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A Long-term Follow-up Study of Schizophrenia in Japan – with Special Reference to the Course of Social Adjustment

KAZUO OGAWA, MAHITO MIYA, AKIO WATARAI,
MASAO NAKAZAWA, SHUICHI YUASA and HIROSHI UTENA

A 21–27-year follow-up was conducted on 140 schizophrenic patients consecutively discharged from the Department of Neuropsychiatry, Gunma University Hospital, between 1958 and 1962, and 130 patients (93%) were successfully evaluated. Of these patients, 105 were still living, and the longitudinal courses could be fully observed in 98. With regard to the social outcome of the 105 patients, 47% were assessed as 'self-supportive' whereas 31% were 'hospitalised'. As for psychopathological outcome, 31% were 'recovered', 46% were 'improved', and 23% were 'unimproved'. In the studies of the longitudinal courses of the 98 patients, fluctuating courses of social adjustment were the most numerous in the early stages, whereas in the later stages many of the patients showed differentiation in one of two directions, namely the 'stable self-supportive' state and the 'chronic institutionalised' state. However, this form of differentiation was not revealed in the distribution of psychopathological 'end states'.

This paper reports a longitudinal study of schizophrenic patients which was conducted over a period exceeding 20 years.

In 1958, a five-year project aimed at preventing the relapse of schizophrenic patients was initiated at the Department of Neuropsychiatry, Gunma University Hospital, Japan by the professor at that time, H. Utena. The subjects were 140 schizophrenic patients consecutively discharged from the hospital between 1958 and 1962. The purpose of the project was to clarify prospectively the degree to which relapse could be prevented by placing the patients under what were then the latest therapies, such as neuroleptic drugs, the open-door system, and intensive aftercare. The results of the project, which was carried out until 1967, were reported by Eguma (1962), Utena (1965), and Yuasa *et al* (1969). These reports revealed that the social adjustment of the subjects had clearly been improved. However, as far as relapse was concerned, the results were found to be rather unfavourable. During the period of the project, the guiding principle of rehabilitational activity known in Japan as *Seikatsu-rinsho* was formulated by Eguma, Yuasa and others (Katoh *et al*, 1966; Tajima *et al*, 1967). Literally, this means 'clinical work in a patient's everyday life', but the term 'living skills development procedure' seems to express the meaning more accurately, and it seems to correspond roughly to a combination of individual counselling and social casework in Western methods of management.

The subjects of the project were subsequently followed up and their courses and social outcomes over a period of 16–22 years were reported by Miya *et al* (1984).

The present paper deals with the long-term courses and social and psychopathological outcomes of the same subjects over a period of 21–27 years.

Method

Subjects

The subjects were 140 schizophrenic patients (67 males, 73 females) consecutively discharged from the Department of Neuropsychiatry, Gunma University Hospital, between 1958 and 1962.

Classifying the subjects at the present time according to the ICD-9 (World Health Organisation, 1978), 84 cases are 295.1 (hebephrenic type), 20 are 295.2 (catatonic type), and 36 are 295.3 (paranoid type). As revealed above, the original selection of the subjects at the time of discharge was based on the narrower concept of schizophrenia.

Of the 140 subjects, 81% were under 30 years old, 79% were first admissions, 91% were prescribed neuroleptic drugs during the period of index admission, 87% had terms of index admission of less than six months, and 82% were 'recovered' or 'improved' at the time of leaving the hospital. Also, almost all the subjects were living in or close to a provincial city, Maebashi, about 100 km north-west of Tokyo. Almost all belonged to the middle social class. Population mobility during the follow-up period was not remarkable.

TABLE I
Eguma's Social Adjustment Scale (ESAS)

Self-supportive
1. Has returned to a level of social functioning similar to that prior to onset of illness
2. Maintains an independent social life with or without asking any advice from psychiatrists or acquaintances
3. Maintains a normal family life (housewife, for example)

Semi-self-supportive
1. Displays vocational ability, with some occasional failures
2. Maintains a positive attitude towards work, but needs supervision and guidance
3. Maintains a normal life at home, but hesitates to return to the job held prior to onset of illness

Socially adjusted to family or community
1. Works when encouraged with continuous significant support from others
2. Needs more time before being ready to return to previously held job
3. Able to work continuously if the work is kept at a simple level

Maladjusted
Social adjustment not possible
1. Non-productive life (able to be cared for at home)
2. Anti-social (admission to psychiatric hospital necessary)

Hospitalised
In psychiatric hospital

Assessment

The investigation of the course and outcome of the subjects was concentrated mainly on the aspect of social adjustment in the same way as previous reports on the same subjects. However, this investigation also covered the aspect of psychopathology.

