Analysis of Health Care Region for Psychiatric Care Based on the National Database

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Abstract

In order to construct an appropriate health care region for the psychiatric medicine, we have analyzed the care received area of psychiatric patients of Fukuoka prefecture based on the National database that the Ministry of Health, Labour and Welfare has constructed using all the claim data.

We have used 56,743 psychiatric cases from 1,288,273 claim data of July 2010 of Fukuoka prefecture. After converting the insurer's code and institution code to health care region number (corresponding to patients living area and institution's location, respectively), we have analyzed the care received area of patients stratified by in- and out-patient services and age category. In addition, the care received area was analyzed for psychiatric emergency care and home care, respectively.

The present analysis clarified that the both in- and out-patient psychiatric care were provided within the health care region in most of the cases. However, the psychiatric emergency care was not self-completed.

In order to construct an appropriate health care plan for psychiatric care, the national database is the important information.

Key words: National database, Psychiatric medicine, psychiatric wards, Regional health care plan, Psychiatric emergency care

❖Introduction

There is a critic that the Japanese psychiatric care system heavily depends on in-hospital care and lacks the viewpoint of community care. In fact, compared with other countries, our system can be characterized by too many beds of psychiatric care as shown in Table 1[1].

After 1960s, the western countries, i.e., France and UK have reduced their psychiatric beds and expanded the capacity of community care. Especially they have organized a variety of social rehabilitation programs for the mentally handicapped under the concept of social inclusion. For example, the French government sets the "sector" as a geographic area of integrated psychiatric care that corresponds to 100,000 to 150,000 populations[2]. Within this area, there is a core psychiatric hospital and integrated services from care to social participation program, i.e., education and job opportunity, are organized.

It is important to recognize that there have been several model cases of community psychiatric care in Japan and that Ministry of Health, Labour and Welfare (MHLW) has implemented a series of registrations in order to improve the situation. Despite these efforts, it has been rather difficult to realize an appropriate system. The social prejudice must be one of the major reasons. Another reason is a shortage of information about the current situation of psychiatric care. The year 2013 is the year of 6th revision of Regional Health Care Plan (RHCP) that must be established by each prefectural government every 5 years. The 6th RHCP must describe how to realize the community based psychiatric care system. This requires a concrete data about the actual situation of psychiatric care.

In 2008, MHLW has started to gather all health

care insurance claim data and to construct a database, so called National Database (NDB)[3]. Using this database, we have tried to describe the actual situation of psychiatric care in Fukuoka prefecture, Japan.

❖Material and method

For this analysis, we have used the one month data (October, 2010) of Fukuoka prefecture. This dataset contains the claim data of national health insurance, health insurance for the aged and social aid. Total number of claims was 3,000,000. The ID number was hashed twice in order to make it anonymous. In order to increase the information security level, age was categorized for each 5 years and insures' number were re-coded into the Health Care Region (HCR) number. The diagnosis coded by ICD was re-coded as DPC number (i.e., F03* as 170030; Disorder of emotion). In this way it became impossible to identify a particular individual.

Using this dataset, we have conducted in- and outflow analyses of the patients for each diagnosis (represented by base DPC [Note 3]) for each of 13 HCRs of Fukuoka. As the recent health policy puts more stress on the community care, we have calculated the percentage of psychiatric patients who received home care services.

In order to assure the information security, cells of result tables under 10 cases are masked. Study approval was obtained from the Institutional Review Boards and the Ethics Committee of the University of Occupation-

Table 1　International comparison of psychiatric care beds per 1,000 population (2011)

Australia	Austria	Belgium	Canada	Denmark	Finland	France	Germany	Italy	Japan	Netherlands	New Zealand	Norway	Spain	Sweden	Switzerland	United Kingdom	United States	OECD Average
0.4	0.8	1.8	0.4	0.6	0.7	0.9	1.2	0.1	2.7	1.4	0.2	0.8	0.4	0.5	0.9	0.5	0.3	0.7

Source: OECD (2012)

Table 2　Self-coverage rate of psychiatric care according to the patient's HCR (In-patient)

