Lessons from the COVID-19 pandemic: strategies and challenges for an aging society in Japan

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Abstract

Purpose – This article analyzes the challenges of infectious disease control under a super-aged society through Japan's experience with COVID-19.

Design/methodology/approach – This article provides an overview of Japan's COVID-19 measures and their characteristics, discusses their successes and failures, and identifies future challenges.

Findings – Japan's basic strategy for COVID-19 consists of three parts: the border defense (Stage 1), slowing down the spread (Stage 2), and damage control (Stage 3). One key policy feature in Stage 2 and Stage 3 is based on "voluntary restriction". It had a certain effect, but it was prolonged with each recurring "wave of infection", resulting in economic exhaustion and people's dissatisfaction. Thus, the effect of the voluntary restriction has weakened, while the percentage of people who have been vaccinated is improving, making it difficult to predict the damage of the next "wave". Under the hyper-aged society, it was necessary to identify and protect particularly vulnerable areas, i.e., psychiatry hospitals, chronic care hospitals, and long term care (LTC) facilities. On the other hand, secondary impacts extend to young people. The most serious one is the decrease in births which further accelerates the aging of society.

Originality/value – This study is original as it investigated why Japan's unique countermeasures against COVID-19 without mandatory lockdown worked well for a considerable period. It also revealed that secondary impacts of the COVID-19 epidemic are broader and more significant than the direct loss of life, and that the social system, especially super-aged society with many vulnerable areas should be reformed in consideration of the threat of infectious diseases. Lessons from the Japanese case may contribute to other countries.

Keywords COVID-19 pandemic, Japan, Aging society, Strategies, Challenges

Paper type Research paper

Introduction

COVID-19 has brought great disasters to Japan and the world, but it has also brought many lessons and opportunities for change. What we learn from the COVID-19 pandemic varies from country to country. Different lessons might be learned in high-income countries where the population is aging and in low- and middle-income countries where the population is relatively young but medical resources are limited. Japan is the most aging country in the world. In 2017, the Japanese people aged 65 years or older accounted for 27.7 percent, and those aged 75 years or older accounted for 13.8 percent (Department of Economic and Social Affairs Population Division, United Nations, 2021). Elderly people are vulnerable to COVID-19. Numerous measures have been attempted to protect them, sometimes successful and sometimes unsuccessful. At the same time, measures were always needed to minimize the impact on the economy. These measures sometimes had conflicting elements. The rigidity of the legal system and the limited amount of available medical resources have always stood as

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barriers. On the other hand, in Japan, laws and regulations for infectious disease control had already been revised based on the lessons learned from the outbreaks of severe acute respiratory syndrome (SARS) in 2003, novel influenza in 2009, and other infectious diseases (Asia Pacific Initiative, 2020). In particular, the threat of a novel influenza was emphasized, and focused measures were developed. Some of these advance measures were applied to COVID-19 and were able to be utilized.

In addition, COVID-19 had a variety of other secondary impacts. These include the impact on the treatment of other diseases, medical checkups, and the increase in domestic violence against women and suicide. Above all, a rapid decline of births could further accelerate the aging of society, which is already a big issue. There is an urgent need to address each of these issues.

This article reviews the flow of measures against COVID-19 in Japan, which had many features, and discusses the results and future issues. This could be beneficial for other countries with aging societies.

Looking back on the COVID-19 epidemic in Japan

In Japan, the first case of COVID-19 infection was confirmed on January 16, 2020 (Ministry of Health, Labour and Welfare, 2020). This case was a Chinese resident of Japan who returned to Japan after a stay in Wuhan. Sporadic, small numbers of infected people had been confirmed since then. Japan first faced the COVID-19 outbreak seriously on February 3, when the luxury liner Diamond Princess arrived at Yokohama. During the cruise, it was found that a person who had disembarked from the ship in Hong Kong on the way had tested positive for PCR. The ship was registered in the UK, but due to the large number of Japanese crew and passengers, the Japanese government decided to accept it and to quarantine it in Yokohama. Eventually, of the 3,711 crew and passengers, 712 were infected and 7 passengers died (Asia Pacific Initiative, 2020). About half infected persons were asymptomatic and the case fatality rate was 1 percent.

