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Original Article

Longer Length of Stay in Psychiatric Care Beds Paid for by Public Assistance: Analysis of "the Statistical Survey of Mentally Disordered Inpatients in 1956"

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Abstract

Purpose: It is well known that the average length of stay in psychiatric care beds in Japan is the longest among OECD countries. To better understand the history and the institutional background of prolonged stays in Japanese psychiatric care beds, we analyzed the relationship between long-term hospitalizations and their sources of payment in 1956 using fact-finding survey records of great archival value. Our primary goal was to determine whether stays were longer when paid for by public assistance than when paid for by social insurance.

Data: We used patient records that were part of the "Report of the Statistical Survey of Mentally Disordered Inpatients in 1956" conducted by the Ministry of Welfare. We randomly sampled 1,000 inpatients from the original records and then selected inpatients who had been admitted for the first time, resulting in a sample of 808 patients with schizophrenia, bipolar disorder, or epilepsy. We also analyzed survey records of discharged patients to confirm robustness.

Method: Multiple regression analysis was used to investigate how lengths of stay differed by source of payment for psychiatric hospitalization. We used regression of

length of hospital stay using dummy variables of payment types, controlling for possible confounding factors such as sex, age, disease status, nursing situation, type of guardian(s), marriage status, time between onset and hospitalization, and medical institution effects.

Results: When controlling for the maximum number of confounding factors, the length of stay paid for by public assistance was, on average, approximately 9 months longer than the length of stay paid for by social insurance for patients with schizophrenia, approximately 10 months longer for patients with bipolar disorder, and approximately 17 months longer for patients with epilepsy. Although standard errors were often large, the positive correlation between length of stay and payment by public assistance was slightly stronger when the patients' guardians were a parent, spouse, or sibling.

Discussion: In 1956, only six years after the current Public Assistance Act took effect, the length of stay in psychiatric care beds paid for by public assistance was slightly longer than that paid for by social insurance, even after controlling for patient background and individual characteristics. This longer length of stay paid for by public assistance may be explained by familial factors of public assistance recipients, such as poorer economic conditions and lower caring capacity, and institutional factors, such as free admission through public assistance and the so-called "(family) consent admission" system, which was often used in cases of psychiatric admission with public assistance. Longer stays in psychiatric care beds paid for by public assistance persist since the period we examined and have become an essential characteristic of post-war psychiatric hospitalization in Japan.

Keywords: consent admission, funding for compulsory hospitalization for treatment, medical assistance, Mental Health Act, public assistance

Introduction

The number of psychiatric beds in Japan surpassed the 1941 prewar maximum (24,000), with 25,000 beds in 1952, 50,000 in 1956, 100,000 in 1961, 200,000 in 1967, and 300,000 in 1979. From about 1980, the number of

psychiatric beds reached a level not significantly different from that of today.

Many previous studies have explained the historical causes of this change in the number of psychiatric beds in postwar Japan as follows. First is the public safety principle:

psychiatric care in Japan has been strongly based on concern for protecting society. The second is the profit principle: private hospitals, owners of most psychiatric beds in Japan, are motivated to admit a large number of patients for profit and have sought to ensure long-term hospitalization.

Acceptance of funding for compulsory hospitalization for treatment played a major role in how the public safety explanation came to be established. In addition to compulsory hospitalization for treatment under Article 29, the Mental Health Act also provides for “hospitalization with the consent of the guardian” (consent admission) under Article 33, and temporary “provisional hospitalization” under Article 34. Previous studies have focused on compulsory hospitalization for treatment under Article 29 (which at the time, as a general rule, was paid for with public funds). Many previous studies have attributed the rapid increase in the number of such hospitalizations in the 1960s to a growing “public safety comes first” tendency in Japanese psychiatry.^{1, 2, 3} The “commercialism” of the profit motive has, to this day, been repeatedly regarded as the basis for the low level of public involvement by the state in restricting the large number of private hospitals, which continue to account for 80% to 90% of psychiatric beds in

Japan.^{2, 4, 5, 6, 7, 8, 9, 10}

These interpretations critical of the focus on public safety and commercialism, though they capture certain characteristics of psychiatry and hospital management in postwar Japan, have neglected other important historical facts. In particular, they have neglected publicly funded hospitalization (hospitalization for medical assistance) under the Public Assistance Act, which has played a major role in covering medical expenses for hospitalization in psychiatric beds.

There are, of course, previous studies that allude to the importance of hospitalization for medical assistance in psychiatric hospitals, although this aspect has not received much attention. Some studies have pointed out the inseparable relationship between mental disorders and public assistance based on the high proportion of patients with mental disorders among hospitalizations for medical assistance.¹¹ Others have pointed out the influence of the Public Assistance Act on the increase in hospital beds in the postwar period, while strongly criticizing the emphasis on public safety.¹ In addition, some studies have noted that the ratio of public assistance recipients (i.e., patients hospitalized for medical assistance) to the total number of patients hospitalized in psychiatric beds was about 50% of the total 95,000

hospitalized in 1960, about 38% of the total 250,000 hospitalized in 1970, and about 37% of the total 310,000 hospitalized in 1980.¹²

The relationship between psychiatric hospitalization and the source of payment has been analyzed in parts of other studies of long-term hospitalization during the period of rapid increase in the number of psychiatric beds from the 1960s to the 1980s. A study using 1973 data found that the number of psychiatric beds (per 10 thousand) and the average length of stay in psychiatric hospitals were strongly correlated with the factor “single payer of mental healthcare” (the former had a correlation coefficient of 0.85 and the latter had a correlation coefficient of 0.51), and these values were higher than the correlation coefficients related to all other factors listed in this study.¹³ Other studies have also pointed out that hospitalization at public expense (hospitalization under the Mental Health Act and hospitalization with medical assistance under the Public Assistance Act) tends to be more prolonged than hospitalization on social insurance.^{14, 15, 16} However, with the exception of one study,¹⁰ these studies are analyses of aggregate results for one region or one hospital. Important studies on the factors of long-term hospitalization in psychiatric beds since

the 2000s have not examined the effect of the sources of funding for medical services.^{17, 18, 19, 20}

The authors of this paper, focusing on the long-term trend of the number of hospitalized patients in psychiatric beds analyzed by the three types of public healthcare funding (administrative detention, public assistance, and social insurance), found that medical assistance under the Public Assistance Act was the main financial support for the growth in the number of hospitalized patients in psychiatric beds in postwar Japan, along with funding for compulsory hospitalization for treatment under the Mental Health Law and hospitalization covered by social insurance.²¹ In a separate successive study, we confirmed that the number of new hospitalizations under the Mental Health Law was clearly higher for consent admission (a system established prior to the current hospitalization for medical protection) than for compulsory hospitalization for treatment; that study also pointed out that medical assistance under the Public Assistance Act was often coupled with consent admission as a source of funds for medical expenses and that medical assistance under the Public Assistance Act was often applied to consent admission as a source of funds for medical expenses.²²

One of us (Goto) argues in a separate,

book-length publication that large-scale psychiatric hospital expansion in postwar Japan was driven not so much by the “public safety principle,” epitomized by involuntary commitment (“compulsory hospitalization for treatment”), as by hospitalization with a strong social welfare component from the public assistance sector, taking the form of hospitalization for public assistance.²³ He identifies the three main functions of psychiatric hospitalization as public protection, treatment of illness, and social welfare, whose three corresponding types of sources of funding for medical services are regulatory statutes, social insurance, and public assistance. His book also examines the duration of hospitalization by source of funding for medical services, but mainly focuses on analysis of descriptive statistics since the 1960s.

As described above, the authors’ studies suggest that medical assistance hospitalization under the Public Assistance Act may have continued to be important for a long time after the war, both in terms of the number of hospital beds and long-term hospital stays. Yet most previous studies by other authors on which the conventional theories mentioned at the beginning of this paper are based do not analyze or discuss the role of hospitalization funding.

To the best of our knowledge, no previous studies conducted overseas of hospitalization in psychiatric beds have drawn attention to the influence of sources of funding for medical services. Perhaps this is because in other countries prolonged psychiatric hospitalization itself is less of a social issue than it is in Japan, and there is consequently less need to examine the length of stay from the institutional perspective of healthcare funding.

In this study, we examine the relationship between hospitalization in psychiatric hospitals under the Public Assistance Act to longer hospital stays during the period when the new Public Assistance Act was enacted (1950), a period that has not been covered by previous studies. In this way we can clarify whether the lengthening of hospital stays for medical assistance under the Public Assistance Act, which continues to the present, had come into being immediately after the enactment of the new Public Assistance Act.

