



A reflection on health and disease amid COVID-19 pandemic

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Abstract

Coronavirus disease 2019 pandemic is persisting for more than a year and it's still far from being controlled. It is making a big impact not only on physical illness but also on mental and social aspects. In this situation, we need to reflect on current medical society's view of disease and health. The dominant paradigm in contemporary medicine is the reductionist view of disease and the biomedical model of health. As a result, the healthcare system seems to be more focused on virus eradication than on patient care. We need to look back on this position in view of humanities and ethics and broaden our perspective to an ecological view of disease and the sociomedical model of health. The quarantine and health care policy also needs to be re-built with more focus on patient care.

KEYWORDS

COVID-19, disease, health, humanities, sociology

1 | INTRODUCTION

It's been a year and a half since coronavirus disease 2019 (COVID-19) pandemic began. This new infectious disease, which had spread at a frightening rate in the early days, became a testing tool for each country's quarantine policy. Unlike the past epidemics, new policies—mass testing, tracing, and isolation—emerged owing to the advancement of information and technology. Some countries have been relatively successful in controlling the number of confirmed cases. However, we are still incompetent in preventing the spread of infectious diseases and confronting many socioeconomic problems over time. The vaccines developed with the greatest hope, although they showed quite good preventive efficacy, are still limited in preventing all the variants of the virus. We are still far from controlling the pandemic.

The current situation leads us to look back on what it means to live a healthy life, and what the healthcare system is for. In this article, I intended to take a look at the problems that emerged during the COVID-19 pandemic and discuss the meaning of disease, health, and health care in terms of medical epistemology and ethics.

2 | WHAT IS A DISEASE?

At the beginning of the COVID-19 pandemic, the South Korean Government recommended screening polymerase chain reaction tests only for those who travelled abroad in certain areas and had a fever and respiratory symptoms. In South Korea, the relationship between the government and the medical association was not so cooperative because the government was planning healthcare policies that the medical association disagreed with. In the meantime, a doctor sent a suspected case to the public health centre for the COVID-19 test. But the public health centre official refused testing because the case did not meet the indications for the test.¹ Later, the case was confirmed as positive, and the medical association criticized the bureaucracy of the government for its lack of medical expertise. The public and the opposition party also joined the criticism. And the government, being conscious of the people's vote, greatly expanded the indications for the test. Infection control became a political issue. As a result, the subjects to the test included asymptomatic

¹The media articles cited in this paper were reported in Korean newspapers, and the websites of the articles are provided in footnotes. For this story, please see the following website: https://www.chosun.com/site/data/html_dir/2020/02/05/2020020503536.html.

individuals, and anybody who wanted to be tested could get it. The public's excessive fear of the virus also played a role in expanding test indications. Besides, the advanced IT situation in Korea made it technically possible. As the South Korean government's quarantine seemed to go relatively successful in limiting the number of confirmed cases, other countries began to implement similar methods of quarantine as South Korea did. The US Government at that time also faced criticism for having fewer COVID-19 tests than South Korea, and more aggressive testing was launched to find out more confirmed cases.

As a result of this mass testing policy that has never been done before, the number of COVID-19 confirmed cases increased drastically. On the contrary, the case fatality rate of COVID-19 showed a tendency to decrease. The case fatality rate of COVID-19 was reported to be lower than that of severe acute respiratory syndrome (SARS) or Middle East respiratory syndrome (MERS).^{1,2} But if the screening test had been restricted to symptomatic cases, the case fatality rate may be higher than reported. The positive effect of this mass testing policy is that it can provide better knowledge regarding the infectivity of the virus. This information is important for establishing effective quarantine policies. However, there are also negative effects. First, the increase in the number of confirmed cases is being reported in the media every day and spreads public fear of the disease. Second, medical resources can be depleted as asymptomatic cases are also included in the management. As a result, patients with symptoms are at risk of being excluded from medical treatment.

An infectious disease develops from the interaction between agent, host, and environment, which is known as the epidemiological triad. Social distancing to suppress the spread of infectious diseases is the right measure in terms of controlling the environment of easy transmission. On the contrary, putting an infected host in an isolated environment with other patients is like leaving the host in a more risky, immune-deteriorating environment. Even though the host had no symptoms in the first place, later he or she might develop symptoms while being isolated in a poor environment, and the disease could get worse.

