Original Article

Comparison of Insight in Patients with Schizophrenia, Bipolar I Disorder, and Major Depressive Disorder in a Real-world Setting

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Abstract

Objective: In this study, we intended to compare the insight in patients with schizophrenia (SCH), bipolar I disorder (BD), and major depressive disorder (MDD). **Methods:** This cross-sectional study was conducted from December 2017 to July 2018. We recruited 102 patients with SCH ($n = 55$), BD ($n = 25$), and major depression ($n = 22$) to assess insight with the Taiwanese version of Self-Appraisal of Illness Questionnaire (SAIQ), and to test the differences of those patient groups. **Results:** Patients with SCH had a significantly lower average SAIQ score compared with MDD (25.95 ± 9.70 vs. 36.38 ±7.75, $p < 0.01$), but no significant difference existed in patients between the SCH and bipolar disorder. For the SAIQ worry subscale, patients with SCH ($p < 0.05$) and those with bipolar disorder ($p < 0.01$) had significant lower scores than those with major depression. For the need for treatment subscale, patients with SCH had significantly lower scores than those with bipolar disorder ($p < 0.05$) and those with major depression ($p < 0.05$). For the presence/outcome of illness subscale, patients with SCH had significant lower scores than those with bipolar disorder ($p < 0.01$) and those with major depression ($p < 0.001$). **Conclusion:** Patients with SCH had lower total insight as well as individual domain than patients with MDD. Patients with SCH had poorer insight than those with bipolar disorder in need for treatment and presence/outcome of illness, but not in the worry subscale. The significant difference in patients with BD and those with major depression were on the worry domain.

Key words: need for treatment, presence/outcome of illness, Self-Appraisal of Illness Questionnaire, worry
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Introduction

Insight refers to patients' capacity to recognize that their symptoms and signs are indicative of psychiatric illness, and that those symptoms require treatment [1]. Insight is thought to be a multidimensional capacity which includes multiple dimensions of awareness about the illness, the need for treatment, and the consequences associated with the illness [1]. A study from Amador et al. [2] evaluated the clinical correlates of self-awareness in patients with schizophrenia (SCH) and suggested that impaired insight into illness is a common phenomenon in patients with SCH, with over 50% of patients experiencing moderate to severe insight impairment. Impaired insight contributes to treatment nonadherence and negative clinical and functional outcomes [3]. Among patients with SCH, insight impairment has also been shown to be associated with more illness severity, lower premorbid intellectual function, lower global cognitive function, poorer executive function, and poorer memory [4, 5].

In contrast, Silva et al. [6] suggested that patients with bipolar disorder can reasonably recognize their symptoms, carry consequences, but experience their greater impaired awareness of their higher energy and activity levels. A lower level of insight in bipolar disorder is correlated with more

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severe symptoms of agitation and energy. A meta-analysis study [7] on four longitudinal studies using self-reported standardized insight scales, has demonstrated that insight improves if the acute manic episode also improves, suggesting that insight is state-dependent [7, 8]. Insight does not return to the preepisodic level in patients with repeated manic episodes [9], suggesting that an unstable clinical course of bipolar disorder might have a negative impact on insight [9]. Recurring and repetitive mood episodes impair patient's level of insight, further being speculated that the phenomenon is due to more impaired neurocognitive functions in patients with many previous manic episodes [9, 10]. Yen et al. [11] also found that being male, having a shorter illness history, and having psychotic symptoms can predict poorer insight in patients with bipolar disorder.

In regards to depression and insight, previous studies have examined level of insight in patients with major depressive disorder (MDD) and other mental disorders. For example, patients with MDD have been found to have better insight than those with SCH [12] and those with bipolar disorder [13]. But in the above studies, the neurocognitive deficits and mood symptomatology in patients are not appropriately assessed with specific measurements. A younger age, higher level of education, more profound depressive symptoms [14], more severe anxiety symptoms, previous hospitalization for depression [15], and combined psychotic features [16] have been reported to be correlated with greater illness insight.

