



Original Research

Can Outpatient Rehabilitation Be Continued During the COVID-19 Pandemic? A Report from a Japanese Regional Medical University Hospital



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KEYWORDS

COVID-19;
outpatient;
infection;
pandemic;
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Abstract Objective: To describe the operation of an outpatient rehabilitation practice at a Japanese hospital severely affected by the coronavirus disease 2019 (COVID-19) pandemic.

Design: Analytical observational study.

Setting: Outpatient rehabilitation department in Saitama, Japan.

Participants: Number (N=953) of outpatients from January 2019 to July 2021.

Interventions: Not applicable.

Main Outcome Measures: This paper begins with a review of the infection control measures that were initiated after declaration of a state of emergency in April 2020. The effects of the pandemic were then examined by comparing the daily average number of outpatients from January 2020 to July 2021 with that noted for the same duration during 2019.

Results: In April 2020, the average daily number of patients decreased by 77.1% compared with the number in 2019 and was further decreased by 65.7% and 63.7% in May and June 2020, respectively. The time limitations on rehabilitation were lifted in June, and the number of patients increased by 82.3% in July 2020. Thereafter, it remained at approximately 80% throughout the

List of Abbreviations: COVID-19, coronavirus disease 2019.

Disclosures: none.

This study has been ethically approved by Saitama Medical University.

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rest of the year compared with that noted in 2019. From January 2021 to July 2021, the number of patients approached the number noted during normal practice or was even higher.

Conclusions: The implementation of infection control measures, adjustments to procedures, and widespread vaccination permitted the continuation of our outpatient practice.

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The coronavirus disease 2019 (COVID-19) pandemic has drastically affected the health care sector. With the global spread of COVID-19, the epidemic struck Japan in repeated waves since its initial onset in the spring of 2020. The effect of the arrival of the infection and the resulting containment was monumental.

Rehabilitation is key to helping patients return to their normal daily life after illness or trauma. In rehabilitation medicine, close contact between therapists and patients is inevitable, raising the chances of contracting COVID-19. Consequently, some hospitals decided to discontinue outpatient rehabilitation after the emergence of COVID-19.¹⁻³

As a hospital that accepts patients with COVID-19 in Japan (table 1), we had to take precautionary infection control measures in all departments. Nonurgent hospitalizations and elective surgeries were postponed, and the health checkup department (Division of Preventive Medicine) was closed for 2 months. The rehabilitation department also changed its practice to continue inpatient and outpatient rehabilitation while following the hospital's policy. Most reports on rehabilitation during the COVID-19 pandemic have focused on hospitalization, and only few studies have discussed outpatient rehabilitation.^{1,4}

The hospital in our study had 788 beds, with the rehabilitation department providing approximately 80,000 inpatient and 10,000 outpatient sessions per year (in practice, inpatients and outpatients received 4-5 and 1-2 sessions per week, respectively). At our hospital's outpatient rehabilitation department, the proportion of patients in the early stages of postorthopedic surgery was usually as high as 80% of patients undergoing rehabilitation both before and after the pandemic. Therefore, stopping or reducing the frequency of muscle strengthening and joint range of motion training was expected to have detrimental consequences for patients (the remaining 20% were patients with cerebrovascular disease, cerebral palsy, or neuromuscular disease). Therefore, after implementing thorough infection control measures, outpatient rehabilitation was continued even during the state of emergency.

Table 1 Hospital Facility Details

Total number of beds	788
Rehabilitation doctors	5 (full-time), 3 (part-time)
Physical therapists	26
Occupational therapists	13
Speech therapists	2
Rehabilitation nurses	2

We have continued accepting COVID-19 patients since March 2020. We provide rehabilitation treatment for inpatients and outpatients.

Medical care in Japan was still greatly affected by COVID-19, and some hospitals in the surrounding Saitama areas were unable to maintain their rehabilitation departments. Since no surveys were conducted by the government or official societies, it was not easy to determine the situation in other hospitals.

