

Misdiagnosis, detection rate, and associated factors of severe psychiatric disorders in specialized psychiatry centers in Ethiopia

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Abstract

Background

There are limited studies regarding the magnitude of misdiagnosis as well as underdiagnosis in a specialized psychiatric setting. Thus far, to the best of our knowledge, this is the first study that determined the epidemiology of misdiagnosis as well as detection rates of severe psychiatric disorders including schizophrenia, schizoaffective, bipolar, and depressive disorders in a specialized psychiatric setting.

Method

In this cross-sectional study, a random sample of 309 patients with severe psychiatric disorders were selected by systematic sampling technique. Severe psychiatric disorders were measured by structured clinical interview for DSM-IV (SCID). The potential determinates of misdiagnosis were explored using binary and multivariable logistic regression models, adjusting for the potential confounding factors.

Result

The current study demonstrated that a remarkable proportion (39.16%) of people with severe psychiatric disorders were misdiagnosed. The commonly misdiagnosed disorder was found to be schizoaffective disorders (75%) followed by major depressive disorder (54.72%), schizophrenia (23.71%), and bipolar disorder (17.78%). Among the patients detected with the interview by SCID criteria, the highest level of the correct diagnosis was recorded in the medical record for schizophrenia (76.29%) followed by bipolar (72.22%), depressive (42.40%), and schizoaffective (25%) disorders with detection rate (sensitivity) of 0.76 (95%CI 0.69-0.84), 0.42 (95%CI 0.32-0.53), 0.72 (95%CI 0.60-0.84), and 0.25 (95%CI 0.09-0.41), respectively for schizophrenia, depressive, bipolar, and schizoaffective disorders. This study revealed that bipolar disorder patients are more likely to be diagnosed as schizophrenia (60%) whereas schizophrenia was most likely diagnosed as bipolar disorder (56.25%) and depressive disorders as schizophrenia (54.72%). Having a diagnosis of schizoaffective and depressive disorders as well as suicidal ideation were found to be significant predictors of misdiagnosis.

Conclusion

The current study revealed that four out of ten patients with severe psychiatric disorders are misdiagnosed in a specialized psychiatric setting in Ethiopia. The highest rate of misdiagnosis was observed for schizoaffective disorder (3 out of 4), followed by major depressive disorder (1 out of 2), schizophrenia (1 out of 4), and bipolar disorders (1 in 5). The detection rates were highest for schizophrenia, followed by bipolar, depressive, and schizoaffective disorders. Having a diagnosis of schizoaffective and depressive disorders as well as suicidal ideation were found to be significant predictors of misdiagnosis.

Background

Severe mental disorders such as schizophrenia, schizoaffective, bipolar, and depressive disorders are the major contributors to the global burden of disease and are also identified as huge contributors to the global burden of morbidity and premature mortality [1, 2]. Schizophrenia is considered the most severe and heritable disorder affecting 0.4% of the general population [3–5]. Major depressive disorders are the most common and the largest contributor to the global burden of disease with a prevalence of 4.7% study [6, 7]. Bipolar disorder is the other common severe psychiatric disorder with a mean prevalence estimate of 1% in the general population [8].

Epidemiologic evidence indicated that there are no pathognomonic signs and symptoms in psychiatric disorders [9–11]. The most common and defining symptoms in one disorder could occur in the other distinct category of mental disorders [10]. For example, the commonest symptoms of schizophrenia such as hallucination and delusion may occur in the other categories of severe psychiatric disorders such as bipolar and depressive disorders. In support of this view, studies also reported that a significant proportion of patients with depressive and bipolar disorders had psychosis symptoms [11–13]. Additionally, as many as 60% of schizophrenic patients had comorbid depression in addition to the main schizophrenic symptoms [14–16].