For the assessment of social adjustment, we used Eguma's Social Adjustment Scale ESAS; (Eguma, 1962) (Table I), which we had used in previous studies. We assessed the course of social adjustment of each case, month by month, throughout the whole term.

For the psychopathological assessment of the outcome, we used the criteria of 'recovered', 'improved' and 'unimproved' which had been used in assessing the outcome at the time of the patients' leaving hospital. For the psychopathological assessment of the course, especially in the last five years, we used the category of 'end state' (Bleuler, 1972). In the criteria mentioned above, 'recovered' means a state without positive schizophrenic symptoms, 'unimproved' refers to a state with remarkable positive and/or negative symptoms, and 'improved' means a state with mild positive and/or negative symptoms.

Information was collected in the following ways. We used data which had already been accumulated in previous studies; the results of analysis of clinical charts and nurses' records from the medical institutions involved; information from doctors, nurses, public health nurses working in the community, and caseworkers; interviews with patients' families, relatives, and acquaintances; and data provided by administrative agencies. Also, interviews were held with as many patients as possible (80%).

Our last follow-up in this study covered the period up to the end of January 1984.

Results

The follow-up was completed in 130 (93%) of the 140 patients (62 males, 68 females). Of the 130 patients, 105 (48 males, 57 females) were still living at the time of the study, and in 98 of these (45 males, 53 females), longitudinal courses were fully observed.

The observation period for the 105 living patients was in the range 21.1–27.2 years, the average being 23.6 years (the duration of illness was 21.3–47.0 years, the average being 26.4 years). The mean age of the patients was 48 years (range 36–70 years) at the end of the follow-up period.

Twenty-five patients (14 males, 11 females) had died during the follow-up period. Suicides accounted for more than half of the deaths (14 patients). Of the other deceased patients, six had died suddenly of unknown cause, one had died of acute cor pulmonale, one of general prostration, one of asphyxia, and we were unable to obtain information concerning the cause of death of the remaining two.

The following results are limited to the living subjects only.

Outcome

Social outcome

The social outcome at the end of the follow-up period, as assessed on ESAS, is shown in Table II. The outcome was regarded as favourable in 'self-supportive' cases, which constituted 47% of the 105 living subjects, and unfavourable in 'hospitalised' and 'maladjusted' cases, which totalled 34%. The cases in the middle grades of ESAS, namely 'semi-self-supportive' and 'socially adjusted to family or community', amounted to only 19%. It was found that many of the cases had become polarised into 'self-supportive' and 'hospitalised'.

TABLE II
Social outcome

Social adjustment	*Male*	*Female*	*Total (%)*
Self-supportive	24	25	49 (47)
Semi-self-supportive	4	4	8 (8)
Socially adjusted to family or community	5	7	12 (11)
Maladjusted	0	3	3 (3)
Hospitalised	15	18	33 (31)
Total	48	57	105 (100)

When the above outcome was substantiated from the aspects of occupational, marital, and residential status, the results were as follows. As to occupational status, 78 (74%) of the 105 patients were fully productive or productive to some extent. Of these 78 patients, 49 were 'self-supportive', 20 were outside a hospital although not 'self-supportive', and 9 were still 'hospitalised', in the sense that they were attending on a 'night-hospital' basis. Such 'hospitalised' patients accounted for 27% of all 'hospitalised' subjects. This was because of the difficulty in discharging these patients, who were not acceptable to their families or to alternative accommodations, of which there are few in the part of the country covered by the study.

As to marital status, of the 105 patients, 47 (45%) were married, 11 (10%) were divorced and 47 (45%) were unmarried. Among the 'self-supportive' cases, 82% were married; among the 'semi-self-supportive' and 'socially adjusted to family or community' cases, 15% were married; and among the 'maladjusted' and 'hospitalised' cases, only 8% were married.

As to residential status, of the 105 patients, 52 (50%) were living in their own homes, 20 (19%) were with parents or other relatives, and 33 (31%) were in psychiatric hospitals. Among the 'self-supportive' cases, 96% were living in their own homes, while among the 'semi-self-supportive', 'socially adjusted to family or community', and 'maladjusted' cases, only 22% were living in their own homes.

