

ЭКСПЕРИМЕНТАЛЬНОЕ ИССЛЕДОВАНИЕ ПО СОЗДАНИЮ ГОРОДСКОЙ СРЕДЫ, КОНТРОЛИРУЮЩЕЙ РАСПРОСТРАНЕНИЕ ВИРУСА

И. Вакаи, профессор

Университет Осака Санге, Осака, Япония

PILOT STUDY ON CREATING AN URBAN ENVIRONMENT THAT CONTROLS THE SPREAD OF VIRUS

I. Wakai, professor

Osaka Sangyo University, Osaka, Japan

Согласно полученным на сегодняшний день результатам, соответствующие меры профилактики и лечения в отношении нового коронавируса COVID-19 были основаны на данных эпидемиологических исследований и клинических наблюдений. Однако автор отмечает, что для борьбы с вирусными вспышками и их распространением необходимо не только полагаться на медицинские методы лечения, но и в полной мере использовать возможности природы, такие как циркуляция атмосферы и взаимное вмешательство в экосистему, сосредоточившись на густонаселенных городских средах. Таким образом, данное пилотное исследование представляет собой новый взгляд на городскую среду, смещая точку зрения на нее за пределы мер здравоохранения, чтобы смягчить распространение вируса.

Ключевые слова: COVID-9, городская среда, общественное здравоохранение, педагогика

According to findings to date, appropriate measures for prevention and treatment concerning the novel coronavirus Covid-19, have been based on medicine. The author however noted that it is necessary to not only depend on medical treatments, but also to harness the power of nature to full advantage such as circulation of the atmosphere and mutual interference in the ecosystem by focusing on densely populated urban environments, to control viral outbreaks and their diffusion. This pilot study therefore presents a new view by shifting the perspective on the urban environment beyond that of medicine to mitigate the spread of virus.

Keywords: COVID-19, urban environment, public health, pedagogy

Introduction

The novel coronavirus COVID-19 has rapidly spread throughout the planet since its emergence at the end of 2019, through flows of active global trade and interchange. This resulted in a large number of people who were infected, falling ill or losing their lives. There have been many fatal cases especially among the vulnerable elderly. As no effective treatments for the virus were available, some countries imposed a lockdown as an emergency measure to prevent infection from spreading and to control the epidemic — a recent case is the Chinese city of Shanghai. The novel coronavirus pandemic has also caused long-term stagnation in socioeconomic activities, in addition to human health hazards. Such a negative impact on human society has been collectively called in Japan «Corona-ka (COVID-19 crisis)».

Today humankind is confronted by an unprecedented challenge to find solutions for the COVID-19 crisis, which can roughly be divided into countermeasures through the use of medicine and by a transformation both in people's

consciousness and society. The former is represented by the development of treatments and vaccines effective in saving human lives, while the latter is by the observance of conscious action based on the idea of public health, and improvement of the densely populated urban environment.

This study aims to discuss the creation of an urban environment from a long-term perspective, as the author believes that it is important to control the emergence and diffusion of COVID-19, the cause of the crisis in question, by utilizing the power of nature.

COVID-19 Situation and Its Basic Prevention in Japan

COVID-19 was found in early 2020 in Japan and spread widely mainly in urban areas. It remains to date without showing signs of subsiding with repeated ups and downs recording a total of six waves. Following such repeated waves, the virus infection has expanded throughout Japan from urban areas to the remote islands, during which there was a great deal of confusion at the

beginning in terms of people's daily lives and social activities, as medical countermeasures for the virus were unknown. However, as the learning effect of people regarding COVID-19 prevention has become apparent, together with subsequently introduced preventive measures by vaccination, public unease has been gradually reduced and daily lives and social activities are beginning to return to normal.

The most fundamental measure urged since the beginning to prevent the outbreak of mass infections was to avoid the «Three Cs», which remains unchanged. The Three Cs means; firstly 'closed spaces' including rooms without windows or with poor ventilation, secondly 'crowded places' with many people assembled close together, and thirdly 'close-contact settings' where people converse or exercise at close range. The term was invented by using the initial letter C of the above situations. In concrete terms, it recommends ensuring good ventilation and maintaining a certain distance from others when conversing or vocalizing where people gather. An appropriate distance from others was described as a social distance and recommended two meters or more. Furthermore, wearing a face masks, washing hands and gargling were strongly recommended as infection preventive measures.

In Japan, as these basic preventive measures were introduced in people's daily lives and social activities, the number of COVID-19 cases has not reached a level under which to impose urban lockdown, despite experiencing six small and large waves.

Impact of the COVID-19 Crisis on Livelihood and Work Style

The spread of COVID-19 infection has had a great impact on people's livelihood and work style. As for everyday living, people spend more time at home as they avoid unnecessary outings other than shopping for bare necessities in order to prevent infection. This enhanced more communication among family members, encouraging them to enjoy mutual hobbies together, which led to the creation of greater family harmony. On the other hand, concern developed regarding the health effects due to lack of exercise. To this end, people began going out to parks and open fields with less people to enjoy walking and jogging while also relieving their mental stress.

In terms of work style, many corporations introduced telework where possible, as a way of avoiding congestion at workplaces. This work style has dramatically changed the movement of workers concerning their commuting and business trips as well as inhouse meetings and other business negotiations. It also meant that people work from home rather than at offices, which not only increased spending time at home as mentioned above, but also required workers to secure working space at home. The introduction of telework is leading to a fall in demand for urban offices and instead shifting to the creation of business hubs in suburban areas.

The unanticipated profound impact of COVID-19 infection on people's lives and working styles as mentioned here, has implications for how one should consider the direction of future urban environment development.

