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THE DELIVERY OF ENVIRONMENTAL HEALTH SERVICES IN MALAYSIA

The Delivery of Environmental Health Services in Malaysia: The Current Status and The Way Forward

Norasmah Kasmani[a], Fathin Shakira Abd Azhar[a], Syarifah Mazidah Syed Badrul[a], Aaina Afrina Abd Manaf[a], Muhammad Aiman Abd Jalil[a], Farah Ayuni Shafie[a,b*] Subramaniam Karuppannan[b], Samsudin Zawawi[c], Murugan Subramaniam[d], Syazwan Aizat Ismail[e], Arshad Abdul Majid[f], Khairul Anam Mokhtar[g], Noramirul Nizam Kamis[g], Siti Naszila Abu Talib[h]

[a] *Centre of Environmental Health and Safety, Faculty of Health Sciences, Universiti Teknologi MARA Puncak Alam, Selangor, Malaysia*
[b] *Malaysian Association of Environmental Health*
[c] *Universiti Teknologi MARA Sarawak, Kota Samarahan, Sarawak*
[d] *Sek. Keb. Sungai Tinggi, Trong, Perak*
[e] *Institut Latihan Kementerian Kesihatan Malaysia Sungai Buloh, Selangor*
[f] *Hospital Queen Elizabeth, Kota Kinabalu, Sabah*
[g] *Majlis Bandaraya Melaka Bersejarah, Graha Makmur, Ayer Keroh, Melaka*
[h] *Pejabat Kesihatan Daerah Kuala Selangor, Selangor*

**Corresponding author: farahayuni@uitm.edu.my*

INTRODUCTION

Environmental health comprises of the effect of human man-made hazard or natural hazard towards the environment and human health which include identification of the impact of those hazards, the source and preventive measures that is needed to be taken into consideration. According to WHO, environmental health addresses all the physical, chemical, and biological factors which is external to a person, and all the related factors impacting towards behaviour. It includes the assessment and control of these environmental factors that can potentially affect health (Rinkesh, 2017).

It is targeted towards preventing diseases and creating a health-supportive environment. Rapid urbanisation is the major cause of environmental health hazards in many countries. It includes contamination of air, water, and soil. Sprawling urban areas contribute to traffic congestion, with is associated to air pollution, noise and long commuting times affecting public health and productivity across the world (Vardoulakis et al., 2016). There is a significant environmental impact of urban activities towards the environment and human (Ofori et al., 2000). The main types of environmental impact are global warming, abiotic depletion, human toxicity and reduction of ozone layer (Tukker et al. 2006).

Figure 1 is the list of most concerning environmental issue in Malaysia according to Malaysian citizens (Müller, 2019). It shows that respondents believe that global warming or climate changes are the most concerning environmental issues that need to be more seriously approached. Environmental impacts have direct effects on health, both in the short term and long-term periods.

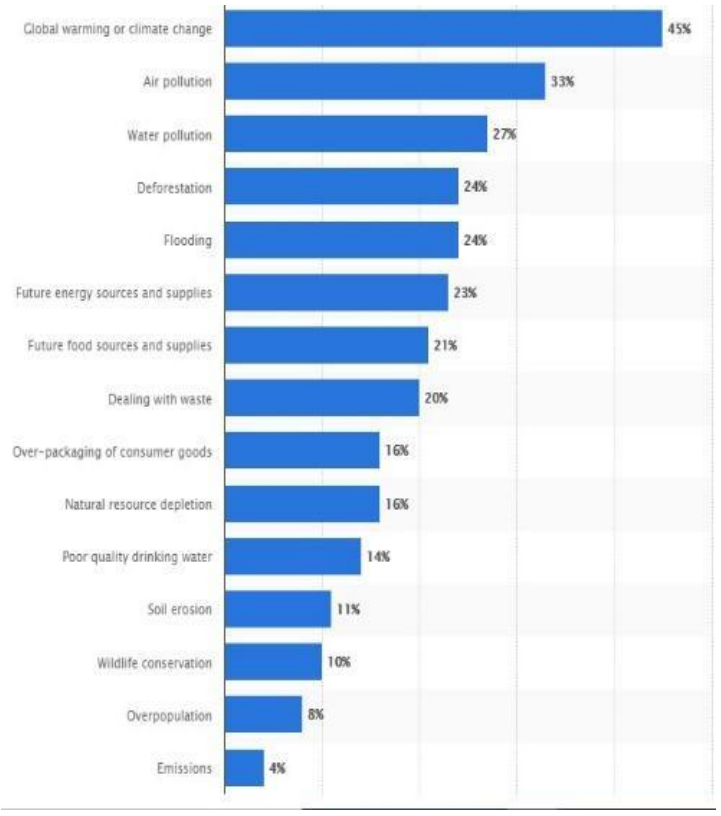

Figure 1: Most concerning environmental issues according to citizens across Malaysia in 2019