Insight into mental illness may have cultural differences. Explanations from the aspect of disease, abnormality, infection, and degeneration may coexist with the explanations from the aspect of supernatural causation in many regions and cultures. Both explanations may influence the help-seeking behaviors of the patients [17, 18]. Insight is represented by various ways in what constitutes an illness, what beliefs are abnormal, and what medical advice it is reasonable to follow.

To investigate the insight into illness among Taiwanese patients is valuable. Furthermore, to improve the outcome and to develop possible clinical interventions for insight enhancement, the different characteristics of insight and awareness into illness in patients with SCH, bipolar I disorder (BD), and MDD are needed to be studied. But, only a few studies have focused on this topic in Taiwan. In routine clinical practice of a real-world setting, we can easily use reliable and validated measurements. Therefore, we intended in this study to investigate and compare the insight in Taiwanese patients among those three psychiatric disorders.

Methods

Participants and study design

This study used a cross-sectional design and was conducted on the psychiatric ward and at outpatient clinic of a medical center in Taiwan from December 2017 to July 2018. This study protocol was approved by the Changhua Christian Hospital with the need to obtain informed consent from all study participants. The participants were selected randomly in the daily clinical practice. We recruited 104 patients. But two of them refused to be interviewed, and they were dropped out of the study. All participants were evaluated through a semi-structured interview by a research psychiatrist to determine their levels of insight and symptomatology. The diagnoses of SCH, BD, and MDD were made according to the criteria of *the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders* [19], and based on clinical interviews and systemic review of medical records. Excluded patients were substance use disorder (e.g., alcohol), and those with neurological or medical conditions that can impair cognitive functions, including head injuries and intellectual disabilities. We recruited total number of 102 patients – SCH (n = 55), BD (n = 25), and MDD (n = 22).

The symptom severity of each illness was measured. During the study period, all participants received their usual daily treatment. We collected demographic data, questionnaire, and objective assessments at a single visit based on clinical interviews and on the review of medical records by well-trained and qualified senior psychiatrists.

Measures (Self-Appraisal of Illness Questionnaire, Schedule for assessment of insight in psychosis and insight scale for affective disorders)

The Taiwanese version of Self-Appraisal of Illness Questionnaire (SAIQ) [20, 21] is a 17-item self-report instrument to assess attitudes toward mental illness and the experience of psychiatric treatment. Originally, the SAIQ [21] was applied for community use. The items of the questionnaire cover a broader range of subjective experiences and feelings toward psychiatric illness. The participants are asked to rate the extent to which they agree with each statement using a four-point Likert scale, ranging from 0, "do not agree at all," to 3, "agree completely," which varies according to the statement or question content. Higher SAIQ total scores indicate greater awareness of one's psychiatric illness and insight. According to the factor analysis, the three subscales in this study were identified as – worry, need for treatment, and presence/outcome of illness:

- The worry subscale refers to how much a patient tends to worry his/her conditions, worry about getting into trouble, worry losing friends, worry being unable to work, and worry thoughts interfere with getting things done
- The need for treatment subscale includes how a patient feels about other person's recommendation for his/her treatment, whether he/she believes the need of current treatment, how a patient thinks he/she would be doing without treatment, whether gaining a lot from being treated, and whether his/her condition requires psychiatric intervention
- The presence/outcome of illness subscale comprises whether a patient thinks his/her conditions will go away without treatment, whether a patient believes that he/she will be better someday without treatment, whether he/she will do fine if discontinued treatment, whether he/she has symptoms of mental illness, and how ill does the patient think he/she is.

The reliability (coefficient α) of the total scale was 0.867, and those of the three subscales were 0.879 for the worry subscale, 0.806 for the need for treatment subscale, and 0.801 for the presence/outcome of illness subscale [20].

