



HEALTH ADAPTATION TO CLIMATE CHANGE

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Heat waves, floods, droughts, cyclones and wildfires are examples of extreme climatic events that act as significant signs of the vulnerabilities and exposure of the human body to climate variability. The main correlated impact that can be seen is the increased rate of mortality and morbidity which includes major issues such as food security and safety, clean water supplies, public health issues and also damages towards the infrastructures and properties. In general, increased mortality and morbidity imply the inadequate flexibility of the current developments in responding to the climate variability (IPCC, 2014) and the impacts are aggravated by the absence of taking necessary actions. Climate change is expected to affect the health of the population worldwide, particularly those living in developing countries, more specifically, low income countries, throughout the 21st century (WHO, 2018). It is proven that these events will result in greater possibility of infectious diseases, injury, or worse, death due to intense heatwaves and fires, malnutritions in poor regions, risk of work capacity lost and labour productivity (IPCC, 2014). "Adaptation" is defined as the process of adjustment to actual or expected climate and its effects which are also considered as secondary mitigation process. The biggest climate change impact is towards the population health. Thus, health adaptation to climate change impacts is crucial in the sense of preparedness and to reduce the severity towards population health (Schmidt-Thomé, 2017).

The United Nations Framework Convention on Climate Change (UNFCCC) was founded to meet its

objective of dealing with climate change by eradicating poverty and ensuring sustainable development. Malaysia is currently one of the 195 country members of Intergovernmental Panel on Climate Change (IPCC) which carries out regular evaluation of the continuous climate change, assesses the impacts and future actions including mitigation and adaptation in dealing with the issue of climate change throughout the world. "Mitigation" is defined as the action in reducing the contributors of climate change (IPCC, 2014). The main contributors of climate change are emission of greenhouse gaseous (GHG) such as carbon dioxide (CO₂), methane (CH₄), ozone (O₃), nitrous oxide (N₂O) and chlorofluorocarbon (CFCs). Besides, there are also other contributors such as black carbon and particulate matter (PM). In Malaysia respectively, these anthropogenic sources resulted from human activities such as land use (palm oil plantation and industries), deforestation, vehicles exhaust emission, sand mining (coastal area), industrial emission and agriculture.

HIGHLIGHTED ISSUES FROM MUHF 2019

In order to achieve health adaptation, many sectors in Malaysia are involved including the National Disaster Management Agency (NADMA) which was founded in 2015. This agency was established to deal with disaster management by reducing risk of natural disasters and to adopt national plans such as Integrated Flood Management, National Haze Action Plan and Extreme

Weather Warning System. The Ministry of Health also contributed in health adaptation by enhancing and sustaining health services, preparing for disaster by creating advanced response plans and monitoring the spread of diseases. In situations of flood disaster, there is a need of disaster risk management. Many issues should be considered such as spreading of diseases (communicable, non-communicable, vector borne and water borne disease), food security and safety and also medical supplies. In 2014, there was a major flood disaster (yellow flood) in Kelantan, Terengganu and Pahang. The flood is said to be caused by the North-East monsoon that brings heavy rain and cold breeze from China and Siberia causing excessive rain and extensive difference in air pressure. In fact, it is actually caused by climate change. Disaster rapid response team can take action by developing a proper early warning system and also evacuation plan. National Disaster Management Agency (NADMA) is responsible in coordinating management of national disaster by implementing Sendai Framework in Malaysia. This framework allows access to data assessment and sources that serve as proxy for indicator, besides providing institutionalisation of strong coordination mechanisms for national science and technology. In addition, Sendai Framework also establishes a centralised disaster data platform for future data sharing and also develops a multi-hazards approach. Furthermore, it outlines a disaster risk reduction in terms of space and area as the initial step to climate change adaptation. Thus, the framework assists the success of adaptation by providing a revision platform for policy guidelines, standard procedures, various regulations and early warning in case of climate extreme events.

Extreme heat weather may cause various population health impacts. Malaysia is well known for its hot and humid weather which exposes workers to the risk of heat stress. If heat stress is not treated, it can worsen with the possibility of developing heat stroke which can be fatal and can lead to death if not given proper treatment. Heat stress has become an alarming illness which usually attacks workers who work in densely populated areas closer to the equator where temperatures are expected to rise in relation to the changing climate (DOSH, 2016). Prolonged exposure to high temperatures can cause heat-related illnesses, including heat stroke, heat exhaustion, and death. The human body is equipped with the ability to acclimatize to any changes in temperature. However, today, the temperature is increasing at an alarming rate that the human body loses its capability to acclimatize, resulting in chronic heat related illnesses that can cause fatal death. Awareness on the risk factors, symptoms of heat-related illness and information on the necessity to seek for medication may also be the best ways of adapting. People should be aware of the importance of drinking

plenty of water and to limit frequent outdoor activities besides using proper covers. In addition, infrastructure improvements can be implemented by using resilient materials and heat island reduction strategies such as green roof, cool pavements and more vegetation and trees.