Particularly many of the severe psychiatric disorders mimic symptoms and diagnostic criteria's each other and despite the valuable standard and validated diagnostic criteria [17, 18], accurate diagnosis of those severe psychiatric disorders can be challenging [19]. Thus, many patients with severe psychiatric disorders were commonly misdiagnosed in primary as well as specialized health care settings [20, 21]. In support of the above view, epidemiologic studies show that as many as 76.8% of patients with bipolar disorders [21] and 50% of patients with depressive disorders [21] were misdiagnosed. Depression was found to be the most likely misdiagnosed mental disorder instead of bipolar disorder and bipolar disorder was most likely misdiagnosed with depressive disorders [21, 22].

So many factors attributed to a considerable magnitude of misdiagnosis of severe psychiatric disorders. Firstly, the fact that the diagnosis of psychiatric disorders heavily dependent on history taking [10, 23]. Secondly, the existing significant overlap of symptoms across the disorders [9–11, 24]. Thirdly, instability of the psychiatric symptoms across the disorders including delusion, hallucination, and other symptoms [25, 26]. Fourthly, the experience and knowledge of the professionals involved; Finally, the severity and complexity of the presentation [27, 28].

However, worldwide, there are limited studies that assessed the misdiagnosis and associated factors of severe psychiatric disorders in a specialized psychiatric setting. Thus, this is the first study that aimed to explore the prevalence and associated factors of misdiagnosis of severe psychiatric disorders in low- and middle-income countries including Ethiopia.

Methods

Participants and study design

In this cross-sectional study, a random sample of 320 patients with severe psychiatric disorders from the outpatient clinic of Amanuel Mental Specialized Hospital was invited to participate. This hospital is the only psychiatric hospital in Ethiopia. Data were collected between May and July 2017. The participant had to meet the following criteria: (1) adults (age over 18 years); (2) positive for severe psychiatric disorders by the structured clinical interview for DSM- IV-TR axis I disorders (SCID) criteria; (3) having the capacity to consent.

Sampling Procedure

This study is part of a comorbidity study conducted in a clinical setting in Ethiopia. For this study, the sample size was estimated using Epi-info version 7 with a 95% CI, 5% margin of error, and taking the prevalence of comorbid physical conditions in people with severe psychiatric disorders nearly 80% [29, 30] and the estimated sample size was 246. Considering a 30% non-response rate a total sample of 320 patients with severe psychiatric disorders were included.

We used a systematic random sampling technique to reach each study participant. Sampling interval was identified by dividing the total patients with severe psychiatric disorders who had the treatment and follow up during the data collection period by total sample size which was 11. To select the first participant, we utilized the lottery method and the remaining participants were selected at a regular interval as suggested by a systematic sampling method.

Measures

In the present study, the sociodemographic and clinical characteristics such as age, sex, residence, marital status, educational status, ethnicity, religion, suicide, duration of the illness, history of relapse and hospitalizations were collected from each of the participants. The study participants were then interviewed using the structured clinical interview for DSM- IV-TR axis I disorders (SCID) [31] for DSM = IV severe psychiatric disorders criteria. SCID is a diagnostic instrument used to assess DSM-IV-axis I disorders (major mental disorders) and it is extensively used in Ethiopia to assess psychiatric disorders in previous studies [32, 33]. All data was collected using trained assessors (maters level psychiatry professionals) assigned to evaluate the participants based on SCID criteria.

Data Quality Control

In the current study, to assure the quality of the data, the data collector (psychiatry professionals) who have adequate knowledge and experience about DSM- IV-TR were recruited. Additionally, training was delivered on how to complete the questionnaire, sampling procedure, inclusion criteria, ethical

consideration, data collection procedure as well as the details of SCID for the data collectors and supervisors. The questionnaire was pretested before the actual data collection and the necessary modification was made. Two Supervisors followed the data collectors and the necessary correction was undertaken when needed. The collected data were reviewed and checked for completeness and relevance by the supervisor and principal investigator each day.