Figure 1 and Table 1 show the number of COVID-19 cases and deaths in Japan. Seven epidemics (waves) can be identified. COVID-19 is known to be prone to virus type mutation. As of October 2021, the target of this research's analysis, almost 100 percent were delta variants, but the emergence and epidemic of omicron variants was considered certain. In fact,

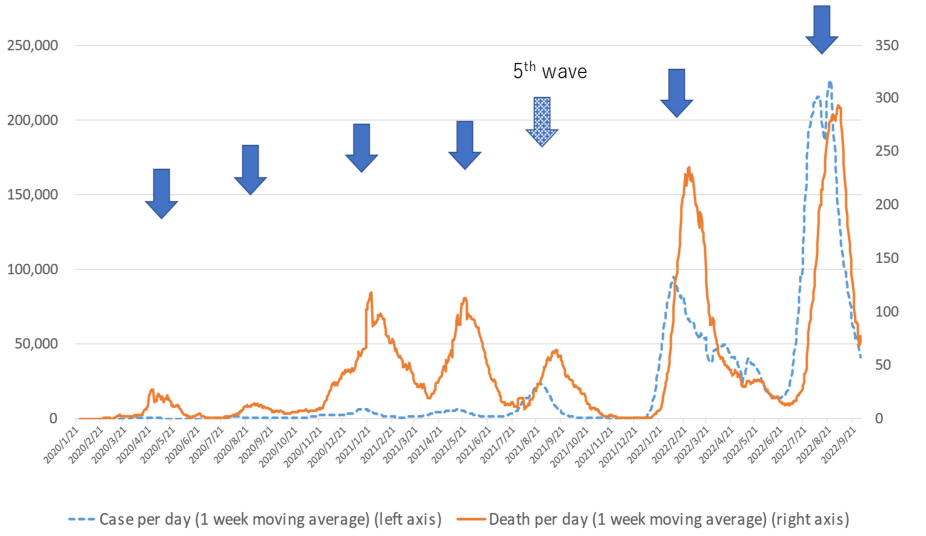


Figure 1.
Number of newly confirmed COVID-19 cases, deaths and case fatality rate in each wave in Japan (**Sources:** *Nikkei Asia* (2022), Ministry of Health, Labour and Welfare (2021a), National Institute of Population and Social Security Research (2022))

	1st wave	2nd wave	3rd wave	4th wave	5th wave	6th wave	7th wave
	2020.1.29-2020.6.13	2020.6.14-2020.10.9	2020.10.10-2021.2.28	2021.3.1-2021.6.20	2021.6.21-2021.12.16	2021.12.17-2022.6.24	2022.6.25-2022.9.20
No of patients	17,422	70,804	343,857	353,612	942,838	7,518,061	11,552,757
No of death	924	692	6,243	6,494	4,018	12,772	12,765
Case fatality rate	5.3%	1.0%	1.8%	1.8%	0.4%	0.2%	0.1%

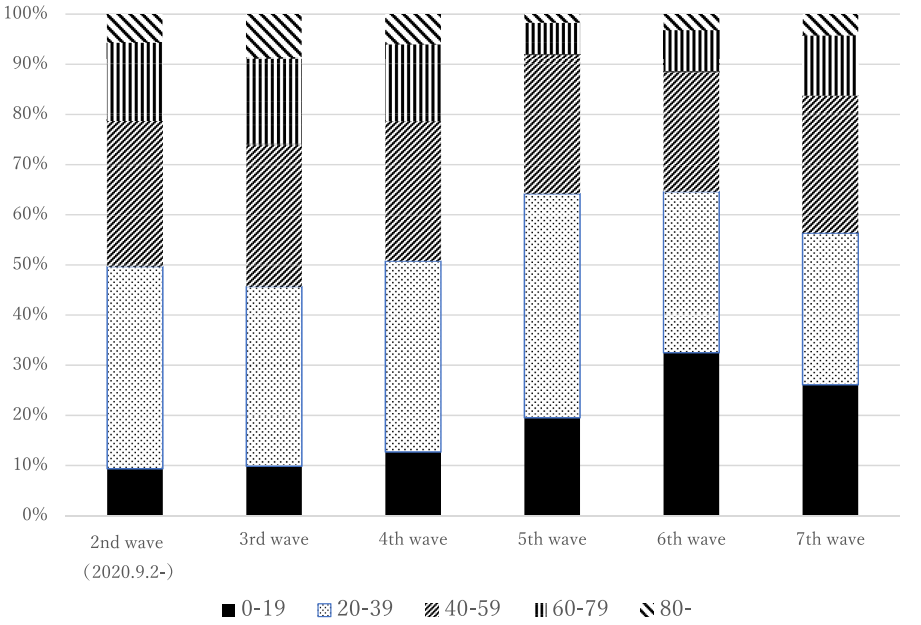
Note: In Japan, all cases (defined as confirmed by positive PCR test, including asymptomatic cases) must be reported by hospitals or clinics to the local government. The number of deaths and case fatality rate includes those who died from COVID-19 and those who were infected with COVID-19 but died from other causes. Therefore, the number of deaths of COVID-19 shown here does not necessarily match the number of deaths of COVID-19 in vital statistics. Case fatality rate was calculated by (number of deaths during the wave period)/ (number of confirmed cases during the wave period).

