

# Association between Facilities of First COVID-19 Diagnosis and Previous Outpatient Visits Based on a Claims Database Analysis

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## Background

- A general practitioner (GP) system is not available in Japan. During the COVID-19 pandemic, many patients with suspected COVID-19 were not accepted at many healthcare facilities, even at facilities they had previously visited and were considered by the patients to be “family doctors.” Meanwhile, some patients who had visited a healthcare facility frequently, seemed to be accepted [1]. This situation highlighted the need to consider a GP system.
- Going forward, people expect in the event of a future pandemic. Everyone should be accepted for testing and care that resembles a GP system. However, the discussion about this system has been limited to the provider side, such as its definition, requirements, and remuneration [2], but not to the demand side: whether it would be useful for patients in the future pandemic.
- Based on a claims database analysis, we investigated association between past visits to healthcare facilities and acceptance at healthcare facilities for COVID-19 diagnosis.

### References:

- a) Hotta. Problems Revealed by the Covid-19 Pandemic Concerning Medical Institution Management. Journal of business administration. 2023;100:243-256. (in Japanese) b) Aoki. [What are the expected effects of strengthening the family doctor function?] Igaku-shoin; Igakukai-Shinbun. 2023; 3539. (in Japanese)
- Ministry of Health, Labour and Welfare. Reference Material 1 for the committee on the provision of medical information, including general practitioner functions for the nation and patients. [Development of a system that enables family doctors to fulfill their functions] Available at: <https://www.mhlw.go.jp/content/10800000/001156133.pdf>