Therefore, this study aimed to describe the experience of the operation of an outpatient rehabilitation practice at a Japanese regional medical university hospital severely affected by the COVID-19 pandemic.

Methods

We examined the COVID-19 control measures implemented to continue outpatient rehabilitation in the outpatient rehabilitation department after declaration of a state of emergency in April 2020. Further, we examined the effects of the COVID-19 pandemic by comparing the daily average number of outpatients from January 2020 to July 2021 with the daily average number of outpatients during the same period in 2019.

A list of outpatients was maintained as a document in the reception office, and the number of outpatients per day was counted from this list. Since outpatient rehabilitation was conducted on weekdays other than holidays, the number of days of outpatient rehabilitation differed across months. Therefore, the average number of outpatients per day was used for monthly comparisons.

The procedures followed protocol and were in accordance with the ethical standards of the responsible institutional review board and ethics committee (Saitama Medical University, IRB 20200520). Informed consent was not necessary due to the nature of the study.

Results

Several infection control measures in the outpatient rehabilitation department were initiated in April 2020 were as follows. First, the outpatients and accompanying family members were subjected to health surveillance, including body temperature checks and subjective symptom assessments (including fever, fatigue, smell disturbance, taste disturbance, runny nose, sore throat, cough, sputum, and respiratory distress); only in the absence of any of these symptoms were the patients allowed to proceed to the training room from the reception room of the department. Wearing of masks and thorough disinfection of hands were made mandatory. Second, thorough disinfection of the hands and wearing of goggles and surgical masks were mandatory for doctors, therapists, outpatient nurses, and reception staff.

Medical examination equipment and training instruments were thoroughly sterilized. Third, regarding the use of the training room, the mornings were dedicated to inpatient rehabilitation, and the afternoons were dedicated to outpatient rehabilitation. The state of emergency in Japan was lifted in May 2020, and separating inpatients from outpatients in the mornings and afternoons was cancelled in June.

Fourth, for the layout of the training room, platforms were placed to provide at least 180-cm distance between patients, and the room was adequately ventilated by ensuring that the windows remained open. Fifth, videofluoroscopic swallowing examinations were suspended in mid-April 2020 and resumed in late June 2020.

For the COVID-19 patients admitted to the hospital, specific criteria were set for initiating rehabilitation interventions. Doctors and therapists who volunteered themselves trained COVID-19 inpatients. In the spring of 2020, there was no COVID-19 vaccine in Japan, and the staff who volunteered themselves treated COVID-19 inpatients at the hospital. Vaccination at the hospital was not implemented until March 2021. In addition, inpatients were prohibited from having visitors or leaving the hospital, and the staff also restricted their movements to prevent the spread of infection.

Changes in the number of outpatients

The changes in the average daily number of patients are presented in figure 1 and table 2. The average daily number of patients who presented for outpatient rehabilitation was 46.7 in January 2020 (112.2% of the number noted during the same period in 2019) and 49.3 in February 2020 (126.8% of the number noted during the same period in 2019). In March 2020, when the first few COVID-19 cases were detected in Japan, an average of 41.9 patients (94.2% of the number noted during the same period in 2019) presented for outpatient rehabilitation daily.

Table 2 The Daily Average Number of Outpatients Per Month

Month	2019, No. (%)	2020 No. (%)	2021 No. (%)
January	41.6 (100)	46.7 (112.2)	39.8 (95.7)
February	38.8 (100)	49.2 (126.8)	48.8 (125.7)
March	44.4 (100)	41.9 (94.2)	45.1 (101.5)
April	39.9 (100)	31.0 (77.6)	45.5 (113.9)
May	43.1 (100)	28.3 (65.7)	45.2 (104.9)
June	45.3 (100)	28.9 (63.7)	44.5 (98.1)
July	40.2 (100)	33.1 (82.3)	44.5 (110.5)
August	41.7 (100)	33.2 (79.6)	-
Sept	45.6 (100)	36.0 (78.9)	-
October	46.0 (100)	37.0 (80.6)	-
November	44.7 (100)	39.6 (88.7)	-
December	45.1 (100)	38.4 (85.3)	-

NOTE. Percentages given are compared to the same month in 2019.