Patient's HCR	Facility's HCR													Others	Total
	1_Fukuoka_Itoshima	2_Kasuya	3_Munakata	4_Chikushi	5_Asakura	6_Kurume	7_Yame_Chikugo	8_Ariake	9_Iizuka	10_Kurate	11_Tagawa	12_Kitakyushu	13_Keichiku		
1_Fukuoka_Itoshima	2529 80.6%	127 4.0%	83 2.6%	189 6.0%	22 0.7%	40 1.3%					16 0.5%	12 0.4%	0.0%	97 3.1%	3136 100.0%
2_Kasuya	99 18.6%	325 61.1%	42 7.9%	28 5.3%										13 2.4%	532 100.0%
3_Munakata	30 6.7%	35 7.8%	254 56.3%									107 23.7%			451 100.0%
4_Chikushi	132 22.8%	10 1.7%		337 58.1%	17 2.9%	31 5.3%								31 5.3%	580 100.0%
5_Asakura				19 10.2%	93 50.0%	46 24.7%									186 100.0%
6_Kurume	20 1.4%		10 0.7%	24 1.7%	33 2.3%	1050 74.7%	57 4.1%	67 4.8%						136 9.7%	1406 100.0%
7_Yame_Chikugo						91 22.1%	263 63.8%	36 8.7%							412 100.0%
8_Ariake				12 0.9%		109 8.4%	26 2.0%	1040 80.3%						95 7.3%	1295 100.0%
9_Iizuka	18 2.5%								487 68.6%	28 3.9%	131 18.5%	12 1.7%			710 100.0%
10_Nogata_Kurate		22 5.2%							48 11.4%	258 61.1%	43 10.2%	27 6.4%			422 100.0%
11_Tagawa									32 4.4%	28 3.8%	629 86.3%	11 1.5%	13 1.8%		729 100.0%
12_Kitakyushu	37 1.3%		62 2.2%			13 0.5%			10 0.4%	31 1.1%	51 1.8%	2311 82.0%	59 2.1%	222 7.9%	2818 100.0%
13_Keichiku											29 5.5%	73 13.8%	380 71.8%	34 6.4%	529 100.0%
Total	2898 21.9%	518 3.9%	497 3.8%	639 4.8%	177 1.3%	1397 10.6%	356 2.7%	1168 8.8%	598 4.5%	358 2.7%	917 6.9%	2562 19.4%	460 3.5%	661 5.0%	13206 100.0%

al and Environmental Health. Given the anonymous nature of the data collection process, informed consent was not required.

❖Results

Table 2 shows the results of in- and out-flow analyses for in-patient services. The highest self-completion rate was observed in the Tagawa HCR (86.3%), followed by Kitakyushu HCR (82.0%), Fukuoka-Itoshima HCR (80.6%) and Ariake HCR (80.3%). The lowest self-completion rate was observed in the Asakura HCR (50.0%), but if the patients hospitalized in the adjacent HCR (Kurume HCR: 24.7%, Chikushi HCR: 10.2%), the rate was over 80%. This situation is similar for other HCRs.

Table 3 shows the results of in- and out-flow analyses for out-patient services. The highest self-completion rate was observed in the Kitakyushu HCR (89.2%), followed by Fukuoka-Itoshima HCR (91.0%), Iizuka HCR (81.9%), Kurume HCR (8.4%). The rates of these

HCRs were higher than those of in-patient for each HCR. Contrary, Kasuya HCR (38.2%) and Nogata-Kurate HCR (44.0%) showed lower rate. These rates were lower than those of in-patient for both HCRs.

Table 4 shows the self-completion rate of each HCR stratified by age category. Generally the rates of aged patients (more than 65 years old) were higher than those of younger generation. The HCRs that showed the in-patient self-completion rate lower than 50% were Yama-Chikugo, Kasuya, Nogata-Kurate, and Asakura. The Kasuya and Nogata-Kurate HCR showed under 50% rate for out-patient care also.

Considering the limitation of available resources, the wide HCRs (w-HCRs) are set for the psychiatric emergency care; Fukuoka (Fukuoka-Itoshima, Kasuya, Munakata, Chikushi), Chikugo (Asakura, Kurume, Yame-chikugo, Ariake), Chikuho (Iizuka, Tagawa, Nogata-Kurate), Kitakyushu (Kitakyushu, Keichiku). Table 5 showed the self-completion rate of psychiatric emergency care. Although the Kitakyushu wide HCR is over-bed area for the psychiatric in-patient services,

Table 3　Self-coverage rate of psychiatric care according to the patient's HCR (Out-patient)