Statistical analysis

All statistical analysis has been carried out using Stata (version 16). Categorical variables were summarized using counting (frequency) and expressed as a percentage. Continuous variables were expressed as mean (standards deviations). Regarding our outcome of interest, to calculate the rates of misdiagnosis the previous diagnosis has been taken from the chart (professional diagnosis) and the current diagnosis was based on SCID criteria. The results were then expressed as frequency and percentage. A paired chi-square test has been employed to assess the detection rates and the results were presented as a percentage with the respective P-value. All the reported probabilities were two-sided.

Concerning the associated factors, bivariate and multivariate logistic regression was conducted to look at the association between outcome and explanatory variables. The strength of the association was measured by OR with 95% CI and P-value less than 0.05 was considered as statistically significant.

Ethical Consideration

The human research and ethics committee (HREC) of Amanuel Mental Specialized Hospital (Research and training department) reviewed and approved the study in accordance with the given roles and national research ethics guidelines [34]. The study participants provided written informed consent after a clear and detailed explanation of the purpose, objectives, significance, benefits, and harms of participation, as well as confidentiality of the collected information to each of the study participants. During the period of the data collection, the investigator, supervisor and data collectors followed the code of ethics and obeyed the rules & regulations of the hospital. Privacy was kept confidential at the time of data collection.

Results

Sociodemographic characteristics of the participants

The sociodemographic characteristics of the participant were summarized in the table in Table 1. A total of 309 participants with severe psychiatric disorders including schizophrenia (n = 135), schizoaffective (n = 28), bipolar (n = 54), and depressive (n = 92) disorders were involved yielding a response rate 96.56%. The mean (SD) age and duration of the participants were 36.19 (10.45) and 10.04 (8.66) years, respectively. Nearly two-thirds of the participants 202 (65.37%) were males, 202 (65.37%) were single, 118

(38.19%) attended secondary school, nearly half 157 (51.47%) were Orthodox Christians, and the majority of the participants 235 (76.05%) were from urban areas.

Table 1
Sociodemographic characteristics of the participants
with severe psychiatric disorders in Addis Ababa, Ethiopia
(n = 309)

Characteristics	Frequency	Percentage
Sex	202	65.37
Male	107	34.63
Female		
Age	110	35.60
30 or less	106	34.30
30 to 40	93	30.10
41 and more		
SPD type	135	43.69
Schizophrenia	54	17.48
Bipolar disorder	92	29.77
MDD	28	9.06
Schizoaffective disorders		
Educational status	30	9.71
Uneducated	103	33.33
Primary	118	38.19
Secondary	58	18.77
Higher		
Ethnicity	95	30.74
Amhara	82	26.54
Gurage	91	29.45
Oromo	41	13.27
Others		

Characteristics	Frequency	Percentage
Religion	87	28.16
Muslim	157	51.46
Orthodox	57	18.54
Protestant	6	1.94
Others		
Marital status	202	65.37
Single	74	23.95
Married	33	10.68
Divorcee/widowed		
Residence	235	76.05
Urban	74	29.95
Rural		

The prevalence of misdiagnosis in people with severe mental disorders

The prevalence of overall misdiagnosis of overall severe psychiatric disorders

In this study, the prevalence of overall misdiagnosis of severe psychiatric disorders was 39.16% (95%CI 33.70–44.60). (See Fig. 1).

The Prevalence Of Major Depressive Disorder Misdiagnosis

This study demonstrated that a remarkably higher magnitude of people with MDD was misdiagnosed in Ethiopia 53 (57.60%). This shows that less than 50% of the patients with MDD identified by the SCID criteria (n = 92) were correctly identified by the professionals 39 (42.40%). The differences between the SCID and professional chart diagnoses were statistically significant (P-value < 0.0001). (Table 2 and supplementary 1)

Table 2
Misdiagnosis of patients with severe mental disorders in central Ethiopia, n = 309

Disorder (SPD)	SCID diagnosis	Correct Chart diagnosis	Misdiagnosis	Remarks	Paired test (2 tailed), P value
	F	F (P)	F (P)		
MDD	92	39 (42.39)	53 (57.60)	Underdiagnosis	< 0.0001
SCZ	135	103 (76.30)	32(23.70)	Underdiagnosis	< 0.0001
BD	54	39 (72.22)	15 (27.78)	Underdiagnosis	0.0001
SCZAF	28	7 (25)	21 (75)	Underdiagnosis	< 0.0001
Key: SPD: Severe psychiatric disorder; MDD: Major depressive disorder; SCZ: Schizophrenia; BD: Bipolar disorder; SCAZAF: Schizoaffective disorder; F: Frequency; P: Percentage					

Major depressive disorder most likely diagnosed schizophrenia 29 (54.72%) followed by bipolar 21 (39.62%) and schizoaffective 3 (5.66%) disorders.