The Japanese government declared a state of emergency in April 2020 during the pandemic's first wave. Therefore, orthopedic surgeries were restricted, and some patients concerned about being infected refrained from attending outpatient sessions. The average number of patients per day for the same month plummeted to 31.0 (77.6% of the number noted during the same period in 2019).

In June 2020, outpatients could use the training room both in the mornings and afternoons, and the average number of patients increased to 33.1 in July 2020 (82.3% of the number noted during the same period in 2019).

Although the third wave of COVID-19 occurred, and the second state of emergency was declared in December 2020, the average number of outpatients remained constant at 39.8 in January 2021 (95.7% of the number noted during the same month in 2019).

The fourth wave of COVID-19 emerged from 7 April to 25 May 2021; however, the average number of daily outpatients

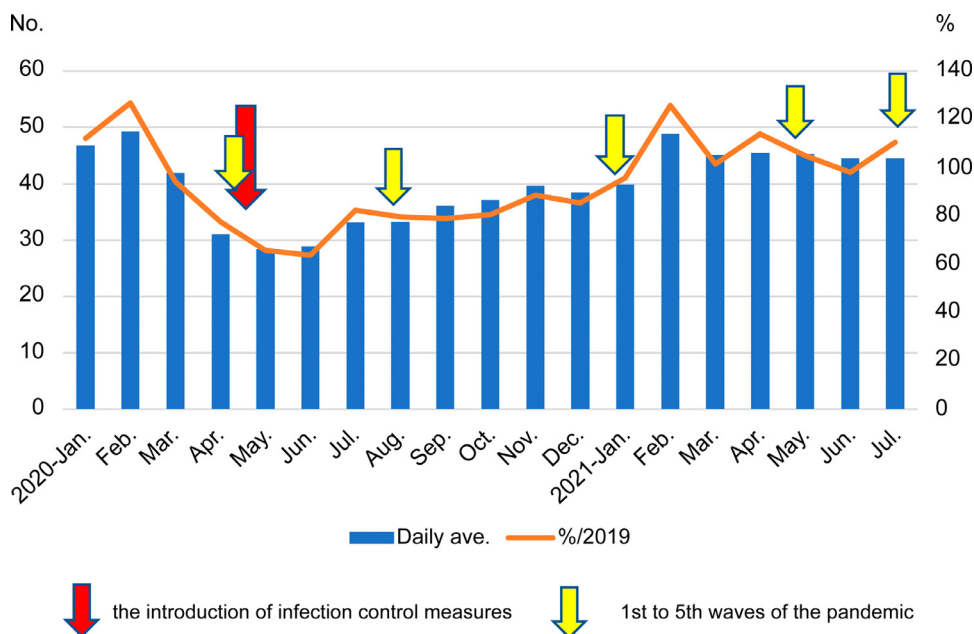


Fig 1 The first to fifth waves of the epidemic and changes in the number of outpatients.

remained at 45.3 in May 2021 (104.9% of the number noted during the same month in 2019) and 44.5 in June 2021 (98.1% of the number noted during the same month in 2019). In July 2021, the fifth wave of COVID-19 due the Delta strain raised concerns, but the average number of patients remained at 44.5 (110.5% of the number noted during the same month in 2019) in July 2021.

Although ≥ 16 patients requested to cancel their training during the first wave of COVID-19, there were no requests to discontinue training during the second and subsequent waves. Between January 2020 and July 2021, no clusters due to COVID-19 occurred in the outpatient rehabilitation department.

Discussion

The World Health Organization declared the COVID-19 outbreak a pandemic in 2020, and it had greatly affected the health care infrastructure in Japan and other countries, thereby necessitating the implementation of various preventive measures.¹⁻⁴ Various methods were explored at our hospital to continue providing rehabilitation under such circumstances through discussions with management branches and interdisciplinary consultations with clinicians and departments.

