

Diagnoses of Schizophrenia, Schizoaffective Disorder, Bipolar Disorder and Unipolar Depression: Interrater Reliability and Congruence between DSM-IV and ICD-10

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Key Words

Diagnostic criteria • Diagnostic systems • Interrater reliability • Diagnostic congruence • DSM-IV • ICD-10 • Psychotic disorders • Affective disorders

Abstract

Background: The present study investigated the interrater reliability of the diagnoses of schizophrenia (SCH), schizoaffective disorder (SAD), bipolar disorder (BPD) and unipolar depression (UPD) according to both DSM-IV and ICD-10, as well as the diagnostic congruence between the two classificatory systems. **Sampling and Methods:** Using the Composite International Diagnostic Interview, two trained psychiatrists simultaneously evaluated 100 inpatients and independently assessed the psychiatric diagnoses. The Cohen's kappa coefficient was employed to estimate interrater reliability and diagnostic congruence between DSM-IV and ICD-10. **Results:** SCH was more frequent according to ICD-10 than DSM-IV criteria. Considering both diagnostic systems, all the four nosological categories, but ICD-10 SAD and DSM-IV UPD, were associated with interrater reliability coefficients above 0.50. The coefficient of the diagnostic congruence between DSM-IV and ICD-10 was inferior to 0.50 only for SAD. BPD was associated with the highest degrees of both interrater reliability and diagnostic congruence. **Conclusions:**

The lack of an item excluding the occurrence of an affective syndrome among ICD-10 diagnostic criteria for SCH can account for: the larger frequency of SCH according to ICD-10 than DSM-IV; the unsatisfactory interrater reliability for the diagnosis of ICD-10 SAD, and the low diagnostic congruence for SAD.

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Introduction

The adoption of descriptive and operational criteria from the modern classification systems has led to an improvement of diagnostic reliability [1]. However, it is possible that the same nosological category could be associated with different degrees of agreement among clinicians when different diagnostic criteria are applied. For example, a study [2] reported that schizoaffective disorder diagnosis based on DSM-III-R criteria [3] has led to a very low interrater agreement when compared to schizoaffective disorder diagnosis based on ICD-10 [4]. Moreover, within the same classification system, different nosological categories may be associated with different degrees of diagnostic agreement. For instance, some test-retest reliability studies [5–7], which utilized DSM-III-R or DSM-IV [8] criteria, found significantly lower

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agreement coefficients for the diagnosis of schizoaffective disorder in comparison with schizophrenia or mood disorders. In another test-retest reliability study [9], bipolar disorder diagnosis was associated with a higher reliability than schizophrenia, schizoaffective disorder and unipolar depression.

The existence of different classification systems may also have led to diagnostic divergence. There are some important differences between DSM-IV and ICD-10 relative to diagnostic criteria. For example, a patient with an affective syndrome and, at the same time, a Schneiderian first-rank symptom, can receive a diagnosis of mood disorder based on DSM-IV criteria and a diagnosis of schizoaffective disorder based on ICD-10 criteria [10]. In fact, a study found a total absence of schizoaffective disorder diagnosis congruence between DSM-IV and ICD-10 [11].

The present work addressed these two issues in a single study. Two trained psychiatrists simultaneously evaluated 100 inpatients and independently verified if they fulfilled the DSM-IV and ICD-10 diagnostic criteria for each of the following nosological categories: schizophrenia, schizoaffective disorder, bipolar disorder and unipolar depression (i.e. major depression disorder in DSM-IV; depressive episode or recurrent depressive disorder in ICD-10). Interrater reliability to each of these four nosological categories was assessed by comparing the amount of diagnostic agreement between the two raters within the same classification system. Diagnostic congruence to each of these four nosological categories was also examined by comparing the degree of agreement between DSM-IV and ICD-10 diagnoses made by the same rater.

Methods

Subjects

Acute inpatients from Institute of Psychiatry of Federal University of Rio de Janeiro were randomly chosen and then invited to participate in the present study. This short-term stay, public hospital has 115 psychiatric beds. Residents, who are under senior psychiatric supervision, treat these patients. The sample consisted of 100 (55 women and 45 men) patients. Average age was 40.3 years, ranging between 19 and 69, with a standard deviation of 12.2.

Data Collection

After given informed consent, each patient was examined simultaneously by two independent psychiatrists of the hospital who were unfamiliar with the case. Nine psychiatrists alternated themselves in the interviews, with multiple pair configurations. The two first available psychiatrists performed the co-interviews. These clinical interviews took place in a period of one year and a half, between 2002 and 2003.

