

The Diagnostic Stability of DSM-IV Diagnoses: An Examination of Major Depressive Disorder, Bipolar I Disorder, and Schizophrenia in Korean Patients

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Objective: We examined the stability of diagnoses defined by the Diagnostic and Statistical Manual of Mental Disorders–Fourth Edition (DSM–IV) (major depressive disorder [MDD], bipolar I disorder [BID], and schizophrenia [SPR]) by means of retrospective reviews of medical records.

Methods: Data from patients who met the DSM–IV criteria for the aforementioned disorders according to two psychiatrists and who were followed for at least 2 years were included in this study. We reviewed the medical records and compared the diagnosis given at the index admission with assessments made every 6 months for 2 years after discharge to determine diagnostic stability.

Results: A total of 138 patients with MDD, 56 patients with BID, and 107 patients with SPR who were followed for 2 years were included in the final analyses. The data showed that 84.8% of the sample retained their initial diagnosis of MDD during the first year; this figure decreased to 79.0% during the second year. During the first year, 93.5% retained their initial diagnosis of BID, and this figure decreased to 89.3% during the second year; 86.8% and 86.9% retained their diagnosis of SPR during the first and second years, respectively.

Conclusion: This study showed the instability of three major DSM–IV diagnoses among Korean patients. Additionally, the results demonstrated that accurate diagnosis using the current diagnostic system requires longitudinal observation.

KEY WORDS: Diagnostic stability; Major depressive disorder; Bipolar disorder; Schizophrenia; Diagnostic and Statistical Manual of Mental Disorders.

INTRODUCTION

Most major psychiatric disorders have a chronic course during which the clinical features change as a function of time. Schizophrenia (SPR) is considered a lifelong disorder that can include cognitive, affective, and behavioral manifestations as well as psychotic symptoms during its natural course. Major depressive disorder (MDD) and bipolar I disorder (BID) can be characterized by recurrent episodes and thus become lifelong chronic illnesses.^{1,2)} Adequate long-term treatment and meaningful scientific investigation require the use of an accurate psychiatric diagnosis during entire the course of an illness. However, in actual clinical practice, psychiatric diagnoses are often

changed for several reasons including problems with the reliability of current diagnostic methods, the inadequacy or inaccuracy of information provided at the initial interview, and substantial changes in the clinical features over the course of the illness.³⁾

Diagnostic stability can be defined as the degree to which a diagnosis is confirmed at subsequent assessments.³⁾ The stability of diagnoses of major psychiatric disorders according to the criteria provided by the International Classification of Diseases-Tenth Revision (ICD-10; World Health Organization, 2003)⁴⁾ and the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV; American Psychiatric Association, 1994)⁵⁾ has been examined by several studies. One study reported that 65% of 20 patients with an initial ICD-10 diagnosis of depressive disorder were diagnosed with the same disorder at a 3-year follow-up.⁶⁾ Other long-term observational studies have reported that one-third of patients initially diagnosed with MDD received a different psychiatric diagnosis later.^{7,8)} One study reported that the diagnosis of about 30% of patients who were ini-

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tially diagnosed with mania/bipolar disorder was eventually changed during follow-up.⁸⁾ Another study reported that the rates at which a diagnosis of bipolar disorder remained consistent were 49% and 38% using prospective and retrospective approaches, respectively.⁹⁾ Prospective stability has been defined as the proportion of patients who received a given diagnosis and who are subsequently re-diagnosed with this initial diagnosis at later assessments, whereas retrospective stability refers to the proportion of patients who receive a given diagnosis at a particular index assessment who were originally diagnosed with the same diagnosis at an earlier assessment. It has been reported that 21.9% of subjects with an initial diagnosis of SPR received a different diagnosis during a subsequent hospitalization and that 32.8% of subjects initially diagnosed with other disorders were later diagnosed with SPR.¹⁰⁾

However, few studies of the diagnostic stability of psychiatric disorders have been conducted in Korea. Thus, it is difficult to determine the existence of ethnic differences with respect to the stability of DSM-IV diagnoses among Korean patients. Therefore, we evaluated the stability of three major psychiatric DSM-IV diagnoses by reviewing medical records.

METHODS

The medical records of patients admitted to the psychiatric ward of one university hospital in Korea from January 2002 to December 2005 were reviewed. Patients who received DSM-IV diagnoses of MDD, BID, or SPR at discharge according to two psychiatrists and who were followed for at least 2 years were included in the analysis. Subjects with comorbid axis I disorders or comorbid medico-surgical illnesses were excluded.