We also assessed participants with an interviewer-rated scale, such as using the schedule for assessment of insight in psychosis (SIP) [22] for patients with SCH. The SIP has 9 items using a 4-point scale from 1 (true insight) to 4 (complete denial). It comprises five dimensions – awareness of psychotic symptoms, ability to recognize and respond appropriately to early symptoms of relapse, awareness and etiology-attribution of having SCH, awareness of achieved effect of treatment and likely compliance to treatment, as well as awareness of the change in life after having SCH. Higher scores indicate less psychiatric insight [22].

Finally, we also used insight scale for affective disorders (ISAD) [23] for those with BD and MDD. The ISAD has 17 items using a 6-point scale from 0 (cannot be evaluated or item not relevant), 1 (total awareness), 3 (moderate awareness), to 5 (no awareness), with higher scores indicating poorer insight [23].

Clinical evaluations

The demographic data of all participants were recorded. We also evaluated patients with measurement scales of the Positive and Negative Syndrome Scale [24] for patients with SCH, Young Mania Rating Scale (YMRS) [25] for those with BD, Hamilton Depression Rating Scale (HAMD) [26] for those with MDD, and Clinical Global Impressions Scale-Severity (CGI-S) [27] for all participating patients. The HAMD-17 item is applied to evaluate depressive symptoms, the YMRS-11 item is for assessing manic symptoms, and the CGI is for global assessment relative to the severity of the mental disorders.

For assessment of cognitive functions, we used the Wechsler Adult Intelligence Scale [28] for measuring intelligence, the frontal assessment battery (FAB) [29, 30] for executive function, and the Montreal Cognitive Assessment (MoCA) [31, 32] for cognitive function. The FAB measures six aspects of executive function, including conceptualization, mental flexibility, motor programming, sensitivity to interference, inhibitory control, and environmental autonomy. FAB scores are ranged from 0 to 18 [30]. The MoCA is to evaluate seven cognitive domains (visuospatial/executive functions, naming, verbal memory registration and learning, attention, abstraction, 5-min delayed verbal memory, as well as orientation). MoCA scores range from 0 to 30 [32].

Data analysis

Descriptive statistics were used to analyze study variables in the demographics and characteristics of the sample. We used one-way analysis of variance to compare the demographics of patients, followed by *post-hoc* analysis with Scheffé's method for continuous data or a Chi-square test for categorical data [33]. To identify group differences in the individual item and subscales of SAIQ, we used an analysis of covariance (ANCOVA) in which age at onset and cognitive functions (in the FAB and MoCA scores) as covariates. Pairwise comparisons were conducted in accordance with the least significant difference adjustment.

Statistical analysis was computed using Statistical Package for the Social Science software version 17.0 for Windows (SPSS Inc., Chicago, Illinois, USA). The differences between groups were considered different if $p < 0.05$.

Results

Table 1 compares the demographic and clinical characteristics of patients with SCH, BD, and MDD, mean ± standard deviation (SD). Significant correlations existed between the SAIQ and either the SIP ($r = –0.549$, $p < 0.001$) or the ISAD ($r = −0.402$, $p < 0.05$) in this study, after controlling the MoCA and FAB total scores.

Table 2 compares item score in the SAIQ among patient groups, mean ± SD. There were significant differences in items 3, 4, 8, 9, 10, 11, 13, 16, and 17 among patient groups. We found that no difference existed among patient groups on items 5, 6, and 14 but found that significant differences existed in *post hoc* pairwise comparisons in the ANCOVA.

Table 3 compares subscale scores in the SAIQ among patient groups, mean ± SD. For the worry subscale, patients with either SCH ($p < 0.05$) or BD ($p < 0.01$) had significantly lower scores than did those with MDD. For the need for treatment subscale, patients with SCH had significantly lower scores than did those with BD ($p < 0.05$) and those with MDD ($p < 0.05$). For the presence/outcome of illness subscale, patients with SCH had significantly lower scores than those with BD ($p < 0.01$) and MDD ($p < 0.001$).