Initially, the policy was to continue outpatient rehabilitation and regular inpatient rehabilitation but not provide rehabilitation treatment only for COVID-19 inpatients who tested positive by polymerase chain reaction tests. However, considering the importance of rehabilitation, we later decided to provide direct training to such polymerase chain reaction-tested positive patients. At that time, more effective and safe training methods were being studied for rehabilitation of COVID-19 patients at home and abroad.⁵⁻⁸

In contrast, the risk of cluster development in outpatient rehabilitation was higher than that in inpatient rehabilitation due to the inability to control exposure among outpatients. Therefore, outpatient rehabilitation was significantly affected during the pandemic.¹⁻³ Consultations were conducted with the hospital's management team, and measures were taken to prevent the spread of infection and continue outpatient rehabilitation to avoid loss of training opportunities for patients.

Initially, the number of patients decreased due to their own decision to not undergo training to avoid infection and due to restrictions on training time. However, after June 2020, the time limits on using the training room and the non-urgent scheduled surgery limit of the orthopedics department were lifted, and the number of daily patients increased from July 2020.

In the third wave of COVID-19, there was a concern that the number of patients wanting rehabilitation would decrease due to the second state of emergency declared by the Japanese government. However, starting from January 2021, the number of patients returned to the same number as that noted during the same period in 2019. The number of outpatients seeking rehabilitation remained at prepandemic levels, even during the fifth wave caused by the Delta strain.

Several factors helped maintain the number of outpatients at the hospital. First, restrictions were not imposed on rehabilitation times and the number of procedures

performed during the second and subsequent states of emergency. Next, restrictions on orthopedic surgery were not implemented after the second wave. During the pandemic, many countries imposed restrictions or noted reductions in the incidence of orthopedic surgeries and rehabilitation⁹⁻¹²; however, orthopedic surgery was fortunately only restricted during the first wave at our hospital.

Then, in March 2021, COVID-19 vaccine inoculation was commenced, and the staff, including doctors and therapists, of the rehabilitation department received their second dose of the vaccination by early April 2021. This significantly decreased anxiety among doctors and therapists regarding the spread of the infection. Similarly, vaccination for older adults aged ≥ 65 years started in May 2021, and many outpatients were vaccinated from June to July 2021, which further reduced anxiety associated with outpatient rehabilitation. Vaccination status was a critical deterministic factor that allowed the resumption of outpatient rehabilitation at prepandemic levels.

A state of emergency was declared again during the fifth wave of COVID-19 in Japan. However, the number of outpatients seeking rehabilitation remained constant without any clusters of cases; however, the risk of infection remained high.

Study limitations

Not being affiliated with a public institution, it was difficult to investigate the situation in other hospitals.

In Japan, most medical costs are covered by public health insurance, and telemedicine was permitted during the pandemic for general outpatient care. However, insurance often did not cover medical fees for receiving rehabilitation training via telemedicine. Some hospitals in other countries provided rehabilitation training via telemedicine during the COVID-19 pandemic, and rehabilitation using new methods that could be effective during a pandemic were being explored.^{2,13-20} There have been discussions to introduce a similar system in Japan, but it has not yet been implemented.^{2,13-20} Although it was hoped that the COVID-19 pandemic would end, new methods were considered to provide rehabilitation during a possible future pandemic.

Conclusions

Our hospital's outpatient rehabilitation department noted significantly reduced patient numbers at the beginning of the COVID-19 pandemic in spring 2020. However, after 2021, with the implementation of infection control measures and the widespread use of vaccinations, outpatient rehabilitation could be performed at the same scale as that before the pandemic. Although the number of patients of outpatient rehabilitation as of 2021 were the same as the pre-pandemic levels, anticipating future pandemics, it is expected that rehabilitation medicine would adopt telemedicine and other new methods.

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