To avoid difficulties related to ambiguity at the initial interview, we excluded unclear case records to rule out those with more than one diagnosis and included only those cases with a single axis I diagnosis. All subjects also completed three measures on a weekly basis: the Positive and Negative Syndrome Scale (PANSS), the Young Mania Rating Scales (YMRS), and the Hamilton Rating Scales for Depression (HRSD). This procedure allowed us to avoid unreliable measurement.

To determine prospective diagnostic stability, we reviewed the diagnoses contained in the medical records at the index admission and every 6 months after discharge. The Institutional Review Board of Yeouido St. Mary's Hospital reviewed the study protocol and approved the

study.

We analyzed the descriptive characteristics of the sample according to level of diagnostic stability and performed logistic regression analyses to identify the factors related to changes in diagnosis.

RESULTS

As shown in Table 1, the demographic and clinical characteristics of patients with MDD, BID, and SPR differed significantly. Patients with MDD were older than patients with BID or SPR, and the age at the onset of MDD was older than that for BID and SPR. Family histories of psychiatric illness were significantly more common in patients with SPR than in those of patients with MDD or BID.

Major Depressive Disorder

Two hundred thirty three patients were given the primary diagnosis of MDD at least once during the study (2002-2005). The mean age of these patients was 53.0±16.9 years, the mean age at onset was 46.1±16.5 years, and 154 members of this group (74.0%) were female. Additionally, 208 patients were given the primary diagnosis of a MDD at the end of the first 6-month period, whereas the remaining patients (n=25) received the diagnosis at later assessments.

Of the 208 patients given the primary diagnosis of MDD at the end of the first 6-month period, 138 were followed for 2 years and included in the final analyses; the drop-out rate in this diagnostic group was 21.2% (n=44) during the first year and 33.7% (n=70) during the full 2 years after the initial diagnosis. Additionally, 139 (84.8%) of the 164 patients who did not drop out during the first year were still diagnosed with MDD at 1 year, and 109 patients (79.0%) of the 138 patients followed for 2 years

Table 1. Demographic and clinical characteristics of patients

	MDD (n=208)	BPD (n=86)	SPR (n=178)	p value
Age	53.1±15.2	43.3±12.5	38.1±10.7	0.000
Gender, female	161 (77.4)	48 (55.8)	86 (48.3)	0.000
Age of onset	52.4±15.4	35.2±12.1	30.3±9.9	0.000
Family history of psychiatric illness	33 (15.9)	23 (26.8)	57 (31.8)	0.001
Psychotic features	44 (21.0)	51 (58.9)	NA	0.000

MDD, major depressive disorder; BPD, bipolar I disorder; SPR, schizophrenia; NA, not applicable. Values are presented as mean±standard deviation or number (%).

maintained that diagnosis 2 years after the initial diagnosis. Thus, the prospective diagnostic stability of those with MDD was 84.8% during the first year and 79.0% during the 2 years of the study. Of the 29 patients with another diagnosis, 21 were diagnosed with BID, three with SPR, three with anxiety disorder, and two with a personality disorder (Table 2).

A logistic regression analysis was performed to identify the factors related to a change in the diagnosis of the 138 patients followed for 2 years. Among the factors (sex, age, age at illness onset, psychotic features, family history of psychiatric illness, treatment resistance), psychotic features ($p=0.003$) and family history of psychiatric illness ($p=0.026$) were found to be associated with a change in the diagnosis.

Eleven patients who were given another diagnosis at the initial contact were diagnosed with MDD by the 2-year follow up. Therefore, the 2-year retrospective stability of the diagnosis of MDD was 90.8% (109/120).

Bipolar I Disorder

One hundred ten patients were given a primary diagnosis of BID at least once during the study period (2002-2005). The mean age of this group was 42.6 ± 17.2 years, the mean age at the onset of the illness was 36.3 ± 14.5 years, and 63 patients in this group (57.3%) were female. Eighty-six patients were given the main diagnosis of BID at the end of the initial 6-month period, whereas the remaining patients ($n=24$) received the diagnosis during

later contacts.

Of the 86 patients given this diagnosis at the end of the initial 6-month period, 56 were followed for 2 years and included in the final analyses; the dropout rate in this diagnostic group was 27.9% ($n=24$) during the first year and 34.9% ($n=30$) during the 2 years after initial diagnosis. Of the 62 patients who did not drop out during the first year, 58 (93.5%) kept the diagnosis of BID after 1 year, and 50 (89.3%) of the 56 patients followed for 2 years maintained that diagnosis at the end of the study. Thus, the prospective diagnostic stability of BID during 1 year was 93.5%, and that during 2 years was 89.3%. Of the six patients who were given another diagnosis after the initial evaluation, three were diagnosed with SPR, and three were diagnosed with schizoaffective disorder (Table 3).