Sources: *Nikkei Asia* (2022), Ministry of Health, Labour and Welfare (2021a), National Institute of Population and Social Security Research (2022)

Table 1.
Number of newly confirmed COVID-19 cases, deaths and case fatality rate in each wave in Japan

in November 2021, 26.6 percent of the samples analyzed by genome analysis in Tokyo became omicron variants, and since December, it has been almost 100 percent (Tokyo Metropolitan Institute of Public Health, 2022).

The theme of this research is an analysis of the countermeasures taken by Japan against omicron epidemic, which is expected to spread in the future. The first wave of COVID-19 in Japan began at the end of March 2020. The government issued the first "the state of emergency" for seven prefectures, including Tokyo, on April 7. It was an unenforceable "request" to refrain from going out, and to close restaurants, stores, and businesses. The state of emergency was soon extended to all of Japan on April 16. Since then, the number of newly infected people has been on a downward trend, and the state was lifted on May 26. Even at the highest level, the number of people infected was 708 per day, and the number of deaths was 31 per day in the first wave, which was very low compared to the Unites States and European countries. However, even after that Japan has experienced the spread of the infection and the quelling of the disease by the issuance of the state over and over again. As of October 2021, the fifth wave has just come to an end. The fifth wave was characterized by the predominance of delta variants, the epidemics seen during vaccination, the timing overlap with the Olympic games, and the large number of young people infected. Vaccination in Japan began in February 2021 for healthcare professional, as a part of "de facto" clinical trial. They were relatively young, and well monitored by the healthcare organizations where they worked. The postponed Olympics, Tokyo 2020, was held from July 23 to August 8, 2021, in principle without spectators. Figure 2 shows the number of COVID-19 cases by epidemic wave by age group in Japan. The fifth wave was characterized by the large number of infected young people. Patients under 19 years occupied 11.3 percent of the total number of cases in the second to fourth waves and 60.7 percent in the fifth wave. Infectious disease prevention



Note: The data as for the age group were open to the public after September 2 in 2021.

Figure 2.
Proportion of COVID-19 cases by epidemic "wave" by age group in Japan (**Source:** *Nikkei Asia* (2022))

measures must be different for young people since the behavioral characteristics of young people may be different from the elderly.

Depending on age and risk, COVID-19 appears as if it were two different diseases. For young people, it is just like the influenza, with a low case fatality rate, which makes it difficult for them to accept behavioral change. For the elderly and people with risk, it is a terrifying disease with a high case fatality rate. When the delta variants were dominant, the case fatality rate was 5.7 percent for those over 60 years old, which was 100 times higher than that for those under 50 years old (data from June 2020 to August 2021, Ministry of Health, Labour and Welfare, 2021b). It is reported that 94.3 percent of deaths due to COVID-19 occurred in people over the age of 60 (National Institute of Population and Social Security Research, 2022).

At the Olympic Games, the activities of the athletes did not only impress us, but also provided valuable insights. At the Olympics Games, as a measure against COVID-19, PCR tests were conducted for athletes at an unusually high frequency. They were requested to take PCR tests twice within 96 hours before departing from their countries, once at the entry into Japan, and every day at the Olympic Village. A few days after entering the Olympic Village, there were several cases of positive PCR results for the first time. We also experienced similar cluster outbreak cases. In several cases, PCR test was negative when the patient was transferred to a hospital or LTC facility, but later became positive and caused clusters (*The Asahi Shimbun*, 2021a).

Therefore, the following characteristics of COVID-19 became a problem for infection control in Japan: the presence of asymptomatic infected persons; relatively long latent time; relatively long infectious period (from -2 days before symptomatic to +10 days after symptomatic); false negative diagnostic test; clusters in hospitals and LTC facilities with high case fatality rates.

