

COVID-19: Start of transition from social to global determinants of health

Mohammad-Reza Sohrabi^{1,2*} 

¹ Community Medicine Department, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

² Social Determinants of Health Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Corresponding author and reprints: Mohammad-Reza Sohrabi, Community Medicine Department, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Email: m.sohrabi@sbmu.ac.ir

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Social Determinants of Health was introduced in 2005 and a commission developed for defining international definitions and policies. Social Determinants of Health mainly focus on factors that lead to inequality within or between countries. These are the factors for birth, growing, living, working, and aging of people. They are consequences of the distribution of money, power, and resources at global, national, and local levels and include gender, education, early childhood experiences, income, employment, social support, physical environment, healthy behaviors, access to health services, and, race (1). This concept was useful for controlling inequity and some of them were used in Millennium development goals.

Recent epidemics and pandemics especially COVID-19 pandemic showed that the era of infectious disease outbreaks is not finished yet and countries all over the world should be ready for the rollback of high mortality pandemics again. “Social Determinants of health” may cover some aspects of health management in pandemics but, there are many factors that affect the speed at which a pandemic spread. Most of these factors are out of the health sector and, same as the Social Determinants of Health, they play a major role in controlling the diseases. To cover these factors, this is the time to propose the concept of “Global

Determinants of Health (GDH)” as the factors that mainly affect health at the international or global level. These factors are not limited to a single country and may affect different countries even from different continents. They change the health status and may cause outbreaks of communicable diseases, the spread of non-communicable disease, poverty, hunger, destruction if they manage incorrectly. Some of these factors are as follow:

International transport and Transit:

After globalization, it became very easy and fast to move between countries, and nowadays everybody can move from the far east to the far west in less than one day. The improvement in technology has two completely different aspects: transmission technology may lead to the high speed of disease transmission and increased mortality and morbidity; management technology may lead to better and faster ways of diagnosis, prevention, treatment, and rehabilitation of diseases and the dramatic decrease in mortality and duration of diseases. Control of epidemics and pandemics depends on the balance between transmission technology and management technologies. If the speed of transmission by more than management technologies, mortality and morbidity will be high and vice versa. As much as international transport and transit increase so does the likelihood of transmitting the diseases and

its speed. In other words, the epidemic is easier to turn into a pandemic.

Migration: Near 14 percent of the world's population is moved from the location they were born (2). People may move following natural and manmade disasters. War, drought, climate changes, income-gap, and inequity are the leading cause of immigration from low and middle-income countries to high-income countries. Population movements may cause a change in health status in both countries of origin and destination. They carry genes and micro-organisms by themselves and keep some lifestyle and behaviors of the origin. Some diseases like diabetes, hypertension, and thalassemia could be transferred to the destination country by genes and be a protective or risk factor for other diseases like Malaria or COVID-19. Studies showed that migration can affect the health system and access to health care services (3, 4).

Tourism: It may accelerate the transmission of infective pathogens between countries. Some countries make a lot of money from tourism and each year, even many times more than the country's population, tourists enter these countries. This entity the same as migration, by higher numbers of travelers and lower duration of stay, can affect public health (5). In COVID-19, the transmission of the disease through ski tourists from Italy to other countries was reported.⁶

World trading: world trading regulations made it easier to use a cheaper workforce of developing countries and commute to exchange goods. Legal or illegal trade in agricultural products and animals are the most prominent examples of transmission of the diseases by trading. The role of the bat and pangolins (a kind of anteater) in the spread of COVID-19 (7), Camels in Middle East respiratory syndrome coronavirus (MERS-COV) are mostly known (8). Opiate trading, especially new chemical high potency opiates, throughout the entire world has a significant effect on mental health status, economic situation, high-risk behaviors and, sexually transmitted

diseases. Opiate consumption is responsible for an important part of the burden of depression. In the COVID-19 pandemic, merchants who traveled to China spread the disease.

market exclusivity: On the other hand, exclusive drug manufacturing may lead to insufficient market access as a result of the commercial interest of the companies. This may cause inequality in access to drugs or vaccines and increases the mortality and morbidity of the pandemics (9). Substandard and falsified drugs are another complication of market exclusivity and may lead to morbidity and mortality during the epidemics and pandemics (10). It may cause falling into a vicious cycle of pandemic or epidemic and poverty (11).

Abroad or overseas workers and employers: Globalization has blurred the borders of countries. Some countries are known as the sources of cheap workers. These workers transfer the infective pathogens and lifestyle between countries the same as written for migration. As inequality through the countries raises, more workers move for finding a better job with higher income. These movements could lead to the spread of communicable diseases as pandemics.