A few years ago, Malaysia had faced major environmental problems that lead to negative impacts towards environment and human health. In 2019, the whole country was shocked with Kim Kim river water pollution that led to the dispersal of dangerous chemical towards Pasir Gudang community. Moreover in 2019, Malaysia experienced haze episodes which were caused from agricultural open burning that consequently gave rise to the Air Pollutant Index (API) in many states. Recently, the emergence of COVID-19 virus world pandemic caused global lockdown because of the spread of the virus infection towards human health. All these environmental health issues have been managed by the environmental health officers, known as the frontline workers. They were the first to implement the plans and carry out corrective actions to minimise the impact towards environment and human population. Strategically, in order to deliver environmental health services effectively, it had been categorised into preventive, treatment, education and operational research measures. In these categories different healthcare professionals whether government agencies or private sector such industrial and Non-Governmental Agencies (NGOs) were involved in delivering environmental health services.

One of the plans included in the environmental framework in Malaysia is the National Environmental Health Action Plan (NEHAP). NEHAP presents the strategies that can be implemented to improve the environmental health within the country and also address the roles played by all major stakeholders. This national framework will provide the basis of the government's approach in the direction of sustainable development, socio-monetary development, protection of the environment, and promoting and protection of human health. Hashim, (2019) mentioned that NEHAP Malaysia had come out with Priority List of Environmental Health Issues in Malaysia (towards 2030) that need to be looked into, which are:

1. Children environmental health (birth cohort study, impact of indoor environment).
2. Vector borne diseases such as dengue and malaria
3. Contamination of drinking water sources and emerging water pollutants such as endocrine disrupting chemicals (EDCs), pharmaceutical drugs (antiseptics, antimicrobials)
4. Urban health issues such as poor housing and sanitation, Crime rate, security and many more.
5. Climate change
6. Food safety and contamination such as incomplete food labelling, untrained food handlers especially among foreigners and non-compliance for food standards.
7. Pesticides contamination
8. Human exposure to environmental chemicals from industrial and daily products.
9. Zoonotic diseases such as rabies and leptospirosis.
10. Exposure to ionizing and non-ionizing radiation.

Therefore, these are the challenges awaiting healthcare professionals or stakeholders in delivering and implementing environmental health framework. The following section will discuss on the current roles and responsibilities of the Environment Health Stakeholders in Malaysia.

ENVIRONMENTAL HEALTH STAKEHOLDERS IN MALAYSIA

Stakeholders are a group of people in an organization where their involvements, actions and decisions influence in the environmental health delivery. The stakeholders in Malaysian Environmental Health are listed in Table 1. The table summarizes the general functions of the listed stakeholders.

Table 1: Roles and Responsibilities of Stakeholders

Category of Stakeholder	Agencies/ Institutions	Function
Federal Level	Ministry of Health (MOH)	● Implement Health Policies and Planning. ● Involved in Public Health Activities for managing Communicable Disease and Non-Communicable Disease. ● Implement regulation and enforcement ● Planning for Health Guidelines and Standards
	Department of Environment (DOE)	● Prevent, eliminate, control pollution to enjoy a better environment and comply with the Environmental Quality Act 1974 and related regulations.
	Department of Irrigation and Drainage	● Collect and analyse hydrological data for the development and management of water resources. ● Implement the plans for development and management of water resources. ● Provide hydrological plan strategies in case of flood or draught.
	Department of Occupational Safety and Health (DOSH)	● Promote safe and healthy workers at workplace. ● Conduct research to reduce accident, injuries or occupational diseases at workplace.
	Ministry of Environment & Water (MEWA)	● Responsible for issues involving climate change and biosafety and spearhead the growth of the green economy. ● Strengthen the management of the water ecosystem.
	Ministry of Housing and Local Government	● Responsible for urban related issue, town and country planning, fire and rescue authority, local government, solid waste and landscape.
State Level	Health Department	● Improve public health through the control of infectious and vector borne diseases. ● Enhance the involvement of residents and other parties in maintaining public health.
	Water Resources Management Authority	● Manage licensing and monitoring of the water services industry.
Local Authorities	Kuala Lumpur City Hall (DBKL)	● Provide public health services and control pollution. ● Plan and control urban development.
	City Council such as Majlis	● Provide services such as roads, traffic planning,

