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Study on Occurrence of Accrued Receivables Related to Medical Expenses: Initial Analysis Using Accrued Receivable Data of Matsue Seikyo General Hospital

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Abstract

Objectives: This study aimed to clarify the status of occurrence of accrued receivables, according to types of medical insurance, in order to explain who are responsible for the accrued receivables related to medical expenses.

Methods: Using accrued receivable data of FY2016 (for practices from April 2016 to March 2017) obtained from Matsue Seikyo General Hospital, Japan quantitative analysis was carried out for occurrence of accrued receivables, based on by hospital visiting patterns and insurance types.

Results: The incidence rate of the accrued receivables in all consultations at the hospital was 1.06%. The incidence rate was the lowest in patients with the Union Health Insurance. On the other hand, the incidence rate of the accrued receivables in patients with Japan Health Insurance Association administered health insurance scheme, which is another employment-based health insurance, was three times higher than that of Union Health Insurance, and also higher than those of the National Health Insurance and Advanced Elderly Medical Service. The incidence rate of public assistance was the highest at Seikyo General Hospital, including hospital admission; and it was characterized by a high incidence of the accrued receivables for expenses for diapers and hospital gowns, during their stay in the hospital.

Conclusion: To promote mitigation of the accrued receivable issue, it is suggested to be recognized as a social issue, especially from the standpoints of medical, economic, and hospital management problems, while paying particular attention to patients' social background, such as occupation, area and age.

Keywords: Medical expenses; Accrued receivables; Medical insurance; Needy person

tourists, which leads to a governmental survey on the actual situation [1]. Under a schedule to summarize the data into a report as at March 2018, the government is in the state of being aware of the issue but not having fully unveiled the actual situation [1]. According to the Current Situation Survey on International Deployment of Medical Services in Fiscal 2017, summarized by the Japan Hospital Association [2], 43.7% of the medical institutions mentioned unpaid medical expenses as an issue in receiving foreign patients, demonstrating that about 40% of medical institutions have recognized the problem.

At the same time, the government also surveyed the actual situation of accrued receivables at medical institutes in 2008 [3] which was based on the viewpoint of hospital management, such as, clarifying the management problems caused by accrued receivables and the means of collecting bills. Results suggested that there were many patients who could not afford the medical expenses. Combined with the recently surfacing poverty and disparity issues, the data implied the need to recognize the issue of accrued receivables, not as a mere economic or hospital management problem but also as a social issue to be worked out, in order to solve the issue of poverty.

However, the background of the unpaid medical expenses has been mentioned to be not only the inability of patients to pay medical bills but also includes patients' refusal to pay the bills due to their discontent with the medical services and/or distrust of the medical institutions. These reactions were heightened by the patients' awareness of their rights, as well as their malicious delinquent behaviours of having no intention to pay for their medical expenses [4]. These indications are true, and certainly worth listening to, but it are also true that a significant number such patients cannot afford the medical expenses. Thus, the unpaid bills are treated as accrued receivables in terms of hospital accounting.

A medical service being available to any person who needs them is one of the most important goals to be achieved in modern society. Systems should be steadily improved so that no one is barred from using medical services, when in need of them, so that every patient can pay his or her share of the medical expenses when visiting a medical institution, and leaving no accrued receivable, when visiting a medical institute. As an analysis based on such a viewpoint, the Council For Four Hospital Organizations (members: the Japan Hospital

Introduction

Non-Payment of the patient's partial share of his or her medical expenses after visiting a medical institution has become an issue. Accrued receivable of the patient's partial share at medical institutions have been a problem for a long time and are recently attracting attention, as an issue involving inbound

Association, All Japan Hospital Association, Association of Japanese Healthcare Corporations, and Japan Psychiatric Hospitals Association) surveyed the actual situation of accrued receivables in its member medical institutes [5,6]. The survey also asked for causes of the occurrences and the top cause was financial difficulties, followed by being uninsured, and trouble in medical care in this order. Attributes of accrued receivable cases and countermeasures therefore, need to be investigated based on such results, but empirical studies on accrued receivables at medical institutions have been insufficient so far.

Having recognized these problems, the author investigated the background of accrued receivables at medical institutions, analysed the situations and characteristics of unpaid medical bills, and discusses problems to be solved to reduce accrued receivables in this study.