Discussion

To the best of our knowledge, this is the first study to compare the insight levels of patients with the three major mental disorders. The main finding of this study (Table 2) was that patients with MDD had significantly higher general insight than did those with SCH ($p < 0.01$) or BD ($p < 0.05$). But, no statistical difference existed between patients with SCH and those with BD in general insight in *posthoc* pairwise comparison (Table 2). On the SAIQ worry subscale (Table 3), patients with MDD got significantly higher scores than did those with SCH ($p < 0.05$) or those with BD ($p < 0.01$). No significant difference existed between patients with SCH and those with BD in the worry subscale score in *post hoc* pairwise comparison. On the need for treatment and presence/outcome of illness subscales (Table 3), patients with BD ($p < 0.05$ and $p < 0.01$, respectively) and those with MDD ($p < 0.05$ and $p < 0.001$, respectively) got significantly higher scores than those with SCH. No significant difference existed between the scores achieved by patients with BD and those with MDD in above two subscales (Table 3).

Difference in insight between patients with schizophrenia and those with bipolar I disorder

Several articles [2, 16, 34] have reported no difference in insight between patients with SCH and those with bipolar

Table 1. Comparison of the demographic and clinical characteristics of patients with schizophrenia, bipolar I disorder, and major depressive disorder, mean ± standard deviation

	Schizophrenia (n = 55)	Bipolar disorder (n = 25)	Major depressive disorder (n = 22)	F/χ^2
Gender, male (%)	31 (56.4)	11 (44.0)	9 (40.9)	1.978
Age, years	46.31 ± 11.94	50.44 ± 13.18	51.77 ± 15.81	1.717
Educations, years	10.62 ± 3.34	11.76 ± 3.43	10.73 ± 3.97	0.957
Family history, yes (%)	23 (41.8)	14 (56.0)	11 (50.0)	1.485
Medical comorbidity, yes (%)	29 (52.7)	15 (60.0)	11 (50.0)	0.540
Hypertension	13 (23.6)	9 (36.0)	6 (27.3)	1.320
Diabetes mellitus	9 (16.4)	6 (24.0)	3 (13.6)	1.000
Hyperlipidemia	8 (14.5)	4 (16.0)	3 (13.6)	0.055
Age at onset, years	28.16 ± 11.81	28.84 ± 10.62	37.36 ± 14.59	4.720*
Duration of illness, years	18.15 ± 10.96	21.60 ± 12.60	14.41 ± 11.21	2.317
Number of hospitalization	5.75 ± 3.58	7.40 ± 3.48	5.81 ± 5.52	1.608
CGI-S	3.84 ± 0.66	3.60 ± 0.76	3.73 ± 0.77	0.974
PANSS total score	72.02 ± 10.34			
YMRS		9.54 ± 8.83		
HAMD			12.73 ± 5.98	
MoCA	19.18 ± 4.96	19.72 ± 5.25	23.59 ± 5.19	6.110**
WAIS	73.65 ± 16.31	80.00 ± 18.39	78.00 ± 5.66	0.188
FAB	11.53 ± 2.35	10.84 ± 3.22	13.95 ± 1.89	10.231***

*p < 0.05; **p < 0.01; ***p < 0.001 using a Chi-square test or ANOVA when appropriate. ANOVA, analysis of variance; CGI-S, Clinical Global Impressions Scale-Severity; PANSS, Positive and Negative Syndrome Scale; YMRS, Young Mania Rating Scale; HAMD, Hamilton Depression Rating Scale; MoCA, Montreal Cognitive Assessment; WAIS, Wechsler Adult Intelligence Scale-Third Edition; FAB, frontal assessment battery

Table 2. Comparison of item score in the self-appraisal of illness questionnaire† among patients with schizophrenia, bipolar I disorder, and major depressive disorder§