	Bandaraya Petaling Jaya (MBPJ)	housing, economic and community development, environment, recreation and amenity services
Private sector	Waste Management Concessions (e.g. Alam Flora Sdn. Bhd /KDEB/E-idaman)	● Provide waste management services such as recycling, waste storage and waste disposal.
	Industries	● Involved in food manufacturing, food supply chain, hospitality, construction, plantations, farms, etc
NGOs	Malaysian Association for Environmental Health (MAEH)	● Promote and share knowledge about environmental health. ● To encourage interest for the Profession of Environmental Health Practitioners.
	Association of Environmental Health Officer (EHOM)	● Increase professionalism among members ● Gather personnel who are involved in environmental health. ● Provide association to agencies which are involved in environmental health.

The stakeholder's views on environmental health are very vital for the improvement and enforcement of laws, policies, prevention control and effective management of public health. The support from the government and all related stakeholders are pertinent to deliver an effective environmental health services.

CHALLENGES IN DELIVERING IN ENVIRONMENTAL HEALTH SERVICES

Crisis, Rumours And Communication

When a crisis occurs in a country, the most valuable thing is the availability of information. There is a need to distinguish between the real news or rumours especially with the emergence of information sharing by social media that can be spread by seconds. The roles of stakeholders are vital to control the information sharing whether among the stakeholders themselves or to the public. The inconsistency of report by stakeholders causing confusion among the authorities to take immediate action. Public also experiencing difficulty due to ineffective communication and updates regarding the major issues from the government through media. This led to a rumour going driving into unnecessary panic.

Some important issues that can be looked into from any tragedies are the role of media in providing timely and useful information during the critical time (Leask et al., 2010). Information sharing between agencies also needs to be strengthened. For example, in handling toxic waste arriving at the port, the first agency involved is the Royal Malaysian Customs Department (RMCD). The RMCD will need to share detailed information on hazardous chemicals with all stakeholders such as the Department of Environment, Ministry of Health Malaysia, local authorities, and others. This step needs to be continued in every user chain until the toxic substance becomes waste and sent to a licensed disposal site for appropriate action.

Barriers to Effective Education

Environmental Education (EE) can be defined "as a process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems, and which has knowledge, attitudes, motivations, commitments and skills to work individually and collectively towards solutions of current problems and the prevention of new ones" (Lateh and Muniandy, 2010). The basic concept of EE is education on the environment, for the sake of the environment by using the environment.

Ministry of Education of Malaysia has taken drastic action to include environmental education (EE) into the school curricula of Malaysia to promote sustainable development and improving the capacity of people to address environmental and developmental issues. Others government agencies that are involved in promoting environmental education are the Department of Environment (DOE), the Department of Wildlife and National Parks (DWNP), municipals councils and non-government agencies (NGOs) such as the Malaysian Nature Society (MNS), the World Wide Fund for Nature (WWF), Treat Every Environment Special (TrEES) and Wetlands International. An example of EE programs conducted is the School Nature Clubs or Kelab Pencipta Alam (KPA). KPA is an example of EE-related clubs active in schools and supported by the Ministry of Education. The club's objectives are to promote interest and understanding as well as to promote student involvement in any sort of conservation of environment activities as the introduction to environmental health should be introduced as early as primary schools. However, absence of specific environmental education syllabus in schools makes it difficult for teachers alone to address environmental health without assistance from the experts (Loubser et al., 2014). Information and guidance from environmental health specialist can be a great help to improve the current content of environmental health education. Sungai Kim-kim episode highlights the importance of our school health program to be continuously conducted and not only looking into the school canteens. The holistic nature of public health risk assessment process should be the primary concern, especially in the public interest areas.