The hypothesis of this study is that, as of 1956, when the Report of the Statistical Survey of Mentally Disordered Inpatients was made, the length of stay was already longer for those hospitalized on public assistance than for those hospitalized on social insurance, even after taking into account the degree of mental illness and the need for assistance. Hospitalization

on public assistance has a poverty-relief aspect for the family and the patient, and it greatly reduces the economic burden and the care burden of the family, especially poor families. Therefore, even if the degree of the patient's mental illness and the degree of the need for care are the same, the inference is that the hospital stay is likely to be longer when the patient is hospitalized on public assistance than when the patient is hospitalized on social insurance.

I. Methods

1. Surveys used in analysis

In this study, we analyzed the relationship between durations of hospitalization and such different sources of medical care funding as social insurance, the Public Assistance Act, and the Mental Health Act. To analyze the relationship between the source of funding for medical services and the length of stay in hospital we digitalized individual data sets obtained from the Report of the Statistical Survey of Mentally Disordered Inpatients (referred to below as "the Report"), a nationwide epidemiological survey conducted by the Ministry of Health and Welfare in 1956.

The National Institute of Mental Health (NIMH, now part of the National Center of Neurology and Psychiatry (NCNP)), was deeply involved in the

analysis of the survey, as stated in the text of the Report.²⁴ Analysis of the survey was done at the National Institute of Mental Health. In the present study, we were able to use individual data sets from the Survey of Mentally Disabled Persons in Hospital because these original data were found at the NCNP. The storage, organization, and archival of the documents and the study were done after obtaining approval from the Ethics Committee of the National Center of Neurology and Psychiatry (Approval No. A2016-053).

The Statistical Survey of Mentally Disordered Inpatients, together with the surveys on conditions of patients at home conducted in 1954 and 1963, provided the statistical and policy basis for the formulation of psychiatric policies and the scale of psychiatric beds in postwar Japan, and is an important survey from the viewpoint of policy history. This Survey on the Actual Conditions of the Mentally Disabled in Hospital was conducted in 1956 with the aim of (quoting from the Report's Introduction) "ascertaining how patients with mental disorders actually lived during and after hospitalization"; the survey covered (1) "all persons with mental disorders hospitalized in mental hospitals (and wards) nationwide", and (2) "persons with mental disorders discharged from mental hospitals (and wards) nationwide" (the Report, p. 7).

The survey was done by sampling; the psychiatric hospitals in Japan were stratified into 17 strata according to their form of management and number of licensed beds classified by degree of disability according to the Hospital Monthly Report; about one-fifth of patients were randomly selected from each stratum. The survey covered all mentally ill persons hospitalized in these institutions as of the date of the survey (July 15, 1956) and those discharged from these institutions between January 1 and June 30, 1956; data sets were prepared separately for inpatients and discharged former patients. Ultimately, 60 institutions, 9,066 inpatients and 4,651 former patients were included in the survey.

The Report does not sufficiently examine the lengths of hospital stays broken down by source of funding for medical services (designated in the Report as “cost payment category at the time of hospitalization”, hereinafter referred to as “sources of funding for medical services”), e.g., social insurance, public assistance, and funding for compulsory hospitalization for treatment. In this study, therefore, we conducted regression analysis using the original survey’s individual data to investigate in greater detail the relationship between sources of funding for medical services and hospital stays while controlling for various

confounding factors such as individual patient and family attributes.

2. Sampling method

The Statistical Survey of Mentally Disordered Inpatients includes two types of data sets: the inpatient data set, which covers patients in hospital at the time of the survey (July 15, 1956), and the discharge data set, which covers patients discharged from hospital (January 1 to June 30, 1956). In this study, we chose the inpatient data set as the main object of analysis because there is little concern about sample selection (the inpatient data set does not have such a bias, whereas the discharged (former) patient data set includes only patients who were discharged); we did an additional analysis on the discharged patient data set. The inpatient data set has the additional merit of having more survey items than the discharge data set, such as the number of hospitalizations and status of contact with family members.

First, for the inpatient data set, which was the main object of analysis, 800 individual data sets were randomly selected from the total 6,344 schizophrenic data sets because of the large number of schizophrenic patients; it would have been too difficult to enter all the data sets. For bipolar disorder and epilepsy, all of the original data sets (336 and 347, respectively) were

included, and only the initial hospitalization data sets were used for analysis.

In the case of schizophrenia, 1,000 discharge data sets were randomly selected from the total of 2,394 data sets. For bipolar disorder and epilepsy, every one of the original data sets (471 and 134 subjects, respectively) was included. Unlike the inpatient data sets, the discharge data sets contained no information identifying whether the patient was admitted for the first time or not, so we used all available data sets.

Because the sampling methods for schizophrenia, bipolar disorder, and epilepsy differed, all analyses were conducted for each individual disease for both inpatient and discharged patient data sets.

There is an issue to take note of regarding sample selection for this study. Length of hospitalization is the dependent variable; this differs for the inpatient data set (for which it would be duration of hospitalization when the study was conducted) and the discharge data set (for which it would be duration of hospitalization at the time of discharge). These differ from the resultant length of stay for the entire hospitalized population. In other words, the hospital stay data set is a sample of only living hospitalized patients, and while it represents the distribution of the hospital stay of patients at the time

of the survey, it does not reflect the hospital stay of patients who died in the hospital after a long stay. On the other hand, the discharge data set is a sample only of patients who were discharged and does not reflect the length of stay of patients who could not be discharged due to long-term hospitalization or those who died in the hospital. Since the purpose of this study is to examine long-term hospitalization, we chose as the main object of analysis the inpatient data set, which is thought to reflect the distribution of hospital stays of patients who were hospitalized at a single point in time, rather than the discharge data set, which contains many patients whose hospitalization for a short period was paid for by social insurance. We did, however, additionally analyze the hospitals' discharge notes.

3. Method of analysis

First, using a sample of inpatients and discharged patients, we performed a simple aggregation of the average length of stay of both inpatients and discharged patients for sources of healthcare funding at the time of admission to verify the average length of stay for each source of healthcare funding. Second, using a sample of hospitalized patients, we conducted a regression analysis with the length of stay as the dependent variable and created a dummy variable for the source

of healthcare funding of hospitalization at the start of hospitalization, with other covariates as explanatory variables. For the dummy variable for the source of funding for medical services, social insurance was used as the reference variable, and dummy variables were created for sources of funding for medical services other than social insurance, such as public assistance and funding for compulsory hospitalization for treatment.

However, when examining the relationship between the source of funding for medical services at the time of admission and the length of hospital stay, it becomes more difficult to interpret the relationship if there are many cases in which the source of funding for medical services changed between the time of admission and the time after admission. Therefore, in the next section, we also examined the number of patients whose financial resources changed between the time of admission and the time after admission.

As criteria for significance testing of the regression coefficients, p-values were calculated using standard errors that are robust against heteroscedasticity, and three criteria were adopted: 1%, 5%, and 10% significance level. The coefficient estimates and their standard errors are clearly indicated in the analysis results table.

4. Variables of hospital length of stay and funding for medical care

The dependent variable in the regression analysis of this study was, in all regression equations, the number of months of hospital stay of the patient. The main explanatory variable was the main source of funding for medical services at the time of hospitalization, and dummy variables were created for hospitalization broken down by the following four sources: self-financed, public assistance, funding for compulsory hospitalization for treatment, and other/unknown. The social insurance hospitalization dummy was excluded from the explanatory variables because hospitalization on social insurance was used as the reference variable.

As for the source of funding for medical services at the time of hospitalization, the Report distinguishes between full assistance and partial assistance and full public expenditure and partial public expenditure for public assistance and funding for compulsory hospitalization for treatment. However, because the number of patients tends to be small, especially for compulsory hospitalization for treatment, we did not distinguish between the two in our analysis. In this regard, there is no significant problem in not

distinguishing between partial assistance and public expenditure, because it is presumed that in both public assistance and compulsory hospitalization for treatment, the partial burden is also reimbursed on a sliding scale depending on the patient's ability to pay, and in effect most of the burden is borne by the public.