		Raters		Total of diagnoses	Coefficient
		Rater 1	Rater 2		
Diagnostic systems	DSM-IV	100	100	200	Diagnostic congruence
	ICD-10	100	100	200	
Total of diagnoses		200	200		
Coefficient		Interrater reliability			

Fig. 1. Study design employed to compute interrater reliability (columns) and diagnostic congruence (lines) coefficients. The number within each cell indicates the number of diagnoses. Each of the 100 patients was independently diagnosed by both raters (rater 1 and rater 2) according to both diagnostic systems (DSM-IV and ICD-10).

Mental disorders were assessed with the Composite International Diagnostic Interview (CIDI), lifetime version [12]. This structured interview allows the assessment of the diagnosis according to both DSM-IV and ICD-10. CIDI was initially developed by World Health Organization to be applied by people without clinical training in epidemiological studies [13]. More recently, it has also been employed extensively in general population surveys [14] and clinical trials [15].

Although both psychiatrists were present at each interview, only one of them asked the CIDI questions. Both interviewers were allowed to repeat or rephrase the CIDI questions when the patient's answers were not clear. During the interview, each psychiatrist independently recorded his or her observations and patient's reports. Based on these data, the psychiatrists had to assess if the patient met the diagnostic criteria according to DSM-IV and ICD-10 for the following categories: schizophrenia, schizoaffective disorder, bipolar disorder and unipolar depression.

Data Analysis

Differences between DSM-IV and ICD-10 about the frequencies of each of the four diagnosis categories were statistically evaluated by the χ^2 test, with a level of significance of 5%.

The Cohen's kappa coefficient was employed to estimate both interrater reliability and diagnostic congruence. Figure 1 presents the study design from which coefficients were computed. The interrater reliability coefficient was calculated by contrasting one rater with the other relative to the 100 diagnoses based on DSM-IV criteria and the 100 diagnoses based on ICD-10 criteria formulated for each patient. The diagnostic congruence coefficient was estimated by comparing DSM-IV with ICD-10 relative to the diagnoses made by each rater for the same patient. According to the literature, kappa values between 0.5 and 0.7 are considered to be fairly good. Values below 0.5 or above 0.7 indicate, respectively, low or high degrees of agreement [16].

Results

Table 1 depicts the frequency of each diagnostic category according to either DSM-IV (second column) or ICD-10 (third column) criteria and to both classificatory systems simultaneously (last column). The numbers in parentheses correspond to the numbers of patients whose diagnoses were assessed by at least one and by both of the raters, respectively.

Based on DSM-IV criteria, bipolar disorder was the most frequent diagnosis and schizophrenia was in the second position. However, using ICD-10 criteria, the ordering was the opposite. In both classificatory systems, unipolar depression was the least common diagnosis. Schizophrenia was more frequent when defined according to ICD-10 than DSM-IV: 68 versus 39 diagnoses ($\chi^2 = 10.7$; $p < 0.005$). Finally, no significant difference was observed between the two classificatory systems in the frequency of schizoaffective disorder ($p > 0.10$), bipolar disorder ($p > 0.10$) and unipolar depression ($p > 0.10$).

The last column of table 1 shows the number of common diagnoses to each of the four nosological categories achieved by both diagnostic systems. The percentage of a DSM-IV diagnosis also detected in ICD-10 and vice versa was, respectively, 97.4 and 55.9% for schizophrenia, 38.2 and 56.5% for schizoaffective disorder, 87.1 and 90.0% for bipolar disorder, and 52.4 and 78.6% for unipolar depression.

Table 2 presents the Cohen's kappa coefficients to evaluate interrater reliability for DSM-IV and ICD-10 across the four nosological categories. Kappa value comparisons between DSM-IV and ICD-10 revealed a very similar pattern across schizophrenia, bipolar disorder and unipolar depression diagnoses. In contrast, ICD-10 schizoaffective disorder presented a lower interrater reliability when compared to DSM-IV schizoaffective disorder. As it can be observed, bipolar disorder presented the highest interrater reliability among the four nosological categories. Schizophrenia showed intermediate values. Unipolar depression and schizoaffective disorder presented the lowest values within DSM-IV and ICD-10, respectively.

Sixteen patients received a DSM-IV unipolar depression diagnosis from at least one of the raters, but only 5 patients received this diagnosis from both raters (see table 1). The 11 cases of disagreement between the raters were related to four DSM-IV diagnoses of bipolar disorder, one of schizoaffective disorder, and six of mental disorders not appraised in the present study.