Meanwhile, environmental health professionals are dedicated to conserve the environment to lower the risk of human disease, as well as improving human health and well-being. The quantity and quality of the environmental health professionals have been an issue (Walker et al., 2018; Massoudi et al., 2012). Knechtges and Kelly (2015) in their paper had focused on the issue of educating environmental health professionals. However, it is important to know the difference between training and education. In simpler words, training is the "Know-How" and education is the "Know Why". When practicing environmental health, it is not enough to rely on "Know-How" alone. "Know Why" also plays an important role in understanding the underlying reasons behind a procedure or standard. This distinguishes professionals from technicians. Environmental Health professionals with proper education and training will be able to develop solutions to unprecedented problems that may not be routinely procedural. New independent regulatory board or body (Malaysian Allied Health Profession Council-MAHPC, 2020) established according to the Allied Health Professional Act 774 will certify the graduates to become competent personnel and also contribute towards the reasons why environmental health practitioners will be involved in the decision-making process as well as raising the standard of the allied health profession. This independent regulatory body is important to assess the training or courses that has been completed by the graduates and are sufficient to ensure the graduates to become a competent person and able to conduct their work effectively.

Many Environmental Health Science (EHS) academic programs in colleges and universities are facing budget reduction due to the low number of students enrolled each year. The reasons behind this may be due to fewer job opportunities and poorly defined career opportunities for environmental health degree holders within the government and private sector. The rising number of online courses

and degree programs also poses significant challenges to EHS academic programs. Higher education institutions should also conduct knowledge sharing sessions with the field practitioners and the industry more frequently to share the new available information from the research that had been conducted by the experts as well as getting inputs or feedbacks from the industry on how the situations may differ in the field.

Besides environmental health professionals, other health professionals and clinicians should also involve or take part in an environmental health education program to take care of the workers and the public. Mujuru and Niezen (2004) stated that due to the limitation on including environmental health course in nurse's education curriculum may lead them to fail to provide sufficient emergency care during the threats of environmental exposures are expected as they do not consider the environmental exposure while tracking a patient's history. Education department should collaborate with environmental expertise when constructing or planning the environmental health syllabus in schools and higher education levels.

The success of environmental education is challenged by a few barriers such as conceptual barriers, logistical barriers, and educational barriers. Conceptual barriers are when there is a lack of agreement on the scope and content or syllabus of the EE. The shortage of attachment and training has failed to prepare the students or future environmental health practitioners for the environmental and public health workforce, ensuring them to be capable of coordinating and come out with alternative approaches to EH problems. Logistical barriers mean there is a lack of time, financial support, and resources. Cooperation between government and non-government agencies in providing funds and resources to prepare a suitable comprehensive syllabus can be a great help in promoting environmental education among environmental health professionals (Tewksbury and Harris, 1982). For instance, Sanitary Survey activities should utilise the Department of Environmental (DOE) database on the river quality monitoring system and water quality index. Teachers or trainers with wide knowledge and experiences on environmental health will be a great help to solve educational barriers in environmental education as they can share their experiences and will be able to expose the reality of environmental health in Malaysia. However, this strong EH collaborative partnership should make the ministries able to work without border especially in terms of data sharing which is more economical for environmental monitoring activities.

Chamhuri (2005) stated that the lack of coordination between NGOs, governments, and media agencies has caused a delay in assistance and the distribution of aid during the Asian tsunami disaster back in 2004. Absence on early system warning on this kind of natural disaster also contributes to this massive destruction. Cooperation between media and government agencies can also help to educate the public on this natural disaster besides distributing the information in all stages before, during, and after more accurately and quickly. Many studies have proved that public awareness, public concern for the environment and the readiness to bear the cost of the adverse impacts of human activities are the major factors that can help to overcome the fright of natural disaster which in this case was the tsunami which is a whole new thing to us. Japan is a good example on how they manage the risk, educate, and create awareness among citizens during natural disasters. Environmental experts also highlighted how the information is being delivered to the public (Ramírez et al., 2019). For example, during the current air pollution risk communication, the use API or Air Pollutant Index is used to monitor the situation. When the API result comes out, stakeholders cannot assume that the public can understand the meaning behind it. Another technical barrier to the successful delivery of environmental health is the language. Most sources are available in English and some of it come in Bahasa Malaysia, but not in spoken languages in Malaysia such as Mandarin and Tamil. Public awareness and support for environmental protection play an important role in the success of government efforts and policies in delivering environmental health services and solve all the environmental issues (Chin et al., 2019).