Japan's basic strategy for COVID-19

Japan's basic strategy for dealing with COVID-19, developed by the Cabinet's Novel Coronavirus Response Headquarters, can be divided into three stages (Ministry of Health, Labour and Welfare, 2021c). Stage 1 is the "border defense" such as quarantine at Diamond Princess and airports. Fortunately for Japan, it was possible to earn time with border defense. It was virtually impossible in the United State and European countries where infected people were found throughout the country from the very beginning of the epidemic. Stage 2 is to "slow down the spread" of the epidemic. During this time, the medical system can be strengthened to accommodate more patients. It also includes the development of vaccines and treatment methods. Stage 3 is "damage control". This is the stage of coexistence with COVID-19 and includes prevention of aggravation and death. Figure 3 shows a schema of the intent of each of these three stages. As of October 2021, when several therapies against COVID-19 were commercialized and vaccination rates were improving, Japan's current position was considered to be shifting from Stage 2 to Stage 3. Of course, minimizing the impact on the economy should always be considered.

If Stage 1 and Stage 2 function well, it would be possible to improve the medical system, reduce the number of patients during peak hours, and reduce the burden on the medical system.

As for Stage 1, a staged border blockade was implemented, starting with a ban on entry from some parts of China at the end of January 2020. In addition, the Japanese government issued a cabinet order designating COVID-19 as a "designated infectious disease" under the Infectious Diseases Control Law and the Quarantine Act on February 1. This has made it possible to forcibly hospitalize COVID-19 patients and to conduct compulsory medical examinations and tests upon entry into Japan. However, this decision also meant that, by the law, all COVID-19 patients would have to be hospitalized, regardless of their severity. As a

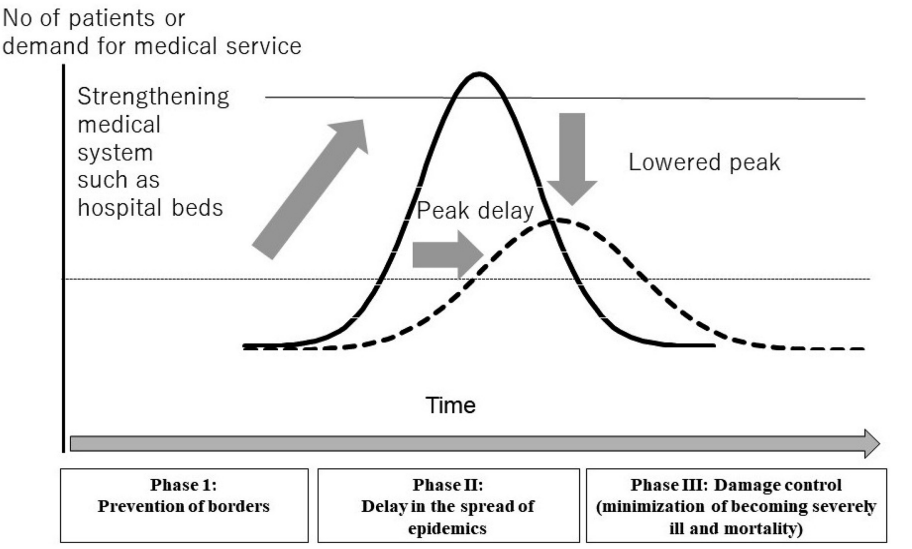


Figure 3.
Japan's basic strategy in dealing with COVID-19: the three stages (**Source:** Ministry of Health, Labour and Welfare (2021c))

result, a large number of mildly symptomatic or asymptomatic patients occupied hospital beds, and the number of hospital beds was often strained at a later time. Currently, the system has been changed so that mildly symptomatic or asymptomatic patients are kept at home or in hotels.

In Stage 2, behavioral change was the main policy to reduce the spread of infection. The focus is on avoiding unnecessary non-urgent going-out and reducing mobility. In addition, it was encouraged to avoid the three Cs (Closed spaces, Crowded places, Close-contact setting) on a daily basis. A characteristic of Japanese policy is that it is not compulsory, but rather voluntary behavior change based on request. There is no law in Japan that forces citizens to stop going out. In the wake of the COVID-19 epidemic, penalties for going out were often discussed, but no such laws have been enacted to date (*Jiji Press*, 2021; *The Asahi Shimbun*, 2021b). On March 14, the Japanese government amended "the Act on Special Measures for Pandemic Influenza and New Infectious Diseases Preparedness and Response" in response to the increase in the number of cases in Japan (The Prime Minister of Japan and His Cabinet, 2021). This law was originally enacted with the main target of novel influenza, but it was made applicable to COVID-19 as well. Based on the law, the government issued the first "the state of emergency" for seven prefectures, including Tokyo, on April 7. Under this state, prefectural governors can request people to stop going out and cooperate in preventing the spread of infectious diseases, and request restaurants and stores to close. Schools may also be asked to close. This was also a "request" with no penalty. However, restaurants were able to receive support money if they responded to requests for closure. Other companies were also able to receive compensation for the decrease in profits caused by the closures if certain conditions were met. Quite interestingly, the majority of people followed this "request" and refrained from going out. Many businesses and stores closed during the state of emergency.

