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Health Care Cost Reduction By Controlling The Number Of Hospital Outpatients In Japan

Atsushi Ito
JIYOGAOKA SANNO College

Abstract

The Japanese government provides universal health coverage and allows all citizens free access to medical services. Because of this, many patients tend to visit hospitals rather than clinics, thus wasting health care resources. This study analyzed the effects of controlling the number of hospital outpatients on reductions in outpatient health care costs. I estimated the reduction achieved if 80% of outpatients are treated in clinics. The results offer two major findings. 1) Though 72% of outpatients were visiting outpatient clinics, the hospital outpatient health care cost accounted for approximately 40% of total outpatient health care costs; the health care cost per 10 thousand outpatients was 1.8 times higher in hospitals than in clinics. 2) The estimated cost reduction if 80% of outpatients were treated in clinics was approximately 707.3 billion yen, accounting for 5% of total outpatient health care costs. If this is achieved, an additional approximately 368 thousand outpatients can be treated in clinics, and increases in health care costs can be slowed. Therefore, reducing the number of outpatients in hospitals can help make the allocation of health care resources more efficient.

Keywords: outpatient, hospital care, clinic care, health care resource, outpatient health care cost, cost reduction

OBJECTIVES

The Japanese government provides universal health coverage and allows all citizens free access to medical services (1). Patients usually pay 30% of their medical expense. The patients' burden is kept below a certain limit by the high-cost medical care benefit system: if a patient's copayment exceeds the maximum due to the need for intensive treatment, the excess is paid by the government as high-cost medical care benefits. Therefore, Japanese citizens receive medical services at affordable costs.

The Japanese health care system is of a high standard, and almost all Japanese citizens are insured under universal health coverage (2). However, many patients tend to visit large hospitals rather than clinics, often for minor illnesses such as colds. This tendency leads to the overcrowding of outpatients in large hospitals. In addition, some patients visit multiple hospitals for the same illness (3). These patient behaviors increase the burden on hospitals. For example, outpatients in many local public hospitals must often wait for a long time before receiving medical treatment, and some patients visit emergency rooms at night for relatively mild illnesses. These problems are expected to cause serious issues such as physician burnout and the resultant closure of hospital departments (4). In fact, many hospitals are reported to have problems such as a shortage of physicians, department closures, revenue reduction, bankruptcy, and hospital closure (5). Moreover, the average per capita health care cost is higher in hospitals than in clinics because hospitals tend to provide more intense evaluation and treatment. As the number of outpatients visiting hospitals rather than clinics increases, per capita health care costs will also increase. To provide high-quality care for all citizens while

containing health care costs, an efficient allocation of health care resources is necessary. This study analyzed the effects of controlling the number of hospital outpatients on reductions in outpatient health care costs.

The general account tax revenue of the Japanese government totaled 54 trillion yen in 2014, but the national health care cost reached approximately 40 trillion yen, placing a financial burden on the government (6]. In addition, many local governments have a weak financial base because of the reduced tax revenue due to the increase in the aging population and the decline of the working age population, especially in cities. It is therefore essential to allocate health care resources efficiently while slowing the rate of increase in health care costs (7).

In 2014, Japan had approximately 8.6 thousand hospitals and approximately 100 thousand clinics; the number of clinics was 11.6 times higher than that of hospitals (8). As the Japanese population totals approximately 120 million, there is one clinic physician per 1,200 Japanese. One study reported that 80% of health problems in community-dwelling Japanese can be dealt with in primary care (9). Health care costs can thus be reduced by shifting outpatient care from hospitals to clinics. Yamada et al. evaluated the disease condition of 4,500 people in a district and reported that 85% of patients could be dealt with in primary care because their diseases were mostly chronic and non-life threatening (10). If this hypothesis is correct, the burden on hospital outpatient departments should be reduced by enhancing the capacity of outpatient care in clinics.

This study examined how shifting outpatient care from hospitals to clinics affected reductions in health care costs, focusing on the reduction of the burden on hospital outpatient departments and the efficient use of health care resources. In this study, the term "clinic" refers to general clinics and does not include dental clinics or dispensing pharmacies.

METHODS

First, I defined the variables used for the analysis of national outpatient health care costs: outpatient health care cost, number of outpatients, health care cost per 10 thousand outpatients, and ratio of outpatients treated in clinics to total outpatients. Second, I developed a model estimating the reduction of outpatient health care costs using the variables (11). Third, I calculated basic statistical values based on the latest version of the Health and Welfare Statistics in Japan ("National Health Care Cost 2012" and "Patient Survey 2012") issued by the Japanese Ministry of Health, Labour and Welfare. Then, I examined how shifting outpatient care from hospitals to clinics affected the reduction in national outpatient health care costs (8, 12, 13). In the estimation, only medical treatment costs out of overall national health care costs were used for the analysis; thus, dental treatment cost, pharmacy dispensing cost, hospital food and living costs, visiting care service cost, and long-term care cost were not included in the analysis. Finally, I use the results to discuss the feasibility of shifting outpatient care from hospitals to clinics to the extent that 80% of health problems are treated in clinics. I also discuss future challenges and prospects.