Land clearing, deforestation and forest degradation are the impacts of poor urban planning that will result in public health issue. Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC) has developed the Reducing Emissions from Deforestation and Forest Degradation Plus Strategy (REDD Plus) to assess the current best practices regarding deforestation reduction. This action strategy is more than just a means of assigning monetary value to forest carbon stocks. It is also about preserving the genetic resources, wildlife, livelihoods of those whose culture, survival and heritage depend on the forests themselves.

Urban planning or urban setting development can be done in line with the adaptation measures for urban areas. Anthropogenic causes will lead to global warming and will give rise to variability of climatic changes which later induces severe extreme weather events. Frequent storm and increase in wind speed cause damages to the housing area especially low cost houses with low quality building materials. Improvement on housing materials (e.g.: rooftop) to withstand high intensity rainfall and strong wind may help the population to face lesser climate impacts. A working drainage system planning may help to reduce the possibilities of urban flash flood event.

Public health improvements that can be implemented are such as immunizations program and self-sustain medical supplies from clinics and hospitals during disaster effect. Emergency plan for medical supplies should be sufficient for at least the first 7 days of disaster to ensure proper medication and treatment can be given. On the other hand, disease surveillance is done to identify the spreading of communicable and non-communicable diseases and also emerging diseases that might have suddenly appeared. Besides, it is also essential to consider the climate sensitive diseases that are multifactorial. This can be done by conducting research and studies for early prediction, planning and proper response. Environmental health surveillance is another way for health adaptation. For instance, severe heat wave events in 2015 has triggered the Ministry of Health (MOH) to develop a surveillance system for clinics and hospitals to send return reports on heat related illnesses such as heat stroke and heat stress. As for haze events, surveillance records on respiratory related illnesses such as conjunctivitis, acute respiratory illness and asthma are kept. Moreover, impacts on air quality can be adapted by anticipating the respiratory health illnesses such as allergy and asthma. In assessing the vulnerabilities towards the populations, the responsible agencies such as state officials and industry

are listed out and baseline data are created to monitor the severity of the impacts (United States Environmental Protection Agency EPA, 2019).

Urgent actions are needed in order to combat climate change and its impact on health as it is classified as the Sustainable Development Goals (SDGs) which is the 3rd goal in “Good Health and Well-being” and 13th goal in “Climate Action”. Health adaptation to climate change impacts is generally not at an individual level, but more on the action plan and response of responsible sectors and bodies. It also depends on the capability of the community to adapt to the variability of changes. It is of utmost importance to educate and raise awareness of the public towards the adaptation program. Health programs such as awareness campaign at the community level can be extended to a wider coverage by including healthy lifestyle awareness, proper clothing and reduced outdoors activities. On the other hand, the collaboration between government agencies and the academic institutions are also crucial as to enhance the knowledge between government staff to carry out their works and to deliver the health information to the public. Awareness on the existing issue and also the efforts of local authority and governments for the adaptation action should be acknowledged. This may attract the community especially professional individuals to contribute their ideas and expertise towards a more proactive adaptation measures.

At the community level, Malaysians are still not fully aware of the climate change issue despite the government’s and local authorities’ effort to outline the action plan to deal with the effect of climate change. Malaysia has anticipated the program to monitor the health effects to see whether climate change has a great impact by using the environment indicator such as greenhouse gases monitored by the Department of Environment (DOE) and rise of sea level which is monitored by Malaysian Meteorological Department (MET). Local authority engagement has a crucial role in the implementation of health adaptation towards climate change. Law enforcement may have its own challenges due to political and financial issues, but cooperation between various sectors is required. This can be achieved by providing incentives and awards for those who contributed besides establishing urban forestry, tree planting and green landscape programs. Moreover, retrofitting public buildings and policy making for plan, design and buildings standard will also encourage communities for climate change adaptation. Meanwhile, efforts such as the idea to Go Green at all stake may have an encouraging medium such as implementation of Green Eco Gardens, Green Buildings, Green Hospitals and Green Schools. Green transportation promotes public transport usage to reduce carbon emission and the usage of green technology by designing an electric bus as implemented in Cyberjaya.

In a nutshell, health impacts due to climate change events are knowingly significant. It is crucial to track and monitor the public health adaptation towards climate change issue as to improve the understanding on health adaptation and how it has significantly helped to minimize the impacts on urban and rural community respectively.

CONTRIBUTION STATEMENT

The MAEH Urban Health Forum was held at Langkasuka Hotel, Langkawi from 17-18 June 2019. FAS, SNSMH, ANCMR, NAF and SFM conceived the forum, applied for and obtained the funding from Malaysian Association of Environmental Health, Majlis Perbandaran Langkawi Bandar Pelancongan, Langkawi Development Authority (LADA) and Universiti Teknologi MARA and also drafted the first version of the charter. MHAR, MFBH, RI, JJ, MAK, SK, RS and TPA analyzed the issue. All participants at the forum contributed to the focus group discussion that produced the charter and all approved the final version.

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