

Psychological Impact of Climate Change Disaster:

Focusing on Climate anxiety

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A B S T R A C T

Every year we, human beings, suffer from diverse types of disasters that cause severe pains and difficulties in our lives. Disasters become more disastrous as they generally occur with wide scope of damage in unpredictable time. But among these, at present the most threatening and imminent disaster is climate change crisis. Presumably, disasters entail not only physical damage but also mental and psychological damage. The climate change disaster, which might cause the doomsday to our earth, could induce significantly negative impact on psychological aspect. However, so far the psychological perspective was not properly recognized and relatively poorly dealt with comparing to physical damage. The purposes of this article are as following. First, to ascertain the psychological impact of climate change disaster and identify the notion of climate anxiety. Second, to acknowledge the importance of implementing support services to assist current and future victims of psychological damage.

Key words: Disaster, Climate Change, Psychological impact, anxiety, implementing service

1. Introduction

There are many kinds of disasters that cause difficulties in our lives every year. At present, everybody can agree that the most threatening and fatal disaster is climate change. Because the scope of damage could be uncountably wide and the level of damage extremely high. According to Heo(2021), "The Intergovernmental Panel on Climate Change (IPCC), founded by the World Meteorological Organization(WMO) and the United Nations Environment Program(UNEP) in 1988, has published five 'climate change reports' over the past 30 years, in which atmospheric scientists have been consistent in warning that unless greenhouse gases are drastically reduced, serious global warming will occur within this century and it will inevitably result in fatal climate change threatening the survival of Human being."(Heo, 2021)

According to Oh (2021), "Every year the World Economic Forum (WEF) announces the possibility of global danger and its potential ripple in each of 5 areas(economy, environment, geopolitics, society,

technology) to preemptively figure out the risk factors to the global economy. According to the contents issued in 2021, extreme climate change is the first place among risk factors, the failure of climate change mitigation and adaptation is the second, disasters made by human being is the third, the infectious disease is the fourth and the biodiversity loss is the fifth. To wit, majority of risk factors to global economy are related to climate change. The data released in 2021 by the National Disaster Research Institute in Korea also shows that the majority of primal damages by disasters in the last five years have something to do with climate change."(Oh, 2021) So it is not questionable that climate change is the hottest and the most urgent topic for human being now days.

Disasters tends to have a wide range of damage and it is unpredictable when and how they will occur. Here in this wide range of damage, the psychological and mental damage should be counted importantly besides the physical damage. According to Song (2010: 53), "those who survived the disaster, those who lost the close ones due to the disaster

or those who closely watched the disaster are susceptible to suffer mental and psychological trauma in addition to physical damage.”. Moon (2016: 239) said that “The psychological approach is presumably very crucial in the process of adapting to climate change, however it was mostly neglected so far.”. And he declared that his research afterward would be more focused on climate change and its psychological adaption. Other studies show similarities in this respect. For example, with climate change posing a major threat to human health, the studies and research for elucidating its physical effects, such as the increased rates of heat-related illnesses and infectious diseases and exacerbation of cardiopulmonary conditions, are prevalent. But comparing to that, the studies and research for psychological and mental effects are very scarce, particularly concerning young people (defined by WHO as individuals aged 10–24 years) and youth (15–24 years) who might suffer disproportionately enormous damage. (Parker, et. Al., 2019; Sanson, et. Al., 2019; Wu, et. Al., 2020: e435).

Of course we could answer the reason why this happened, According to Hong(2022), “Because to whom suffering climate change disaster, the physical loss and damages were drastically enormous, international organizations were rather belated in illuminating the fact that climate change may threaten the mental health. As abnormal weather caused by climate change has brought about more damage due to natural disasters than in the past, mental health issues have been pushed to the back burner as they had to focus on recovering physical property damage. For example, when a super-large forest fire broke out in Fort MacMurry, Alberta, Canada in 2016, the immediate urgent task was to solve the housing and livelihoods of 88,000 victims. A long time later, BBC Earth reported that University of Alberta, after having surveyed children aged 12 to 18 years old who experienced forest fires at the time, revealed that one-third of them were suffering from post-traumatic stress disorder (PTSD) 18 months after the fire.”(Hong, 2022)

As we have seen above, considering the importance of psychological and mental health, studies and research in treating the effects of disasters in the psychological perspective are rather deficient comparing to the physical. So, in this study I sought to identify the climate change disaster and examine its effects focusing on psychological respects. In addition, I tried to elucidate how to deal with the psychological aftermath of climate change disasters.

