

Climate effects on human health and health policy

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Abstract: This study analyzed policies related to healthcare that are affected by climate change in Korea. The Asia region is suffering from many health problems, such as vector-borne diseases, water-borne diseases, and rodent-borne diseases because it is exposed to more natural disasters than any other region in the world. Implementing a surveillance system nationally can alleviate these problems, supporting capacity-building for new kinds of diseases emerging in developing countries in an effort to attain sustainable development goals.

Keywords: national policy, foreign policy, climate change, health effects.

1 Introduction

The term “climate change” means a change in the climate system, which is incurred by changes in the concentration of greenhouse gases as a consequence of human activities in addition to a natural climate change that has been observed over a considerable period, according to the Framework Act on Low Carbon, Green Growth [1].

Many research findings show a close relationship between climate change and its effects on human health in terms of morbidity, vulnerability to maximum or minimum temperatures, and reproductive function as well as ecosystems, tourism and other systems. [2, 3]. The two research issues of morbidity and the costs of climate change’s adverse effects have been highlighted since the 1990s.

Moreover, it is widely accepted that climate change is the riskiest of recently emerging environment factors that affect the health of humans and even their continued existence. In the third report on the United Nations’ Intergovernmental Panel on Climate Change noted that most of the global warming over the last 50 years was very likely due to human activity [4]. Moreover, the report considered that human health in lower income populations was more exposed to health threats [4].

According to the 4th report from the United Nations’ Intergovernmental Panel on climate change [4], the average temperature of all countries has increased by 0.74 Celsius in the last hundred years, and this has caused an increase in diseases and mortality rates worldwide. The agriculture sector is

also highly affected by climate change [5].

In particular, in Korea, the average temperature has risen by 1.7 °C from 1912 to 2008, a difference over nearly 100 years in Korea that is much greater than the world average [6].

The World Health Organization, in the World Health Report 2002, has predicted what the adverse effects on human health of climate change will be. The most serious health problem highlighted was diarrhea, and malaria in certain middle-income countries [4].

Two processes have been used at the United Nations level to deal with climate change, mitigation and adaptation measures. According to the United Nations Environment Programme (UNEP), climate change mitigation refers to efforts to reduce or prevent emissions of greenhouse gases. UNEP takes a multifaceted approach toward climate change mitigation in its efforts to help countries move toward a low-carbon society. Climate change adaptation includes efforts to change the core systems of transportation, agriculture, business, infrastructure, water, energy, public health, ecosystems, and land use. Therefore, many health experts have insisted that health impact assessments should be included in planning national climate change policies [7].

In this study, a literature review has been conducted to analyze the impacts of climate change on human health, and governmental efforts to deal with those problems have been evaluated in order to suggest improvements for future policymaking.

2 Climate change's effect on national and foreign policy

2.1 National policy level

To reduce the impacts on healthcare due to climate change and to implement a climate change adaptation policy, it is necessary to evaluate the health impacts, analyze the vulnerability factors, and develop policy and technical alternatives.

The impacts of climate change in Korea vary across public health, ecosystems, and agriculture. For instance, the annual precipitation in six major cities has increased by 19% in 100 years, and rainfall intensity has doubled compared with that of the 1970s. The effects on public health are an increase in the spreadability of infectious diseases, a rise in the number of heatwave victims, and the maladaptation of vulnerable people [8].

Korea has changed its national climate change policy three times since its first comprehensive plan on countermeasures to climate change (1999–2001). In 2010, Korea established the “Framework Act on Low Carbon, Green Growth” and the National Adaptation Strategy. The purpose of this Act is to promote the development of the national economy by laying down the foundations necessary for low carbon production and green growth and by utilizing green technology and green industries as new engines for growth. According to Article 1, this is to enable the pursuit of the harmonious development of the economy and environment, to contribute to improving the quality of life of every citizen, and to allow for the take-off of a mature, top-class, advanced country that will fulfil its responsibilities in international society through the realization of a low-carbon society.

Based on the act, the following plan relates to climate change adaptation: The Green Growth five-year Implementation Plan 2011–2015 was implemented as part of the national climate change adaptation master plan, providing, in turn, plans for every sector and local government [9]. The national climate change adaptation master plan is composed of 86 major projects for 10 sectors, comprising public health, disaster control, agriculture, forestry, marine and fisheries, water, ecosystems, climate change monitoring and projection, the adaptation industry, educational materials, and international cooperation. In addition, the chair of the ministerial level committee is the Minister of the Environment. Those projects deal with 13 related ministries [10]. However, Korea's adaptation policy has been evaluated as a top-down approach and a slow

development phase among OECD countries. Moreover, health policy has not been regarded as important as other policies in adapting to climate change.

2.2 Foreign policy level

It is well known that Korea has dramatically changed its position from being a recipient country of aid since the Korean War in 1950 to being a donor country, and is now a leading country in the preparation of post-millennium development goals. The impacts of climate change have been most serious in developing countries, which are exposed to risk factors because of their vulnerability and lack of managerial capacity.

The Korea International Cooperation Agency (KOICA), established in 1991 by the Ministry of Foreign Affairs, is the only Korean organization that offers official development assistance grants. Korea became a member of the OECD Development Assistance Committee (DAC) in 2010, and has increased the size of its aid budget to achieve the DAC goal, as the standard contribution of DAC members for Official Development Assistance expense is set at 0.7% of Growth National Income [11]. DAC has developed and applied Rio markers to calculate the amount of expenditure made by the Committee on Climate Change since the Rio Convention.