Table 1. Number of diagnoses according to DSM-IV (second column), ICD-10 (third column) and to both classificatory systems simultaneously (last column)

	DSM-IV	ICD-10	DSM-IV and ICD-10
Schizophrenia	39 (26 + 13)	68 (44 + 24)	38 (25 + 13)
Schizoaffective disorder	34 (22 + 12)	23 (19 + 4)	13 (10 + 3)
Bipolar disorder	62 (37 + 25)	60 (36 + 24)	54 (34 + 20)
Unipolar depression	21 (16 + 5)	14 (10 + 4)	11 (8 + 3)
Others	44 (31 + 13)	35 (24 + 11)	31 (23 + 8)

In parentheses, the number of patients that received the diagnosis from at least one and from both the raters, respectively.

Table 2. Interrater reliability of the diagnosis of the four nosological categories according to DSM-IV and ICD-10 criteria (in kappa values)

	DSM-IV	ICD-10
Schizophrenia	0.59	0.56
Schizoaffective disorder	0.65	0.26
Bipolar disorder	0.72	0.72
Unipolar depression	0.41	0.54

Table 3. Congruence between DSM-IV and ICD-10 diagnoses of the four nosological categories (in kappa values)

	DSM-IV vs. ICD-10
Schizophrenia	0.61
Schizoaffective disorder	0.37
Bipolar disorder	0.83
Unipolar depression	0.59

Nineteen patients received an ICD-10 schizoaffective disorder diagnosis from at least one of the raters, but only four patients received this diagnosis from both raters (table 1). The 15 cases of disagreement between the raters were related to nine ICD-10 diagnoses of schizophrenia and six of bipolar disorder.

The Cohen's kappa coefficients employed to evaluate the diagnostic congruence between DSM-IV and ICD-10 for the four nosological categories are presented in table 3. As it can be observed, congruence rates between DSM-IV and ICD-10 were high for bipolar disorder diag-

nosis, reasonable for schizophrenia and unipolar depression, and low for schizoaffective disorder.

Considering the two interviewers together, there were 34 diagnoses of schizoaffective disorder according to DSM-IV. Applying ICD-10 criteria by the same interviewer, those diagnoses corresponded to 19 diagnoses of schizophrenia, 13 of schizoaffective disorder and two of bipolar disorder. Moreover, there were 23 diagnoses of schizoaffective disorder according to ICD-10. Applying DSM-IV criteria, those diagnoses corresponded to one diagnosis of schizophrenia, 13 of schizoaffective disorder, six of bipolar disorder and three of unipolar depression.

Discussion

In our sample, schizophrenia diagnosis was significantly more common according to ICD-10 than DSM-IV criteria. The higher frequency of diagnosis of schizophrenia according to ICD-10 than DSM-IV or DSM-III-R has also been reported in two additional studies [17, 18], although other studies failed to detect this difference [2, 13, 19–21]. Indeed, ICD-10 criteria for schizophrenia seem to be less restrictive. One-month duration is enough for the diagnosis. Also, mood symptoms are allowed, since they have begun after the schizophrenic ones. Differently, in DSM-IV the symptoms should last for at least six months, and an affective syndrome should be excluded [23]. Finally, the larger frequency of schizophrenia according to ICD-10 criteria could be explained by the fact that the DSM-IV criteria for schizoaffective disorder diagnosis require a 2-week period of psychotic symptoms in the absence of affective symptoms. Since many patients who presented psychotic symptoms for 2 weeks probably did not remit within one month, they could meet DSM-IV diagnostic criteria for schizoaffective disorder and, at the same time, ICD-10 diagnostic criteria for schizophrenia.

Regarding the frequencies of schizoaffective disorder, bipolar disorder and unipolar depression diagnoses, we failed to find a significant difference between DSM-IV and ICD-10. Patients presenting a mixture of schizophrenic and affective symptoms tend to receive a diagnosis of mood disorder in DSM-IV – unless there is a 2-week period with psychotic symptoms not associated to an affective syndrome – and a diagnosis of schizoaffective disorder in ICD-10. This is due to the fact that ICD-10 does not allow the occurrence of Schneiderian first-rank symptoms in affective disorders. So, it would be expected that mood disorders and schizoaffective disorder would

be more common according to DSM-IV and ICD-10 criteria, respectively. In spite of the absence of significant difference, we found more diagnoses of both schizoaffective and mood disorders based on DSM-IV than on ICD-10. This result could also be related to the lack of restrictiveness of ICD-10 criteria for schizophrenia. Indeed, ICD-10 seems to favor the diagnosis of schizophrenia over the diagnoses of schizoaffective and mood disorders. Two studies found that schizoaffective disorder diagnosis was more frequent in ICD-10 than in DSM-IV or DSM-III-R [11, 17]. Nevertheless, other studies did not detect any frequency difference between the two classificatory systems in schizoaffective disorder [2], bipolar disorder [2, 17] and unipolar depression [2, 17].

