**Original Contribution**

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# The Effects of Psychoeducation on Long-term Inpatients with Schizophrenia and Schizoaffective Disorder

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**Summary:** This study aimed to examine the significance of intervention to improve medication adherence in long-term inpatients by providing psychoeducation and then elucidating the effects of this training in terms of patient knowledge and attitudes. Subjects were patients who had been hospitalized for more than 1 year after being admitted to a psychiatric hospital, had been diagnosed as F2 (schizophrenia, schizoaffective disorder) according to the International Classification of Diseases, 10th Edition, and were capable of verbal communication. Patients suspected of having dementia were excluded. Items surveyed were patient background, prescriptions, Global Assessment of Functioning (GAF) score, Drug Attitude Inventory-10 (DAI-10) score, and Knowledge of Illness and Drugs Inventory (KIDI) score. The amount of medication taken and GAF, DAI-10, and KIDI scores were evaluated within 1 week of starting psychoeducation and within 1 week of completing psychoeducation. The Wilcoxon signed-rank test and McNemar test was used to compare scores before and after intervention. The mean overall KIDI score increased significantly, and the mean overall DAI-10 score improved significantly after intervention. Furthermore, the mean overall KIDI score of very long-term inpatients with schizophrenia and schizoaffective disorder increased significantly after intervention. Psychoeducation produced improvement in some areas of knowledge and attitudes towards medication among long-term inpatients. These results demonstrate that psychoeducation has an effect on long-term inpatients that is similar to the effect observed in earlier studies on patients leading community lives, including patients who have just been admitted or discharged and patients attending day care or outpatient visits.

**Key words** schizophrenia, long-term inpatients, medication adherence, psychoeducation, knowledge

## INTRODUCTION

One of the problems with psychiatric treatment in Japan is the duration of hospitalization. The mean length of stay in psychiatric hospitals in 2011 was approximately 300 days, and the number of patients hospitalized for more than 1 year as a proportion of the total capacity of hospitals accounts for about 60% [1]. Furthermore, when limited to patients with schizophrenia alone, the proportion of patients who remain hospitalized for more than 1 year is 75.4%, and those hospitalized for more than 5 years account for as many as 48.5%. The mean length of stay of patients in Japanese psychiatric hospitals is extremely long when compared with other countries, which poses clinical problems for psychiatric treatment in Japan.

The significance of treatment for patients becomes less clear with long-term hospitalization, which can

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Abbreviations: DAI-10, Drug Attitude Inventory-10; GAF, Global Assessment of Functioning; KIDI, Knowledge of Illness and Drugs Inventory; F2, schizophrenia, schizoaffective disorder.

also lead to decreased motivation. Passively taking medication day after day while aimlessly leading a life in the hospital can lower a patient's awareness of autonomous medication. That is why patients who are hospitalized for a long period of time do not necessarily learn how to manage their own disease and medication; rather, they generally struggle with disease management after discharge, which can lead to relapse.

On the other hand, it is difficult to gain an understanding of the causes and symptoms of psychiatric diseases, particularly schizophrenia [2,3]. To maintain a good disease status, patients require autonomous medication adherence and must continue to consciously take their medication. However, the medication adherence of schizophrenic patients is rather low [4,5]. Psychoeducation is one useful approach to improving these issues [6].

Psychoeducation for those treated in the field of psychiatry generally focuses on the acute phase [7], the period immediately after relapse [8], or patients attending day care [9], or making outpatient visits [10], and many reports support its effectiveness. On the other hand, a search of the literature revealed very few reports on the effects of psychoeducation patients hospitalized for more than 1 year.

We have a wealth of experience with psychoeducation for patients hospitalized for more than 1 year as part of occupational therapy in psychiatric rehabilitation, and have seen improvement in awareness of disease and medication through psychoeducation, even in patients hospitalized for an extended period. In light of this, the present study was conducted with a focus on the effects of psychoeducation on patients hospitalized for a long period of time in psychiatric hospitals.

## METHODS

### *Aims*

The aim of this study was to examine the significance of intervention to improve medication adherence in long-term inpatients with schizophrenia and schizoaffective disorder by providing psychoeducation to long-term inpatients and elucidating its effects in terms of patient knowledge and attitudes. In this study, patients hospitalized for more than 1 year in psychiatric hospitals were defined as long-term inpatients with schizophrenia and schizoaffective disorder in accordance with earlier studies [11-13].

### *Subjects*

Subjects were patients who had been hospitalized for more than 1 year after being admitted to psychiatric hospitals in Kagoshima Prefecture, were diagnosed as F2 (schizophrenia, schizoaffective disorder) according to the International Classification of Diseases, 10th Edition and were capable of verbal communication. Patients suspected of having dementia were excluded.