Methods

Overview of the hospital surveyed

Matsue Seikyo General Hospital was founded in 1960, as a hospital with 25 beds but which has developed into a General hospital of the town, together with the community for more than half a century. Being a hospital of a cooperative society, it has a motto of non-discriminatory and equal provision of medical services. In April 2015, it opened a medical care ward, increasing the number of beds to 315. It provides advanced large-scale care-mix services for all phases, including emergency, acute, convalescent, and chronic phases. As an emergency hospital, it bears secondary medical service as one of the five medical emergency centres (designated emergency hospitals) and receives 1,300 ambulance transported patients a year, which accounts for about 20% of all patients transported on an ambulance in Matsue City.

Matsue Seikyo General Hospital also, has the largest dialysis room in the area and treats the third largest number of patients with dialysis out of the nine available medical facilities. The hospital is one of the few facilities that have beds for local general care and recovery rehabilitation. Many patients are referred from other medical institutes, and the percentage of patient's recovery is high. Since July 1, 2017, the hospital has been providing a free or low-cost medical service program as a Class 2 social welfare service. In the six months from July 2017 to December 2017, 21 patients consulted, 23 applied for the program, and the total sum of exemptions was 1,121,752 yen.

Analytical methods

Data analysed

The data analysed in this study were the accrued receivables at Matsue Seikyo General Hospital in the fiscal year 2016 (expenses of medical services in April 2016 to end March 2017 that should be paid by the patients but were not paid as of the end of April 2017). In this study, 932 cases were investigated (including 571 (61.27%) at Fureai Clinic, 27 (2.98%) at the outpatient dialysis department of the hospital, 134 (14.29%) at the emergency department of the hospital, and 200 (21.46%)

from inpatients of the hospital). The analysed data about the accrued receivables were provided by Matsue Seikyo General Hospital. In concrete terms, the data of the accrued receivables were statistically analysed separately for each consultation form in Matsue Seikyo General Hospital (inpatients, outpatient dialysis department and emergency department) and Fureai Clinic.

Ethical considerations

This study was approved by the Ethic Review Board of Matsue Seikyo General Hospital.

Items analysed

In the analysis, it included the evaluated relationship of accrued receivables with the kind of health insurance scheme operated by the patients. The data were compared among each insurance type in each consultation form. In the data attributes, items with many factors were categorized as follows. (a) as attributes, gender was categorized into male and female; while (b) age was classified into groups of 0-14 years, 15-39 years, 40-64 years, 65-74 years and over 75 years; (c) Health insurance was classified into the insurance of the Japan Health Insurance Association (contractor and family, hereinafter referred to as "JHIA insurance"), insurance of Society-Managed Health Insurance or of a benefit society (policy holder and family, hereinafter referred to as "Social insurance"), national health insurance or national health insurance after retirement (hereinafter referred to as "NHI"), other insurance (mandatory vehicle liability insurance, workmen's accident compensation insurance, etc.), own expenses, certificates of qualification, livelihood protection, and advanced elderly medical service systems; (d) The departments (Surgery, Internal medicine, Neurology, Orthopaedic surgery, Rehabilitation, Gastroenterology, Urology, Nephrology and Dialysis, Cardiology, Neurosurgery, Otolaryngology, Dermatology, Paediatrics, Gynaecology, Breast oncology, Ophthalmology, Gynaecology and Psychiatry) were categorized into the group of Surgery, Orthopaedic surgery, and Neurosurgery, the group of Internal medicine and Neurology, the group of Paediatrics, Breast oncology and Gynaecology, and the group of other departments. Other than the afore-mentioned categorized items, the data of the unpaid sums were compared between the policy holders and families; between consultation forms (Fureai Clinic or Matsue Seikyo General Hospital (inpatients, outpatient dialysis department and emergency department)), and among the co-payment rates (0, 10%, 20%, 30%, 100%, 200%).

Analytical methods

The number of cases and their respective percentage were transcribed for each of the categorized data of gender, age, insurance, co-payment rate, department group, and unpaid sums. The median [interquartile range] was determined for unpaid sums, which is continuous data. To analyse the characteristics of patients who had not paid the bill, the rate of occurrence of non-payment for each insurance kind was calculated and compared between the group of patients of Matsue Seikyo General Hospital (inpatients, outpatient dialysis department and emergency department) and patients of Fureai Clinic. To examine the difference in distribution between the

groups, the Mann Whitney U test was conducted for continuous data, and Fisher's exact test was used for categorical data. When it was difficult to use Fisher's exact test, Pearson's Chi-squared test was applied. All the tests were conducted as two-sided with a significance level of $p < 0.05$. In the analyses, missing data was not complemented. No outlier or extremum was excluded; instead all values were used for the analyses.