Psychopathological outcome

The psychopathological outcome at the end of the follow-up period is shown in Table III according to the criteria mentioned above. There were 31% 'recovered', 46% 'improved', and 23% 'unimproved'. The number of middle-grade cases was the greatest, and the polarisation to two extremes as observed in the social outcome was not seen here.

TABLE III
Psychopathological outcome

Psychiatric state	*Male*	*Female*	*Total (%)*
Recovered	19	14	33 (31)
Improved	23	25	48 (46)
Unimproved	6	18	24 (23)
Total	48	57	105 (100)

Table IV shows the correlation of the psychopathological outcome with the social outcome. It can be seen that the 'improved'patients showed degrees of social adjustment ranging from 'self-supportive' to 'hospitalised', and that they accounted for one-third of the 'self-supportive' and one third of the 'hospitalised' patients.

Treatment

Of the patients alive at the end of the follow-up period, 69 patients (66%) were under psychiatric care. This high percentage may be due to the fact that there were many patients in whom relapse had occurred, resulting in resumed, and subsequently prolonged, treatment; 78% of patients had been readmitted one or more times. Almost all the patients (96%) under psychiatric care were taking neuroleptic drugs.

Even among the 49 'self-supportive' cases, 20 (41%) were under psychiatric care. Many of these cases had mild psychiatric symptoms. Of the 'semi-self-supportive', 'socially adjusted to family or community', and 'maladjusted' cases (23 in all), 16 (70%) were under psychiatric care, and 7 had dropped out of psychiatric care.

Course

Course of social adjustment

In 98 patients, the longitudinal courses were assessed and illustrated month by month using the five ESAS grades, as shown in Fig. 1, in which the passage of time is plotted

TABLE IV
Correlation between psychopathological outcome and social outcome

Social adjustment	*Psychiatric state*			*Total*
	Recovered	*Improved*	*Unimproved*	
Self-supportive	33	16	0	49
Semi-self-supportive	0	8	0	8
Socially adjusted to family or community	0	11	1	12
Maladjusted	0	2	1	3
Hospitalised	0	11	22	33
Total	33	48	24	105

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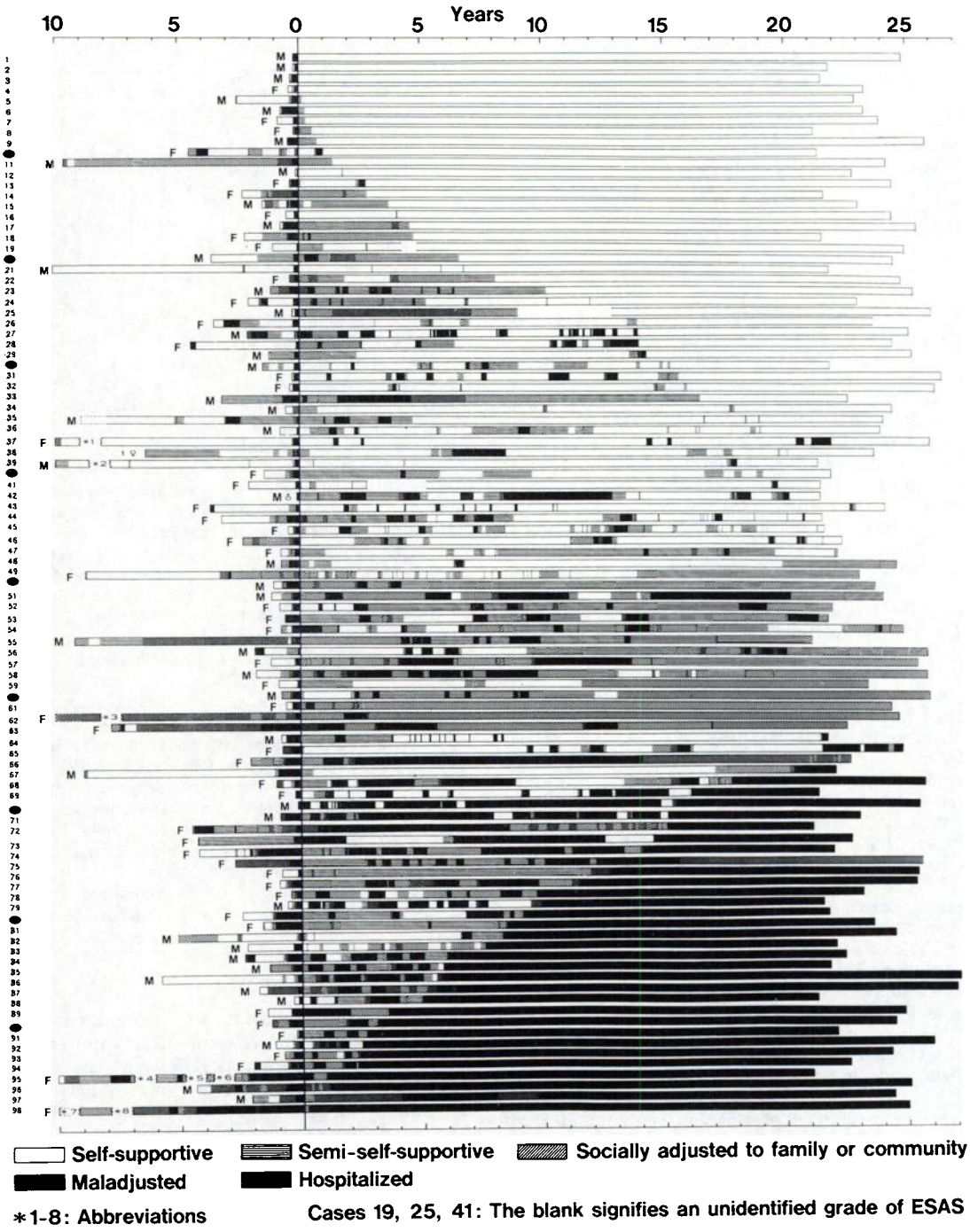