2. Materials and Methods

To achieve the purpose of this study, I examined and inquired the references and articles meaningfully related to this subject. These examinations and

inquiry served to identify the climate change disasters and elucidate the negative effects of climate change in the psychological and mental perspective and the methods dealing with these aftermaths.

3. Climate Change Disaster: Global Warming and Climate Change

The term ‘climate change’ is intimately related with ‘global warming’. And ‘global warming’ is a phrase that refers to the effect on the climate of human activities, in particular the burning of fossil fuels (coal, oil and gas) and large-scale deforestation, which cause emissions to the atmosphere of large amounts of ‘greenhouse gases’, of which the most important is carbon dioxide. Such gases absorb infrared radiation emitted by the Earth’s surface and act as blankets over the surface keeping it warmer than it would otherwise be. Because of its negative impacts on human communities (including for instance substantial sea-level rise) and on ecosystems, global warming is the most important environmental problem the world faces. Adaptation to the inevitable impacts and mitigation to reduce their magnitude are both necessary. International action is being taken by the world’s scientific and political communities. Because of the need for urgent action, the greatest challenge is to move rapidly to much increased energy efficiency and to non-fossil-fuel energy sources(Houghton, 2005: 1343). Associated with this warming are changes of climate. The basic science of the ‘greenhouse effect’ that leads to the warming is well understood. More detailed understanding relies on numerical models of the climate that integrate the basic dynamical and physical equations describing the complete climate system. Many of the likely characteristics of the resulting changes in climate (such as more frequent heat waves, increases in rainfall, increase in frequency and intensity of many extreme climate events) can be identified. Substantial uncertainties remain in knowledge of some of the feedbacks within the climate system (that affect the overall magnitude of change) and in much of the detail of likely regional change.

Modern climate change basically related with global warming is dominated by human influences, which are now large enough to exceed the bounds of natural variability. The main source of global climate change is human-induced changes in atmospheric composition. These perturbations primarily result from emissions associated with energy use, but on local and regional scales, urbanization and land use changes are also important. Although there has been progress in monitoring and understanding climate change, there remain many scientific, technical, and institutional impediments to precisely planning for, adapting to, and mitigating the effects

of climate change. There is still considerable uncertainty about the rates of change that can be expected, but it is clear that these changes will be increasingly manifested in important and tangible ways, such as changes in extremes of temperature and precipitation, decreases in seasonal and perennial snow and ice extent, and sea level rise. Anthropogenic climate change is now likely to continue for many centuries. We are venturing into the unknown with climate, and its associated impacts could be quite disruptive(Thomas and Kevin, 2003: 1719).

Anyway it is very clear that climate change has many dangerous factors. It can bring about natural disasters like flooding, extreme heat, drought. And those disasters will drive people to suffer physical and mental damages, which force the Country to spend vast amount of money for recovery. So, climate change is not simply the change of climate as a natural course. Now it has become 'Climate Crisis' which can cause the most threatening disasters in our human history. Therefore, we can directly call it as 'Climate Change disaster'.

Disasters can be classified into natural disasters caused by natural phenomena and human disasters caused by human behavior. According to 7 of Article 2 of the Korea Meteorological Law, " 'Climate change' means that weather events continue beyond the average state for a considerable period of time due to human activity or natural factors". In a study by O'Brien et. Al.(2006: 64), it was also mentioned that "Climate change, although a natural phenomenon is accelerated by human activity". And one of the key words associated with climate change disaster, as we have already mentioned above, is global warming.

To wit, climate change has been caused by human activity with natural forces adding some variability, and it can bring out enormously fatal effects to our world(even the doomsday). As such, climate change can correspond to disaster both human and natural.

4. The effects of climate change Disaster from a Psychological Perspective

According to Kim.C(2022), on February 13, 2022, the Child Welfare Research Institute of the Green Umbrella Children's Foundation released the research report concerning 'The effects of climate change crisis to children and the responses', which included the results of focus group interviews with 29 children aged 11 to 16 in Seoul, Jeonbuk, and Busan from September 1 to 12 last year. The results shows that children recognize the climate change crisis as an obstacle closely related to life, such as chewing gum that would not fall out or mosquitoes that bother one's daily life. Children who participated in the study said they had to be careful against safety accidents when going to and coming from

school or going outside, due to frequent heat waves, sudden rainstorms and cold waves, which led to negative emotions such as lethargy, stress, irritation, and anxiety. Moreover the spread of COVID-19 increased the number of non-face-to-face classes, which made it more difficult for them to have interpersonal and intimate relationship with their friends.(Kim.C, 2022)