Here comes a fundamental question about a disease. Is a test-positive case without symptoms a patient? Can we say that those who are test positive are having a disease?

According to Encyclopedia Britannica, "disease" is defined as "any harmful deviation from the normal structural or functional state of an organism, generally associated with certain signs and symptoms and differing in nature from physical injury." As seen in this definition,

a disease is generally a phenomenon that involves symptoms and signs. In fact, the disease begins with symptoms that the patient complains of, and then the diagnostic process follows. And the goal of treatment is a relief of symptoms.

Since ancient times, a disease had been defined according to symptoms that the patient complains of. Medical theories arise in the process of explaining and treating symptoms. In ancient Greek medicine, represented by Hippocrates, the disease was seen as a disharmony resulted from fluid dysregulation,³ and health care was provided based on the holistic care model.⁴ In oriental medicine, the symptom was the basic unit and key term in medical theory.⁵ The human body was seen as a microcosmos and harmony was emphasized for healing. After the modern era, the invention of microscopes and the discovery of microorganisms have introduced the pathology of diseases. Disease entities have begun to be defined according to pathologic findings. Descartes regarded the world as a giant clockwork machine and thought that one would have to disassemble it and look at the parts to understand it. This mechanistic view was applied to an understanding of the human body, and the reductionist view became the dominant paradigm in medicine.⁶

Reductionism in medicine affected the diagnosis, treatment, and preventive approach of disease. The reductionist view is to diagnose a disease based on pathology, assume that the pathologic finding has a causal relationship with the symptoms, seek for a treatment to get rid of pathologic findings, and establish prevention strategies focused on eradicating observable pathology. Consequently, it became ambiguous whether the purpose of health care is an improvement of patient's condition or restoration of pathology. In the same way, it is believed that the detection of pathogens is more essential in the diagnosis of infectious disease than a clinical presentation of patients. Furthermore, by seeing infectious disease as evolutionary warfare between mankind and microorganism, strategies to eradicate microorganisms are considered to be more important than patient care.

The reductionist view, of course, has contributed a lot to the advancement of medicine, but because of its limitations, system theory has attracted attention as an alternative.⁷ In contrast to the microscopic view of reductionism, system theory understands the world as a system and provides a macroscopic ecological perspective. The ecological perspective considers disease as disharmony in the entire system and attempts a multidimensional approach in diagnosis, treatment, and prevention of disease (Table 1).

In fact, COVID-19 was initiated by the destruction of ecological balance. Global instability can lead to an increase in new epidemics. Therefore, to properly cope with emerging infectious diseases, we

TABLE 1 Reductionist versus ecological view of infectious disease

	Reductionist view	Ecological view
Relationship between agent and host	Conflict	Harmony
Diagnosis	Isolation of microorganism	Host response to microorganism
Treatment	Removal of microorganism	Focus on interaction between host, agent, and environment
Prevention	Eradication of microorganism	



need to integrate knowledge from multiple disciplines and approach problems from a system perspective and ecological context.⁸ The microscopic approach of molecular biology is important for understanding the origin and pathology of pathogens. Whereas, understanding the ecology of infectious diseases and agent–host interactions provides key knowledge in regard to transmission and manifestations of diseases, and thus help establish successful disease control strategies.⁹ Recognizing that human health and global biosystem are inextricably linked, efforts should be made to understand infectious diseases and provide solutions from a more ecological perspective.¹⁰ Concentrated too much on reductionist view, we may lose the balanced view. We may fall into the fallacy of thinking newly emerging infectious diseases as problems to be solved solely by biological means rather than seeking more sustainable solutions for coexistence.

A disease entity is neither born nor discovered but defined. Pathologic finding per se is not a disease. Defining disease entities not only affects an individual's health status, but also affects the whole society in both ethical and economic aspects.¹¹ Now in this pandemic, we are experiencing the influence of disease control strategy, which is based on the reductionist view, on the whole society. It does not seem appropriate to set the number of confirmed cases as the goal of infection control without defining the disease entity. We should first define the disease entity we fight against and clarify who needs medical care.

3 | WHAT IS HEALTH?