Item in SAIQ	SCH	BD	MDD	Significant pairwise comparison‡
1. Other person's recommendation for present treatment	1.76 ± 0.93	1.72 ± 0.54	2.19 ± 0.75	NS
2. How much you tend to worry	1.29 ± 1.07	1.00 ± 1.12	1.75 ± 1.18	NS
3. Worried about your condition**	1.33 ± 1.09	0.80 ± 0.91	1.75 ± 1.13	SCH > BD*; BD < MDD**
4. Worried about getting into trouble**	1.25 ± 1.09	1.12 ± 1.09	2.38 ± 0.89	SCH < MDD**; BD < MDD**
5. Worried about losing friends	1.31 ± 1.15	1.08 ± 1.19	1.69 ± 1.08	BD < MDD*
6. Worried about being unable to work	1.55 ± 1.10	1.36 ± 1.22	2.13 ± 0.96	BD < MDD*
7. Worried about not recovering	1.56 ± 1.17	1.20 ± 1.29	1.81 ± 1.17	NS
8. Condition will disappear by itself*	1.56 ± 0.79	1.84 ± 0.85	2.31 ± 0.95	SCH < MDD**
9. I'll be better someday*	1.38 ± 0.91	1.84 ± 0.90	1.94 ± 1.00	SCH < BD*
10. Believe current treatment is necessary**	1.89 ± 0.94	2.32 ± 0.90	2.81 ± 0.40	SCH < BD*; SCH < MDD**
11. If you had never experienced treatment, how do you think you would be right now*	1.53 ± 0.98	2.08 ± 0.76	2.19 ± 0.91	SCH < BD*
12. Gain a lot from treatment	2.07 ± 0.69	2.16 ± 0.80	2.38 ± 0.50	NS
13. Discontinue treatment**	1.44 ± 0.81	1.92 ± 0.86	2.19 ± 0.66	SCH < BD*; SCH < MDD*
14. Your thoughts interfere with getting things done	1.35 ± 1.00	1.28 ± 1.06	2.00 ± 0.97	SCH < MDD*; BD < MDD*
15. Require treatment	1.87 ± 0.82	2.04 ± 0.89	2.44 ± 0.51	NS
16. Experience symptoms of illness**	1.67 ± 0.86	2.20 ± 0.65	2.38 ± 0.62	SCH < BD**; SCH < MDD**
17. How ill do you think you are**	1.13 ± 1.00	1.36 ± 0.57	2.06 ± 0.77	BD < MDD*; SCH < MDD**
Total SAIQ score**	25.95 ± 9.70	27.32 ± 9.57	36.38 ± 7.75	SCH < MDD**; BD < MDD*

*p < 0.05; **p < 0.01 using the ANCOVA; †Controlling age at onset and cognitive functions (scores on the MoCA and FAB) in the analysis; ‡The right side column lists patient groups that have significant differences in item score in the SAIQ in multiple comparisons; §Data are presented with mean ± SD. NS, no significance; SCH, schizophrenia; BD, bipolar I disorder; MDD, major depressive disorder; SD, standard deviation; ANCOVA, analysis of covariance; MoCA, Montreal Cognitive Assessment; SAIQ, self-appraisal of illness questionnaire; FAB, frontal assessment battery

disorder. Our results of the general insight levels of both disorders (Table 2) also indicated no significant difference. But in the study by Ramachandran et al. [35], certain insight domains, such as awareness of the mental disorder, effects of medication, and social consequences of mental disorders on the scale to assess unawareness of mental disease [1], are better in patients with bipolar disorder than those with SCH. In our study (Table 3), the insight levels for "need for treatment" (p < 0.05) and "presence/outcome of illness" (p < 0.01) factors on the SAIQ was significantly better in the patients with BD.