### *Ethical Issues*

Subjects were given verbal and written explanation of this study and provided their written informed consent. This trial was registered with the approval of the Ethics Committee of Epidemiological Studies of Kagoshima University Faculty of Medicine (no. 202).

### *Survey Content*

Items surveyed were patient background, prescriptions, Global Assessment of Functioning (GAF) [14] score, Drug Attitude Inventory-10 (DAI-10) [15-17] score, and Knowledge of Illness and Drugs Inventory (KIDI) [18,19] score. The amount of medication taken and GAF, DAI-10, and KIDI scores were evaluated within 1 week of starting psychoeducation and within 1 week of completing psychoeducation. Chlorpromazine (CP) equivalency values were calculated for the amount of medication. To examine patient backgrounds, sex, age, disease, date of admission, and period of hospitalization until starting psychoeducation were surveyed from medical records. The GAF is a general functional evaluation of mental health based on symptoms and behavior. To reduce evaluation bias as much as possible, three nurses with a certain level of training performed the evaluation, and the mean score of all three nurses was used. The DAI-10 is a scale that evaluates the patient's attitude toward medication. Patients record their answers themselves using a 10-item questionnaire. The KIDI is a self-administered 20-item questionnaire on the level of knowledge of disease and medication and is used to examine knowledge of schizophrenia and medication.

### *Intervention*

The intervention period of this study was from December 2011 to March 2014. One course of psychoeducation was composed of six sessions. Members who underwent intervention were divided into groups of 6–12 individuals. Intervention took place once a week in a room where a calm environment could be maintained. Staff involved in the intervention were ward nurses, clinical psychologists, and occupational therapists, and 4–5 staff members were present during each session.

The textbook used was a standard textbook widely used for psychoeducation in Japan [20]. The psychoe-

TABLE 1.
*Theme of each Psychoeducation session*

| | Theme |
|---|---|
| 1st | Overview of PE and orientation |
| 2nd | Diseases and symptoms |
| 3rd | Drug effects |
| 4th | Drug side effects |
| 5th | Reducing relapse as much as possible |
| 6th | Review |

ducation program is presented in Table 1.

The psychoeducation program consisted of the following six sessions. The first session introduced the participants to the psychoeducation program. The second session explained epidemiology and the cause of schizophrenia and its symptoms in order to improve the participants' insight and knowledge about their illness. The third session explained the medications that are used to treat schizophrenia and the participants were encouraged to discuss their experiences, such as their "feelings about taking medications" or their "feelings about the effects of medications". The fourth session explained the side effects of medications, which are considered to be one of the main reasons why patients stop taking their medications, and the participants were taught methods for coping with side effects. The fifth session provided information about stress, which is a factor that contributes to relapse. The sixth session was a summary of the five previous sessions.

Throughout the psychoeducation program, participants were taught that their experiences were universal among patients with schizophrenia.

### *Analysis*

The Wilcoxon signed-rank test and the McNemar test were used to compare scores before and after intervention and p values $< 0.05$ were considered to be statistically significant. IBM SPSS Ver.23 was used for statistical processing.

## RESULTS

Patient backgrounds are presented in Table 2. The total number of subjects was 70 (40 men and 30 women), and the mean age was 55.69 (standard deviation [SD] = 11.24) years. The mean length of stay was 4,420.97 (SD = 4222.39) days, and the mean number of hospitalizations was 3.71 (SD = 3.90).

The patients among the study population who had been hospitalized for more than 10 years were defined as very long-term inpatients with schizophrenia and schizoaffective disorder [21], and analyzed separately. These very long-term inpatients with schizophrenia and schizoaffective disorder numbered 34 (18 men and 16 women) and had a mean age of 58.91 (SD = 10.29) years. Their mean length of stay was 7,739.71 (SD = 3,784.04) days, and their mean number of hospitalizations was 2.97 (SD = 2.33).

TABLE 2.
*Patient backgrounds*

| | Overall (incl. very long-term inpatients), n = 70 | Very long-term inpatients, n = 34 |
|---|---|---|
| Sex (individuals) | Men 40/ Women 30 | Men 18/ Women 16 |
| Mean age (years) | 55.69(SD=11.24) | 58.91(SD=10.29) |
| Mean length of stay (days) | 4420.97(SD=4222.39) | 7739.71(SD=3784.04) |
| Mean number of hospitalizations (times) | 3.71(SD=3.90) | 2.97(SD=2.33) |