WHO defined health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.” This WHO definition has been criticized for the word “complete,” which is usually unachievable, and its disease-centeredness. As an alternative, the definition of health as “the ability to adapt and self-manage” has been proposed.¹² It makes more sense to define health as “a dynamic state of wellbeing characterized by a physical, mental and social potential, which satisfies the demands of a life commensurate with age, culture, and personal responsibility.”¹³

Aside from the definition of health, WHO published and distributed “International Classification of Functioning, Disability and Health (ICF).”¹⁴ ICF takes a more comprehensive approach to health. ICF sees health state in a functional point of view, defines domains of health as body structure, body function, activity, and participation, and identifies personal and environmental factors as modifiers. According to the holistic and social perspective of ICF, health is not just a matter of presence or absence of disease but encompasses the way how we live. This perspective enables us to seek ways of minimizing the negative impact of disease and impairment on activity and participation.

The dominant paradigm of current medical society is the biomedical model. The biomedical model sees health as a disease-free or pathogen-free state. Its perspective is restricted to body organ or body system level and focuses only on body structure and function. It

TABLE 2 Biomedical versus sociomedical model of health

Biomedical model	Sociomedical model
Absence of disease	Health in disease
Absence of pathogen	Adaptation to life situation
Body organ or body system level	Whole person or society level
Focus on body structure and function	Focus on activity and participation

often neglects social and system factors that affect health status and sees health problems only at the biological level of an individual.¹¹ To complement the limitations of the biomedical model, a sociologic perspective is required. In the sociomedical model, one can be said to be healthy if he or she can adapt to life situations even with the disease. The sociomedical model extends the concept of health to the level of whole person and society, and focuses on activity and participation (Table 2).

Absurdly, as the pandemic persists, the quarantine policies limit activities and restrict the participation of individuals in everyday life, even when the virus itself that caused the pandemic does not cause serious symptoms or harm human body. From the health perspective of ICF, healthy lives are being threatened by activity limitations and participation restrictions in the absence of disease or impairment.

As new epidemics such as SARS and MERS emerged since the beginning of the 21st century, principles of quarantine ethics have been established. Upshur¹⁵ suggested the following four principles: harm, proportionality, reciprocity, and transparency. Aside from these ethical principles, we need to ensure whether quarantine policies are effective. For proportionality, we need to estimate whether the potential benefits of quarantine surpass the negative effects resulted from it. Benefits of isolating asymptomatic or mild cases should be weighed against side effects such as stigma. Besides, we should also keep in mind that a high-intensity quarantine policy can enhance public fear and anxiety, induce stigmatization, and provoke competition for limited resources. It may result in deepened economic polarization and a divided society.¹⁶ Policymakers tend to take position of people who are not infected yet. To protect uninfected, they isolate and confine infected ones. Such a quarantine policy is not different from oppressing the minority for the benefit of the majority. Infectious disease usually affects more in poor people and poor countries. Policymakers should not ignore the principle of justice when making quarantine policy.¹⁷

In South Korea, confirmed cases with no or mild symptoms are forced to be isolated in designated treatment centres. In March 2021, the media reported a case who committed suicide while being isolated in a designated centre.² According to press reports, the woman had been accused for violating self-isolation after receiving test negative result a few weeks ago. She contacted an infected one again and took her second test to get positive result, so she was sent to a designated treatment

²This case story was reported in the Korean newspaper, <https://insight.co.kr/news/32867>.



centre for isolation. The police assumed that she was suffering from being isolated alone in a room. The coronavirus did not cause serious physical symptoms to this woman, but isolation under the quarantine policy caused very serious negative consequence.

This tragic incident was reported in the media and called public attention, but in fact, there are many other unknown cases that are experiencing mental illness during COVID-19 pandemic. It is important to ensure that involuntary hospitalization be administered in an appropriate and respectful manner to protect the interests of both patients and the community. Special attention must be paid to prevent abuse of forced isolation just to alleviate public anxiety.¹⁸

Media also reported cases who are suffering from social disadvantage after overcoming COVID-19. Many people suffered from the stigma of having been a COVID-19 patient even after they got test negative. They had to feel uncomfortable when meeting other people in community or in the workplace. They often were pressured to resign from the company they had been working for, and some of them were actually fired.³ This irrationality comes from excessive public fear of the virus on the one hand. On the other hand, it also comes from the company's worries about the disadvantages they may get because of the quarantine policies. Though these patients defeated the virus and overcame the disease, they got participation restriction because of social prejudice and overly restrictive quarantine policies.