Patient's HCR	1_Fukuoka_Itoshima	2_Kasuya	3_Munakata	4_Chikushi	5_Asakura	6_Kurume	7_Yame_Chikugo	8_Ariake	9_Iizuka	10_Nogata	11_Tagawa	12_Kitakyushu	13_Keichiku	Others	Total
1_Fukuoka_Itoshima	12337 91.0%	159 1.2%	121 0.9%	476 3.5%	18 0.1%	92 0.7%	10 0.1%	12 0.1%	23 0.2%		17 0.1%	45 0.3%		233 1.7%	13556 100.0%
2_Kasuya	779 39.9%	747 38.2%	219 11.2%	124 6.3%					14 0.7%			13 0.7%		31 1.6%	1954 100.0%
3_Munakata	178 12.4%	53 3.7%	978 67.9%	15 1.0%								177 12.3%		16 1.1%	1440 100.0%
4_Chikushi	877 26.1%	14 0.4%	10 0.3%	2193 65.2%	38 1.1%	132 3.9%		12 0.4%						60 1.8%	3361 100.0%
5_Asakura	38 4.9%			89 11.6%	415 54.0%	182 23.7%								32 4.2%	769 100.0%
6_Kurume	132 2.7%			93 1.9%	104 2.1%	3949 81.4%	101 2.1%	155 3.2%						305 6.3%	4853 100.0%
7_Yame_Chikugo	24 1.6%					549 36.8%	796 53.3%	71 4.8%						34 2.3%	1493 100.0%
8_Ariake	40 1.4%			15 0.5%		378 13.3%	65 2.3%	2183 76.8%						154 5.4%	2844 100.0%
9_Iizuka	90 4.4%	35 1.7%	11 0.5%	18 0.9%		10 0.5%			1683 81.9%	21 1.0%	122 5.9%	36 1.8%		20 1.0%	2055 100.0%
10_Nogata_Kurate	55 4.2%	12 0.9%	55 4.2%						288 22.0%	575 44.0%	37 2.8%	261 20.0%		18 1.4%	1307 100.0%
11_Tagawa	36 2.0%								333 18.2%	48 2.6%	1280 70.1%	81 4.4%	19 1.0%	12 0.7%	1827 100.0%
12_Kitakyushu	157 1.5%	11 0.1%	104 1.0%			25 0.2%			41 0.4%	84 0.8%	58 0.5%	9586 89.2%	63 0.6%	595 5.5%	10746 100.0%
13_Keichiku	27 1.5%								13 0.7%		28 1.5%	301 16.4%	1287 70.3%	164 9.0%	1831 100.0%
Total	14770 30.7%	1043 2.2%	1518 3.2%	3047 6.3%	592 1.2%	5335 11.1%	987 2.1%	2440 5.1%	2418 5.0%	747 1.6%	1562 3.3%	10513 21.9%	1390 2.9%	1674 3.5%	48036 100.0%

Table 4   Self-coverage rate of psychiatric care according to the patient's age and HCRs for in- and out-patient care

(%)

Patient's HCR	Facility's HCR												
	1_Fukuoka-Itoshima	2_Kasuya	3_Munakata	4_Chikushi	5_Asakura	6_Kurume	7_Yame-Chikugo	8_Ariake	9_Iizuka	10_Nogata-Kurate	11_Tagawa	12_Kitakyushu	13_Keichiku
Out-Patient													
less than 65 y.o	89.8	33.4	62.5	61.1	45.8	78.8	47.7	72.0	77.3	43.5	63.7	87.2	68.9
65 y.o and more	93.4	46.1	75.1	71.5	64.1	85.3	61.9	84.4	88.6	44.7	79.3	91.7	72.2
In-Patient													
less than 65 y.o	76.4	53.0	54.7	56.2	43.6	71.2	62.4	75.2	66.8	57.9	81.8	81.5	70.2
65 y.o and more	85.3	70.4	58.1	60.3	60.9	78.8	65.4	85.9	70.9	65.1	91.1	82.6	73.4

Table 5   Self-completion rate of psychiatric emergency care according to HCRs

Patient's HCR			Facility's HCR							
		Wide HCR	Chikugo	Fukuoka			Chikuho	Kitakyushu	Others	
Wide HCR	HCR	HCR	Kurume	Fukuoka-Itoshima	Chikushi	Munakata	Iizuka	Kitakyushu	Others	Total
Chikugo	Ariake	Psychiatric	100.0							100.0
		Others	100.0							
	Yame-Chikugo	Psychiatric	91.7	8.3						100.0
		Others	100.0							
	Asakura	Psychiatric	60.0		40.0					100.0
		Others	100.0							
	Kurume	Psychiatric	93.9						6.1	100.0
		Others	100.0							
Fukuoka	Fukuoka-Itoshima	Psychiatric	5.0	55.0	22.5	15.0			2.5	100.0
		Others	1.8	94.7	0.6				2.9	
	Chikushi	Psychiatric	20.0	40.0	40.0					100.0
		Others		100.0						
	Kasuya	Psychiatric		50.0		50.0				100.0
		Others		100.0						
	Munakata	Psychiatric		13.3		86.7				100.0
		Others		75.0			25.0			
Chikuho	Iizuka	Psychiatric	100.0							100.0
		Others		0.9			99.1			
	Tagawa	Psychiatric					100.0			100.0
		Others		6.9			93.1			
	Nogata-Kurate	Psychiatric				100.0				100.0
		Others					95.7	4.3		
Kitakyushu	Kitakyushu	Psychiatric				37.5		50.0	12.5	100.0
		Others						96.7	3.3	
	Keichiku	Psychiatric								
		Others						100.0		
Total		Psychiatric	46.8	20.5	8.3	17.9	0.6	2.6	3.2	100.0
		Others	16.2	37.2	0.2		28.6	16.4	1.4	100.0