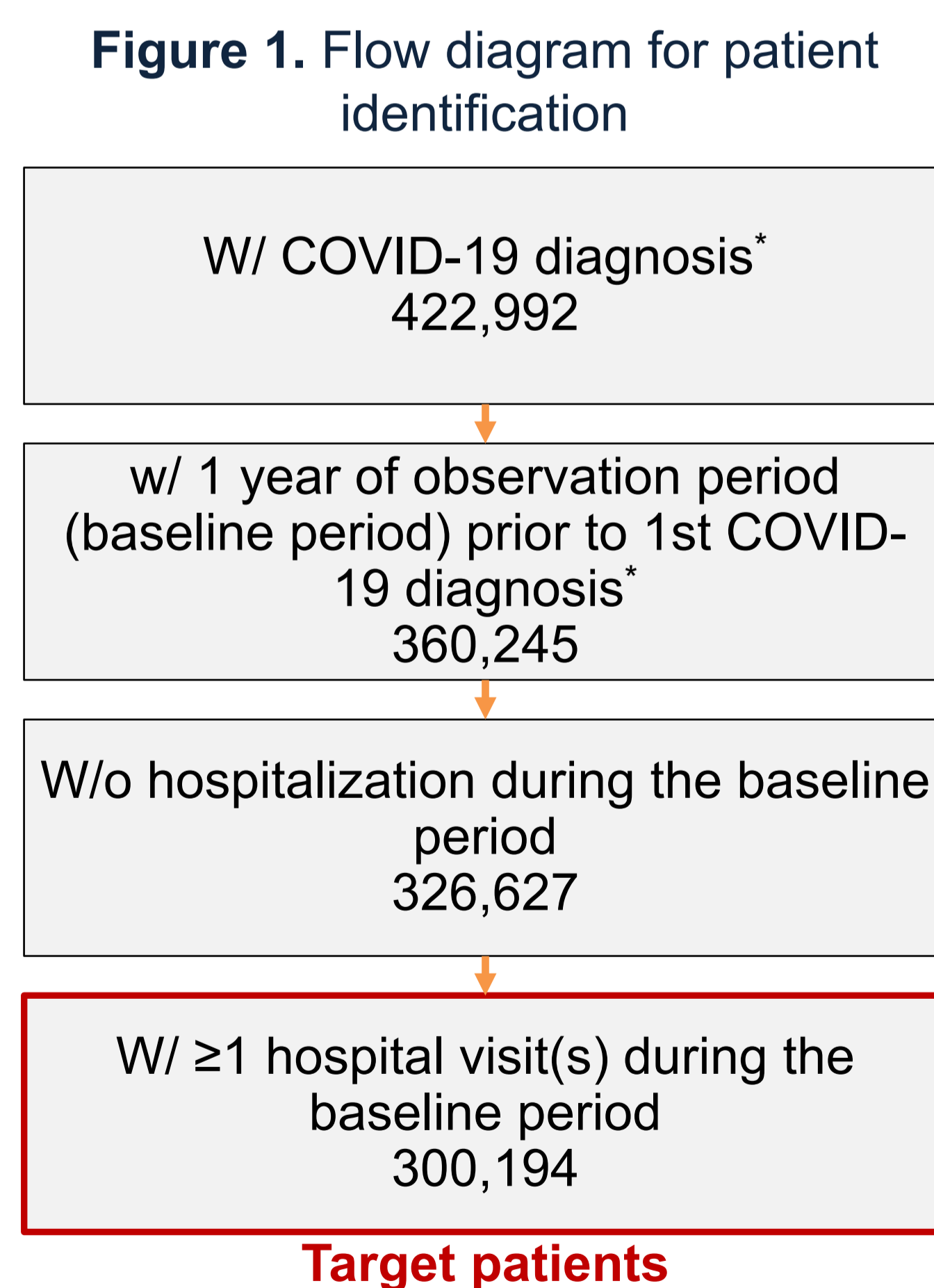
## Methods

### Study design and data source

- A claims-based cohort study using a Japanese health insurance claims database provided by DeSC Healthcare Inc (Tokyo, Japan)
- Data period: from April 2014 to January 2023

### Study population

- Patients who had a record of 1st COVID-19 diagnosis during the data period, had 1 year of observation period (defined as the baseline period) prior to the 1st diagnosis, had no hospitalization during the baseline period, and had at least one outpatient hospital visit(s) during the baseline period (Fig. 1)



Note: \*diagnosis represents definitive diagnosis. w/, with; w/o, without.

### Analysis

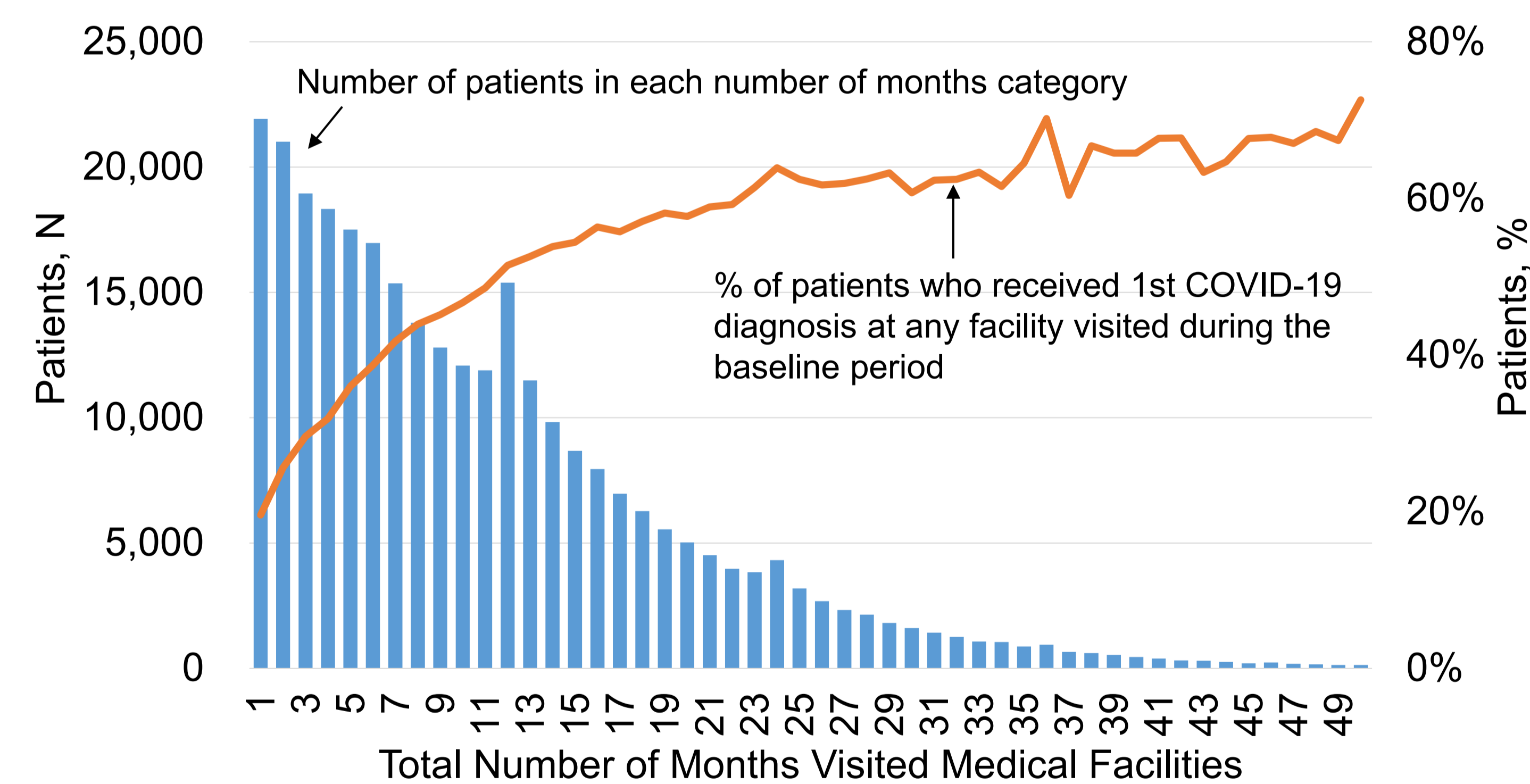
- Association between the facility of 1st COVID-19 diagnosis and previous outpatient visits was analyzed and considered the frequency of visits to the facilities and the size of the facilities.