A fairly good interrater reliability was found for schizophrenia diagnoses according to both DSM-IV and ICD-10 criteria. Three studies reported interrater reliability values within the range of the present study [17, 23, 24]. However, other studies found considerably higher values [2, 13, 15, 21, 25–30].

In the present study, the interrater reliability of schizoaffective disorder diagnosis was reasonable in DSM-IV, but was low in ICD-10. As it was seen, when an ICD-10 schizoaffective diagnosis was made by a rater, schizophrenia was the most common ICD-10 diagnosis made by the other rater. Since ICD-10 diagnostic criteria for schizophrenia do not exclude an occurrence of affective symptoms, the differential diagnosis between schizophrenia and schizoaffective disorder is perhaps more difficult in ICD-10, which would favor a larger disagreement between interviewers. In one study [17], the diagnosis of schizoaffective disorder was associated with a low interrater reliability in both DSM-III-R and ICD-10. The results of another study [2] were contradictory in relation to ours: a high kappa value in ICD-10, and a low one in DSM-III-R. Other studies found a high [28] and a reasonable [24] interrater reliability in DSM-IV. In another study [29], the diagnosis of schizoaffective disorder was associated with a reasonable interrater reliability in ICD-10.

Bipolar disorder diagnoses were associated with the highest coefficients regarding interrater reliability both in DSM-IV and ICD-10. This result is in concordance with several previous reports [2, 15, 23–30], although in one study just a fair interrater reliability value has been detected [17].

We found a low interrater reliability in DSM-IV for unipolar depression diagnosis, but in ICD-10 the kappa value was reasonable. However, except for one study which yielded a similar result [2], high kappa coefficients

have been consistently reported in the literature for the interrater reliability of unipolar depression [2, 15, 17, 23, 24, 26, 28–32]. The reason for this discrepancy may be related to the low frequency of unipolar depression diagnoses in our sample. As it has been observed, a reduced number of positive diagnoses contribute to a drop in kappa value [33].

The diagnoses of schizophrenia were associated with a reasonable congruence between DSM-IV and ICD-10. Two other studies found a high congruence, with kappa values of 0.86 and 0.87 [20, 34]. However, it should be noted that the sample of one of these studies [20] was composed by chronic patients.

The congruence between the two classificatory systems for schizoaffective disorder diagnoses was low in our sample. As it was seen, an ICD-10 schizoaffective disorder diagnosis corresponded in most cases to a DSM-IV schizoaffective disorder diagnosis made by the same rater. However, a DSM-IV schizoaffective disorder diagnosis corresponded more commonly to an ICD-10 schizophrenia diagnosis. So, this diagnostic divergence is probably related to the fact that a patient with affective symptoms may receive a schizophrenia diagnosis based on ICD-10, but not on DSM-IV criteria. Another important aspect that may have contributed to this low level of convergence is the fact that the ICD-10 schizoaffective disorder corresponds to a life-time diagnosis, whereas DSM-IV diagnostic criteria for this nosological category are related to an episodic event [10]. The only other study which addressed the diagnostic congruence for schizoaffective disorder found a kappa value equal to zero [11]. Nevertheless, this result may have been related to the very

low frequency of these diagnoses in the sample: six schizoaffective disorder diagnoses according to ICD-10 and none according to DSM-IV criteria [11].

Finally, we found a high congruence between the two diagnostic systems (DSM-IV and ICD-10) for bipolar disorder. The coefficient of congruence for unipolar depression diagnosis was considered reasonable. To our knowledge, no other study has investigated the congruence between DSM-IV or DSM-III-R and ICD-10 for mood disorders.

The present work has some methodological limitations that need to be addressed. First, it was based on a small sample. Second, diagnostic reliability was assessed with a 'joint' method – that is, both the raters observe the same interview –, which yields higher degrees of agreement and is less generalizable to the real world than test-retest method [9].

In conclusion, our study indicates that the lack of an item excluding the occurrence of an affective syndrome among ICD-10 diagnostic criteria for schizophrenia can account for three of our results: the larger frequency of schizophrenia according to ICD-10 than DSM-IV; the unsatisfactory degree of agreement between clinicians for the diagnosis of ICD-10 schizoaffective disorder, and the low diagnostic congruence between DSM-IV and ICD-10 for schizoaffective disorder.

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