5. Control variables

The control variables used in the regression analysis (explanatory variables other than source of funding for medical services) can be broadly divided into three types: personal attributes at the time of admission, family attributes, and dummy variables for medical institution category. First, for the personal attributes at the time of admission, we used sex, age, patient's condition, level of nursing care required, and duration of illness before admission. For sex, we used a dummy variable of 1 for male patients and 0 for female patients. For age, we used age and its square. There are 9 main categories (excitement, confusion/depression, dementia, schizophrenia, hallucinations/delusions, disturbances of consciousness, paroxysmal symptoms, episodic symptoms, physical symptoms) and a total of 33 condition subcategories. Therefore, as a control variable, the total number of applicable states (the

number of symptoms observed in the patient's condition) was used as a proxy variable for the overall severity of the condition. In addition, for each of the nine condition categories, nine dummy variables were added to the control variables, which were set to 1 if there was at least one corresponding condition and 0 if there was none. In addition, since there is information on 18 conditions that require special attention in nursing, including violence, defiance, irritability, and noisy fussiness, the total number of applicable conditions was also used as a control variable. Finally, since there were four levels for overall level of need for careful nursing care and conditions requiring nursing care, mainly assistance and guidance in daily life, dummy variables were created for each of these levels, and three control variables were added for each.

Second, for family attributes, we used variables for the type of guardian and whether or not patients were married. For the six categories of guardians, no guardian, parent, spouse, child, sibling, and other, we created dummy variables that were set to 1 if applicable and 0 if not applicable, and five of these dummy variables were used as control variables. We also added a dummy variable that was set to 1 if the patient was married.

Third, since the data set contains information on the hospitalizing

institution, a dummy variable for each admission institution (60 medical institutions in total) was also used as a control variable in order to control for differences in hospital stay due to differences among the medical institutions (medical institution effect).

Many survey items, such as the source of funding for medical services and the patient's condition, contain information at two time points: at the time of admission and at the time of survey (or at the time of discharge in the discharge data set). Since the purpose of this study is to examine the relationship between source of funding for medical services and length of hospital stay, sources of funding for medical services at the time of admission were used as explanatory variables, and patient attributes at the time of admission were used as control variables for confounding factors.

6. Robustness verification and analysis by type of guardian

The following two additional analyses were done to verify the robustness of the analysis results and to analyze the results by attributes of the guardian. First, we did a similar regression analysis using sample discharge data. Discharge data sampling does not have the same level of reliability as the results of the analysis of admission data sampling because, compared to the

hospitalization data, it has the following disadvantages: (1) we do not know whether the patient was admitted for the first time or not, (2) we cannot obtain variables for family attributes such as the presence or absence of a guardian or marriage status, and (3) only patients who were discharged within a certain period of time are included. However, we confirmed the robustness of the results of the analysis in the previous section by examining whether such statistics have the same implications as the results of the analysis of the hospitalization data set.

Second, using a sample of inpatient data sets, we tested how much the relationship between hospitalization paid by public assistance and length of stay differed according to attributes of the guardian. Specifically, we analyzed whether the length of stay for hospitalization on public assistance was longer when the guardian was a relative, such as a parent or sibling, compared to when there was no guardian or when the guardian was a non-relative.

II. Results

1. Number of patients and descriptive statistics after sampling

Table 1 shows the number of patients sampled by source of funding for medical services (at the time of admission) and by disease. After sampling, the total number of

inpatients (first-time admissions only) was 808: 417 with schizophrenia, 178 with bipolar disorder, and 213 with epilepsy. The total number of patients discharged from the hospital was 1,588 (1,000 with schizophrenia, 461 with bipolar disorder, and 127 with epilepsy).

Though tables with descriptive statistics for the various variables used in the analysis of inpatient data sets for initial hospitalization and in additional analysis of discharge data sets are omitted from this paper, the descriptive statistics from inpatient data sets at initial hospitalization are reviewed below.

First, the mean length of stay as the dependent variable was 24.3 months for schizophrenia, 7.13 months for bipolar disorder, and 27.6 months for epilepsy. In other words, the average length of hospital stay was more than six months for all mental disorders, and more than two years for schizophrenia and epilepsy. The length of hospital stay of one patient with schizophrenia and one with epilepsy exceeded the maximum 120 months (10 years); their stay was listed as 120 months.

Second, regarding the main explanatory variable, source of funding for medical services at the time of hospitalization, of patients with schizophrenia, about 10% were self-financed, about 32% were covered by social insurance, about 44% by public

assistance, and about 12% were taken in charge under compulsory hospitalization for treatment. Of patients with bipolar disorder, about 24% were self-financed, 41% financed by social insurance, 29% by public assistance, and 4% by funding for compulsory hospitalization for treatment. Of patients with epilepsy, about 7% were self-financed, 28% financed by social insurance, 47% by public assistance, and 14% by funding for compulsory hospitalization for treatment. For epilepsy, self-financing accounted for about 7%, social insurance about 28%, public assistance about 47%, and hospitalization for treatment about 14%. In the case of each disease, social insurance and public assistance together accounted for more than 70% of the total.

Third, looking at the personal characteristics of patients at the time of admission with schizophrenia, the male ratio was about 58%, the average age was about 32.5 years, and the estimated duration of illness before admission was about 42.6 months; “schizophrenic deficit state [sic]” was reported in about 72% of patients, and hallucinatory delusional state was reported in 77% of patients. As for the guardianship and family status of patients with schizophrenia, about 7% had no guardian, 49% had a guardian parent, 14% had a guardian spouse, 3% had a

guardian child, 23% had a guardian sibling, 5% had a guardian other than the above (“other guardian”), and about 20% were married.

Next, Table 2 shows the relationship between the source of funding for medical services at the time of admission and at the time of survey and discharge. About 90% of the patients whose source of funding at the time of admission was social insurance, public assistance, or funding for compulsory hospitalization for treatment had the same source of funding at the time of survey and discharge.

In addition, in order to examine the representativeness of the present sample, we compared it with the results table in the Report. In the Report, the sources of funding for medical services are not collected by diagnosis, but there is a breakdown of the total number of hospitalized people with mental disorders (9,066). According to the breakdown, 11.7% were self-financed, 33.1% were covered by social insurance, 40.2% by public assistance, 13.2% by funding for compulsory hospitalization for treatment, and 1.7% were other or unknown. This distribution is similar to that of the sample of patients with schizophrenia in the present hospitalization survey (about 10% self-financed, 32% social insurance, 44% public assistance, and 12% funding for compulsory hospitalization for

treatment). Of total hospitalized patients, 6,344 had schizophrenia, which is about 70% of the total.

Similarly, the Report’s results table does not have a column for the legal guardian by diagnosis, but it still gives a breakdown of the total number. According to the Report, 7.9% of the patients had no guardian, 46.1% had a guardian parent, 21.2% had a guardian spouse, 4.5% had a guardian child, 16.3% had a guardian sibling, and 3.2% had a guardian other than the above. Generally the percentages of the different categories of the guardians of patients with schizophrenia analyzed in this study were similar, although the percentage of guardians who were spouses was about 7% lower and the percentage of guardians who were siblings was about 6% higher.

The Report also shows the distribution of the length of hospital stay by source of funding for medical services, although only for the total, not by diagnosis. According to the Report, 8.1% of patients were hospitalized for more than two years at their own expense, 16.3% by social insurance, 51.9% by public assistance, 22.2% by funding for compulsory hospitalization for treatment, and 1.5% for other or unknown reasons.

2. Length of stay by source of funding for medical services

Before examining the results of the regression analysis, we did a descriptive statistical analysis using samples of inpatient and discharged (former) patient data sets. The figure shows the average length of stay by source of funding for medical services at the time of admission for inpatients and for discharged (former) patients. In the case of patients with schizophrenia, the average length of stay was about 12 months for patients whose medical expenses were paid by social insurance, while it was about 30 months for patients on public assistance and about 39 months for patients undergoing compulsory hospitalization for treatment. This shows that hospitalizations covered by public assistance were 3 times longer than those covered by social insurance, and 4 times longer for cases of compulsory hospitalization for treatment. For discharged patients with schizophrenia, the average length of stay was about 5 months for patients whose medical expenses were paid by social insurance, while it was about 14 months for those on public assistance and about 18 months for those who underwent compulsory hospitalization for treatment. Once again, hospitalizations covered by public assistance were 3 times longer than those covered by social insurance, and 4 times longer in cases paid for with funding for

compulsory hospitalization for treatment. The overall trend for bipolar disorder and epilepsy was similar to that for schizophrenia.

Next, Table 3 shows the results of the regression analysis of the inpatient data set. This table shows the results of regression analysis using the length of hospital stay of patients with schizophrenia, bipolar disorder, and epilepsy as the dependent variable. In each analysis, five different regression equations are used, and only the estimated coefficients of the dummy variable source of funding for medical services at the time of hospitalization, which is the main object of analysis, are shown.