The Magnitude Of Misdiagnosis Of Schizophrenia

We also found that the prevalence of misdiagnosis of schizophrenia was 32 (23.71%) with a significant difference between the SCID and professional chart diagnosis (P-value < 0.0001). (Table 2 and supplementary 1).

Schizophrenia was most likely diagnosed as bipolar disorder (56.25%) followed by major depressive 13(40.63%) and schizoaffective 1 (3.12%) disorders.

The magnitude of correct BD diagnosis as compared with a chart diagnosis

Furthermore, this study also revealed that the prevalence of misdiagnosis of bipolar disorder was 15 (17.78%). The variation between the SCID and chart diagnosis is statistically significant (P-value < 0.0001). (Table 2 and supplementary 1).

Bipolar disorder was most likely diagnosed as schizophrenia 9 (60%) followed by major depressive 1 5(30%) and schizoaffective 1(10%) disorders.

The Magnitude Of Schizoaffective Disorder Misdiagnosis

The current study revealed a considerably higher magnitude of misdiagnosed schizoaffective disorder 21(75%) with a significant difference between the SCID and professional chart diagnosis (P-value < 0.0001). (Table 2 and supplementary 1).

Schizoaffective disorder was most likely diagnosed schizophrenia 15 (71.72%) followed by bipolar 5 (23.80%) and major depressive disorder 1(4.76%) disorders.

The detection rate of people with PSD by professional (Correct chart diagnosis)

In the current study, among the patients detected with the interview by SCID criteria, the highest level of the correct diagnosis was recorded in the medical record for schizophrenia 103 (76.29%) followed by bipolar 39 (72.22%), depressive 39 (42.40), and schizoaffective 7(25%) disorders with detection rate (sensitivity) of 0.76 (95%CI 0.69–0.84), 0.42 (95%CI 0.32–0.53), 0.72 (95%CI 0.60–0.84), and 0.25 (95%CI 0.09–0.41), respectively for schizophrenia, depressive, bipolar, and schizoaffective disorders.

Factors Associated With Misdiagnosis Of Severe Psychiatric Disorders

The present study revealed that having suicidal ideation, schizoaffective and major depressive disorders were positively and significantly associated with misdiagnosis in people with severe psychiatric disorder. The odds of having misdiagnosis was increased by 4.22 for MDD [AOR = 4.22 (95%CI 1.69–10.56)]. Similarly, the odds of misdiagnosis were increased by 12.39 for schizoaffective disorder [AOR = 12.39 (95%CI 4.50-34.16)]and by 2.19 for suicidal ideation [AOR = 2.19 (95%CI 1.24–3.87)]. (Table 3)

Table 3

Factors associated with suicide in people with severe mental disorders, Addis Ababa, Ethiopia