The Creditor Reporting System (CRS) is a databank accessible to the public. The OECD DAC has monitored the goals of the Rio Convention using Rio markers in CRS. The Rio markers on climate change mitigation were established in cooperation with the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC). They have been available since 2011 after being developed by the DAC in 2009. Those markers indicate donor countries' policy objectives, especially in the different kinds of aid provided to developing countries on climate change [12].

In the 2013 report on the Rio markers, the Asia region was the priority area for receiving climate change aid of 70.5% for mitigation measures and 86.3% for adaptation measures. The aid provided was for such projects as water supply and sanitation, forestry, and general environment protection [13].

The healthcare sector is the second largest area of expenditure, constituting 80 billion (16% of 500 billion) of KOICA's total expenditure of won in 2012. In particular, KOICA has operated vector-borne diseases control projects in Mongolia, Cambodia, and Papua New Guinea in collaboration with the World Health Organization [14].

On the other hand, the Korean peninsula is a unique area, which is technically still at war, with a truce holding since 1953. In the 1970s, during the regime of former President Park Chung-hee, Korea put huge efforts into reforestation and made other green change in 1980s. Now his daughter, President Park Geun-hye, has been building a creative economy through green cooperation since her inauguration.

The Korean government has devised a three-stage green detente cooperative strategy with North Korea [15]. The first phase is to build a green cooperation trust-building process through alleviating tensions and promoting small acts of cooperation, such as contagious disease management, biodiversity, and forestation projects. The second phase is to deepen green economic cooperation by implementing sustainable agricultural methods and turning demilitarized zones into ecological peace parks. The third phase is to expand the government's inclusive green growth movement to the greater Asia region through the Korean peninsula green economy and environment community. The final goal of this plan is to establish a foundation for the unification of Korea [15].

3 Climate effects on health policy

The pathway of climate change to human health shows that human exposure to climate change could cause temperature-related illnesses and deaths, extreme weather-related health effects, air pollution-related health effects, vector-borne and rodent-borne diseases, and other mental and nutritional effects [16]. One of the longitudinal research findings revealed that the risk of hospitalization and need for emergency services was affected by high and low temperatures, especially among the vulnerable population: low-income people, infants, and the elderly [17].

Based on a review of Korea's national and foreign, the country has devised policies that take into account the health effects of climate change. The Ministry of Health and Welfare's health management countermeasures contain basic principles for climate change adaptation. They include a warning system, building a comprehensive health safety net, and providing intensive care for vulnerable people.

However, it is necessary to develop a more systematic approach to dealing with the health effects of global warming and the onset of new kinds of contagious diseases because the consequences for health are very serious.

For the past 15 years, the United Nations has been making efforts worldwide to achieve the Millennium Development Goals (MDGs), and is now finalizing the post-MDG goals. The post-MDGs will be applicable to all countries by 2016, and their core concept is sustainable development as one global community, including developed and developing countries together [18].

On this point, the health effects of climate change are not limited to one country but apply everywhere. Climate change aggravates deaths from high temperatures, especially among vulnerable people, who have diminished immune system capacity, and it increases the likelihood of scarce communicable diseases outbreaks being caused by global warming.

The 5th IPCC report [10] also recommended that health impacts be considered in the devising of climate change policy. Korea did not put much stress on it because the policy was being undertaken by the Ministry of Environment, not by the Ministry of Health and Welfare.

Recently, South Korea suffered from an outbreak of Middle East Respiratory Syndrome (MERS) over a two-month period, and the Ministry of Health and Welfare intensified public health measures to counter the outbreak. Finally, it is now receding. The current status of MERS cases in South Korea is as follows: Statistics on MERS are available on the Ministry of Health and Welfare's website. Laboratory confirmed cases number 186, and, of these, 138 were discharged, there were 36 deaths, and 12 cases are under treatment as of July 30, 2015. The total number of people who were isolated was about 17,000. Now, MERS has receded after a two-month long public-health crisis.

The lessons of MERS were that surveillance and early detection activities are very important to control the spread of new diseases amongst the public. Such measures can result in less health expenditure and use of health personnel.

The importance of prevention measures in relation to climate change is not a recent recommendation. According to research finding published last year by Brown University, the number of epidemic outbreaks has increased dramatically since 1980. Gaia theory underlines the critical role of the ecosystem, suggesting the MERS outbreak was caused by climate change as well as an inadequate emergency health response [19]. We live in one globalized world as global citizens, so we need to know what the catastrophic results of climate change are for human beings. A health policy to manage the issues raised by climate change centers on the prevention management of new contagious diseases and the health management of vulnerable

people. These efforts should be implemented more intensely nationally and globally in the form of aid to developing countries and humanitarian assistance for North Korea.

4 Conclusion

In this study, national and foreign policies, and those related to health, were reviewed.

Recently, we have faced outbreaks of very rare infectious diseases. These phenomena are closely interrelated with the malfunctioning of the environment and ultimately result in adverse effects to human health.

The Asia region is exposed to more natural disasters than any other region in the world and is suffering from many health problems, such as water-borne diseases from floods and vector-borne diseases from global warming. These can be alleviated by implementing a surveillance system nationally and supporting capacity building for new kinds of diseases in developing countries. In addition, green cooperation efforts should be focused on reforestation, creating peace parks in demilitarized zones, and building disease control capacity in North Korea.

World leaders at the recent United Nations Sustainable Development Summit agreed to adopt 17 sustainable development goals by 2030 [15]. And it is promising that South Korea has been given the leading role in Asian green cooperation between China, Japan, and North Korea.

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