In this study, we interpret the results from regression equation (5), which controls for the largest number of confounding factors, as the main result. We also estimated a regression equation by adding a dummy variable for the type of treatment received during hospitalization (10 types in total) to regression equation (5), but because the type of treatment might be a mediating variable that is affected by the source of funding for medical services, the results were almost identical.

Panel A shows the results of the analysis for the sample of patients with schizophrenia. According to the results of regression equation (1), which does not take into account the control

variables, patients admitted at their own expense, on public assistance, or undergoing compulsory hospitalization for treatment had significantly longer hospital stays, of about 9.4 months, 18.6 months, and 27.1 months, respectively, compared to patients admitted on social insurance. These significant differences decrease when covariates such as individual attributes, family attributes, pre-hospitalization onset period, and hospital institution effects are progressively controlled for, but even when all covariates are controlled for by regression equation (5), the length of stay is about 8.7 months and 9.6 months longer, respectively, for public assistance and compulsory hospitalization for treatment than for social insurance hospitalization.

For patients with bipolar disorder in Panel B, the duration of hospital stay was significantly longer for public assistance than for social insurance hospitalization by about 9.9 months in column (5) after controlling for all covariates. On the other hand, the coefficients of the compulsory hospitalization dummies are large but not significant, ranging from about 15 to 19 (months) for compulsory hospitalization (1) to (4), and the coefficients decrease significantly to about -7.9 in column (5) after controlling for the medical institution dummy (the sample size of patients with bipolar

disorder is small, however, ranging from $n=166$ to 178, and the number of involuntarily hospitalized patients is also small).

Finally, looking at the results for epilepsy in Panel C, in all regressions, public assistance and inpatient compulsory hospitalizations for treatment resulted in significantly longer hospital stays than social insurance hospitalization. Even in column (5), where all covariates were controlled for, the length of stay was about 17.0 months longer for public assistance and about 18.1 months longer for compulsory hospitalization for treatment, compared to hospitalization paid by social insurance (although the standard error for compulsory hospitalization for treatment is relatively large, about 12.7).

3. Analysis using hospital discharge data sets

Next, in order to confirm the robustness of the results obtained in the previous section, we analyzed the discharge data set samples. The results of the discharge data set analysis are shown in Table 4. The format is almost identical to that in Table 3: Panels A, B, and C show the results of the analysis of the samples of patients with schizophrenia, bipolar disorder, and epilepsy, respectively.

The results for schizophrenia in Panel A show that, regardless of the presence or absence of control variables, the length of stay was significantly longer for public assistance and compulsory hospitalization for treatment than for social insurance hospitalization. In column (4), which controls for the most confounding factors, patients on public assistance and receiving funding for compulsory hospitalization for treatment had roughly 7.3 months and 8.3 months longer stays, respectively, than patients with social insurance. In Panel B, the results for bipolar disorder show that the length of the hospital stay is not longer for compulsory hospitalization for treatment, while it is about 3.5 months longer for hospitalization on public assistance, regardless of the regression equation. Finally, for epilepsy in Panel C, despite the small sample size, no significant lengthening of hospital stay was observed in cases receiving either public assistance or funding for compulsory hospitalization for treatment.

4. Medical assistance length of stay by guardian's demographics

Using the sample of inpatient data sets again, we tested how the relationship between hospitalization on public assistance and hospital stay observed in the previous analyses differed according to the attributes of

the guardian. For this purpose, we added to the previous regression equation an interaction term between the public assistance dummy and the guardian's attribute dummy. However, as shown in Table 5, the number of patients for each guardian attribute is not very large, so we used "no guardian" and "with other guardian" together as reference attributes to examine the extent to which the length of hospital stay differs, compared to these groups, when the guardian is a parent, spouse, child, or sibling, respectively.

Table 6 shows the results of the regression analysis. First of all, the interpretation of the coefficients of the source-of-medical-funding dummy is the same as in Tables 3 and 4, with the exception of the public assistance dummy. On the other hand, the coefficients for the public assistance dummy indicate how much longer the hospital stay is for hospitalization on public assistance without guardian or with other guardian, compared to the hospital stay on social insurance, because the interaction term between the public assistance dummy and the guardian dummy is added separately. As a result, the standard errors of the estimates of the public assistance dummy coefficients were large for both regression equations, and no statistically significant differences were observed.

Next, the coefficients for the guardian dummy demonstrate the extent to which there was a difference in the length of hospital stay when a parent, spouse, child, or sibling was a guardian, compared to the case of no guardian or with other guardian. However, since we also introduced an interaction term between the public assistance dummy and the guardian dummy, we show here the difference in hospital stay for patients other than those paid for by public assistance. As a result, although the standard errors of dummy variables (2) and (3), which include control variables (covariates), are large and not statistically significant, the duration of hospital stay tends to be shorter when the guardian is a spouse or a child.

Finally, we examine the coefficient of the interaction term between the public assistance dummy and the guardian dummy, which is our main object of interest. This coefficient indicates how much longer the average length of stay is for public assistance patients whose guardians are parents, spouses, children, or siblings, compared to those whose guardian status is either “no guardian” or “other guardian”. The results of (2) and (3), which include control variables, show that the average length of stay in the hospital is about 6.6 to 15.8 months longer when the guardian is a parent, spouse, or sibling, while it is the same or shorter when the

guardian is a child. However, the standard errors were both large and not statistically significant.

III. Discussion

1. Were hospitalizations on public assistance longer?

In this study, we examined the relationship between the source of funding for medical services and the length of hospital stay in psychiatric beds by analyzing individual data sets from the 1956 National Epidemiological Survey. We found that, among the sources of funding for medical services, both medical assistance hospitalization under the Public Assistance Act and funding for compulsory hospitalization for treatment under the Mental Health Act tended to lengthen the hospital stay more than hospitalization on social insurance or hospitalization at the patient's expense. In the following sections, we will discuss in greater detail hospitalizations under the public assistance system, especially during the period of rapid increase in the number of psychiatric beds from the 1950s to the 1970s.

The results of the present analysis suggest that hospitalization for public assistance is strongly associated with longer hospital stays, regardless of the illness, whether schizophrenia, bipolar disorder, or epilepsy. The results were robust after controlling for personal

attributes such as sex, age, illness severity, and nursing status, family attributes such as type of guardian and marital status, duration of illness before hospitalization, and medical institution effects.

With regard to the inpatient data set, comparing column (1) in Table 3 with columns (2) to (5), it is clear that there is an upward bias in the difference in hospital stay between hospitalization on public assistance and on funding for compulsory hospitalization for treatment when compared to hospitalization on social insurance when no covariates are considered, and that simple cross-tabulation overestimates the relationship between healthcare funding and length of hospital stay. However, even when controlling for the largest number of confounding factors, the average length of stay was about 9 months longer for schizophrenia, about 10 months longer for bipolar disorder, and about 17 months longer for epilepsy when hospitalized on public assistance than when hospitalized on social insurance.

Of course, the analysis in Tables 3 and 4 alone does not allow us to conclude that the source of healthcare funding of public assistance is the only factor that prolongs the length of hospital stay. However, at the very least, even after controlling for various observable confounding factors (degree of disability,

nursing care status, guardian attributes, etc.), the length of stay of patients hospitalized on public assistance and those hospitalized for compulsory treatment was still significantly longer than the stay of those hospitalized on social insurance, and the coefficient estimates of the public assistance dummy variables in particular showed relatively little variation across regression equations. The analysis of the inpatient data sets (Table 3) showed that even the smallest estimated variation was about 8.7 months, indicating a significantly longer hospital stay compared to hospitalization on social insurance. This suggests that the factor of hospitalization on public assistance was strongly associated with the longer hospital stay.

2. Trends in length of stay for hospitalization on public assistance from the 1960s to the present

The survey which provides the data for the main analysis of this study was conducted in 1956, just after the new Public Assistance Act came into effect. In the subsequent years, did hospitalization for public assistance show a trend toward longer stays in hospitals?

First of all, the Patient Survey from 1954 to 1983 includes an item titled “Cumulative Percentage of Discharged

Patients by Payment Method, Specified Injuries and Diseases, and Length of Stay”,²⁵ which shows the cumulative percentage of patients discharged within a certain period of time by source of funding for medical services. This item shows the cumulative percentage of hospitalized patients who were discharged within a certain period of time; a value of 100% indicates that all patients were discharged. For example, if the cumulative percentage is 85.0% at 5 months, it means that 15% of the patients are still in the hospital after 5 months. Using this statistic, we can examine the trend of the length of hospital stay by the source of funding for medical services.