The analytical software used was SPSS for Windows Ver.22.

Results

Data of all accrued receivable cases

Out of the totally analysed 932 cases of Matsue Seikyo General Hospital, 571 (61.27%) occurred at Fureai Clinic, 161 cases (17.27%) were from outpatients of Matsue Seikyo General Hospital, including 134 (14.38%) and 27 (2.90%) in the emergency and outpatient dialysis departments, respectively, and 200 (21.46%) were from inpatients.

Males accounted for 447 cases (47.96%), and females constituted 485 (52.04%). The number of cases for each age group of 0-14 years, 15-39 years, 40-64 years, 65-74 years and over 75 years was 13 (1.39%), 102 (10.94%), 333 (35.73%), 186 (19.96%) and 298 (31.97%), respectively. In 624 cases (79.09%), the debtor was the policy holder of health insurance; and the debtor was a family member in 165 cases (20.91%). The cases in the group of Surgery, Orthopaedic surgery, and Neurosurgery, group of Internal medicine and Neurology, group of Paediatrics, Breast oncology and Gynaecology and group of other departments were 178 (19.10%), 437 (46.89%), 49 (5.26%) and 268 (28.76%), respectively.

Regarding the kind of health insurance, Society insurance, JHIA insurance, NHI, the advanced elderly medical service system, and other insurance (mandatory vehicle liability insurance, workmen's accident compensation insurance, etc.) accounted for 58 (6.26%), 248 (26.69%), 238 (25.62%), 243 (26.16%), and 22 (2.37%), respectively. Cases of accrued receivables from those under livelihood protection, having certificates of qualification, and paying the bills by their own expense were 80 (8.61%), 2 (0.22%), and 38 (4.09%), respectively. For each co-payment rate groups of 0, 10%, 20%, 30%, 100%, and 200%, the number of cases was 62 (6.65%), 318 (34.12%), 37 (3.97%), 41 (44.31%), 73 (7.83%), and 29 (11%), respectively. The mean and standard deviation of the unpaid sum was $12,058 \pm 24,536$ yen. (The median [interquartile range] was 3,110 [940, 12216].)

Situations of accrued receivable occurrence for each kind of health insurance

For each kind of health insurance, differences in the occurrence of accrued receivable cases among consultation forms are shown in Table 1. As a whole, the occurrence of

unpaid bills was 882/83,247, or 1.06% of all patients did not pay their bills. The occurrence for each kind of health insurance was 49/9,029 (0.54%) in Society insurance, 248/16,940 (1.46%) in JHIA insurance, 238/19,207 (1.24%) in NHI, 243/27,617 (0.88%) in the advanced elderly medical service system, 80/4,306 (1.86%) in the group of livelihood protection, 2/7 (28.57%) in the group of certificate of qualification, and 22/1,232 (1.79%) in the mandatory vehicle liability insurance or workmen's accident compensation insurance.

Excluding the group of certificates of qualification, which was very small, the occurrence was the highest in the group of livelihood protection (1.86%), followed by the mandatory vehicle liability insurance or workmen's accident compensation insurance (1.79%), JHIA insurance (1.46%), NHI (1.24%), the advanced elderly medical service system (0.88%), and Society insurance (0.54%). Only the groups of Society insurance (0.54) and the advanced elderly medical service system (0.88) showed occurrences below the overall rate of accrued receivable occurrence (1.06%). This was likely because Society insurance is a health insurance system whose subscribers are mainly employees of big businesses and those of the advanced elderly medical service system can easily pay their co-payment because their co-payment rates are low. On the other hand, of the health insurance systems to which employees subscribe, JHIA insurance is insurance subscribed to by employees of small and medium-sized businesses and showed higher occurrence of accrued receivable cases compared to Society insurance and NHI. Between Society insurance to which employees of big businesses subscribe and JHIA insurance to which employees of small and medium-sized businesses subscribe, the occurrence of accrued receivables differed by about three-fold. Another characteristic was low occurrence of accrued receivables in NHI.