According to data from the Tokyo Metropolitan Government using cell phone location data, just before the state was issued, the number of people staying in the seven downtown areas of Tokyo (Ginza, Roppongi, Shibuya, Shinjuku-Nichome, Kabuki Cho, Ikebukuro, and Ueno) between 8 p.m. and 10 p.m. was about 900,000, but after the declaration was issued, the

number dropped to less than 200,000 (Tokyo Metropolitan Government Disaster Prevention Information, 2021a). The state was soon extended to all of Japan on April 16. With such voluntary restrictions by the people, the first wave came to an end and the declaration was once lifted on May 25. Since then, the Japanese government has repeatedly declared the state of emergency whenever the infection spreads, and then terminated it when it subsided. As of October 2021, the state of emergency has been declared and lifted four times so far. The second and subsequent states focused on closing restaurants, promoting telework, and curbing cross-prefectural travel, and did not call for closing companies and schools in order to reduce the impact on the economy (*The Asahi Shimbun*, 2021c). In particular, drinking parties held in *Izakaya* (Japanese style pub) were targeted as they were considered to spread the infection.

It is difficult to argue whether the voluntary restrictions in Japan or the enforceable "lockdown" in other countries was better at long-term infection control. The voluntary restrictions gave people more freedom of action and might have less impact on the economy than lockdown. On the other hand, these voluntary restrictions may have accelerated the division of society. It has been pointed out that despite the lack of coercion, Japan has been able to reduce the number of COVID-19 cases due to the conscience and shame of people and the effect of "mutual monitoring" of society (Asia Pacific Initiative, 2020; Ito, 2021; *The Mainichi Newspapers*, 2020; *Toyo Keizai Online*, 2020). However, the perception of the COVID-19 threat varies from person to person. First, it has been realized that there is a difference in the magnitude of fear between generations because the case fatality rate of COVID-19 varies greatly depending on the age. Many elderly people criticized the spread of the COVID-19 by the highly active youth, while young people complained that their freedom was being stifled and the economy stagnated to protect the elderly. There may also have been a gap in perception between people living in urban areas, where there are already many cases, and people living in rural areas, who perceive COVID-19 as an "unknown threat" from urban areas. It was ultimately up to each individual to decide what behavior was acceptable and what was not.

These differences in behavioral norms sometimes led to conflicts among people. Such negative emotions sometimes spiraled out of control, with people harassing restaurants that were not closed and damaging cars with license plates from other prefectures. Of course, these actions are illegal. They were called "self-restraint police" by the media and became a social problem symbolizing the mutual surveillance of the Japanese people (*Mainichi Newspapers*, 2020; *Toyo Keizai Online*, 2020). Even though these were extreme cases, many Japanese people have been living in fear of what others think for the past two years. However, as the state of emergency has been repeatedly declared and prolonged, the effect of voluntary restrictions is diminishing. In the first place, the state and the accompanying voluntary restrictions were initiated for the purpose of "delay in the spread of epidemics" in Stage 2. However, to date, the government is still continuing with the same policies and has failed to take the initiative with a new direction. Although less restrictive than lockdowns, prolonged voluntary restrictions have reduced economic activity and worsened the performance of many restaurants, hotels and businesses (Teikoku Databank, 2021). People's dissatisfaction also accumulated.

The data from the Tokyo Metropolitan Government mentioned above show that the number of people in the downtown area at night increased in the "fourth" than in the "third" (Tokyo Metropolitan Government Disaster Prevention Information, 2021b). On the other hand, some observers believe that even after the government lifts the states, the behavioral norms of people who have been under strictly voluntary restrictions will not change significantly, and consumption will not grow as much as hoped (*Nihon Keizai Shimbun*, 2021). In any case, the power of the government to control people's behavior through "requests" has become weak compared to the beginning. Under such situation, one of the few good news is

that vaccinations are progressing reasonably well. It should be noted whether the power of vaccines can prevent the next wave, keep the damage caused by COVID-19 within acceptable limits in the long term, and create a situation in which the economy can recover is to be observed.