In 1960, the proportion of patients discharged within less than one year (hereafter referred to as the less-than-one-year discharge rate) was 95.8% for “health insurance, ship’s insurance, mutual aid, and day labor health insurance” and 79.2% for “public assistance.” In 1970, the rate of discharges under one year was 89.4% for cooperative health insurance patients and 61.0% for public assistance patients. In 1980, the rate was 93.1% for members of health insurance cooperatives, and 65.5% for public assistance.¹⁷ These data show that in 1960, 1970, and 1980, hospitalization under the public assistance system was consistently more likely to be longer

than one year compared to hospitalization under the social insurance system, mainly health insurance cooperatives.

According to a study²⁶ that analyzed the medical claims data for 46,559 public assistance patients admitted to psychiatric beds in May 2016, 15.9% of public assistance recipients were hospitalized for less than 3 months, 15.8% for 3 months to 1 year, 25.2% for 1 year to 5 years, and 43.2% for more than 5 years. This showed that almost 70% of these patients were hospitalized for longer than one year. In a related study,²⁷ an analysis of over 600,000 new admissions to psychiatric beds between April 2014 and March 2016 showed that the discharge rate within 360 days was 85.7%. Referring to both studies, it can be seen that even today, hospitalization on public assistance tends to result in longer hospital stays than hospitalization paid for by other healthcare funding sources.

3. Familial background of prolonged hospitalization on public assistance

In this study, we found that in the mid-1950s, hospitalization in psychiatric wards for medical assistance under the Public Assistance Act was more likely to result in prolonged hospitalization than hospitalization on social insurance. What caused this phenomenon? One of

the most likely causes is that the families of patients hospitalized on public assistance, due to economic factors, lacked the ability to provide nursing care and oversight by family members, relatives, and attendants, and this family vulnerability made it difficult for mentally ill patients to live at home. On the other hand, in the case of hospitalization for public assistance, leaving aside consideration of the quality of care, 24-hour care/medical services are provided, and as discussed in the next section, no out-of-pocket medical expenses are charged to the patient's family; hence the benefits for the family of the patient's long-term hospitalization are significant. In other words, for families who bear the actual burden of care, and especially for economically deprived households that are eligible to receive public assistance, the availability of hospitalization for family members paid for by public funding may induce long-term hospitalization.

It should be noted that since the 1960s, the provisions of the Public Assistance Act regulating "household separation" (division of a household into two for tax or other administrative reasons while the household members continue to live together) have been frequently revised to expand the application of medical assistance for hospitalization in psychiatric hospitals

to include patients other than those from needy households. However, in 1986, for example, while there were 30,520 cases of household separation in households receiving public assistance, only 1,220, or 4.0%, were classified as adaptations necessitated by "mentally ill patients, etc.", and only 6.5% were for long-term hospitalization and hospitalization at public expense combined -- which is not a large proportion of the whole.²⁸

The hospitalization of mentally ill persons paid for by public assistance may have played a role in encouraging prolonged hospitalization because it frees the family from the physical, economic, and psychological burdens of care. This is consistent with the results of Kono et al.,¹⁹ who cited "family acceptance problems" as the most common direct reason for prolonged hospitalization, and Ikebuchi et al.,²⁹ who found that family factors were high in several clusters as a cause preventing discharge support.

The phenomenon of longer length of stay in hospitalization covered by public assistance can also be viewed from the opposite perspective: shorter length of stay in hospitalization on social insurance. As shown in column (5) of Table 3, when controlling for the greatest number of confounding factors for patients with schizophrenia, other sources of hospitalization funding were

on average 5 to 10 months longer than social insurance. In other words, the length of stay for hospitalization on social insurance tended to be the shortest among all funding sources.

Then as now in most cases of hospitalization for schizophrenia, the patients are either temporarily unemployed or had never held a job. It can be therefore assumed that the majority of medical payments under social insurance were made by family members, not by the patient. The validity of this assumption is supported by the fact that in the inpatient data sets only two of the 133 patients (1.5%) who were hospitalized with social insurance had no guardian. (By comparison, 57 (7%) of the 808 patients in the inpatient data sets used for the main analysis of this study are listed as having no guardian.)

Although it's necessary to consider the possibility that the circumstances of patients' families covered by social insurance may differ considerably, depending on whether they are covered by cooperative health insurance or covered by the national health insurance plan, it is reasonable to assume that their socioeconomic conditions are more favorable to accommodation of family member patients upon their discharge from hospital than those of households receiving public assistance. In the 1950s,

when community mental health resources such as day care, night care, and outreach were almost non-existent, households eligible for public assistance were thought to lack the capacity to provide care due to economic hardship. In such a situation, the family's acceptance of the patient's return was thought to be as important as the effectiveness of treatment for the success or failure of discharge.

The above suggests that there was a particular concern that discharging a mentally disabled person from the hospital would lead to an increased burden of care and financial burden on needy households, which may have prompted the avoidance of discharge and prolonged hospitalization. As seen in Table 6, this inference is supported by the fact that a patient's hospitalization on public assistance tended to be prolonged, although not to a statistically significant degree, when the guardian was a parent, spouse, or sibling compared to when there was no guardian or the guardian was not a relative. In cases where there was no guardian or the guardian was not a relative, discharge from the hospital may have been easier in the absence of opposition to discharge from family members or relatives. On the other hand, however, the absence of kin could also be assumed to make discharge more difficult due to a need to secure a

place to live, which might lead to a longer stay in the hospital. The reasons for these apparent discrepancies in interpretation remain unclarified.

4. Institutional background of prolonged public assistance hospitalization

In addition to the family background, the institutional characteristics of hospitalization on public assistance and social insurance are also important to consider in the results of this analysis. First, under the Mental Health Act of the time, family members had the responsibility under law to be guardians, and the system placed considerable importance on the wishes of family members when admitting and discharging patients. Medical assistance under the Public Assistance Act was generally granted after the patient was admitted with the consent of the family members to whom guardianship of the patient was assigned.²² This combination of (the family's) "consent admission" and (public) medical assistance gave economically needy families receiving public assistance strong powers as duty-bound guardians to have patients admitted and discharged. This institutional factor may have induced longer hospitalization in consent admission or medical assistance cases than in other categories of hospitalization.

Second, as already mentioned, in most cases of hospitalization on public assistance, there was no out-of-pocket cost to the patient's household, whereas in hospitalization on social insurance at that time, there was no out-of-pocket cost for the insured individual, but the insured's family was required to pay 50% of the cost of medical treatment. Therefore, for needy households who were eligible for public assistance, prolonged hospitalization of patients greatly reduced not only the burden of care but also the economic burden (costs) compared to care at home; this may also have been a strong incentive for prolonged hospitalization. On the other hand, in the case of hospitalization on social insurance, since most of the hospitalized patients are thought to be in the category of insured family members, the 50 percent co-payment may well have been an incentive for early discharge from hospital.

Thirdly, especially in 1956, when the survey used for this analysis was conducted, in cases where, due to severe prefectural budget restraints on funding for compulsory hospitalization for treatment, patients could not be hospitalized although normally they would have been subjected to compulsory hospitalization for treatment, public assistance funds to cover part of the costs were allowed to

be repurposed (by Joint Notification of the Director-General of the Social Affairs Bureau and the Director-General of the Public Health Bureau of the Ministry of Health and Welfare: October 25, 1952. It is thought, therefore, that in some cases patients who would normally have been hospitalized on public assistance because of their symptoms were classified instead as eligible for compulsory hospitalization for treatment and for this reason remained hospitalized longer.

Fourth, 1956 was a difficult year for hospital management to make a profit from reimbursements for pharmacotherapy because the previous year (1955) chlorpromazine, which had just been discovered, was included in the standard drug price list for the first time. These circumstances may have strengthened hospitals' incentives to admit for long-term hospitalization those patients with stable financial resources such as public assistance benefits.

It is important to note that institutional features similar to those for consent admission, especially under the Mental Health Act, have not changed significantly even today. For example, the phrase "family members, etc." is still used in the administrative procedures of hospitalization for medical care and protection, and

hospitalization on public assistance does not require copayment (by patients or guardians) of a share of medical expenses, whereas hospitalization on social insurance does require copayments. In other words, the institutional features of the combination of consent admission and public assistance have been inherited by the current system with the combining of public assistance funding with hospitalization for medical care and protection.

A look at legal systems in advanced developed countries overseas shows that it is uncommon for family members to have the right to decide on involuntary hospitalization. For example, in countries such as Germany, Sweden, Italy, and Israel, family members and relatives are not recognized as applicants for involuntary hospitalization of the mentally ill: in most countries, physicians apply and the judiciary decides whether or not the application is approved.³⁰ This means that the system does not directly reflect the wishes of family members in the decision of admission and discharge; it operates on different institutional premises from the system of admission and discharge in Japan.