FIG. 1 The course of social adjustment.

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TABLE V
Correlation between 'end states' and social course types

	Stable self-supportive	*Fluctuating and stable middle*	*Chronic institutionalised*	*Total*
Subjects	35	32	31	98
'End states': number of subjects	33 (94%)	9 (28%)	29 (94%)	71 (72%)
Recovery	23	0	0	23
Mild chronic	10	4	4	18
Moderately severe chronic	0	5	13	18
Severe chronic	0	0	12	12

horizontally, and the origin point is the start of follow-up. The illustrated courses for each patient were arranged in order from good to bad in terms of social adjustment as follows:

(a) 'Stable self-supportive' patients, who were in a long-term 'self-supportive' state for at least 5 years immediately prior to the end of the follow-up period, were arranged from the top in the order in which they reached this state.
(b) 'Chronic institutionalised' patients, who were in a long-term 'hospitalised' or 'maladjusted' state for at least 5 years immediately prior to the end of the follow-up period, were arranged from the bottom in a similar manner.
(c) The remaining patients were arranged below the category of 'stable self-supportive' in order from good to bad in terms of the social adjustment outcome at end of the follow-up period.

In Fig. 1, it can be seen that in the early stages of the long-term course, fluctuating courses were the most numerous, while in the later stages these courses gradually decreased in number and many of them differentiated in one of two directions, namely to the 'stable self-supportive' state and to the 'chronic institutionalised' state; out of the 98 patients, there were 35 of the former and 31 of the latter. The remaining 32 patients were termed 'fluctuating and stable middle' types; 25 of these were 'fluctuating' patients and 7 were 'stable middle' patients, who were in either of two long-term middle states in the ESAS for at least 5 years immediately prior to the end of the follow-up period.

Fig. 1 shows that the two curves obtained by plotting the initial points at which individual patients attained 'stable self-supportive' states and 'chronic institutionalised' states, respectively, were smooth and unbroken and in addition formed a symmetrical pattern.

This phenomenon was found to be the same even if the origin of the time plot in Fig. 1 was changed to the time of onset of illness or to the time of first admission. Therefore we called this phenomenon, in which fluctuating courses gradually decreased in number, and many differentiated in one or the other of two directions, 'the scissors phenomenon', as it resembled a pair of scissors with the blades open and facing in two directions.

Psychopathological course, especially 'end state'

For the psychopathological assessment of the course, especially the last 5 years, we used the category of 'end state' (Bleuler, 1972). Table V shows the result, and its correlation with the course of social adjustment. It can be seen that the proportion of patients who attained an 'end state' amounted to 72% (71 of 98). This proportion coincides closely with that (74%) of patients in a socially stable state (the 'stable self-supportive' state, the 'chronic institutionalised' state, or the 'stable middle' state).