Table 6   Percentage of psychiatric patients who receice home care services accrording to the HCRs

Patient's HCR	Total of patients receiving home care	Total psychiatric out-pacient	Percentagel of patients receiving home care
1_Fukuoka_Itoshima	299	13,556	2.2%
2_Kasuya	54	1,954	2.8%
3_Munakata	12	1,440	0.8%
4_Chikushi	94	3,361	2.8%
6_Kurume	120	4,853	2.5%
7_Yame_Chikugo	21	1,493	1.4%
8_Ariake	50	2,844	1.8%
9_Iizuka	14	2,055	0.7%
10_Nogata_Kurate	16	1,307	1.2%
11_Tagawa	72	1,827	3.9%
12_Kitakyushu	170	10,746	1.6%
13_Keichiku	69	1,831	3.8%
Total	991	47,267	2.1%

this area accepted the only 50% of emergency cases. It is very important to know that 12.5% of psychiatric emergency cases of this area were hospitalized in the other prefectures.

Table 6 showed the rate of patients who received the home care services in each HCR. The highest rate was observed in Keichiku HCR (3.1%) and the lowest was in Iizuka HCR (0.7%).

❖Discussion

There were several limitations for this study. The first is the coding problem of major diagnosis. Usually one claim contains several diagnoses. The reimbursement rule requires for the clinicians to indicate the main diagnosis. But this rule is not always respected and furthermore it is very common that one claim contains more than one main diagnoses. In this study, as we have used the top listed main diagnosis for the analysis, the patients who had psychiatric disorders as co-morbidities and complications were not included into the analysis. Therefore, there might be a selection bias problem. The second problem is the possible bias caused by availability of geographical information. In the case of national health insurance, health insurance scheme for the aged and medical service covered by social assistance, the insurer code indicates the residence area of the patients, so that it is possible to allocate HCR for the each patient. However, in the case of company managed insurance scheme (i.e., Sony, Panasonic, Toyota, etc), the insurers number is unique for all employee.

Thus it is not possible to estimate the patients belonging HCR. Considering the above mentioned limitations, we will discuss the implication for the health policy making.

Historically, the psychiatric care system has been organized at the prefectural level. However, the psychiatric patients occupy 25% of total in-patients, and the number of patents who use the out-patient mental care is also increasing. It is clear that the psychiatric disorder is one of the common diseases in the current Japanese society. Considering this situation, the related organizations such as the Japanese College of Psychiatry and the Japan Association of Psychiatric Hospital, requested for the government to re-consider the health care region for the psychiatric care. The Ministry of Health, Labour and Welfare (MHLW) accepted it and to modify the related law. According to this decision, each prefecture government was required to establish the regional psychiatric care plan for each HCR.

The results of our study have suggested the appropriateness of this decision, that is, the most of HCR showed high self-completion rate for the psychiatric care. However, there was a big problem to be solved for the psychiatric emergency. A psychiatric emergency case often needs both physical and mental emergency treatment. It requires the ER services of general hospital where psychiatric doctors working. However, it is reported that the number of psychiatrists has been decreasing in the acute care hospitals[4]. One of the reasons of this decrease is that the psychiatrists do not receive appropriate respect within the acute somatic care hospi-

tals[5]. This situation must be changed. The enough economic evaluation for the ER activity by psychiatrist within the official tariff table must be one of the effective solutions, for example. According to the ageing of society, the number of emergency cases with dementia is also increasing in Japan. This situation requires more psychiatrists working for the acute care somatic hospitals as our previous literature has indicated[6].

The ageing of society and development of pharmaceutical treatments for psychiatric disorder have an effect to increase the psychiatric patients who receive care at their home. The current study indicated that the level of home care for the psychiatric patients was still low in Fukuoka prefecture. This situation must be ameliorated.

In order to realize the "normalization" for psychiatric patients, it is quite important to organize the seamless care services from acute in-patient care to home care. This requires an objective data by which we can evaluate the current situation. The National Database must be one of the important data sources for this purpose. It is expected for MHLW to advance its IT strategy and program in more pragmatic way like ResDAC

in USA[7].

❖Literatures

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