Creation of an Urban Environment to Prevent Epidemics

Japan has the bitter experience that following the opening of the country to the world in the Meiji era (1868–1912), cholera was brought from abroad through port cities, causing many deaths by its wide spreading. The then government that keenly felt the necessity for public health sent Rintaro (Ogai) Mori, Shibasaburo Kitazato and other physicians or the like to Europe to study public health and bacteriology. Following their return to Japan, they made an enormous contribution to the dissemination of public health and development of countermeasures against epidemics, realizing the concept of hygiene at the national level, up to the present day.

After all, it is undeniable that a pandemic caused by an unknown virus such as COVID-19 will occur in the future. Particularly in the cities and regions of today where populations and urban functions are overly congested to an extent unprecedented in the history of humanity, once an epidemic is widely spread, it may trigger another pandemic. Not only claiming many human lives, it will cause huge and long-term damage to socioeconomic activities. Adopting a long-term standpoint therefore, one should reconsider hygiene and the control of epidemics in areas, which provide the infrastructure for people's daily lives and socioeconomic activities, in addition to prevention and countermeasures based on medicine for the spread of epidemics. From this perspective, the author presents as a pilot study, the creation of an urban environment resistant to epidemics, as follows.

(1) *Reorganization to a well-ventilated urban structure*

Practicing social distancing has been recommended as a preventive measure for COVID-19. This is based on the teachings of the public health study expected to be effective to a certain extent to prevent droplet and airborne transmissions. Ensuring adequate ventilation was widely practiced in private rooms, offices, museums, theaters and other public facilities, as a concrete countermeasure. Through the broadening of this idea, a well-ventilated urban environment can be developed to shorten the survival time of viruses. Concrete examples include a long-term reorganization to gradually shift urban structure, which considers the local prevailing wind direction. Such well-ventilated cities are expected to achieve the infection prevention effect by the use of natural wind, which helps reduce the stagnation of air and diffuse a virus, thereby decreasing its density.

(2) *From high-rise to medium/low-rise buildings*

As a second method to create a well-ventilated urban environment, consideration should be given to a change from high-rise buildings which hamper the

smooth flow of air to medium/low-rise buildings. In the cities of today, verticalization is in high demand for the purpose of effectively utilizing urban space due to soaring land prices, combined with development of the so-called technopole, a high-technology cluster consisting of urban functions. This trend is a remote cause of the concentration of city populations including during daytime. Epidemics spread at an increased rate when people assemble in excess, a lesson humankind learned from pandemics it experienced in the past. In order to avoid such a worst-case scenario, it is necessary to envisage and formulate an urban policy that encourages a shift from high-rise to medium/low-rise buildings as an effective measure.

(3) Development of a foundation for an ecosystem that controls virus outbreaks

Present-day cities are losing a degree of nature due to extreme artificialization. Life then loses its sound sustention, and once a virus like COVID-19 or bacterium invades human society, it rapidly increases causing a widespread epidemic. In order to minimize the risk of such epidemic, it is necessary to consider measures by utilizing mutual interference in the ecosystem to avoid an explosive outbreak of virus or bacterium hazardous to human life. In other words, one should promote the creation of an ecosystem foundation suitable for controlling a virus or bacterium outbreak, while applying the results of ecological studies to urban spaces. The creation of such a foundation includes for example, the development of green corridors, green spaces with a harmonic unity, and forest parks. What will then be required will be research and studies to verify the effects of the creation of such an ecological infrastruc-

ture concerning the virus and bacterium control, in other words, mutual interference in the ecosystem. Although this involves research and studies requiring steady work and time, it represents an issue of great importance that humankind needs to tackle in view of the economic efficiency of health.

Conclusion

Arrival of the novel coronavirus COVID-19 and spreading of its infection caused tremendous anxiety and disrupted people's daily lives worldwide, while greatly restricting economic and social activities. In concrete terms, the spread of COVID-19 dramatically transformed prior life and business styles while rapidly downsizing global trade and interchange which were on an upward trend, indicating various aspects of a shrinking world.

In order not to repeat such a bitter experience, humankind has confronted, it is essential for each individual to acquire knowledge and effective practice concerning public health including unknown viruses and bacteria to avoid the illness resulting from them. To this end, education on a national level with the study of public health as a requisite subject will play a vital role. The establishment of pedagogy to teach the importance of hygiene is needed at the same time.

Adopting a view from the perspective of the creation of an urban environment and national-level education, this pilot study intends to academically inspire the before-mentioned significance of epidemiology and how public health should be implemented in the restricted highly dense urban spaces where people reside and work.

References

1. Nakagawa M. Pandemic, Telecommuting, and Agglomeration. *Quarterly Journal of Planning and Public Management*, 2021; 44 (1): 3–8.
2. Morotomi T. Can the COVID-19 Pandemic Change the Japanese Economy through Geographic Distribution? *Quarterly Journal of Planning and Public Management*, 2021; 44 (1): 9–14.
3. Machimura T. Cascading Effects of COVID-19 on Cities: A Sociological Approach to a Pandemic. *Quarterly Journal of Planning and Public Management*, 2021; 44 (1): 15–20.
4. Fukushima S. The Changes in Structural Factors in the Pandemic of the Tokyo Region and Issues for Revitalizing Provincial Regions after the COVID-19 Pandemic. *Quarterly Journal of Planning and Public Management*, 2021; 44 (1): 21–26.
5. Sasaki Y. Considering the Future of Post-corona Cities and Regions. *Quarterly Journal of Planning and Public Management*, 2021; 44 (1): 27–32.
6. Dobi M. The Framework of Ecological Democracy: Make a City to the People's Hearts and Change the World. *Quarterly Journal of Planning and Public Management*, 2021; 44 (1): 33–38.