The logistic regression analysis showed that none of the variables measured (sex, age, age at onset, first episode, severity of first episode, psychotic features, family history of psychiatric illness, number of previous episodes) was related to a change in the diagnosis among the 56 patients followed for 2 years. Thirteen patients who had been diagnosed with another disorder at the initial contact were diagnosed with BID at the 2-year follow up. Thus, the 2-year retrospective stability of BID was 79.4% (50/63).

Schizophrenia

Two hundred and fourteen patients received a primary diagnosis of SPR at least once during the study period (2002-2005). The mean age of this group was 36.1 ± 10.1

Table 2. DSM-IV diagnoses during follow-up for patients with the baseline diagnosis of major depressive disorder ($n=208$)

	Baseline	6 months	1 year	18 months	2 years
Number of patients	208	174	164	147	138
Follow-up loss		34	44	61	70
Major depressive disorder	208	156 (89.7)	139 (84.8)	118 (80.3)	109 (79.0)
Bipolar disorder		11 (6.3)	15 (9.1)	21 (14.3)	21 (15.2)
Schizophrenia spectrum disorder		4 (2.4)	4 (2.4)	3 (2.0)	3 (2.2)
Anxiety disorder		3 (1.7)	4 (2.4)	3 (2.0)	3 (2.2)
Personality disorder		0 (0)	2 (1.2)	2 (1.4)	2 (1.5)

DSM-IV, Diagnostic and Statistical Manual of Mental Disorders IV. Values are presented as number (%).

Table 3. DSM-IV diagnoses during follow-up for patients with the baseline diagnosis of bipolar I disorder ($n=86$)

	Baseline	6 months	1 year	18 months	2 years
Number of patients	86	71	62	60	56
Follow-up loss		15	24	26	30
Bipolar I disorder	86	68 (95.8)	58 (93.5)	54 (90.0)	50 (89.3)
Schizophrenia		1 (1.4)	2 (3.2)	3 (5.0)	3 (5.4)
Schizoaffective disorder		2 (2.8)	2 (3.2)	3 (5.0)	3 (5.4)

DSM-IV, Diagnostic and Statistical Manual of Mental Disorders IV. Values are presented as number (%).

Table 4. DSM-IV diagnoses during follow-up for patients with the baseline diagnosis of schizophrenia (n=178)

	Baseline	6 months	1 year	18 months	2 years
Number of patients	178	160	144	121	107
Follow-up loss		18	34	57	71
Schizophrenia	178	142 (88.8)	125 (86.8)	108 (89.3)	93 (86.9)
Schizoaffective disorder		3 (1.9)	2 (1.4)	5 (4.1)	4 (3.7)
Bipolar disorder		7 (4.4)	8 (5.6)	3 (2.5)	5 (4.7)
Major depressive disorder		2 (1.3)	4 (2.8)	2 (1.7)	3 (2.8)
Anxiety disorder		1 (0.6)	3 (2.1)	1 (0.8)	1 (0.9)
Delusional disorder		5 (0.3)	1 (0.7)	1 (0.8)	1 (0.9)
Malingering		0	1 (0.7)	1 (0.8)	0

DSM-IV, Diagnostic and Statistical Manual of Mental Disorders IV. Values are presented as number (%).

years, the mean age at onset was 28.9±9.9 years, and 98 patients with SPR (45.8%) were female. One hundred seventy-eight patients received the primary diagnosis of SPR at the end of the initial contact period, whereas the remaining patients (n=36) were given the diagnosis at later contacts.

Of these 178 patients diagnosed with SPR at the end of the initial contact period, 107 were followed for 2 years and included in the final analyses; the dropout rate in this diagnostic group was 19.1% (n=34) during the first year and 39.8% (n=71) during the 2 years after the initial diagnosis. Of the 144 patients who did not drop out during the first year, 125 (86.8%) continued to have the diagnosis of SPR at 1 year, and 93 patients (86.9%) of the 107 patients followed for 2 years retained this diagnosis 2 years after the initial diagnosis. Therefore, the prospective diagnostic stability of SPR during 1 year was 86.8%, and that over 2 years was 86.9%. Among the 14 patients who received another diagnosis after the first assessment, five were diagnosed with BID, four with schizoaffective disorder, one with delusional disorder, three with MDD, and one with anxiety disorder (Table 4).