Vaccines are the most effective tool for infection control. As mentioned, in Japan, vaccination first started in February 2021 for 4.8 million healthcare professionals, in April for 36 million the elderly, and in July for young people. As of October 14, 2021, 66.5 percent of the total population had completed vaccination and the coverage rate increased to 81.5 percent in October 2022. Table 2 shows the COVID-19 case fatality rate for each "wave" by age groups. Vaccination was effective in reducing the aggravation and death. After the fifth wave, a significant decrease in case fatality rate is observed especially in people over 60 years old. How long the vaccination is effective is unknown and the booster (second) vaccination began in December 2021 after much debate.

Infectious diseases have historically revealed social structures that were not normally of interest. COVID-19 also identified areas of vulnerability, some of which are related to aging society. In psychiatric hospitals, for example, long hospital stay is often seen, the number of medical staff is limited, there are no specialists for infection control, and it is difficult for patients to cooperate in infection control. A study by the Japanese Association of Psychiatry Hospitals reported that many psychiatry hospitals had COVID-19 clusters, and that it was often difficult to transfer patients to acute care hospitals because of rapid increase of medical demands, resulting in many deaths (Japan Psychiatric Hospitals Association, 2021).

How to protect the elderly should be investigated. Figure 4 shows the number of cluster outbreaks and the number of people infected by the cluster in December 2020. Analysis of clusters showed that clustered in hospitals and LTC facilities had a high number of cases per cluster and a high case fatality rate. Figure 5A shows the case fatality rate, and Figure 5B shows the percentage of deaths that occurred by type of facilities during the third wave in Sapporo. In acute care hospitals, the fatality rate seems high and accounts for the majority of deaths, because they were in charge of treating critically ill patients. But we should know that chronic care, psychiatry hospitals and LTC facilities explain for significant number of deaths. It is also reported that with appropriate support of infection control specialists, clusters could be controlled, and the case fatality rate could improve by 25-50 percent (National Hospital Organization).

Eradication of COVID-19 from society (zero-corona strategy) is extremely difficult with high infectivity of COVID-19 variants such as delta and omicron, and we are entering the Stage 3, that is the coexistence with the COVID-19 (with-corona strategy). In Stage 3, the most important issue is to coexist with COVID-19 while controlling the social impact of COVID-19 on health and economy in an acceptable level. We should pay special attention to the

Table 2.
The COVID-19 case fatality rate for each "wave" by age groups

	0-49	50-59	60-59	70-79	80+	60+ (subtotal)
2nd wave*	0.10%	0.87%	4.92%	15.58%	38.45%	17.58%
3rd wave	0.00%	0.01%	0.08%	0.24%	0.48%	0.27%
4th wave	0.02%	0.24%	1.24%	4.90%	17.00%	7.01%
5th wave	0.01%	0.15%	1.06%	6.55%	19.82%	6.70%
6th wave	0.00%	0.07%	0.14%	0.31%	0.62%	0.33%
7th wave	0.00%	0.02%	0.06%	0.32%	1.20%	0.45%
Total	0.00%	0.01%	0.04%	0.18%	0.75%	0.28%

Note: * Data only available after 2020.09.02
Source: National Institute of Population and Social Security Research (2022)

Figure 4.
The number of cluster outbreaks and the number of people infected by the cluster in Japan during the third wave by type of facilities (**Source:** Cabinet Secretariat (2021))

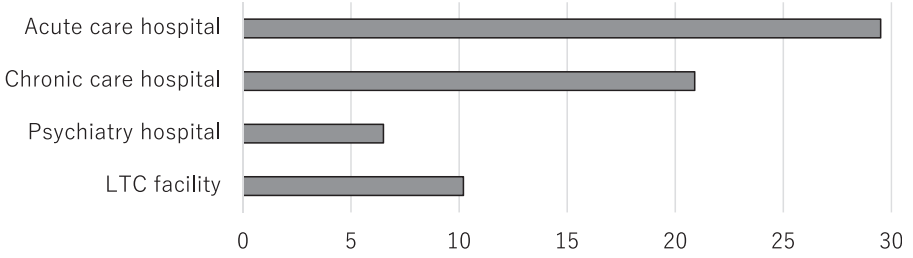


Figure 5A.
The case fatality rate in Sapporo, Hokkaido during the third wave by type of facilities