Considering Japan's legally based tolerance for involuntary hospitalization and regulatory provisions for copayment of medical

expenses, there are certain grounds for concluding that there was a relationship between the system of hospitalization and long-term hospitalization in Japan in 1956, and that this relationship has continued to the present.

5. Length of stay for hospitalization on public assistance in general hospital wards and tuberculosis hospital wards

In this section, we examine whether the tendency toward longer hospital stays for hospitalization on public assistance has historically been observed in general hospital wards other than psychiatric wards and in tuberculosis wards. In a previous study, Nakajima,³⁰ for example, examined the length of stay of patients discharged from all departments except psychiatry, dentistry, and radiology of Kyoto Prefectural University of Medicine Hospital in 1956, and analyzed the results by source of funding for medical services. The median length of stay was found to be 26.9 days for social insurance patients, 15.9 days for their family members, 75.2 days for public assistance patients, 14.7 days for self-pay patients, and 25.8 days for others, with public assistance patients having the longest stays.

Nagura et al.³¹ conducted a survey from 1962 to 1967 on 1,933 hospitalized patients (excluding patients with acute diseases and trauma who recovered in

three to five days and tuberculosis patients) at 21 large and small hospitals in the Kyoto-Osaka area, and also examined the length of stay by type of medical insurance. They found that the percentage of patients who were hospitalized for more than three months was higher in patients with public assistance and day laborers' health insurance, with the largest percentage 50%, higher than in patients with other employee insurance and national health insurance plans.

In addition, referring to the aforementioned "Cumulative Percentage of Discharged Patients by Payment Method, Specified Injuries and Diseases, and Length of Stay" in the Patient Survey,²⁵ the less-than-one-year discharge rate was 97.4% for all hospitalized patients including mentally ill patients in 1960, compared to 77.5% under the Public Assistance Act. In 1970, the mean rate of discharge within one year was 67.4% for all tuberculosis patients, compared to 58.3% for those on public assistance.

Based on the above previous studies and the Patient Survey, it can be said that medical assistance hospitalization under the Public Assistance Act tends to result in longer hospital stays than social insurance hospitalization not only in psychiatric but also in other general hospital and tuberculosis wards.

6. Length of stay on funding for compulsory hospitalization for treatment and self-pay hospitalization

Next, we examine the relationship between the length of stay in hospital and funding for compulsory hospitalization for treatment and self-pay hospitalization in psychiatric beds. First, in the 1960s it seems that regulations affecting funding for compulsory hospitalization for treatment and discharge may have been responsible for the lengthening of hospital stays. At that time, Article 40 of the Mental Health Act said only that “the director of a mental hospital that has committed a mentally disordered person pursuant to the provisions of Article 29 [compulsory hospitalization for treatment] may discharge the mentally disordered person with the permission of the prefectural governor if the director no longer finds a need to continue the hospitalization in light of the mentally disordered person’s symptoms”. A provision to systematically facilitate discharge was absent, as pointed out by Otani Fujio, an influential bureaucrat in the Ministry of Health and Welfare in the 1960s, who argued that Article 40 should be revised to permit prompt lifting of compulsory measures.³²

In other words, compulsory hospitalization for treatment status made it very difficult for patients to be

discharged from the hospital, and it is thought that this led directly to a tendency for stays in the hospital to lengthen. In addition, in the 1950s, the prefectural budgets for compulsory hospitalization under the Mental Health Act were insufficient, and only patients with especially serious medical conditions were hospitalized. As the length of stay in the present-day compulsory hospitalization system is known to be shorter, this itself indicates that the tendency toward prolonged hospitalization was due to institutional factors.

Second, with regard to the payment of medical costs at one’s own expense, the survey was conducted before universal health insurance came into effect in 1961, and since a certain number of people were still uninsured at that time, it is likely that some of these uninsured people had no choice but to be hospitalized at their own expense. On the other hand, back in those days, it was not only the uninsured who were hospitalized in psychiatric hospitals at their own expense. It is reasonable to think many well-off people hospitalized family members and relatives of theirs in this more anonymous manner because in those days prejudice against mental illness was very strong. In the present analysis, we did not observe a robust trend toward longer or shorter hospital stays (compared to social

insurance) for schizophrenia, bipolar disorder, or epilepsy. It should be noted, however, that one of the reasons is presumably the small number of individual records pertaining to patients admitted at their own expense. There were no cases of self-pay hospitalization without guardians; thus almost all hospitalization costs were paid by family members or relatives.

7. Significance of the results of this study

The mainstream historical evaluation of Japanese psychiatry as a whole has regarded home-care confinement as the prototype and “treats the mentally ill as requiring isolation to protect the public rather than medical treatment, whose responsibility falls on the individual”.² Frequent criticisms of the system as failing to establish national public hospitals state that this is the result of “the negligence of the state in consistently failing to assume public responsibility for 80 years of psychiatric history”.³³ According to these views, in Japan, “psychiatry [...] was more focused on ‘public safety’ than on providing treatment and care for the mentally ill”³⁴ and “private psychiatric hospitals have been established as a medical industry without fulfilling public responsibility”.⁵

Based on the results of our study, however, we find that the trend toward

long-term hospitalization in psychiatric hospitals financed by medical assistance under the public assistance system had already begun in the mid-1950s. Based additionally on the results of previous studies on trends in long-term hospitalization of psychiatric patients after 1960,^{14, 15, 16} we may infer that the trend of these patients financed by medical assistance was a consistent phenomenon in the postwar Japan public assistance system from the 1950s to the 1980s. In addition, an earlier study by us (Ando, Goto) found that among postwar psychiatric hospitalizations, the number of patients admitted to psychiatric hospitals on medical assistance under the Public Assistance Act remained consistently high.²¹ In other words, although it has not received much attention, medical assistance under the Public Assistance Act has played a significant role in hospitalization for the mentally ill in postwar Japan, and the results of our study support this. Though it is beyond the scope of this study to evaluate the entire history of psychiatry in Japan, further examination is necessary.

8. Limitations of this study

Our study has several limitations. The first limitation affects the interpretation of the results of analysis. In the discussion based on the results of the regression analysis, we argued that

economic hardship of the patient's family and the psychiatric system allowing "consent admission" (by the family) underlay the relationship between prolonged hospitalization and medical assistance hospitalization under the Public Assistance Act. In this study, however, we did not directly analyze the impact of family economic deprivation and consent admission. However, in the regression analysis, confounding factors such as personal and family attributes at the time of hospitalization and the hospital that admitted the patient were controlled for as much as possible.

As mentioned earlier, the average length of stay for schizophrenia in the inpatient data sets was 24.3 months, but according to the list of institutions in the Report, there were 17 out of 60 institutions (about 28%) that had been established for less than 24.3 months at the time of the survey. Patients admitted to these newer hospitals inevitably had shorter lengths of stay, which may have introduced a bias toward underestimation in the examination of length of stay by source of care.

The second limitation is in the representativeness of the sample. Since only three illnesses, schizophrenia, epilepsy, and bipolar disorder, were included in this study, and neurosis and other psychoses were excluded, the

relationship between the source of funding for medical services and the length of hospital stay in the case of excluded mental illnesses is unclear. In addition, although the survey covered all of Japan (all 301 hospitals where more than 50% of the licensed beds are psychiatric beds), only one-fifth of the hospitals were selected at the time of the survey. In the case of patients with schizophrenia, 800 patients were randomly selected from a total of 6,344 patients (selection rate: 12.6%). Therefore, it is possible that the sample was biased in the selection process. However, as there were no systematic factors that impaired the representativeness of the sample in either the sampling method used at the time of the survey or the sampling method used in this study, the results can be considered to have respectable reliability.

The third limitation is due to the time restrictions of the survey. The individual data sets used in this study come from a survey conducted in 1956, and the results of the analysis of these individual data sets cannot be interpreted in the same way as today's data sets. However, the purpose of this study was not to directly extrapolate its significance to the present day, but to examine the historical role that hospitalization for medical assistance under the Public Assistance Act played

in the rapid increase and prolongation of psychiatric hospitalization that occurred in the latter half of the 20th century. Therefore, the fact that we were able to use individual data sets from a survey conducted in 1956, shortly after the new Public Assistance Act of 1950 went into effect, enhances rather than diminishes the value of this study. In addition, given that the institutional procedures for psychiatric hospitalization under the Public Assistance Act have not changed significantly to the present day, and its framework has been maintained, the results of this study, which observed a robust relationship between the source of funding for medical services and the length of hospital stay even 60 years ago, have significant contemporary implications. Of course, examination of the relationship between the source of funding for medical services and the length of stay in present-day psychiatric beds is a major academic and policy issue for the future, and the results and implications of this study should be re-examined in new surveys and studies.