According to Park(2022), there is also a study showing that there is a correlation between global warming and suicidal rate increase. According to CNN in July 2018, the research team led by Marshall Burke, associate professor of geo-system science at Stanford University, said that when the monthly average temperature rises by 1°C, monthly suicidal rate increases by 0.68 percent in the U.S. and 2.1 percent in Mexico. They say that if the temperature rises at unusual rate, the suicidal rate corresponding to that month tends to rise proportionate to it. The research team predicted that 9,000 to 40,000 more people will kill themselves by 2050 due to rising temperature caused by climate change in the United States and Canada unless CO2 emissions are restrained. As a result, there have come out the voices demanding the State to prepare plans to support mental health problems caused by climate change and to establish a mental health support system for people suffering from emotional distress due to the rapidly changing climate. At the World Health Organization (WHO) meeting in Stockholm, Sweden, on June 2 to 3, Maria Neira, director of the WHO's Environmental Climate Change Health Bureau, pointed out that while the impact of climate change is becoming a part of our lives, mental health support is hardly involved(Park, 2022). Taylor & Murray(2020: 1) said, "The physical impact of the climate crisis is impossible to ignore, but experts are becoming increasingly concerned about another, less obvious consequence of the escalating emergency – the strain it is putting on people's mental well-being, especially the young. Psychologists warn that the impact can be debilitating for the growing number of people overwhelmed by the scientific reality of ecological breakdown and for those who have lived through traumatic climate events, often on the climate frontline in the global south".

As such, it has been shown that disasters due to climate change can cause not only physical and material damage but also mental and psychological damage, of which the representative one is climate anxiety.

4.1 Psychological Impacts of climate change disaster: Climate Anxiety

Recently the U.S. also seems to value the psychological impact of climate change. And 'climate anxiety', which hinders daily life due to anxiety about

the future, is becoming an area of psychotherapy. According to the New York Times on February 6, 2022, the recent survey on 10,000 people in 10 countries showed that though less than half of them(45%) said having suffered from climate anxiety, the number of cases complaining of such anxiety is increasing faster than ever, so the climate anxiety has become included in the psychological treatment area(Song, 2022).

According to Pihkala (2019: 1), "Climate anxiety is an aspect of wider phenomenon of eco-anxiety: it encompasses challenging emotions, experienced to a significant degree, due to environmental issues and the threats they pose. On a wider scale, both eco-anxiety and climate anxiety are components of a phenomenon, in which the state of the world (i.e. the so-called macro social factors) impacts our mental health." Lee(2021) also argued that now we cannot ignore the results of a series of research, which shows climate change is adversely affecting mental health, and the reason could be found in that climate anxiety or climate grief are often found in the younger generation. In addition, in September, the medical journal 'The Lancet' published a study confirming this fact once again. The research team led by Elizabeth Marks, a Senior Lecturer at the University of Bath, conducted a survey on the impact of climate change on the younger generation of 10,000 teenagers aged 16 to 25 in 10 countries. As a result, more than 80% of the respondents experienced climate anxiety, and 60% of them said the degree of anxiety was very serious. According to another study, people are not only worried about the future environment that may be completely ruined, but also that the actions of themselves or their descendants could have a negative impact on the planet. Perhaps because of that, not a few young adults who suffer from climate anxiety choose to have fewer children or not at all.(Lee, 2021) Kim (2022) also said that anxiety and depression due to the climate crisis eventually cause social problems, which result in avoiding childbirth. Anxiety about climate crisis will be led to low birth rate, and many experts warn that the higher the awareness of the climate crisis, the worse the problem of low birth rate becomes. CNBC, a U.S. economic media outlet, also introduced a similar analysis in September last year, saying that fear of climate change will speed up the low birthrate as many youngsters decide not to give birth at all.

According to Moon(2021), on May 26, 2021, UK newspaper 'The Guardian' quoted a recent study on the effects of climate crisis on mental health and emotions and reported that climate crisis is causing enormous socioeconomic costs due to the adverse effects on human mental health. According to the study report, heat waves increase suicide rates and weather changes such as floods and forest fires cause victims to suffer from trauma. In addition,

anxiety about food, housing, and livelihood causes extreme stress and depression, and anxiety about the future adversely affects mental health, especially for young people. In addition, even if it is not a climate crisis, mental health conditions are already having a profound impact on billions of people, resulting in trillions of won in costs every year. The study also explained that global heat waves could worsen mental problems unless proper measures are not taken, and people whose mental health has deteriorated due to climate change are bound to be more vulnerable to another more severe climate change in turn, and such a vicious cycle can continue(Moon,2021).