Even if it is not directly caused by infectious disease, economic depression and unemployment affect the whole society and hinder people's healthy lives. There has been a report that, among OECD countries, decline in employment during COVID-19 pandemic period is large in South Korea, which implemented stronger quarantine policies than other countries.⁴ Mass unemployment causes much greater social loss than the virus itself does. Mental distress a person may experience because of unemployment may cause more harm to health status than the virus itself does. We should not overlook this and make a misjudgment by looking only at gross economic indicators.¹⁹ Just like exaggerated immune response against virus harms our own body, an overreaction of society against disease may harm our society's economic structure.

4 | WHAT IS HEALTH CARE FOR?

In March 2020, early of the COVID-19 pandemic, a tragic death occurred in Daegu, where the first outbreak occurred in South Korea. A healthy adolescent man died of pneumonia. According to media reports,⁵ this high school student visited the hospital with

symptoms of pneumonia and high fever, but was denied hospitalization as he was classified as a suspected COVID-19 patient. Days ago, he had had to line up for about an hour on a rainy chilly day to buy facial masks which were in short supply at that time, even though he already had mild respiratory symptoms. After then he visited the hospital with a high fever, but could not receive proper treatment other than intravenous fluid supply in his parents' car. Later, in hindsight, he was hospitalized and treatment began, but this young man could not survive. This tragedy happened because suspected COVID-19 patients were not allowed either to come to general hospitals or to be transferred to the designated COVID-19 hospitals until confirmed. There was a loophole in health care caused by quarantine policy. The father of the young man moaned and said, "The result of complying with the COVID-19 manual led to an unfair death of a young man."

This case raises an important ethical question in pandemic situation. Is it ethically justifiable to ban infected people who need medical care from coming to hospitals under the cause of protecting the public? Under this policy, hospitals would avoid patients with respiratory symptoms. Even though they are not confirmed as positive, patients with respiratory symptoms cannot come to hospitals. Even when they manage to come to an emergency room, they will be isolated without receiving proper treatment. During the isolation, their symptoms may worsen or they may get a new infection. Healthcare policy is for all people including those who do not yet have the disease. Nevertheless, in essence, health care is primarily about taking care of sick people. Suppression of infectious disease cannot justify neglect of patients in medical need.

Pandemic situation caused many moral questions, and there has been debates in views of deontologist versus consequentialist.²⁰ Consequentialist may argue that rejection of treatment for the suspected cases is justified because if the suspected cases come to the hospital and spread the infection, it will have worse consequences at the public health level. Deontologist may argue that the reason why hospitals exist is to care for patients and it is the righteous duty of hospitals to treat patients while thoroughly complying with the quarantine policy, and that refusing patient care cannot be justified in any occasion. It is necessary to estimate consequences in terms of public health benefits, but in real world, accurate prediction of the consequences is usually impossible. If we justify refusal of care, it will be inevitable that early patients be killed for the cause of public health whenever a new epidemic emerges.

This case raises another ethical question in terms of redistribution of healthcare resources. Is it appropriate to set up facilities for forcible isolation of cases with mild or no symptoms in the shortage of hospital beds designated for COVID-19 patients? This question also applies to the current quarantine policy that sets the number of test-positive cases as the target indicator of infection control. Increasing test numbers and thus increasing the detection rate regardless of symptoms may be effective in counting the number of

³There have been a lot of newspaper articles reporting social disadvantages experienced by COVID-19 confirmed cases. Some of those stories were reported on the following website: http://news.tvchosun.com/mobile/svc/osmo_news_detail.html?contid=2021011990116#none.

⁴A Korean economics professor gave a presentation regarding this issue at a conference, and it was reported in a Korean newspaper: <https://m.hani.co.kr/arti/society/labor/981317.html>.

⁵This case story was reported in many newspapers in South Korea. One of the reports is the following website: <https://nocutnews.co.kr/news/5298772>. The article was written in Korean language and translated by the author in this manuscript.



test-positive cases, but medical resources can be run out early. More attention should be paid to ensure patient care and use limited medical resources efficiently.²¹ The purpose of health care is not virus eradication but patient care. Even though we do not have the exact antiviral agent acting on coronavirus, we still can take care of patients and save lives.