Conclusion

This study analyzed the relationship between the source of funding for medical services and the length of stay in hospital for the mentally ill in 1956, using individual data sets from the Statistical Survey of Mentally

Disordered Inpatients conducted by the Ministry of Health and Welfare. These records are kept by the National Center of Neurology and Psychiatry (NCNP). We found that in 1956, soon after the new Public Assistance Act came into effect, the length of stays for medical assistance hospitalization under the Public Assistance Act became significantly longer than for hospitalization on social insurance, and that the length of stay was similar to that of compulsory hospitalization for treatment under the Mental Health Act. Under the Public Assistance Act, prolonged public assistance hospitalization occurred when the guardian was a parent, spouse, or sibling, suggesting that the hospitalization-related needs of the guardian family may underlie the observed prolongation of hospitalization under the Public Assistance Act.

This study presents important analytical findings for examining the question of how Japanese psychiatric care's characteristic large-scale and long-term hospitalization has been historically shaped. Although an ever greater variety of studies and discussions have examined postwar psychiatric hospitalization, little research has been done on the role played by medical assistance under the Public Assistance Act: this is a topic that requires further examination.

In addition, the combination of consent admission under the Mental Health Act and medical assistance under the Public Assistance Act that this study draws attention to remains operative even today, taking the form of a combination of hospitalization for medical assistance with (limited involuntary) hospitalization for medical care and protection. The findings of this study focusing on hospitalization under the Public Assistance Act and the family and institutional attributes underlying them not only contribute to the study of the history of psychiatric policy, but also have policy implications for modern psychiatric policy and the future advancement of community mental healthcare.

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Disclosure Statement

The authors declare no conflict of interest.

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Figure Average length of stay (inpatients and discharged patients, unit: month) by source of funding for medical services (at time of admission)

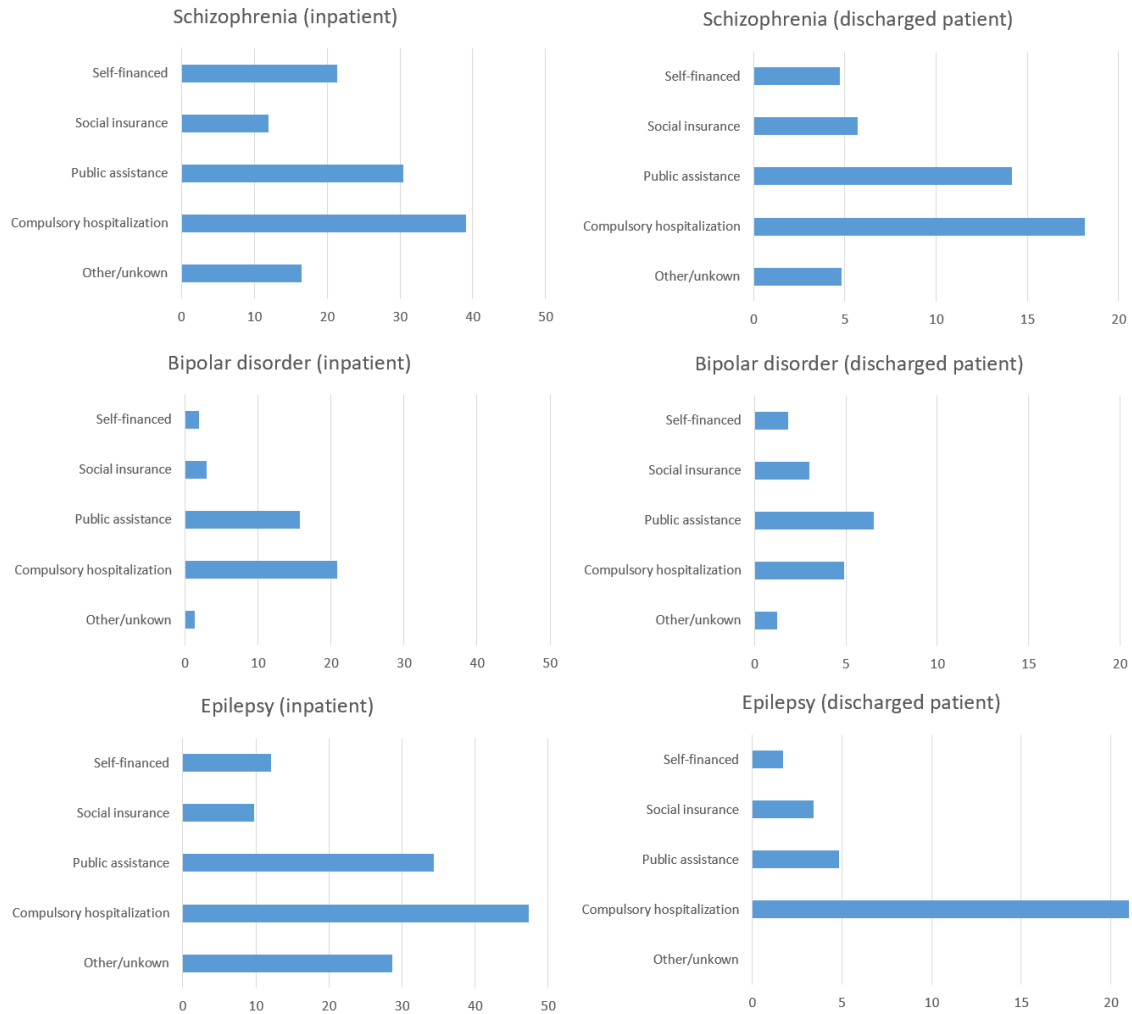


Table 1 Number of patients by disorder in inpatient data set after sampling

The type of payment for psychiatric hospitalization	Inpatient (first hospitalization)				Discharged patient			
	Schizo- phrenia	Bipolar disorder	Epilepsy	Total	Schizo- phrenia	Bipolar disorder	Epilepsy	Total
Self-financed	43	43	14	100	232	125	28	385
Social insurance	133	73	60	266	551	268	66	885
Public assistance (all)	115	30	68	213	95	29	17	141
Public assistance (partial)	69	22	33	124	88	24	10	122
Compulsory hospitalization (all)	31	5	19	55	11	10	4	25
Compulsory hospitalization (partial)	17	2	11	30	12	1	1	14
Other	5	2	6	13	11	2	1	14
Unknown	4	1	2	7	0	2	0	2
Total	417	178	213	808	1,000	461	127	1,588

Table 2: Funding sources for medical costs at time of hospitalization, at time of survey, and at time of discharge

Number of inpatients by the type of payment	At the time of survey							Total	% of patients with the same type of payment as at hospitalization
	Self- financed	Social insurance	Public assistance (all)	Public assistance (partial)	Compulsory hospitalization (all)	Compulsory hospitalization (partial)	Other		
At the time of hospitalization									
Self-financed	75	4	3	13	2	1	2	100	75.0
Social insurance	3	248	5	8	0	2	0	266	93.2
Public assistance (all)	0	2	189	21	0	1	0	213	88.7
Public assistance (partial)	1	6	6	111	0	0	0	124	89.5
Compulsory hospitalization (all)	1	0	3	2	49	0	0	55	89.1
Compulsory hospitalization (partial)	0	0	0	1	3	26	0	30	86.7
Other	0	1	2	1	0	0	9	13	69.2
Unknown	0	0	1	3	1	0	2	7	-
Total	80	261	209	160	55	30	13	808	87.5

Number of discharged patients by the type of payment	At the time of discharge							Total	% of patients with the same type of payment as at hospitalization
	Self- financed	Social insurance	Public assistance (all)	Public assistance (partial)	Compulsory hospitalization (all)	Compulsory hospitalization (partial)	Other		
At the time of hospitalization									
Self-financed	340	21	2	14	3	5	0	385	88.3
Social insurance	8	861	4	8	3	1	0	885	97.3
Public assistance (all)	1	0	129	10	0	1	0	141	91.5
Public assistance (partial)	2	3	5	112	0	0	0	122	91.8
Compulsory hospitalization (all)	0	0	1	1	23	0	0	25	92.0
Compulsory hospitalization (partial)	0	1	0	0	2	11	0	14	78.6
Other	1	2	0	0	0	0	11	14	78.6
Unknown	0	0	0	0	0	0	2	2	-
Total	352	888	141	145	31	18	13	1,588	93.6