RESULTS

Model of outpatient health care cost reduction

First, I developed formulas for calculating outpatient health care cost, number of outpatients, health care cost per 10 thousand outpatients, and ratio of outpatients treated in clinics to total outpatients (i.e., ratio of clinic outpatients).

Total outpatient health care cost (TC) was calculated by formula 1), total number of outpatients (TN) by formula 2), health care cost per 10 thousand hospital outpatients (APC) by formula 3), health care cost per 10 thousand clinic outpatients (AHC) by formula 4), and ratio of clinic outpatients (α) by formula 5), as follows:

Total outpatient health care cost (TC) =
hospital outpatient health care cost (HC) + clinic outpatient health care cost (PC)……..1)

Total number of outpatients (TN) =
number of hospital patients (HN) + number of clinic outpatients (PN)……..2)

Health care cost per 10 thousand hospital outpatients (AHC)＝HC/HN……3)

Health care cost per 10 thousand clinic outpatients (AHC) = PC/PN……4)

Ratio of clinic outpatients (α)…… 5)

Health care in Japan is covered by social insurance. The annual budget is determined based on the Fee Schedule. Therefore, outpatient health care cost can be captured by a linear model. The total outpatient health care cost (TC) when outpatient care is shifted from hospitals to clinics (or from clinics to hospitals) is calculated by formula (6):

TC＝（1-α）TN・AHC＋αTN・APC……..6)

As it is known that the average health care cost is higher in hospitals than in clinics, formula 7) is added as a prerequisite:

AHC > APC……..7)

When α＝1, TC’ is calculated by formula 8):

TC’=TN・APC……..8)

When α＝0, TC’’ is calculated by formula 9).

TC’’=TN・AHC……..9)

Health care costs are compared between hospitals and clinics by formula 10) using formulas 8) and 9):

TC’’ －TC’＝TN・AHC－TN・APC……..10)

Formula 7) leads to the following:

AHC －APC≧0……11)

Formula 11 indicates that TC’ >TC”.
Thus, it is desirable to increase the value of α in order to reduce health care costs.

Estimation of outpatient health care cost reduction

Second, the number of outpatients, outpatient healthcare care cost, and health care cost per 10 thousand outpatients were calculated separately for hospitals and clinics (see Table 1). During the study period (2014), the total number of outpatients in Japan was 5,875 thousand. Among these, hospital outpatients totaled 1,642 thousand (28%) and clinic outpatients 4,233 thousand (72%). The ratio of the former to the latter was 3 to 7, indicating that approximately 70% were clinic outpatients. Meanwhile, Japan's outpatient health care cost totaled 13,770 billion yen. Of this, the health care cost of hospital outpatients totaled 5,642.4 billion yen (41%) and that of clinic outpatients 8,134.6 billion yen (59%). The ratio of the former to the latter was 4 to 6, indicating that the outpatient health care cost was 1.5 times higher in hospitals than in clinics.

Table 1 Basic statistics

Units: thousand people/billion yen		(%)
Total outpatient number	587.5	(100)
Hospital outpatient number	164.2	(28)
Clinic outpatient number	423.3	(72)
Total outpatient health care cost	137,700	(100)
Hospital outpatient health care cost	56,424	(41)
Clinic outpatient health care cost	81,346	(59)
Health care cost per 10 thousand outpatients	234	-
Health care cost per 10 thousand hospital outpatients	344	-
Health care cost per 10 thousand clinic outpatients	192	-

The health care cost per 10 thousand outpatients in Japan was 23.4 billion yen. The health care cost per 10 thousand outpatients in hospitals was 34.4 billion, while that in clinics was 19.2 billion yen; the former was 1.8 times higher than the latter.

Third, I estimated the reduction of the outpatient health care cost according to changes in the α value (see Table 2). In 2014, the number of hospital outpatients was 1,642 thousand (28%), while the number of clinic outpatients was 4,233 thousand (72%). If 80% of outpatients are treated in clinics, that represents 470 thousand outpatients, indicating that 470 thousand outpatients (8% of total outpatients) will be shifted from hospitals to clinics. Given that the baseline of the α value is 0.72, increasing the value of α from 0.72 to 0.8 leads to a reduction in outpatient health care costs from 13,770 billion yen to 13,069.7 billion yen; the reduction is 707.3 billion yen, accounting for approximately 5% of the total outpatient health care cost. If the value of α is increased to 0.9 (i.e., if 90% of outpatients are treated in clinics), the total outpatient health care cost will be 12,179.9 billion yen; the reduction is 1,400.8 billion yen, accounting for 10% of the total outpatient health care cost. If the value of α is increased to 1 (i.e., is 100% of outpatients are treated in clinics), the outpatient health care cost will be reduced to 11,290 billion; the reduction is 2,487 billion yen, accounting for 18% of the total outpatient health care cost.

Conversely, if the value of α is decreased from 0.72 to 0.7, the number of outpatients in clinics will decrease to 4,239 thousand (70%); the increased cost is 144.3 billion yen, accounting for 1% of the total outpatient health care cost. If the value of α is decreased to 0.6, the number of patients in clinics will decrease to 3,639 thousand; the increased cost is 916.9 billion yen,

accounting for 7% of the total outpatient health care cost. These findings demonstrated that shifting outpatient care from hospitals to clinics would contain health care costs.