The main purpose of quarantine in the early phase of pandemic was to reduce deaths from COVID-19. Although the mortality of COVID-19 was not higher than other previous epidemics, its high infectivity made it a priority to implement a policy to stop its spread. Lockdown in the early pandemic seems to have had a direct effect in reducing the number of confirmed cases. In countries where the number of confirmed cases increased because of the failure of the initial blockade, the number of deaths increased. However, the death toll of COVID-19 is not solely explained by the number of confirmed cases. In a study that investigated mortality rates among countries, the difference between countries was explained by other factors such as the proportion of people over the age of 80, population density, the proportion of urban population, gross domestic product, number of hospital beds per population, average temperature in March, and incidence of tuberculosis. In some countries, more important factor than lockdown to reduce the number of deaths was medical resources, that is, the number of hospital beds. In particular, countries with high population density and a high proportion of older people over the age of 80 should focus on the increase in hospital beds.²²

These findings suggest that the healthcare system factor matters a lot in reducing COVID-19 related mortality. According to a study that investigated clinical manifestations of COVID-19, the progression rate from pneumonia to acute respiratory distress syndrome was significantly different among countries. It ranged from 3% to 63%. To reduce this rate, proper allocation of medical resources is critical.²³ Leaving patients untreated leads to high mortality.²⁴ Quarantine alone cannot guarantee a reduction in the number of deaths. In countries where healthcare is not warranted and medical costs are to be borne on their own, the mortality would be higher because of those who could not access health care.²⁵ Inequality is more pronounced in pandemic situation. Infectious disease affects more poor, neglected people, and minorities.²⁶

Apart from deaths directly caused by COVID-19, medical care for other diseases is also at risk. One way to estimate the death toll during the COVID-19 pandemic is to calculate the number of deaths in excess compared to the usual year. Last year's excess death statistics suggest a significant increase in deaths not only from COVID-19 but also from other causes.²⁷ The number of excess deaths vary by country. In the United States, where the number of COVID-19 confirmed and death cases were high, the rate of all-cause excess mortality compared with mortality directly caused by COVID-19 was 135%. On the contrary, in South Korea, where enhanced quarantine measures have been relatively successful in reducing the number of confirmed and death cases, this rate was 488%. This means that the success of the quarantine was accompanied by the sacrifice of other patients.²⁸ The reason for this may be that patients who needed medical care were hesitant to visit the hospital

because of the fear of COVID-19. Or it may be due to the shortage of medical resources caused by the pandemic. It was reported that diseases such as diabetes²⁹ or cancer,³⁰ which require long-term management, are likely to be affected by the pandemic. From long term perspective, while it is important to minimize deaths from COVID-19, it is also important to reduce all-cause mortality and maintain health services for other diseases.³¹

We need to reassure people that they will be well treated and recovered even if they are infected with COVID-19. We should not leave people to be overwhelmed by fear and anxiety that they will suffer great physical and social harm induced by this pandemic.

5 | CONCLUSION

COVID-19 pandemic is not only a matter of biological science but also a human problem. It is not an isolated problem, but deeply connected with the human condition and society. To re-establish sustainable community health amid this pandemic, humanistic reflection is required.³² Current response to COVID-19 pandemic arouses suspicion that the medical society is deeply immersed in the reductionist and biomedical view of disease and health. The ecological and sociomedical perspective is required to respond to this pandemic in more balanced manner.

Ethical reconsideration is also necessary for terms of the proportionality of the quarantine effects and the distribution of medical resources. It is advisable to stop testing people who do not present any symptoms or signs and try every effort to keep confirmed cases from stigmatization. It is not advisable to forbid suspected cases as well as patients with other diseases from coming to hospitals.

Policymakers need to make proper decisions about reestablishing COVID-19 control strategy and rearranging healthcare resources with focus on patient care. Otherwise, more people will get more suffering not only from direct effects of the virus but also from social and economic complications induced by quarantine policy.

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The author declares no conflicts of interest.

AUTHOR CONTRIBUTION

Si-Woon Park is the only author of this study.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

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