Characteristics	Misdiagnosis		Crude odds ratio (95%CI)	Adjusted odds ratio (95%CI)
	Yes	No		
Gender				
Male	83	119	1.27 (0.80–2.06)	1.52 (0.85–2.71)
Female	38	69	1	1
Age				
18–30	46	64	1.09 (0.62–1.91)	1.17 (0.58–2.36)
31–40	38	68	0.86 (0.48–1.50)	1.01 (0.52–1.96)
≥ 40	37	56	1	1
Educational status				
No formal education	15	15	1.63 (0.67–3.99)	1.46 (0.49–4.34)
Primary	38	65	0.96 (0.49–1.86)	0.83 (0.38–1.78)
Secondary	46	72	1.05 (0.55–1.96)	1.13 (0.54–2.34)
Higher	22	36	1	1
Residence				
Rural	34	40	1	1
Urban	87	148	1.45 (0.85–2.45)	1.49 (0.78–2.82)
Marital status				
Single	79	123	1	1
Married	30	44	1.07 (0.62–1.83)	0.87 (0.45–1.66)
Divorce/widowed	12	21	0.89 (0.41–1.96)	1.15 (0.48–2.82)
Type of SPD				
MDD	53	39	4.37 (2.47–7.76)	4.22 (1.69–10.56) *
BPD	15	39	1.24 (0.61–2.53)	1.24 (0.57–2.68)
SCZAF	21	7	9.66 (3.76–24.79)	12.39 (4.50–34.16) **
SCZ	32	103	1	1

* Significant association (p-value < 0.05); ** Significant association (p-value < 0.001); SCZ: Schizophrenia; MDD: Major depressive disorder; BD: Bipolar disorder; SCZAF: schizoaffective disorder

Characteristics	Misdiagnosis		Crude odds ratio (95%CI)	Adjusted odds ratio (95%CI)
	Yes	No		
MDD psychosis				
Yes	38	26	2.85 (1.62–5.02)	1.14 (0.44–2.95)
No	83	162	1	1
Suicidal ideation				
Suicide	87	104	2.07 (1.27–3.37)	2.19 (1.24–3.87) *
No suicide	34	84	1	1
Relapse				
Relapsed	90	169	1.11 (0.66–1.86)	1.41 (0.75–2.62)
No relapse	31	52	1	1
Admission				
Admission	78	118	1.07 (0.69–1.73)	1.23 (0.70–2.16)
No admission	43	70	1	1
* Significant association (p-value < 0.05); ** Significant association (p-value < 0.001); SCZ: Schizophrenia; MDD: Major depressive disorder; BD: Bipolar disorder; SCZAF: schizoaffective disorder				

Discussion

Main findings

Thus far, to the best of our knowledge, this is the first study that determined the epidemiology of misdiagnosis as well as detection rates of severe psychiatric disorders including schizophrenia, schizoaffective, bipolar, and depressive disorders in a specialized psychiatric setting. The results of our evaluation revealed that a remarkable proportion of people with severe psychiatric disorders were misdiagnosed and the detection rates of the distinct categories of severe psychiatric disorders were relatively low. This study shows that roughly three out of four and one out of two patients with schizoaffective and major depressive disorders respectively were misdiagnosed. We also found that roughly one in four and one in five of patients with schizophrenia and bipolar disorder respectively were misdiagnosed. In addition, the current study demonstrated remarkably low detection rates of schizoaffective disorder (25%), depressive disorder (42.40%), bipolar disorder (72.22%) as well as schizophrenia (76.29%). Having a diagnosis of schizoaffective and depressive disorders as well as suicidal ideation were found to be significant predictors of misdiagnosis.