Table 2 Estimation of outpatient health care cost reduction

α	PN（Thousands）	TC（Billion）	Reduction（Billion）	Reduction（%）
0	0	201,882	-64,112	（47）
0.1	59	192,984	-55,214	（40）
0.2	118	184,086	-46,316	（34）
0.3	176	175,188	-37,418	（27）
0.4	235	166,290	-28,520	（21）
0.5	294	157,391	-19,621	（14）
0.6	353	148,493	-10,723	（8）
0.7	411	139,595	-1,825	（1）
*0.72	423	137,700	0	（0）
0.8	470	130,697	7,073	（－5）
0.9	529	121,799	15,971	（－12）
1	588	112,900	24,870	（－18）

*** The baseline of ratio of clinic outpatients in 2014**

DISCUSSION

This study estimated how controlling the number of outpatients could reduce health care costs. The two major findings are as follows.

First, 72% of outpatients are visiting clinics, and their health care costs account for 40% of total outpatient health care costs. Health care cost per one outpatient is higher in hospitals than in clinics because examination and treatment tend to be more intense in hospitals. The health care cost per 10 thousand outpatients is 1.8 times higher in hospitals than in clinics. Increasing the number of hospital outpatients increases outpatient health care costs, thus wasting health care resources. Therefore, reducing the number of outpatients in hospitals is desirable in order to allocate health care resources more efficiently. Given that Japanese patients have free access to medical services under their universal health coverage, increasing the copayment for hospital outpatient care may enhance the efficiency of health care resource allocation.

Second, I estimated the reduction in outpatient health care costs if 80% of outpatients were treated in clinics. The reduction was estimated at approximately 707.3 billion yen, accounting for 5% of total outpatient health care costs. Were this reduction achieved, an additional 368 thousand outpatients could be treated in clinics and the increase in health care costs slowed. I then estimated the cost reduction if all outpatients were treated in clinics by introducing a gatekeeper system. The total outpatient health care cost was estimated at 11,290 billion yen and the cost reduction at 2,487 billion yen, accounting for 18% of the total health care cost. Achieving this reduction may require a system like the UK's general practitioner (GP) system, the patients of which have no direct access to hospitals (14). However, introducing such a strict system in Japan is unrealistic because there are great differences between the two countries in

terms of health culture, tax system, and social security system. A Japanese opinion survey reported that less than 10% of respondents would support a health care system like the UK's GP system (14). Therefore, introducing such a strict system in Japan would be difficult.

A study reported that 80% of health problems could be dealt with in primary care. It is therefore reasonable to expect that 80% of outpatients could be treated at clinics, while the remaining 20% would be treated in hospitals. Two major problems must be solved to achieve this goal.

The first problem is that Japanese clinic physicians are not of a quality that would enable them to treat a wide variety of diseases. According to Green et al. and Fukui et al., most outpatients had chronic non-life threatening diseases that did not require hospitalization and could thus be treated in clinics if the physicians were competent to treat a wide variety of common medical problems (15). However, unlike family physicians in the United States and GPs in the UK, most Japanese clinic physicians were not trained to be primary-care givers (16, 17). Most became clinic physicians after practicing in hospitals for a certain number of years as specialists after graduating from medical school; thus, they were originally specialists rather than generalists. Improving the quality of clinic physicians is therefore necessary if they are to treat a wide variety of health problems. To this end, a flexible cooperation system between clinic physicians such as a group practice system would be useful (18), perhaps by establishing "medical malls" to foster collaboration (19).

The second problem is the inconvenience of transportation. Patients' preference for hospitals appears to be related to the convenience of transportation, as many hospitals are located near transportation stations (20). Convenience of transportation is an important factor in clinics' ability to attract patients. The degree of information disclosure is another issue. Patients often have difficulty accessing information regarding the quality of care in clinics, such as medical services, critical pathways, treatment outcomes, physicians, and health care staff. This difference in information disclosure may be part of why many patients prefer to visit hospitals rather than clinics. Therefore, clinics need to disclose more information about their care.

CONCLUSIONS

This study estimated how shifting outpatient care from hospitals to clinics could reduce outpatient health care costs. The analysis yielded two major findings. 1) Though 72% of outpatients were visiting outpatient clinics, hospital outpatient health care costs accounted for approximately 40% of total outpatient health care costs. The health care cost per 10 thousand outpatients was 1.8 times higher in hospitals than in clinics. 2) If 80% of outpatients were treated in clinics, the estimated cost reduction would be approximately 707.3 billion yen, accounting for 5% of the total outpatient health care cost. If this were achieved, an additional approximately 368 thousand outpatients could be treated in clinics, and the increase in health care costs would be slowed. Therefore, reducing the number of outpatients in hospitals could enhance the efficiency of health care resource allocation. This study demonstrated that shifting outpatient care from hospitals to clinics can reduce the wastage of health care resources but could not offer specific action plans. Further research is required to support more detailed planning for the implementation of this study's findings.

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