Other challenges that can disrupt the success of an environmental health delivery system are the lack of training of Environmental Health Officials on how to assist or respond to environmental problems in an integrated and comprehensive way. With only a small number of them who have been trained to predict and prevent the pollution to occur or make effective use of the reduction tools beyond the command-and-control regulations. Some challenges in environmental training are to promote “competent person” to all Department of Environment (DOE) staff, industries, consultants and services providers, promoting the accumulation of CPD hours and promoting the transformation of command and control of enforcement approach into guided self-regulation. There is also lack of Environmental Health Surveillance System to enable EH professionals to make risk decision-making process easier, which will cause many EH issues being neglected and not being pursued by EH professionals and might be taken up by other professionals. Many EH professionals in Malaysia were trained as reactive professionals rather than proactive professionals, they generally proceed with current and lack of prediction and forecasting skills. They were trained but not officially certified by any regulatory body and perform work on the basis of attachment. Regulatory body who governs the professionalism, ethics and competency should be made available to ensure the professionalism of the profession.

Solving Methods by Stakeholders

Solving methods or decision-making process are vital to have an effective environmental health delivery. The authorities usually allow the law makers and the stakeholders to implement and enforce the law needed to work together effectively with limited resources. Participants in stakeholder processes have a variety of problem-solving options, each of which has strengths and limitations. Number of, facilitators, and participants have not made effective use of, knowledge and practices developed over time. For example, in the issue of Sungai Kim Kim pollution, it has had been timely reported but there is no significant action taken by the authorities (Keshavarzifard et al., 2018). The scientific monitoring data is needed to treat it with high importance and governing bodies should be working closely with those researchers for the benefits of public, especially in air and water related work (Yap et al., 2019).

The conflicting role of the federal and state governments can be problematic in dealing with environmental issues when the state and federal governments are of different political backgrounds. Take for example the Integrated River Basin Management (IRBM) issue. The framework adopted is still less effective in addressing rivers and water management issues in Malaysia (Chuan et al., 2013). There are too many government agencies involved in various aspects of river management, with no single agency directly responsible. The issue of federal and state government disputes over water supply is one example of non-integrated management. According to Chan (2012), rivers and urban drainage must be managed well before achieving good water quality in order to maintain water resource sustainability. Poor understanding and change of top management staff have led to delays in the Integrated Urban Water Management System (IUWM) which requires alignment of urban development and basin management to achieve sustainable economic, social and environmental goals (Bahri, 2012).

DELIVERY OF ENVIRONMENTAL HEALTH: THE WAY FORWARD

The Environmental Health service in Malaysia encompasses a wide range of public health institutions from government, private and non-governmental organizations (NGOs) who provide health services through prevention, control and law enforcement. Despite the challenges faced today on issues of globalization and sustainable

development, the delivery of Environmental Health services has been a major step in the face of challenges and concerns in maintaining the strength of the current public health system. The rapid development of high-tech physical and industrial as well as technological advancements in the field of public health requires increased knowledge and skills in the field of Environmental Health to address new emerging issues. These developments affect the roles and responsibilities of public health including environmental health delivery system that needs to be expanded, and streamlined.

Environmental Health Groups have an identifiable 'stake' in the future with a set of goals and measurable criteria or indicators. The potential future of Environmental Health delivery system, must consider the accessibility of information technology and which is associated with decentralization of decision-making in large institutions; increased transparency of organizations whose decisions have an impact on environmental quality; enhanced capacity of communities to participate in stakeholder processes; and policy commitments made by government agencies to improve stakeholder engagement.

Enabling Information Technology Knowledge Sharing

Environmental Health is a public health field that addresses a variety of factors around us that affect our physical and mental well-being. Malaysia's challenge in delivering Environmental Health services in the future need to be more realistic. Effective delivery of environmental health services includes partnerships collaboration between agencies in maximizing the use of data and information to generate new knowledge that can be exchanged, shared and incorporated with other agencies (Erwin et al., 2019). Like other developing countries, Malaysia needs to have a comprehensive community of Environmental Health (EH data base) systems as well as a cohort exposed to environmental agents so that environmental epidemiological methods, modelling techniques as well as forecasts of exposure risk and health impacts can be evaluated either in the short and long term. For example, the use of Pasir Gudang community data exposed to health threats from water and air pollution is used in the assessment of exposure based on scientifically and systematically planned methods. In addition, other than conducting cross-sectional epidemiological studies and case studies, retrospective and prospective cohort studies should also be carried out in the communities involved so that we can identify hazards or mitigation in the community at risk for preventive measures to be identified in the early stages before the issue becomes more serious.