The possible reasons for the misdiagnosis

There are so many explanations for the observed considerable level of misdiagnosis of severe psychiatric disorders. First, failure to appreciate the significance of extensive and expert psychiatric history is among the important factors for the misdiagnosis. In support of this view, evidences indicated that psychiatric history taking is the most important component in the evaluation and care of patients with mental disorder [35, 36]. Additionally, psychiatric history taking is considered as a part of the treatment process (first stage of treatment process) where we collect important information for final psychiatric diagnosis[10]. So, it is strongly recommended that adequate time must be given in taking a history from the patients with average length time roughly up to 45 minutes but the length of time varies depending on the setting, the complexity of the presentation, the purpose of the interview and other factors (including additional assessment tools for the quality or other purposes of services) [10, 35, 36]. However, according to the unpublished study report that assessed the length of time for psychiatric assessment in the same setting in Ethiopia found that the average length of time for psychiatric evaluation was only five minutes. Secondly, the severity and complexity of the presentation might be the other reasons for the misdiagnosis. This is because as the study was conducted in a tertiary hospital, the patients were more likely to serve and referred from the different areas of the country, and the more severe the disorder the more likely to be the overlapping presentation leading to misdiagnosis [37, 38]. In support of the above explanation, the current study found that a remarkably higher proportion of people with bipolar (88.89%) and depressive (69.56%) disorders had overlapping psychotic symptoms and nearly one in five of patients with schizophrenia had depressive symptoms during evaluation. Thirdly, the higher rates of misdiagnosis could be attributed to the low level of clinical experience, knowledge about the psychiatric disorders and diagnostic criteria's, as well as the subjective nature of the diagnosis due to the absence of any supporting laboratory evidence in diagnosis of psychiatric disorders [5, 39, 40]. This is because in Ethiopia professionals without psychiatry specialty as well as diploma and degree level trained psychiatry nurses were involved in care, diagnosis, and treatment of patients with mental disorders because of the scarcity of specialized manpower [41]. Finally, the diagnostic instability and the change from one disorder to the other disorder over time might be the other possible attributing factor for the misdiagnosis. Because in the current study the average duration of the disorder was 10 years and epidemiologic evidence indicates that as many as 50% of patients with bipolar disorder had a shift to non-bipolar disorder at least once over ten years [42].

Comparing with the existing literature

In the present study, the commonly misdiagnosed disorder was found to be schizoaffective disorders (75%) followed by major depressive disorder (54.72%), schizophrenia (23.71%), and bipolar disorder (17.78%). Of those patients who were missed by the professionals and diagnosed as a schizoaffective disorder by SCID criteria by assessors, most frequent of them were received schizophrenia diagnosis 15 (53.57%) in the chart. The remaining diagnosed as bipolar 5 (17.86%) and depressive 1 (3.57%) disorders in the medical record. The possible reason for higher misdiagnoses of schizoaffective disorder could be the clinical presentation and the required criteria to diagnose schizoaffective disorders are more complex containing similar symptoms to schizophrenia and mood disorder episodes (manic or depressive episodes) [43]. Additionally, the criteria to diagnose schizoaffective disorder are more strict requiring the

presence of psychotic symptoms occurring for at least two weeks without prominent mood episodes [39]. Our findings are supported by previous epidemiology study that found the least interrater reliability and low diagnostic congruence for schizoaffective disorders as compared with schizophrenia, bipolar, and major depressive disorders [44].

The findings of the current study indicating bipolar disorder as the least misdiagnosed disorders as compared to the other severe psychiatric disorders are supported by the validation study that identified bipolar disorder as the disorder with the highest degree in both diagnostic congruence and interrater reliability as compared with schizophrenia, schizoaffective, and depressive disorders [44]. However, the rate of bipolar disorder misdiagnosis was remarkably lower than the results of the previous studies conducted in china 76.8% [21]. The possible reasons for this difference might be due to the variations in the episodes, presenting symptoms as well as the difference in the characteristics the professionals used to evaluate the disorders.

The current study also demonstrated that bipolar disorder patients are more likely to be diagnosed as schizophrenia (60%) whereas schizophrenia was most likely diagnosed as bipolar disorder (56.25%). The possible reasons might be due to the severity of the bipolar disorder in the current study where 88.89% of bipolar disorders had psychotic features. Supporting this view a study found that the presence of psychotic symptoms in bipolar patients was associated with misdiagnosis [45] and the majority of patients with bipolar with psychotic features were misdiagnosed as psychotic disorders including schizophrenia [46, 47]. These findings are different from the previous scientific evidence which resulted in depression (70.6%) as the most likely missed diagnosed disorder instead of bipolar disorders [21]. The other possible reason for the difference is that in the present study nearly half of bipolar patients had only manic episode in their lifetime which more resembles schizophrenic symptoms than depressive symptoms.

We also found that depressive disorder was most likely diagnosed as schizophrenia (54.72%). The possible reasons for this might be the presence of psychotic symptoms (66.67%) in addition to the depressive symptoms in patients with major depressive disorders detected by SCID criteria.