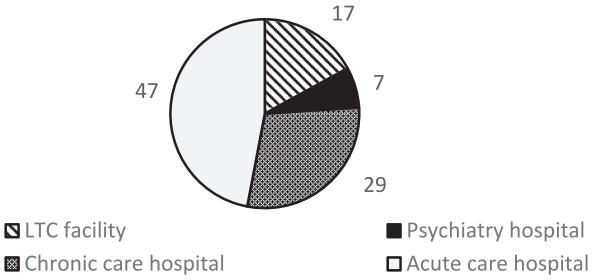


Figure 5B.
The percentage of deaths that occurred in Sapporo, Hokkaido during the third wave by type of facilities (**Source:** Kondo (2021))

following. At first, vulnerable areas should be identified. For example, LTC facilities, psychiatry hospitals and chronic care hospitals have limited resources for infection control. Support for these hospitals/facilities by medical specialists is important and should be encouraged in the healthcare system. Cooperation between acute care hospitals and these hospitals/facilities in the areas of patient safety and infection control should also be strengthened.

Secondary impacts of COVID-19 in Japan

Fear of infection and the government's request of behavior change have had secondary impacts in various areas of society. Table 3A and 3B show the medical expenses and use of medical services in FY 2020 by age groups and by departments, respectively. Not only elderly people but also children have a remarkable decrease in the number of medical consultations and medical expenses. Hospitals and clinics lost a total of 1.4 trillion yen in income and were concerned about a business crisis, and the government had to invest 4 trillion yen in subsidies to maintain the medical system. Many people in need of medical care discontinued treatment, and as a result, it is feared that the condition would worsen.

The number of annual medical checkups also decreased. For example, in 2020, the number of people receiving cancer screening at 118 cancer centers in Japan decreased by 30.5 percent from 2019 (The Japan Cancer Society, 2021), and the number of newly confirmed lung cancer cases in 2020 was 6.6 percent lower than in 2019 (The Japan Lung Cancer Society, 2021). It is completely unexpected that COVID-19 will reduce lung cancer and advanced cancer may increase in the long term. In addition to cancer, early detection of several diseases, including fatal ones, may be hindered.

In addition to the sequelae directly related to COVID-19 infection, other health effects were also observed. Stay home does not necessarily mean stay safe. One of the typical examples is domestic violence (DV). The number of inquiries to prefectural DV counseling centers increased by 1.6 times in 2020 compared to 2019 (Gender Equality Bureau Cabinet Office, 2021). Frustration from the prolonged voluntary restrictions and families spending more time at home together may have increased DV. Home stay also may deteriorate ADLs in the elderly. One study reported that the COVID-19 epidemic significantly reduced total physical activity time in April 2020 compared to January 2020 in the elderly (Yamada *et al.*, 2020). Mental health including depression and suicide are also big issue. According to an OECD survey, Japan's national estimate of prevalence of depression or symptoms of depression was 17.3 percent in 2020, more than double the 7.9 percent in 2013 (Organization for Economic Co-operation and Development, 2021). The number of suicides in Japan in 2020 was 21,081, the first increase in 11 years, and 912 (4.5 percent) more than in 2019. Suicide rate increased

Table 3A.
The change of medical service use in 2020 from 2019 by age group

	Medical expense (% change compared to 2019)	Use of medical service (% change compared to 2019)
0-5 years	-17.0	-28.2
6-74 years	-2.3	-7.0
75 years or over	-3.3	-7.5
Total	-2.9	-8.2

Table 3B.
The change of medical service use in 2020 from 2019 by departments

	Medical expense (% change compared to 2019)	Use of medical service (% change compared to 2019)
Internal medicine	-4.3	-10.1
Pediatrics	-22.2	-31.5
Surgery	-12.0	-15.4
Orthopedic surgery	-3.4	-6.7
Dermatology	-0.8	-0.9
Ophthalmology	-3.3	-7.3
Otorhinolaryngology	-19.7	-24.4

Source: Ministry of Health, Labour and Welfare (2021d)

especially in young women (Ministry of Health, Labour and Welfare *et al.*, 2021). Aside from sequelae of COVID-19, most of them seem to be relatively short-term, but they still require careful monitoring.

Perhaps the biggest impact of COVID-19 on society is the decrease of births. Births in 2020 fell by 2.8 percent in Japan (Ministry of Health, Labour and Welfare, 2021e). Birth rate reflects the situation 10 month ago, and this downward trend is expected to continue in 2021. Similar birth declines have been reported in many other countries (Aassve *et al.*, 2021; Stout *et al.*, 2021; Ullah *et al.*, 2021). Birth rate recovery will be affected by future developments of COVID-19 epidemic, the economic conditions of young people, and support for young people. If continued for a long period of time, it may accelerate the aging of society.