Table 3. Comparison of subscale scores in the self-appraisal of illness questionnaire† among patients with schizophrenia, bipolar I disorder, and major depressive disorder§

Subscale/factor	SCH	BD	MDD	Significant pairwise comparison‡
Worry*	9.64 ± 5.88	7.84 ± 6.03	13.50 ± 5.96	SCH < MDD*; BD < MDD**
Need for treatment*	9.13 ± 3.03	10.32 ± 2.75	12.00 ± 1.93	SCH < BD*; SCH < MDD*
Presence/outcome of illness***	7.18 ± 2.96	9.16 ± 2.63	10.88 ± 2.73	SCH < BD**; SCH < MDD***

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$, using the ANCOVA; †Controlling age at onset and cognitive functions (scores on the MoCA and FAB) in the analysis; ‡Comparison of different patient groups with regard to the subscale score in the SAIQ; the worry subscale include items 2, 3, 4, 5, 6, 7, 14; the need for treatment subscale include items 1, 10, 11, 12, 15; and the presence/outcome of illness subscale include items 8, 9, 13, 16, 17 of the SAIQ; the right side column lists the patient groups that have significant differences in subscale factors in the SAIQ in multiple comparisons; §Data are presented with mean±SD. SCH, schizophrenia; BD, bipolar I disorder; MDD, major depressive disorder; SD, standard deviation; ANCOVA, analysis of covariance; MoCA, Montreal Cognitive Assessment; SAIQ, self-appraisal of illness questionnaire; FAB, frontal assessment battery

With regard to the individual item (Table 2), patients with SCH significantly overlooked the necessaries of symptom treatment (items 9, 10, 11, 13) and were unaware of their mental disorder (item 16) in contrast to those with bipolar disorder. In this study, the patients with SCH and those with BD got significantly lower scores on the "worry" subscale than those with MDD. This study finding indicates that patients with SCH and those with bipolar disorder have less insight than those with the MDD. But, the difference between the "worry" subscale scores achieved by the SCH and BD groups was not significant (Table 2). Those findings indicate that awareness and intensity on how much a patient tends to worry, worry about getting into trouble, about losing friends, about being unable to work, not recovering, and worry thoughts interfere with getting things done as per the content of the self-rated questionnaire (Table 2) to be similar between both groups. But, we found a trend that each item of the worry domain in patients with BD got a lower mean score than those with SCH. Item 3 "How much do you worry about your condition?" showed significant difference ($p < 0.05$) between both patient groups. Due to small sample size in our study, this result must be interpreted with caution.

Difference in insight between patients with schizophrenia and those with major depressive disorder

Previous studies suggest that patients with MDD have better insight than do those with SCH [2, 12]. Similarly, in our study (Table 2), the general insight level of patients with MDD was higher than that of patients with SCH. Those results were also found in the three subscales of the SAIQ (Table 3). Individual items that did not differ included items 1, 2, 3, 5, 6, 7, 9, 11, 12, and 15. The greatest differences were noted in the presence/outcome of illness subscale, such as item 8 "I think my condition will disappear by itself," item 13 "If I were to discontinue treatment today I would do fine," item 16 "I have symptoms of mental illness," item 17 "How ill do you think you are?" and item 10 "Do you believe your current treatment to be necessary?" in the need for treatment subscale. Those questions indicate that poorer insight in persons with SCH is associated with false judgment and impaired perception of current situations and conditions. Besides, significant lower mean score on the item 4 "How much do you worry about getting into trouble because of your condition?" in patients with SCH suggest a relatively negative attitude or inadequately coping approach toward their illness compared to those with MDD. But, the insight into illness in patients with MDD should still be carefully evaluated. Literature review indicates that patients with MDD are severely undertreated around the world [36, 37]. Patient's involvement and illness concept are paramount in understanding why individuals choose to receive or refuse treatment. Therefore, we suggest that to fully understand insight and awareness in patient with MDD is clinically important and that their differences of insight exist between patients with MDD and those with SCH or those with bipolar disorder. Further investigation is warranted in this area.