TABLE 3.
*CP equivalency values and GAF, KIDI, and DAI-10 scores before and after intervention*

| | Before intervention | After intervention | *P* value |
|---|---|---|---|
| Overall CP equivalency value (mg) | 695.00(SD=464.14) | 680.72(SD=453.99) | *p=0.326 (n.s.)* |
| Overall GAF score | 55.19(SD=12.08) | 56.25(SD=13.00) | *p=0.91 (n.s.)* |
| Overall KIDI score | 11.93(SD=3.92) | 13.00(SD=4.43) | *p=0.001*** |
| Overall DAI-10 score | +3.40(SD=4.94) | +4.26(SD=4.61) | *p=0.043** |

n.s. : not significant *: $p<0.05$ **: $p<0.01$

No significant difference between values before and after intervention was observed for the CP equivalency value or GAF score (Table 3). However, the mean overall KIDI score increased significantly, and the mean overall DAI-10 score improved significantly (Table 3).

Scores increased significantly for all of the following KIDI sub-items: "Knowledge of the effects of tranquilizers," "Knowledge of continued use of tranquilizers," and "Knowledge of injections" (Table 4).

A comparison of DAI-10 sub-items ("Q1: Positive evaluation of the effects of medication," "Q2: Negative evaluation of continuing medication," and "Q4: Positive evaluation of the comfort of taking medication") revealed that scores improved significantly for all participants (Table 5).

The mean overall KIDI score for very long-term inpatients with schizophrenia and schizoaffective disorder increased significantly (Table 6). On the other hand, no significant difference was seen in the mean overall DAI-10 score.

Among sub-items in very long-term inpatients with schizophrenia and schizoaffective disorder, the mean score for knowledge of side effects in the KIDI

TABLE 4.
*KIDI sub-items*

| | Before intervention | After intervention | *P* value |
|---|---|---|---|
| Q11: Knowledge of the effects of tranquilizers | 0.60(SD=0.49) | 0.74(SD=0.44) | *p=0.029** |
| Q14: Knowledge of continued use of tranquilizers | 0.70(SD=0.46) | 0.81(SD=0.39) | *p=0.046** |
| Q17: Knowledge of injections | 0.43(SD=0.50) | 0.58(SD=0.50) | *p=0.018** |

*: $p<0.05$

TABLE 5.
*DAI-10 sub-items*

| | Before intervention | After intervention | *P* value |
|---|---|---|---|
| Q1: Positive evaluation of the effects of medication | 0.29(SD=0.965) | 0.54(SD=0.850) | *p=0.029** |
| Q2: Negative evaluation of continuing medication | 0.26(SD=0.973) | 0.57(SD=0.831) | *p=0.028** |
| Q4: Positive evaluation of the comfort of taking medication | 0.11(SD=1.001) | 0.39(SD=0.927) | *p=0.025** |

*: $p<0.05$

TABLE 6.
*Very long-term inpatients before and after intervention*

| | Before intervention | After intervention | *P* value |
|---|---|---|---|
| CP equivalency value (mg) | 634.81(SD=470.68) | 630.85(SD=450.90) | *p=1.00(n.s.)* |
| GAF score | 53.03(SD=11.65) | 54.65(SD=11.97) | *p=0.84(n.s.)* |
| Overall KIDI score | 11.06(SD=3.78) | 12.12(SD=4.96) | *p=0.04** |
| Overall DAI-10 score | +3.29(SD=4.85) | +4.00(SD=4.36) | *p=0.263(n.s.)* |

n.s. : not significant *: $p<0.05$

TABLE 7.
*KIDI and DAI-10 sub-items in very long-term inpatients*

| | Before intervention | After intervention | *P* value |
|---|---|---|---|
| KIDI Q12: Knowledge of side effects | 0.53(SD=0.51) | 0.76(SD=0.44) | *p=0.039** |
| DAI-10 Q4: Positive comfort of taking medication | ±0.00(SD=1.02) | +0.52(SD=0.87) | *p=0.004*** |

*: $p<0.05$ **: $p<0.01$

increased significantly (Table 7). The DAI-10 revealed that positive attitudes toward taking medication also significantly improved.

## DISCUSSION

Many of the previous studies on the effects of psychoeducation focused on patients leading community lives, such as patients who have just been admitted to the hospital or discharged, or patients attending day care or outpatient visits. In this study, we provided psychoeducation to long-term inpatients with schizophrenia and schizoaffective disorder and saw improvement in some areas of knowledge and attitudes towards medication. The results of this study essentially demonstrate that psychoeducation has an effect on long-term inpatients with schizophrenia and schizoaffective disorder that is similar to the effect observed in earlier studies on patients leading community lives, which included patients who have just been admitted or discharged and patients attending day care or outpatient visits.