As to the proportion of patients who attained an 'end state' in each social course classification, this amounted to 94% among the 'stable self-supportive' patients; and among the 'chronic institutionalised' patients, the same high proportion was observed. Among the 'fluctuating and stable middle' patients, nine (28%) attained an 'end state'. Seven of these nine were 'stable middle' patients, and only two had a fluctuating social course.

From these results, it was found that there is a close correlation between the 'end state' and the socially stable state.

The 'end states' were distributed as follows. In the 'stable self-supportive' type, most patients (70%) had recovered, and mild chronic 'end states' also occurred (30%). In the 'chronic institutionalised' type, 41% were severe chronic 'end states', but more (45%) were moderately severe chronic 'end states', and mild chronic 'end states' also occurred (14%). Overall figures were: recovery 32%, mild chronic 'end states' 25%, moderately severe chronic 'end states' 25%, and severe chronic 'end states' 17%. In the distribution of 'end states', the differentiation in two directions which was found in social adjustment did not occur.

Discussion

Our results on the outcome for schizophrenic patients showed that 47% were 'self-supportive' with regard to social adjustment, whereas 31% were 'recovered' with regard to psychopathological outcome. Of the 'self-supportive' patients, all were fully productive, almost all (96%) were living in their own homes, and the majority (82%) were married. But even among the 'self-supportive', 41% of the patients were under psychiatric care.

The results of earlier studies on the long-term outcome of schizophrenia in Japan indicated that drug therapy had no effect on the percentage of patients who recovered completely, although it

TABLE VI
Proportion and distribution of 'end states'

	Bleuler (1972)	*Ciompi & Müller (1976)*	*Huber* et al *(1979)*	*Present report*
Average follow-up term: years	22	36.9	22.4	23.6
Subjects	208	289	502	98
'End states': number of subjects	152 (73%)	262 (91%)	367 (73%)	71 (72%)
Recovery: percentage of end states	20	29	26	32
Mild chronic: percentage of end states	33	24	31	25
Moderately severe chronic: percentage of end states	24	26	29	25
Severe chronic: percentage of end states	24	20	14	17

reduced the number of patients with severe defects and increased the number with slight or moderate defects (Gotoh, 1971; Murakami, 1971; Shimazono, 1974; Aritome, 1978). However, as to the social outcome, a trend towards improvement in outcome has been noted; that is, the percentage of 'self-supportive' cases has increased as a result of intensive aftercare, including drug therapy (Yuasa, 1984). These findings are confirmed by results of our present study, which is a longer follow-up study than those mentioned above.

In other countries, several reports of follow-up studies of schizophrenia exceeding 20 years were published in the 1970s (Bleuler, 1972; Ciompi & Müller, 1976; Huber *et al*, 1979; Tsuang *et al*, 1979). Although it is difficult to make an exact comparison between these studies and our own, we have tried to do so on a limited basis, especially with regard to the percentages of cases in the 'self-supportive' state and those that recovered completely.

Bleuler (1972) performed a very careful follow-up study of 208 schizophrenics for more than 20 years and, according to his results, a social outcome of 'employable, outside a clinic', which seems equivalent to a status of 'self-supportive' in our study, accounted for 34% of the probands. This proportion was greater than the proportion (22%) of complete recoveries (the "undulating courses types progressing to recovery"). Studies by Huber *et al* (1979, 1980) and Tsuang *et al* (1979) produced similar results to those of Bleuler; in the study of Huber *et al*, the 'social remission degree 0' cases accounted for 39%, while the proportion of complete remissions was 22%; in the study of Tsuang *et al*, those having a rating of 'good' in 'occupational status' made up 35%, while 'good' patients with regard to 'psychiatric symptoms' accounted for 20%. The results of the study by Ciompi & Müller (1976, 1980) differed from these results in that only 15% of patients were 'good' in 'social adaptation', while 20% achieved 'total remission'. This seems to have been chiefly due to the advanced age of the probands (the average age was 74 years at follow-up). The above results from three studies, except those of Ciompi & Müller, are in agreement with our results in that the number of cases equivalent to 'self-supportive' was greater than the number of cases that recovered completely. However, in our results the percentage of 'self-supportive' patients is higher than that in the other three studies. This seems to be due to the fact that almost all our subjects had been under intensive aftercare, including neuroleptic medication from the early stages of the illness, whereas in the other three studies there were many subjects treated before the era of drug therapy. In other words, it is thought that neuroleptic medication, when used in conjunction with intensive aftercare, improves the long-term social outcome of patients with schizophrenia.