Income, per-capita Growth Domestic Product (GDP): Besides mortality and morbidity, pandemics of communicable diseases have a high economic impact on countries and global economics. Quarantines, mortalities and leave sick lead to limitation of participation in economic activities and decreasing production and economic growth rate. It has been more prominent in the last few decades after globalization. GDP and the proportion of the health sector from GDP are important, as much as it is higher, the possibility of a pandemic and its spread is lower. Higher GDP makes it possible to support people to stay at home and control the curve of an epidemic in communicable diseases pandemics. On the other hand, higher GDP may lead to using more calories and choosing a sedentary lifestyle; this could

increase the prevalence of non-communicable diseases (12). Keep in mind that this factor alone cannot be considered and should be analyzed along with other factors, including the health system.

Radicalism, racism, and extreme nationalism: They lead to violence and ignorance of minorities. The extreme nationalist is growing around the world. They have faith in their belief, race or country and allow themselves to do anything with others. Bioterrorism is an extreme outcome of this kind of thinking. Using micro-organisms as a weapon of attack may lead to epidemic or even pandemic of disease and violence (5, 13).

War: It directly causes death and disability, displacement of refugees in and out of the countries. It may lead to the demolition of urban infrastructures such as safe drinking water, agricultural land, health facilities and, they are exposed to epidemics and pandemics (14, 15). Cold war and sanction are silent wars, they destroy infrastructures gradually and damage the general population economically and finally, they will be vulnerable and ill.

Politics, international health organizations power, and influence: international cooperation is an important key point in the exchange of information and global health management especially in a pandemic. Cost-effective community-based interventions, standardizing new drugs and vaccines, evidence-based protocols and policies, exchange of data and experiences, training of health workers and physicians and, common researches are the most important health actions during pandemics. International health organizations have an important role in planning, organizing, doing, and controlling these actions. The authority of these organizations come from the international consensus on their job and supporting them. Political and financial support of international health organizations helps them to overcome the hard situation of pandemic and do their best. International coordination and

cooperation make it possible to control pandemic cost-effectively (16, 17). In the COVID-19 pandemic cutting off US aid to the World Health Organization affected the organization's ability to cope with the crisis.

Climate changes: climate changes, directly and indirectly, could affect global health status. Greenhouse gases increase more than estimates and accelerate the warming process of the world. Climate change could raise the level of water in the oceans, floods, windstorms, and droughts. These may affect the models of infectious disease epidemics and also food security (18, 19).

Sources of energy: Nuclear power, oil derivations, electric and solar energy are the main sources of energy. They are the most determinants of air pollution and could affect health to varying degrees. Their role in health is mainly limited to non-communicable diseases but these non-communicable diseases make people susceptible to infections and communicable diseases.¹⁸

Internet influence rate: Information is the source of power in the future. The Internet as the source of much information has a brilliant role in health maintenance and promotion. Internet influence rate indirectly shows literacy rate, economic status, equity, and governance in a community. A high internet influence rate, as a protective factor, could prevent an epidemic to be a pandemic (20).

This is an introduction to the preliminary conceptual framework on Global Determinants of Health. For prevention and control of future pandemics, we need to know more about the role of Global Determinants of Health and also define intervention to minimize the effect of negative factors and maximize the effect of positive ones on global health. It should be discussed and criticized by experts in all related fields. Also, it is recommended that international health organizations, especially the World Health Organization, develop an expert committee to define and manage it on a global level.

Non-communicable diseases or their risk factors, on the other hand, can appear as epidemics or pandemics too. Obesity is a common risk factor that affects many people all around the world. Diabetes type 2 as the main outcome of obesity has the potential of being epidemic or pandemic. As the mortality per unit of time and speed of spread of non-communicable diseases are much less than communicable diseases, they have less paid attention. The burden of non-communicable diseases shortly makes us consider them as epidemics and pandemics of diabetes, coronary heart diseases, and cancers (21).

To be ready for response to the future pandemics of communicable and non-communicable diseases, it is essential to define the factors that facilitate or limit the spread of communicable diseases between countries or make people susceptible to non-communicable diseases on a global level. The concept of “Global Determinants of Health (GDH)” is defined here as the factors that mainly affect health at the international or global level. These factors are not limited to a single country and may affect different countries even from different continents. They change the health status and may cause outbreaks of communicable diseases, the spread of non-communicable disease, poverty, hunger, destruction if they manage incorrectly.

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