Difference in insight between patients with bipolar I disorder and those with major depressive disorder

Insight into illness in patients with bipolar mania is poorer than that in those with unipolar depression. Specific manic symptom does not account for the level of insight [13]. For the clinical course of bipolar disorder, patients with manic episodes are suggested to have poorer insight than those with euthymic states and bipolar depressive episodes [38]. Studies comparing the differences in insight level between patients with BD and those with MDD are scarce. In our study (Table 2), the general insight of patients with BD was significantly lower than that of patients with MDD ($p < 0.05$). This finding of our study is compatible with that of the study by Dell'Osso et al. [13] One of the shortcomings in our study was that patients with or without psychotic features were not adequately divided. Interestingly, the only difference in the SAIQ subscales between both disorders was the "worry" factor. As shown in the findings of the individual items (Table 2), the patients with bipolar disorder were significantly less worried about their conditions (item 3), getting into trouble because of their conditions (item 4), losing friends (item 5), and being unable to work because of their conditions (item 6) than were patients with depression. The bipolar patients did not consider that their thoughts and feelings would interfere with being productive (item 14) in daily living. We speculate that this finding is related to the fact that the majority of the bipolar patients who participated in this study were in those in manic states. Such persons would have more impaired awareness of their energy

and activity levels and overestimate their abilities. Mania refers to elation of mood, acceleration of thinking, and hyperactivity. Although it may be described as a different state from normal, it is rarely complained of by the patient as a symptom. In contrast, the patient may have a sense of expectation that his/her life is full and successful. For this reason, the patients are reluctant to take medications or to report their condition to the doctor and do not worry about troubles in their daily living. Moreover, the bipolar patients are prone to underestimating the illness severity, as shown in the result of item 17 "How ill do you think you are?"

The disadvantage of this study is the heterogeneous participants including patients with three psychiatric disorders. The associative factors of insight in different diagnostic patient group are suggested to be inconsistent. This may cause difficulties in results analysis and interpretation. Factor like longer duration of illness, it is reported to be correlated with better insight in patients with SCH [39] and those with BD [11], but no association existed with those with MDD [15]. As for the factor of executive function, the literature suggests that better executive function is associated with better insight in patient with SCH [4, 5], and that the roles of executive function on insight in patients with bipolar disorder and those with MDD are unclear. Studies on correlates of insight in major psychiatric disorders have yielded inconsistent results. Insight is a complex multidimensional phenomenon and one major reason for uncertainty is the difficulty to translate complex phenomenon like insight into empirical measurements. The different measurements capture different dimensions of insight. On the contrary, to appropriately evaluate patients' neurocognitive functions and symptomatology becomes the advantage of our real-world study. We can control those variables with the appropriate analysis methods.

Study limitations

The readers are warned against overinterprete the study data because this study has five limitations in terms of data generalization:

- This study is a cross-sectional assessment. But, it does not shed light on the dynamic nature of insight.
- The sample was collected from the psychiatric ward and outpatients through a convenient rather than random method. Thus, the results may not be generalizable to all patients.
- A self-report questionnaire cannot capture the way that patients with psychiatric disorders objectively understand and feel about their illnesses.
- In this study, we did not divide people with mood disorders with or without psychotic symptoms. According to previous studies, the insight level differs between major depression with and without psychotic features [16].
- The sample size of this study was small.

Even with those limitations, we consider the results of this study valuable for future references. We attempted to minimize the effect of heterogeneous participants. No differences existed among the three patient groups with regard to demographics and characteristics, such as illness severity (Table 1). The confounding factors, such as age at onset, cognitive function, and executive function, were controlled when doing the statistical analysis. This study in Taiwan was of a naturalistic study design, reflecting the real world scenario of insight. Moreover, important information on the insight into illness in patients with SCH, BD, and MDD was obtained, and the findings of this study might offer further to physicians' clinical judgment and treatment.

Summary

The results of this study revealed that differences existed in insight among patients with SCH, those with BD, and those with MDD after controlling for the patients' age at onset and cognitive functions. Some differences were also identified in the subscale analysis. Patients with MDD had significantly higher insight than those with bipolar disorder and those with SCH. No significant difference existed between patients with SCH and those with BD with regard to general insight. We noted some discrepancies among the three major psychiatric disorders in the results of the subscale analysis. Further study is needed to focus on the characteristics of insight and awareness into individual mental illness.

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Conflicts of Interest

There are no conflicts of interest.

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