After examining these studies, we can find out that the disasters of climate change have a profound influence on the mental part, and these mental adverse effects have the possibility of enormous negative impact to social and economic aspects and vice versa. Therefore, it is probable to be repeated and escalated into vicious circle and it is our mandate to cut off this vicious circle by adequately dealing with psychological damages.

5. Response

As we have seen at the above, nowadays climate anxiety is prevalent especially in younger generation. They overwhelmingly worry about climate crisis, which take cause fear, depression, anger, helplessness. Sometimes they even feel for committing suicide or do not want to have their own children. So, the impact of climate crisis on people's psychological well-being and how to respond with it has become an important problem to be solved.

Building a response for psychological and mental damage is a crucial and important task because the mental damage caused by disaster can ruin a person's life, and moreover cause enormous adverse effects to country's economy. Wu, *et. Al.*(2020: e436) said, "Mental health professionals, policy makers, and advocates need robust evidence to mitigate the effects of climate anxiety and stress on the short-term and long- term mental health of young people. There has never been such a large population of young people globally, nor do we anticipate any reversal of the impacts of climate change. Young people are agents of change, our future leaders, and most likely to succeed in improving planetary health. Thus, making investments to improve their mental health and wellbeing will provide dividends now and in the future."

Followed by Hong(2022), "World Health Organization (WHO) announced a policy briefing on the 2022 June 3rd, that it is urgent to establish a mental health support system to cope with climate change."

In the case of Moon (2016: 242-244), he talked about psychological prevention against climate

change, which included specific psychological prevention such as reduction behavior, psychological intervention for the protecting the vulnerable, the establishment of a PTSD treatment network and the stress immunization therapy.

In our country, measures through establishing mental health center by each local government can be usefully practiced. On the base of excellent health insurance system and high standard of medical expertise in our country, the nationwide mental health welfare centers can work very efficiently for dealing with psychological and mental problems caused by climate change disasters.

The example of this could be found in our capital city Seoul. According to Lee(2022), on April 27, 2022, the Seoul Metropolitan Government announced that it will start the operation of Seoul Mental Health Integration Center to the full-scale with the opening of its website, after successful test operation which has begun for the first time in the country in December 2021. The center operates the 'Hope Academy', a comprehensive rehabilitation facility for the recovery and return to normal social life of those with mental illness. For job seekers who have difficulty finding jobs, the center will provide job support services such as the operation of job training courses and the development of new jobs considering the characteristics of mental illness through the 'New Job Yard.'(Lee, 2022) With accumulation of experiences and feedbacks in this kind of center will give us a good guideline how the public and the municipal can serve to deal with mental and psychological damage due to climate change disasters.

6. Limitations

In this study no in-person qualitative interviews or quantitative surveys were conducted. Arguments in this article established mainly depending on secondary sources. Further longitudinal and data-based study are needed to distinguish of psychological symptoms and to characterize the level of negative effects to our everyday life.

7. Conclusion

Through the previous studies, we found out that the disaster of climate change has a significant impact on the mental and psychological aspects as well as the physical and material. Especially, the recent phenomenon of climate anxiety has given us an insight to reflect on the impact of climate change from a more psychological perspective. Negative implications of climate anxiety are for example depression, post-traumatic stress disorder (PTSD) and suicidal thoughts. Climate phenomena can ruin a person's life due to worries and depression against the future, and furthermore it can urge a badly negative impact on the nation's economy and vice versa.

In order to break this vicious cycle, it seems to be necessary for us to deal with mental health problems more carefully and come up with efficient countermeasures. With understanding psychological effects of climate change disaster on the prevalence of stress, anxiety and depression, the tailored intervention is required for the victims' coping and resilience. Coping with effective stress mitigation interventions may optimize overall health and increase resilience.

The arguments of this article suggest that there is a need for government, policy makers, health care Organization to actively engage in supporting victims of climate change disaster. This engagement needs to be multifaceted and recognize the importance of psychological and emotional impact of such disaster. This may highlight the importance of providing comprehensive support strategies to reduce the negative psychological impact of climate change disasters such as climate anxiety. These support strategies should include the responsiveness of systematized organizational supporting reaction and providing quality care with adequate and timely response.

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