An examination of KIDI sub-items revealed significant improvement in items regarding medications, but no change in items regarding symptoms. The changes in items on medications were likely the result of patients noticing the effects of taking medication that they had not noticed before, such as "Being able to sleep" and "Feeling calm". Patients noticed the effects of taking medication after receiving psychoeducation and looking back on their past state. On the other hand, no changes were seen in items regarding symptoms in the present participants, which may be because the participants did not recognize auditory hallucinations, delusions, or other issues as symptoms, denial regarding the disease and symptoms, or they simply did not experience an improvement in symptoms. Moreover, the relationship between psychoeducation and symptoms has been examined in a previous report [22] that claimed that "even if knowledge increases, it is difficult to connect to disease," which suggests that subjects may not have been able to recognize their symptoms in psychoeducation. However, as symptoms were not evaluated in this study, the relationship between symptoms and the level of knowledge could not be clarified.

Next, DAI-10 sub-items were compared, which revealed improvement in comfort with taking medication, such as "Q1: For me, the good things about medication outweigh the bad," "Q2: I feel strange, "doped up", on medication," and "Q4: Medications make me feel more relaxed." This was likely due to the fact that participants became aware of the effects of medications through psychoeducation, much like with the KIDI sub-items.

The aforementioned findings demonstrated that psychoeducation for long-term inpatients with schizophrenia and schizoaffective disorder produces good results in items regarding medications and taking medication.

Our findings also suggest that psychoeducation for very long-term inpatients with schizophrenia and schizoaffective disorder for more than 10 years reliably increases their knowledge. Very long-term inpatients with schizophrenia and schizoaffective disorder are likely to have serious handicaps or neurocognitive dysfunction that prevents discharge. A study in South Korea found that medication adherence was associated with disease awareness and executive function in patients who suffered from chronic schizophrenia for more than 10 years [23]. Another study claimed that the level of knowledge following psychoeducation could be predicted from the state of neurocognitive function [24]. The results of these studies suggest that neurocognitive dysfunction may have an adverse effect on the outcomes of psychoeducation. Although neurocognitive function was not examined in this study, the fact that even very long-term inpatients with schizophrenia and schizoaffective disorder maintained neurocognitive function demonstrates the effectiveness of psychoeducation. This leads us to believe that there is still room for improvement in medication adherence by means of psychoeducation.

On the other hand, despite improvement in scores for attitude towards taking medication in very long-term inpatients with schizophrenia and schizoaffective disorder, no significant changes were seen. The results for the DAI-10 show that subjects had a positive attitude towards taking medication from the start of psychoeducation. This means that the group of very long-term inpatients with schizophrenia and schizoaffective disorder surveyed had a good attitude toward taking medication before the intervention. Considering factors such as living patterns during long-term life in a psychiatric hospital, patients may appear to have a good attitude towards taking medication because they are used to taking medication as part of their daily lives in an environment where many patients take medication routinely and passively. However, this kind of attitude towards taking medication cultivated in a hospital environment may not continue after discharge [25]. Therefore, despite the good attitude towards taking medication of very long-term inpatients with schizophrenia and schizoaffective disorder that was demonstrated by the results of the DAI-10, there is limited

certainty that this attitude will continue after discharge, which suggests that psychoeducation is necessary to ensure ongoing medication adherence after discharge.

DAI-10 sub-items and KIDI sub-items with limited connections to medications showed improvement due to psychoeducation. Although the participants frequently complained about taking medications and their experiences with missing their medication, they seemed to develop a better understanding of the necessity of taking their medications with each session. Conversely, they seldom recognized their pathological experiences as symptoms. Previous studies [26] have suggested that it takes time to develop insight regarding an illness, even for patients who receive an explanation about their illness. The attitude regarding medications is a key factor for preventing relapse, and the effect of psychoeducation for improving adherence may depend on improving patients' knowledge about medications.

*Study Limitations*

This study provided psychoeducation as part of routine care in psychiatric hospitals. There are several limitations that should be considered when interpreting the results of this study. Specifically, to ensure the equality of treatment and to meet the needs of patients, it was not possible to include a control group. Furthermore, neurocognitive function and symptoms were not evaluated due to the burden such testing would place on the patients.

*Conclusions*

Long-term hospitalization for psychiatric treatment in Japan is problematic. Current trends suggest that chances of long-term inpatients with schizophrenia and schizoaffective being discharged may increase in the future. To achieve this, psychoeducation interventions for long-term inpatients with schizophrenia and schizoaffective disorder will need to be made available, especially as these patients have not previously been the focus of psychoeducation. The present results have shown that psychoeducation for long-term inpatients with schizophrenia and schizoaffective disorder may play an important role in facilitating smooth discharge and maintaining health after discharge.

## DISCLOSURE STATEMENT

The authors do not have conflict of interest to declare.

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