Moreover, having a diagnosis of schizoaffective [AOR=12.39 (95%CI 4.50-34.16)], and depressive disorders [AOR=4.22 (95%CI 1.69-10.56)], as well as suicidal ideation [AOR=2.19 (95%CI 1.24-3.87)] were found to be significant predictors of misdiagnosis. These findings were in agreement with similar previous studies [21, 27].

Consistent with previous epidemiologic studies [21], this study revealed that the detection rates were highest for schizophrenia, followed by bipolar, depressive, and schizoaffective disorders.

Implications for future research and clinical practice

The current study had some implications for future research as well as clinical practice. First, this study shows that the misdiagnosis and poor detection rates were remarkably higher in patients with severe

psychiatric disorders especially for schizoaffective and depressive disorders which need future robust longitudinal research confirming the magnitude and evaluating the possible reasons for the highest magnitude. Second, in the current studies, we included specific categories of mental disorders by distributing the overall sample size calculated for severe psychiatric disorders. This shows that the sample for each disorder may be below the estimate the magnitude for distinct categories of the disorders. So future studies addressing this issue are warranted. Thirdly, attention needs to be given to possibly reduce the extensive level of misdiagnoses by the concerned body with the possibilities of implementing continuous medical education (CME) so that the patients will be safe from suffering related to persistence symptoms as well as unnecessary and inappropriate drug uses leading to an increased level of severity of the disorders due to misdiagnosis and side effects of drugs.

Strengths and limitations

This study had several strengths: (1) being the first study to estimate and compare the level of misdiagnosis and detection rates across the severe psychiatric disorders such as schizophrenia, schizoaffective, bipolar, and depressive disorders. (2) the use of standard and diagnostic instruments (SCID) to examine severe psychiatric disorders. (3) inclusion of the participants from a well-defined catchment area and assessing the indicators of severity such as psychosis in bipolar and depressive disorders which are the possible reasons for a remarkably high magnitude of misdiagnosis.

However, the current study had also some limitations: first, due to the cross-sectional nature of the study factors associated with misdiagnosis may not imply causality. Second, the possibilities of recall bias due to the retrospective nature of the study might impact the magnitude of misdiagnosis.

Conclusion

In summary, this study demonstrated that a remarkable proportion of people with patients with severe psychiatric disorders are misdiagnosed in a specialized psychiatric setting in Ethiopia (one out of four). The highest rate of misdiagnosis was observed for schizoaffective disorder (75%), followed by depressive disorder (54.72%), schizophrenia (23.71%), and bipolar disorder (17.78%). The detection rates were highest for schizophrenia, followed by bipolar, depressive, and schizoaffective disorders. Having a diagnosis of schizoaffective and depressive disorders as well as suicidal ideation were found to be significant predictors of misdiagnosis.

Robust longitudinal studies assessing the reasons for the highest level of misdiagnosis as well as identifying the common determinates for the misdiagnosis are warranted. Continuous medical education (CME) and other refreshment training are recommended for the professionals.

Declarations

Authors' contributions

GA Conceptualized the study and was involved in the study design, reviewed the article, analysis, report writing, discussion, and drafted the manuscript. ZY, and KH were involved in the study design, data entry, and review of the subsequent drafts. DA, AT, KH, and SD were involved in the discussion of the overall document, and review of subsequent drafts. All authors read and approved the final manuscript.

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Competing interests

The authors declare that they have no competing interests.

Consent for publication

N/A.

Ethics approval and consent to participate

The human research and ethics committee (HREC) of Amanuel Mental Specialized Hospital (Research and training department) reviewed and approved the study in accordance with the given roles and national research ethics guideline. Confidentiality and privacy were maintained at all levels of the survey. Informed written consent was obtained from each study participant. The right to withdraw from the research process at any point in time was respected. Privacy and strict confidentiality were maintained during the interview process.