Although COVID-19 may be a terrible disease for the elderly with high case fatality rate, the total number of deaths in Japan decreased for the first time in 11 years in 2020 compared to 2019 (Ministry of Health, Labour and Welfare, 2021e), suggesting that COVID-19, did not cause excess mortality in Japan. There are many possible causes for this, but it is possible that people's behavior has decreased and that infection control and health control have been stricter than usual. On the other hand, the secondary impacts extend to the young, children, and births. Unfortunately, reducing the direct impact of COVID-19 infection and reducing the secondary impact are sometimes opposing concepts. It may not be justified to overburden young people to eliminate the risk of older people. It is important to protect the youth and children in order to make Japan's aging society sustainable. However, in an aging democratic society, it is difficult to have such a discussion head-on in the political arena because it would be perceived as "abandoning the elderly" and subject to strong criticism. In addition, compared to the emotional fear of a newly emerged virus, the casualties of secondary effects are less likely to be noticed or reported. Direct and secondary impacts should be compared fairly. While taking measures to protect vulnerable groups from direct impacts, efforts should be made to stimulate social and economic activities to minimize secondary impacts. At the same time, measures can be taken to protect those who are vulnerable to secondary impacts. For example, adequate measures should be taken against DV, mental health and suicide. Above all, there is an urgent need to take measures against the declining birthrate.

Lessons and future prospects for COVID-19 countermeasures in Japan

The authors have outlined the development of COVID-19 epidemic in Japan and the countermeasures. The measures taken in Stage 1 and Stage 2 seem to have achieved the goal of slowing down the spread of infection to some extent. As a result, the damage caused by the first wave was very low compared to Europe and the United States. In particular, behavior change through the voluntary restrictions was initially often introduced with surprise and admiration in other countries. In a homogenous society like Japan, where the pressure to behave in the same way is strong, just a request from the government with incentives can be effective in controlling the infection. It works particularly effectively when concrete measures such as three Cs are presented together with the request. However, there seems to be a limit to the length of the voluntary restriction. The government's ability to control people's behavior has been weakened. The period during which the request is valid is relatively short, and it is necessary to separately consider how to extend this effect. Not only has it become more difficult to trigger strict restrictions on people's behavior through the declaration of a state of emergency, but the prolonged voluntary restriction has reduced social and economic activities, and the secondary effects cannot be ignored. In an aging society, a new Stage 3 measure to coexist with COVID-19 would minimize the secondary effects, especially on youth, children and births, while protecting vulnerable groups.

Japan thereafter experienced the sixth and seventh waves, where major virus type was omicron, which was characterized by being more infectious and less virulent than other virus types. The fifth wave was a turning point, and despite the increase in the number of infected people after that, the increase in the number of deaths was suppressed. Although it is difficult to quantitively asses, but it seems reasonable to think that the strengthened medical system, and higher vaccination rate had contributed to minimize the burden. With the peaking-out of the seventh wave, Japan has announced policies aimed at post-corona recovery, such as easing quarantine and removing restrictions on restaurants and travel.

It may be too early to clearly imagine a society coexisting with COVID-19, but from experience in Japan, authors think it is highly possible that the following revisions will be made. First, social security resources are likely to shift from welfare for the elderly to measures against the declining birthrate. The accelerating birth decline due to the COVID-19 epidemic may make childcare and schooling support more urgent issues. Next, hospital/LTC facility design will take measures against infectious diseases into consideration. Such facilities with compromised patients and users will need to have larger spaces, better structures for patient isolation and flow line, and more robust systems. Medical care (including medical equipment and drug supply) will be treated as a national security issue. Then, introduction of IT technologies in medical care and society will be accelerated. In Japan, strict regulations had been placed on telemedicine due to opposition from the medical associations, but these regulations have now been relaxed to maintain medical care provision in the COVID-19 epidemic (Japan Medical Association, 2020; Ministry of Health, Labour and Welfare, 2021f). Although this deregulation was introduced as a temporary measure, it will continue. Telemedicine is also suitable for a super-aged society that needs to provide medical services to depopulated rural areas with limited medical resources.

As approached an aging society, we experienced an epidemic as a new threat to healthcare. It is also recognized that this is not just about the health of the elderly, but it also affects various areas of the society. We must continue to think and share ideas of how to establish a robust and sustainable social and medical system.

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