Regarding differences in the occurrence among consultation forms, the occurrence was higher in Matsue Seikyo General Hospital, which included inpatients and the emergency department, compared to Fureai Clinic in all kinds of health insurance excluding the group of certificates of qualification, which had very few analytical targets. This was likely attributable to higher amounts per bill charged to inpatients compared to outpatients, and that the emergency department receives many emergency patients also at night. Patients visiting the hospital at night pay deposits because their medical expenses cannot be calculated at night. It was likely that medical expenses remained unpaid when the actually charged sum exceeded the deposit. The occurrence of unpaid medical bills in Matsue Seikyo General Hospital was the highest by the group receiving livelihood protection with 7.36%. In such a case, the unpaid bills included charges for diapers and patient gowns and characteristically embrace expenses other than the medical expenses paid by the public. Following the group of livelihood protection, the occurrence in NHI was high with 3.74%. This was likely because the elderly account for a large proportion of the subscribers of NHI and many subscribers were hospitalized. The occurrence (3.07%) in JHIA insurance was also higher than the total average.

The occurrence of accrued receivables in JHIA insurance was also high at Fureai Clinic with 1.18%.

Table 1 For each kind of health insurance, differences in the occurrence of accrued receivable cases among consultation forms

	All patients who received medical services			The Occurrence			Incidence			P-Value
	All Patients	Seiko General Hospital	Fureai Clinic	All Patients	Seiko General Hospital	Fureai Clinic	All Patients	Seiko General Hospital	Fureai Clinic	
Society Insurance	9029	1290	7,739	49	16	33	0.54%	1.24%	0.43%	**0.001
JHIA Insurance	16,940	2,570	14,370	248	79	169	1.46%	3.07%	1.18%	**0.000
The group of livelihood protection	4,306	829	3477	80	61	19	1.86%	7.36%	0.55%	**0.000
NHI	19,207	2,570	16,637	238	96	142	1.24%	3.74%	0.85%	**0.000
Elderly medical service system	27,617	6693	20,924	243	86	157	0.88%	1.28%	0.75%	**0.000
The group of certificate of qualification	7	5	2	2	0	2	28.57%	0.00%	100.00%	*0.048
The mandatory vehicle liability insurance or workmen's accident compensation insurance	1,232	474	758	22	7	15	1.79%	1.48%	1.98%	0.66
All patients	83,247	15,076	68,171	882	345	537	1.06%	2.29%	0.79%	0.00

Note: *p<0.05, **p<0.01

Discussion

Patients who did not pay their medical bills accounted for 1.06% of all patients who received medical services. Suggestions from the situations at which accrued receivables related to medical expenses occurred can be summarized as below. The occurrence of accrued receivables was low among those who used the advanced elderly medical service system likely because their co-payment rates are low and they could easily pay the bills. Therefore, increasing the co-payment rates of the latter-stage elderly is suspected to cause them to refrain them from visiting a hospital and increase unpaid medical bills. It is thus important to take deliberate action in discussing increasing the co-payment rates for the advanced elderly medical service system.

Next, the occurrence of accrued receivables was suspected to be higher in NHI, to which persons engaged in independent businesses, retirees, part-time workers, the unemployed, etc. subscribe, compared to employees' insurance, which covers salaried workers. However, such a trend was not observed as shown in Table 1. Actually, the occurrence of accrued receivables was low in Society insurance but was higher in JHIA insurance, which is employee insurance, compared to NHI. This was possibly because NHI includes persons who refrain from using medical services due to financial reasons, etc., and thus the occurrence of accrued receivables due to financial reason was low.

Relevant to this, a big difference was found in the occurrence of accrued receivables between Society insurance and JHIA insurance, which are both employee insurance systems. The

occurrence was low in Society insurance but was high in JHIA insurance. The average income per contractor was 2.07 million yen in Society insurance, 1.42 million yen in JHIA insurance and 0.86 million in NHI 6), and the difference in employment status and income was suggested to relate to nonpayment of medical bills.

Conclusion

In order to mitigate the issue of accrued receivables, it was suggested necessary and important to recognize the issue of accrued receivables not as a mere issue related to medicine, the economy or hospital management but as an issue that originates from changes in socioeconomic structures that surround employment and family and is to be solved by the entire society.

Finally, future topics are mentioned. There are many topics remaining. In this study, provide able data were supplied from a hospital and analyzed, and thus the investigation was limited to analysis for each kind of health insurance. It is a future topic to obtain patients' data other than the kind of health insurance and continue analysis.

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