As to the course of social adjustment, our results showed that various courses were observed, but that overall, the characteristic pattern which we called 'the scissors phenomenon' occurred. The features of 'the scissors phenomenon' are:

(a) Transition from fluctuating courses to stable courses.
(b) Differentiation of the transition in two directions (one to the 'stable self-supportive' state and the other to the 'chronic institutionalised' state).
(c) Smooth, unbroken continuity of the transition.

Although the classification of the course types in schizophrenia has already been reported in many studies (the eight types of Bleuler, the eight types of Ciompi & Müller, and the 12 types of Huber *et al*, etc.), a fine, clear-cut distinction between subtypes was difficult to achieve in the present study.

Table VI shows the results for the 'end state' in the above three studies and our study. It is seen that as to the percentage of patients who attained an

'end state', our results coincide closely with those of Bleuler and of Huber *et al*. However, the percentage reported by Ciompi & Müller is higher than those in the other three studies. This seems to be due to the difference in the length of the follow-up term: the percentage of patients attaining an 'end state' seems to become higher when the course of the illness is longer and the age of each patient is higher. However, the difference in the length of the follow-up term does not influence the distribution of 'end states'. In particular, the results of all four studies are consistent in that the percentage of the middle grades (mild chronic and moderately severe chronic) of 'end state' is 50–60%. This differs remarkably from the distribution of socially stable states, in which differentiation in two directions was observed in the course of social adjustment.

We shall now deal with the relationship between 'the scissors phenomenon' and each course. It is necessary to pay attention to the fact that the cases in the 'stable self-supportive' state and in the 'chronic institutionalised' state, which increase in number gradually in the later stages of the course, change places to some extent with the cases in the 'fluctuating and stable middle' states. Although the 'stable self-supportive' and 'chronic institutionalised' states are not easy to change, they are not altogether unchangeable. For instance, in the last 5 years of the course, 6 (9%) of 64 patients in the 'stable self-supportive' and 'chronic institutionalised' states changed to the 'fluctuating and stable middle' states. However, in the same period, 12 (32%) of 38 patients in the 'fluctuating and stable middle' states changed to the 'stable self-supportive' or 'chronic institutionalised' state. Consequently, the number of cases in the 'stable self-supportive' and 'chronic institutionalised' states increases and 'the scissors phenomenon' progresses.

The present report deals with the course and outcome of schizophrenia as a whole. We are now analysing the other important issues involved in the prognosis of schizophrenia.

Conclusions

In the era of use of neuroleptic drugs, a trend towards improvement in the social outcome of schizophrenia has been recorded. This seems to be due to the effect of intensive aftercare, including neuroleptic medication from the early stages of the illness.

The percentage of complete recoveries with regard to psychopathological outcome seems to have remained at a similar level to that existing before the era of use of neuroleptic drugs. This shows the limit of these treatments. Furthermore, the percentage of cases with a favourable outcome without need of care still remains at a low level, and the length of the term spent under care tends to have been increased. These problems remain to be solved.

During the course of social adjustment, fluctuating courses in the early stages change on the whole to stable courses in the later stages. This is correlated with the increase in the number of patients who attain an 'end state' in the later stages.

The differentiation in two directions observed in the course of social adjustment is not seen in the distribution of 'end states' in psychopathology. This is characteristic of the course of social adjustment.

As to the 'chronic institutionalised' state, which is one of the two directions taken, this has again been brought to the fore as a problem to be solved, especially for those patients who remain in a psychiatric hospital even though their psychiatric condition is not very serious, making it apparent that social support systems should be established immediately in Japan.

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*Kazuo Ogawa, MD, *Lecturer*; Mahito Miya, MD, *Lecturer: Department of Neuropsychiatry, Gunma University School of Medicine*; Akio Watarai, MD, *Psychiatrist, Tone Chuo Hospital, Numata Shi*; Masao Nakazawa, MD, *Head of Department of Psychiatry, Yoyogi Hospital, Tokyo*; Shuich Yuasa, MD, *Consultant Psychiatrist, Haruna Hospital, Shibukawa Shi*, Hiroshi Utena, MD, F(corresp.)RCPsych, *Consultant Psychiatrist, Sakamoto Clinic, Niiza Shi*

*Correspondence: *Department of Neuropsychiatry, Gunma University School of Medicine, Maebashi Shi, Gunma Ken, 371, Japan*

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