



## Comparison of characteristics of suicide attempters with schizophrenia spectrum disorders and those with mood disorders in Japan

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### ABSTRACT

Suicidality in patients with schizophrenia is high. To clarify the characteristics of suicidal behavior in patients with schizophrenia, we investigated suicide attempters with schizophrenia spectrum disorders in comparison with patients with mood disorders. One hundred patients with schizophrenia spectrum disorders and 155 patients with mood disorders admitted to an emergency department after a suicide attempt were interviewed in detail on items concerning 1) demographic characteristics, 2) previous suicidal behavior, and 3) index suicidal behavior. Differences between the two groups were subsequently analyzed. Patients with schizophrenia spectrum disorders showed a lower incidence of previous deliberate self-harm, and a higher incidence of a subsequent suicide attempt more than 1 year after the previous suicide attempt as well as a higher lethality of index suicide attempt compared to patients with mood disorders. Furthermore, the most common motive for making a suicide attempt in patients with schizophrenia spectrum disorders was having a mental problem. This study revealed the factors associated with suicide attempts among Japanese patients with schizophrenia spectrum disorders, and the nature of these factors makes it difficult to predict future attempts. This makes clear the importance of continuous long-term follow-up with careful attention to the mental symptoms and psychological burden for such patients.

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## 1. Introduction

It is generally acknowledged that over 90% of those who commit suicide have a psychiatric diagnosis at the time of death (Bertolote and Fleischmann, 2002; Cavanagh et al., 2003). The presence of psychiatric illness is an important risk factor for suicide, and different risk profiles may emerge for different diagnoses (Fawcett et al., 1987). Among the various psychiatric illnesses, schizophrenia (19–46%) and mood disorders (28–62.4%) account for a high portion of suicide attempters/victims, and are known to be the most frequent risk factors for suicide (Proulx et al., 1997; Steblaj et al., 1999; Ran et al., 2004; Haukka et al., 2008).

As means to decrease the suicide rate in patients with mood disorders, some studies have suggested the effectiveness of an educational program for improving the diagnosis and treatment

provided by general practitioners (GPs) and the development of screening tools for depression (Rutz et al., 1992; Chiu et al., 2003; Henriksson and Isacson, 2006; Szanto et al., 2007).

A study by Dassori et al. (1990) reported that depression, suicidality in the past, and impairment in adaptive function are the best discriminators between suicidal and nonsuicidal patients with schizophrenia. Despite these findings and a high lethality of suicide attempts in such patients, a strategy for suicide prevention has not yet been established (Radomsky et al., 1999; Hunt et al., 2006b). It may be due to the fact that patients with schizophrenia often fail to communicate their suicidal intent directly (Breier and Astrachan, 1984; Funahashi et al., 2000), and life events – which are established risk factors for suicide in general populations – seem to be less prominent before suicide in patients with schizophrenia (Heila et al., 1999).

In Japan, few studies investigating the characteristics of suicide attempters with schizophrenia have been reported to date (Ichimura et al., 2005). The present study presents the findings from a consecutive series of suicide attempters with schizophrenia who were admitted to an emergency department. We compare the characteristics of patients with schizophrenia to those of patients with mood disorders, both of

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which are the most common psychiatric disorders in suicide attempters, in order to clarify the characteristics of patients with schizophrenia who attempt suicide.

## 2. Methods

### 2.1. Subjects

The present study was performed at the Advanced Critical Care Medical Center, Yokohama City University Medical Center, in Yokohama, a city which has over 3.6 million inhabitants. The center receives all patients with potentially fatal conditions from the southern area of the city. Suicide attempters account for 13.0% on average (April 1, 2003–March 31, 2008) of all admitted patients.

The study subjects were 255 patients consecutively admitted to the center after suicide attempts between April 1, 2003 and September 30, 2008, and who met the criteria for schizophrenia spectrum disorders (schizophrenia and other psychotic disorders) or mood disorders according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth edition (DSM-IV). Individuals with both schizophrenia and mood disorder were assigned either to the schizophrenia group or the mood disorder group according to their symptoms as follows: DSM-IV 295.70 Schizoaffective Disorder (schizophrenia spectrum disorders) and DSM-IV 296.94 Major Depressive Disorder, Single episode, Severe, with the characteristics with psychosis (mood disorders). Suicide attempt was defined as any intentional self-destructive act with suicidal ideation. Deliberate self-harm was defined as intentional, direct injuring of body tissue without suicidal intent. The presence of suicidal ideation was confirmed by two attending psychiatrists.

Patients were included in our analyses only once; if they were readmitted during the study period, data from only the first admission were analyzed. The attending psychiatrists performed face-to-face interviews with all patients admitted after a suicide attempt and made a psychiatric diagnosis.

### 2.2. Assessment of the characteristics of suicide attempters

The following aspects were assessed by interview: 1) demographic characteristics, 2) previous suicidal behavior, and 3) index suicidal behavior. The demographic characteristics included the following four items: age, sex, educational level, and living situation. Educational level was divided into two categories according to the educational system in Japan: those with up to the compulsory 9 years of school education, and those with high school education and beyond. The index suicidal behavior comprised the following seven items: 1) period after previous suicide attempt, 2) method of suicide attempt, 3) usage of alcohol and other drugs just before the attempt, 4) motive of suicide attempt, 5) surgery under general anesthesia required following the attempt, 6) presence of somatic complications, and 7) psychiatric treatment recommended by psychiatrists after discharge. Any surgery under general anesthesia was counted as an indicator of higher medical severity (Beautrais, 2001).