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Figures

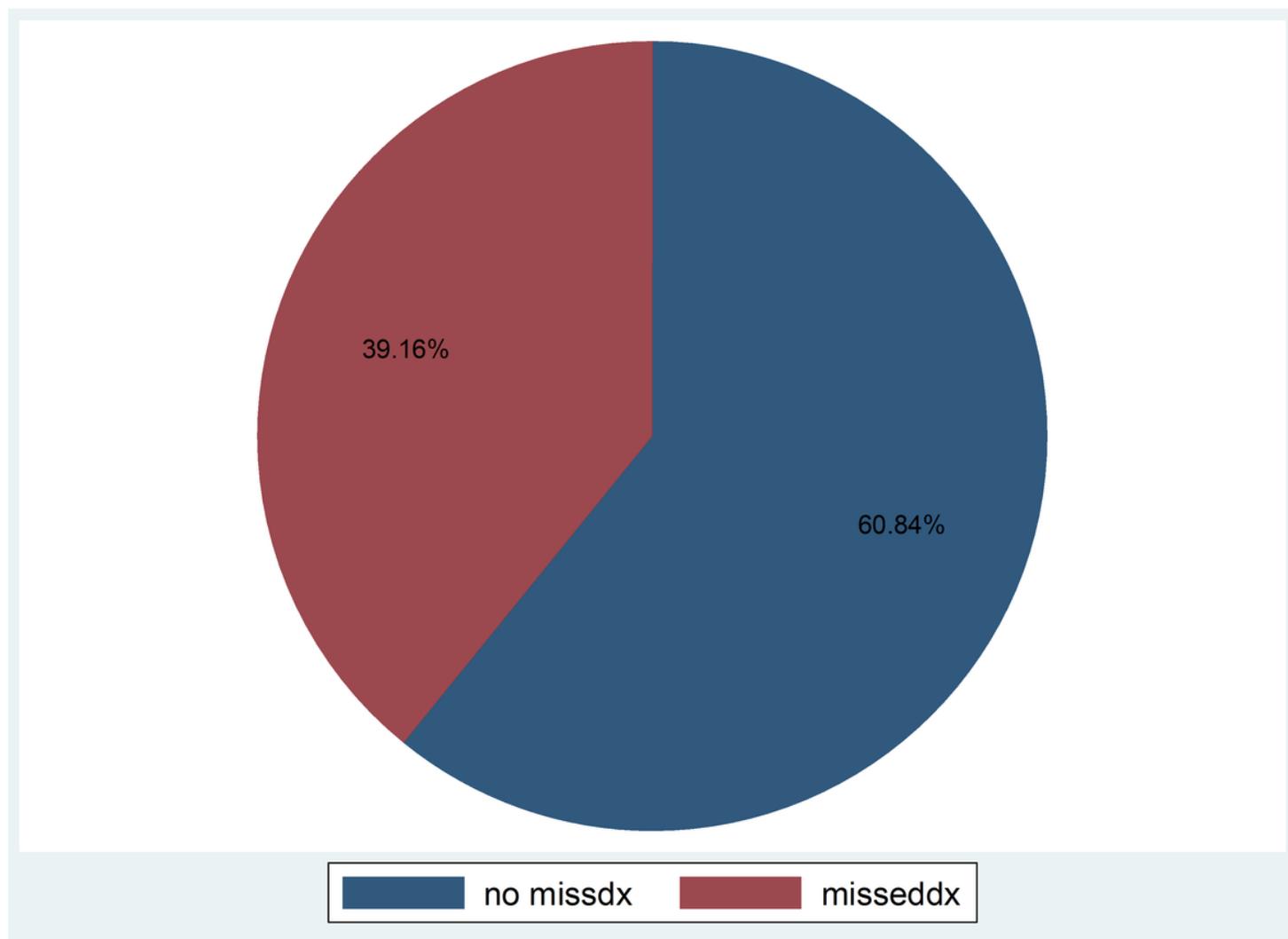


Figure 1

The magnitude of missed diagnosis of overall severe psychiatric disorders