The logistic regression analysis performed on data obtained from the 107 patients followed for 2 years showed that none of the factors studied (sex, age, age at onset, duration of illness, diagnostic subtype, symptom severity, family history of psychiatric illness, number of previous admissions) was related to a change in the diagnosis. Thirty-one patients who were diagnosed with another disorder at the initial contact were diagnosed with SPR at the 2-year follow up. Therefore, the 2-year retrospective stability of SPR was 75.0% (93/124).

DISCUSSION

The results of this study showed that the prospective stability of MDD was 79%, that of BID was 89.3%, and

that of SPR was 86.9% 2 years after the initial diagnosis. Of these three common psychiatric disorders, BID had the best prospective stability, followed by SPR and then MDD.

Consistent with our results, an American study reported that the prospective stability for MDD was 73.8%, that for BID was 83.0%, and that for SPR was 91.7% 2 years following the initial diagnoses.¹¹⁾ However, the prospective stability of BID was higher than that of SPR in our study. This may be because we evaluated patients with the diagnosis of BID rather than bipolar disorder to ensure the accuracy of the diagnosis of manic episodes.

In terms of retrospective stability, 2 years after the initial diagnosis, the consistency was 90.8% for MDD, 79.4% for BID, and 75.0% for SPR. Thus, MDD, which was characterized by the lowest prospective stability, had the highest retrospective stability; this result was consistent with that of the American study mentioned above.¹¹⁾ These findings reflect the fact that many patients were diagnosed with MDD at the initial contact but later had their diagnoses changed. Additionally, a diagnosis of MDD made after 2 years of observation was more likely not to change. Conversely, SPR and BID showed higher prospective than retrospective stability; that is, the initial diagnosis of these two disorders was more accurate than was that of MDD. Thus, originally latent symptoms of SPR and BID may emerge over a period of 2 years.

Diagnostic changes over time may reflect the evolution of an illness, the emergence of new information, or unreliable measurement and diagnostic criteria. Schwartz *et al.*¹¹⁾ attributed these diagnostic changes to the evolution of the illness, but they also showed that the greatest instability occurred in the least frequently used diagnostic categories. Therefore, unreliable measurements and diagnostic criteria may contribute substantially to the instability of diagnoses. Additionally, both the medical delivery system and cultural differences contribute to fre-

quent changes in diagnoses. Indeed, misdiagnosis or unconfirmed diagnoses are very common. However, some investigators have reported higher rates of misdiagnosis than those found in our results. In terms of bipolar disorder, Kessing⁸⁾ reported that only 56.2% of bipolar patients received the ICD-10 diagnosis of bipolar disorder at the initial contact. Other investigators also reported that 48% and 69% of individuals with bipolar disorder had been misdiagnosed.^{12,13)} In Korea, patients who seek psychiatric care need not go through a primary-care physician and wait for a psychiatric visit, which may explain the high prospective stability in our study.

Several factors were related changes in the diagnosis of MDD following the initial contact in our study. Indeed, some patients with psychotic features were diagnosed with SPR or bipolar disorder after 2 years. Patients with family histories of psychiatric illness were sometimes diagnosed with a 'familial' disorder subsequently. We found that no factor studied was correlated with changes in the diagnoses of patients who had been diagnosed with SPR and BID at the initial contact in our study.

Although the DSM-IV includes aspects of longitudinal parameters in its diagnostic criteria, these are a small part of the evaluation and may be disregarded during the actual diagnostic process. Our findings support the need for a longitudinally based diagnostic process and long-term diagnostic criteria in the service of the early identification of an accurate diagnosis. Additionally, understanding the factors related to changes in diagnoses may help with the management of these patients.

This study had the following limitations. Because it was a retrospective review of medical records, we were able to include only the variables recorded in medical charts. Although two psychiatrists assessed and diagnosed clinical features, a structured interview was not performed. Nonetheless, this study adopted a naturalistic observational approach by means of retrospective chart reviews. The major objective of this study was to identify the patterns characterizing the stability of diagnoses given in actual clinical practice by using the diagnoses determined by two psychiatrists on admission to a psychiatric institution, a standard procedure in Korea. We included data on patients admitted to the psychiatric ward at least once to eliminate data obtained from patients with more mild symptoms from the analysis. Additionally, we were unable to rule out the effect of antidepressants, which were prescribed to most hospitalized patients; moreover, the de-

gree of compliance with the prescribed medication may have affected the course of the illness. This is the first observational study to investigate the stability of the DSM-IV diagnostic criteria for three major psychiatric disorders in Korea. Despite these limitations, the results of this study examined instability in these DSM-IV diagnoses among Korean patients and provided longitudinal observations and assessments of the stability of diagnoses based on the current diagnostic system.

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