The motive of suicide attempt was divided into the following six categories: 1) mental problem (psychological symptoms caused by a psychiatric disease or other subjective symptoms associated with depression), 2) family relations, 3) human relations (workplace or school) and male–female relationships, 4) somatic complications, 5) financial situation, and 6) other reasons.

The study protocol was approved by the ethics committee of Yokohama City University School of Medicine, and conforms to the provisions of the Declaration of Helsinki in 1995. We obtained informed consent from all participants and their anonymity was preserved.

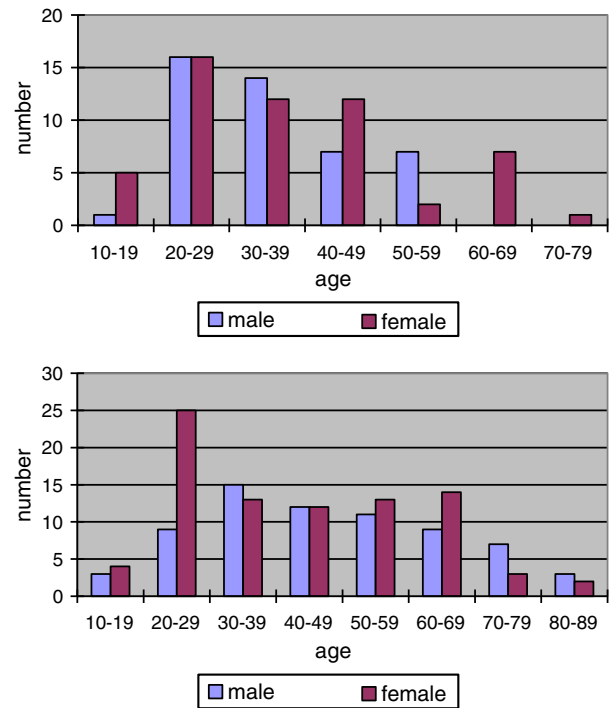
### 2.3. Statistical analysis

A chi-square test was used to explore the differences between patients with schizophrenia spectrum disorders and mood disorders in regard to gender, living status, and educational level. A *t*-test was used to compare the differences between patients with schizophrenia spectrum disorders and mood disorders for age. A logistic regression analysis was used to determine the difference between patients with schizophrenia spectrum disorders and mood disorders for previous suicidal behavior, and index suicidal behavior. In the logistic regression model, we used age and gender as adjustment variables. Statistical analyses were conducted using SPSS for Windows Version 16.0. A probability level of  $p < 0.05$  was considered statistically significant.

## 3. Results

### 3.1. Demographic characteristics

Fig. 1 shows the demographic characteristics of suicide attempters for the two diagnostic groups. Subjects ranged in age from 14 to 88 years, 44.7% ( $N = 114$ ) were male and 55.3% ( $N = 141$ ) were female; 100 (39.2%) were diagnosed with schizophrenia spectrum disorders and 155 (60.8%) with mood disorders. The mean age of patients with mood disorders was significantly higher than that of those with schizophrenia spectrum disorders (mean  $\pm$  standard



**Fig. 1.** Age distribution of 255 (male = 114, female = 141) suicide attempters by diagnostic group. The upper panel shows the number of patients with schizophrenic spectrum disorders by sex, and the lower panel shows the number of patients with mood disorders by sex. Mean age was  $36.8 \pm 13.6$  ( $M \pm S.D.$ ) in patients with schizophrenia spectrum disorders and  $44.8 \pm 18.1$  ( $M \pm S.D.$ ) in patients with mood disorders.

deviation (SD),  $44.8 \pm 18.1$  years and  $36.8 \pm 13.6$  years, respectively;  $p < 0.05$ ). There were no significant differences between patients with schizophrenia spectrum disorders and those with mood disorders in regard to sex, educational level, or living situation (Table 1).

### 3.2. Previous suicidal behavior

The data on previous suicidal behavior are shown in Table 2. A history of deliberate self-harm was found in 27 (27.0%) patients with schizophrenia spectrum disorders and 49 (31.6%) patients with mood disorders. Previous suicidal behavior was found in 42 (42.0%) patients with schizophrenia spectrum disorders and 54 (34.8%) patients with mood disorders. The results of logistic regression analyses examining the differences between the two diagnostic groups are shown in Table 3. The presence of previous deliberate self-harm was significantly less likely in those with schizophrenia spectrum disorders than in those with mood disorders ( $p < 0.05$ ).

No significant difference in previous suicide attempt was shown between the two diagnostic groups.

**Table 1**  
Demographic characteristics of 255 suicide attempters by diagnostic group.

	Schizophrenia spectrum disorders ( $N = 100$ )	Mood disorders ( $N = 155$ )	Total ( $N = 255$ )
Sex			
Male	45 (45.0)	69 (44.5)	114 (44.7)
Female	55 (55.0)	86 (55.5)	141 (55.3)
Education level			
Compulsory education	27 (27.0)	36 (23.2)	63 (24.7)
High school education and beyond	69 (69.0)	111 (71.6)	180 (70.6)
Living situation			
Alone	20 (20.0)	26 (16.8)	46 (18.0)
With someone	76 (76.0)	125 (80.6)	201 (78.8)

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