## Results and Discussions

- The database included 422,992 patients with a COVID-19 diagnosis, of which 300,194 patients were identified for the analysis (Fig. 1). Of these patients, 167,975 (44.0%) received their 1st COVID-19 diagnosis at a facility visited during the baseline period.
- Patients with a higher volume of visits to healthcare facilities during the baseline period were more likely to receive their 1st COVID-19 diagnosis at one of the facilities visited during the baseline period. Nevertheless, 30%–40% of patients with ≥24 months of visits (as the total number of months to all facilities) during the baseline period did not receive their first COVID-19 diagnosis at one of the facilities visited during the baseline period (Fig. 2).
  - Patients who frequently visited medical facilities for their care would likely consider a doctor at one of the facilities to essentially be their family doctor. However, a portion of these patients were not accepted by such facilities.

- Among patients who receive their 1st COVID-19 diagnosis at a facility not visited during the baseline period, the most frequently attended medical facility for most patients, approximately 86.5%, was a facility with <20 beds (Table 1).
  - Considering that doctors who are recognized as family doctors usually work in clinics or small hospitals, many of these patients that were not accepted by the facilities should have had a doctor that would be considered a family doctor.
- Patients who receive their 1st COVID-19 diagnosis at a facility not visited during the baseline period more frequently received their 1st COVID-19 diagnosis at large facilities compared to patients who receive their 1st COVID-19 diagnosis at a facility that was visited during the baseline period.
  - Although the majority of patients received their 1st COVID-19 diagnosis at small facilities, including clinics, more patients who received their 1st diagnosis at a facility not visited during the baseline were diagnosed by doctors who may not be recognized as family doctors.

**Figure 2.** Percentage of patients who received their 1st COVID-19 diagnosis at any facility visited during the baseline period



Note: For each patient, the number of months visited during the baseline period was calculated for each facility. For example, if a patient visited a facility once in May and twice in October, the number of months visited was calculated as two. The total number of months visited medical facilities was calculated as the sum of the number of months for all facilities visited during the baseline period. Patients were categorized based on the total number of months, and the percentage of patients who received their 1st COVID-19 diagnosis at any facility visited during the baseline period was calculated for each number of months category.

**Table 1.** Size of medical facility of the most frequent visits during the baseline period and of the first COVID-19 diagnoses

Size (No. of beds)	Patients with 1st COVID-19 diagnosis at a facility NOT visited during the baseline period (N = 167,975)		Patients with 1st COVID-19 diagnosis at any facility visited during the baseline period (N = 132,219)	
	A	B	A	B
<20	86.5%	68.2%	80.1%	70.1%
20-49	0.8%	1.3%	1.0%	1.2%
50-99	1.9%	4.1%	2.8%	3.8%
100-149	1.2%	3.5%	2.0%	2.9%
150-199	2.0%	5.6%	3.2%	5.0%
200-299	1.5%	4.7%	2.4%	3.8%
300-399	1.6%	4.4%	2.4%	3.9%
400-499	1.2%	3.7%	1.9%	3.3%
500-599	0.9%	1.7%	1.1%	1.9%
600-699	0.8%	1.3%	1.1%	1.8%
700-799	0.5%	0.3%	0.5%	0.5%
800-899	0.4%	0.7%	0.5%	0.8%
≥900	0.8%	0.4%	0.9%	1.0%
Unknown	0%	0%	0%	0%
Total	100%	100%	100%	100%

Note: Column A: percentage of patients who visited each size of medical facility most frequently during the baseline period. Column B: percentage of patients who received their first COVID-19 diagnosis in each size of medical facility. The size of the medical facility is determined by the number of beds.

## Conclusions

During the COVID-19 pandemic, even patients who frequently visited medical facilities and had doctors who could be considered their family doctors were not accepted by the facilities. This situation may lead the expectation of the GP system. The original expectations for the GP system seem to have been disregarded. Further discussion would be needed, taking into account the demand from the population.