Table 3 Results of analysis of inpatient data set samples

	Dependent variable: length of stay (months)				
	(1)	(2)	(3)	(4)	(5)
Panel A: schizophrenia					
Payment-type dummy (reference category: social insurance)					
Self-financed	9.42* (5.35)	9.63* (5.08)	8.82* (4.69)	9.25* (4.71)	5.61 (4.58)
Public assistance	18.55*** (2.44)	12.00*** (2.70)	10.67*** (2.77)	10.54*** (2.98)	8.74*** (3.17)
Compulsory hospitalization	27.12*** (4.40)	20.46*** (4.50)	16.96*** (4.19)	17.40*** (4.37)	9.59* (5.35)
Other	4.50 (10.39)	2.02 (8.12)	6.60 (7.14)	6.06 (7.06)	7.62 (6.41)
Sample size	417	416	413	388	388
Adjusted R-squared	0.12	0.20	0.25	0.25	0.37
Panel B: bipolar disorder					
Payment-type dummy (reference category: social insurance)					
Self-financed	-1.01 (0.73)	-2.40** (1.15)	-2.52* (1.29)	-2.86** (1.44)	-1.79 (2.52)
Public assistance	12.79*** (2.85)	13.01*** (3.30)	9.86*** (2.74)	10.06*** (3.05)	9.87*** (3.45)
Compulsory hospitalization	17.90 (13.82)	15.47 (13.75)	18.78 (13.81)	19.17 (14.02)	-7.92 (11.42)
Other	-1.63* (0.94)	-2.08 (2.64)	0.93 (2.34)	0.48 (2.23)	-1.34 (7.98)
Sample size	178	178	177	166	166
Adjusted R-squared	0.18	0.17	0.25	0.26	0.26
Panel C: epilepsy					
Payment-type dummy (reference category: social insurance)					
Self-financed	2.37 (5.23)	3.81 (5.32)	0.01 (5.53)	-0.91 (5.54)	-4.26 (9.64)
Public assistance	24.70*** (3.09)	20.44*** (3.35)	19.05*** (3.72)	20.10*** (4.21)	16.97*** (5.22)
Compulsory hospitalization	37.63*** (6.41)	33.81*** (6.39)	27.08*** (6.33)	33.13*** (7.15)	18.06 (12.72)
Other	18.93 (14.06)	19.49 (15.50)	22.41* (13.07)	31.07 (23.25)	33.49 (23.89)
Sample size	213	213	213	175	175
Adjusted R-squared	0.21	0.24	0.31	0.38	0.50
Covariates					
Personal attributes	No	Yes	Yes	Yes	Yes
Family characteristics	No	No	Yes	Yes	Yes
Pre-hospitalization onset period	No	No	No	Yes	Yes
Medical facility fixed effects	No	No	No	No	Yes

Note: Regarding covariates, personal attributes are a total of 21 variables (18 of which are dummy variables) for gender and age, as well as "patient's condition" "level of need for careful nursing," and "condition requiring assistance and guidance in daily life," which were listed on the original questionnaire. Family characteristics are dummy variables for the type of guardian (parent, spouse, child, sibling, other, etc.). Pre-hospitalization onset period (months) is the number of months between onset and hospitalization. The medical facility fixed effect is captured by the medical facility dummy variable. Standard errors in parentheses are robust to heteroskedasticity: *** p<0.01, **<0.05, *<0.1

Table 4 Results of analysis of discharge data set samples

	Dependent variable: length of stay (months)			
	(1)	(2)	(3)	(4)
Panel A: schizophrenia				
Payment-type dummy (reference category: social insurance)				
Self-financed	-0.97 (0.66)	-1.49** (0.65)	-1.61** (0.63)	-2.14*** (0.71)
Public assistance	8.47*** (1.20)	7.22*** (1.16)	7.56*** (1.21)	7.26*** (1.23)
Compulsory hospitalization	12.47*** (3.96)	10.68*** (3.65)	9.59*** (3.16)	8.26** (3.46)
Other	-0.89 (2.03)	-1.76 (2.38)	-2.32 (2.66)	-1.08 (2.79)
Sample size	1,000	1,000	966	966
Adjusted R-squared	0.11	0.15	0.19	0.21
Panel B: bipolar disorder				
Payment-type dummy (reference category: social insurance)				
Self-financed	-1.16*** (0.27)	-1.30*** (0.29)	-1.20*** (0.29)	-0.93** (0.39)
Public assistance	3.57*** (0.75)	3.37*** (0.74)	3.59*** (0.77)	3.71*** (0.72)
Compulsory hospitalization	1.93 (1.36)	1.33 (1.10)	0.73 (0.96)	-0.64 (1.08)
Other	-1.73** (0.69)	-1.20* (0.65)	-1.02 (0.83)	-4.61** (2.29)
Sample size	461	461	448	448
Adjusted R-squared	0.14	0.17	0.17	0.25
Panel C: epilepsy				
Payment-type dummy (reference category: social insurance)				
Self-financed	-1.71** (0.68)	-1.55** (0.77)	-1.77 (1.09)	-5.39 (4.05)
Public assistance	1.41 (1.00)	0.66 (1.24)	0.44 (1.49)	-2.64 (3.36)
Compulsory hospitalization	17.59* (10.23)	18.50 (11.33)	19.82 (13.51)	14.73 (15.09)
Other	-3.41*** (0.50)	-1.35 (1.97)	-0.03 (2.52)	6.59 (6.70)
Sample size	126	126	110	110
Adjusted R-squared	0.26	0.28	0.22	-0.10
Covariates				
Personal attributes	No	Yes	Yes	Yes
Pre-hospitalization onset period	No	No	Yes	Yes
Medical facility fixed effects	No	No	No	Yes

Note: See the notes to Table 3 for the covariates personal attributes, duration of pre-hospitalization onset period (months), and medical facility fixed effect. Note that we do not control for family characteristics because the questionnaire for discharged patients does not include family information on guardians and marriage. Standard errors robust to heteroskedasticity in parentheses: *** p<0.01, **<0.05, *<0.1

Table 5: Number of patients by guardian in inpatient data set samples

	Hospitalization without Medical Assistance	Hospitalization with Medical Assistance	Total
No guardian	5	23	28
With guardian (parent)	128	73	201
With guardian (spouse)	37	21	58
With guardian (child)	4	9	13
With guardian (sibling)	48	46	94
With guardian (other)	10	11	21
Total	232	183	415

Table 6: Results of analysis of parents' attributes in inpatient data set samples

	Dependent variable: length of stay (months)		
	(1)	(2)	(3)
Payment-type dummy (reference category: social insurance)			
Self-financed	8.62*	9.10*	5.06
	(5.00)	(4.66)	(4.63)
Public assistance	8.12	0.84	-2.86
	(9.48)	(9.71)	(9.28)
Compulsory hospitalization	25.33***	17.10***	8.64
	(4.39)	(4.39)	(5.51)
Other	7.15	7.19	8.70
	(10.87)	(7.22)	(6.50)
Gurdian dummy (reference category: no gurdian and with gurdian (other))			
With guardian (parent)	-7.97	0.54	-2.32
	(8.06)	(8.50)	(7.58)
With guardian (spouse)	-16.68**	-11.14	-7.92
	(8.14)	(9.79)	(8.97)
With guardian (child)	-11.06	-16.60	-10.79
	(11.40)	(17.95)	(14.47)
With guardian (other)	-0.37	0.59	0.81
	(8.89)	(8.99)	(8.21)
Interaction of public-assistance dummy and guardian dummy			
Public assistance × with guardian (parent)	13.34	11.60	13.83
	(10.05)	(10.10)	(9.73)
Public assistance × with guardian (spouse)	16.85	15.82	15.14
	(10.77)	(11.07)	(10.96)
Public assistance × with guardian (child)	9.73	-0.93	-10.35
	(14.00)	(18.34)	(15.96)
Public assistance × with guardian (sibling)	3.54	6.58	9.91
	(10.88)	(10.77)	(10.03)
Covaraites			
Personal attributes	No	Yes	Yes
Family characteristics	Yes	Yes	Yes
Pre-hospitalization onset period	No	Yes	Yes
Medical facility fixed effects	No	No	Yes
Sample size	414	388	388
Adjusted R-squared	0.121	0.256	0.370

Note : See note in Table 3 for covariates. Covariates for family characteristics are used in all regression equations (1)~(3) as guardian dummy variables. Standard errors in parentheses are robust to heteroskedasticity : *** p<0.01, **<0.05, *<0.1