During the Crisis and Disaster Management, the objective of the Environment Health professionals is to prevent and reduce any possible misfortunes from risks and hazards, guarantee instant and provide suitable help to the survivors of the disaster. The Environment Health Professional aims to accomplish quick and effective recovery affect from the disaster. Besides that, even though the fact of the information, data and resource sharing can improve the standard of operating procedure of Crisis and Disaster Management, there might be apparent gap in government joint effort and coordination between different stakeholders in solving the environment issues (Dahlan et al., 2013). According to Maidin et al. (2015), the lack of collaboration and exchange of information through agencies will complicate solutions to environmental issues. Each organization has a propensity to keep information relevant. Research carried out has identified the challenges of cross-agency collaboration in information sharing (Othman et al., 2014). This is reflected in the high commitment given by Environmental Health practitioners in all government agencies, private and foreign agencies and NGOs that have been working hard to monitor, manage and evaluate the ongoing COVID-19 outbreak to address and help the community. The ‘frontline troops’ in the public health to prevent disease are the local Environmental Health practitioners. However, there are some specific suggestions that can be applied to improve the management system to be more efficient, systematic and effective for a long-term community mitigation plans. One of the neglected duties will be the post-disaster mitigation actions and strategies; EH professionals should be equipped with a group of professional in qualitative research, to understand the thematic, perception and text analytics, in the context of understanding needs or improvement needed, in the event of upcoming disaster.

The failure rate in collaborations especially in communication process for information sharing is a major concern (Marek et al., 2015). According to Eide et al. (2014), cross-agency collaboration is complex and difficult to manage because each of the agency possess different skills, procedure, knowledge and competencies. Hence, the key challenges of collaboration can be categorized into efficient communication across agencies, establishing and maintaining shared situational awareness and achieving adequate organizational understanding. By defining the core competencies required for successful environmental health at the local level and beginning to find consensus about their adoption, the Environmental Health system can be strengthened, and the programs' capacity building can be developed. A robust system to monitor environmental quality trends and information used to mitigate potential health concerns, resource planning, risk analysis and decision-making should be provided by the environmental health surveillance system. The environmental health surveillance system is not fully being implemented by Environmental Health officers, no absolute system under Environmental Health fields, most coming from the other programs. Environmental Health surveillance systems such as using of software available within the agency to conduct research, save the record, communication, analysis and interpretation of data, and tasks to be reported in environmental agents that is needed to be considered by the Environmental Health practitioners. At the same time, the opportunity to use Information Technology for the development of Environmental Health services. Environmental health surveillance system (record, analyse, and predict) environmental agents need to be considered.

Quality Decision Making Processes by Stakeholder Engagement

Effective delivery of environmental health services includes strategic alliances and collaborations between academic institutions and health departments to promote evidence-based decision-making (Brooks et al., 2019). To tackle local issues and improve resilience, Environmental Health practitioners should broaden and enhance current relationships by working together with other public health disciplines such as laboratories, epidemiologists, community health educators), NGOs and universities. Environmental health practitioners are important collaborators in optimizing the value of translational research. It is important to establish new strategic partnerships between academic and government researchers and Environmental Health practitioners in the environmental health field.

According to (Wisner and Adams, 2003), the involvement of various parties in the Environmental Health issue is necessary to rectify the deficiencies in the management of sectoral nature. This indicates that consensus as a result of the agreement of all stakeholders in addressing environmental issues can improve the quality of environmental management in Malaysia. Strategic collaborations between higher learning institutions and health departments will promote evidence-based decision-making in local health services (Erwin et al., 2019). This is reflected in the involvement of various ministries, agencies, educational institutions and the public in dealing with the ever-discussed dengue outbreak. Establishment of a National Dengue Special Task Force aimed at mobilizing agencies and communities in the prevention and control of dengue. The task force includes ministries from the Ministry of Health (MOH), the Ministry of Housing and Local Government, the Ministry of Human Resources, the Ministry of Education, the Ministry of Higher Education, the Ministry of Defense, the Ministry of Works and the Ministry of Communications & Multimedia, including the Local Authorities (PBT). All partners have their own jurisdiction outside the

health sector to implement strategies in the fight against dengue infections.

There is a strong need to prepare Environmental Health practitioners to address the challenges and environmental health problems facing the country in the next century. The value of competency is required by every Environmental Health practitioner to ensure they are able to attend important meetings and decision-making processes. Environmental Health practitioners must have a certification system. A proposal for members under the Malaysian Allied Health Profession Council (MAHPC) to set up a certification of competency body and renewal practising abilities specifically for the field of Environmental Health (e.g. Environmental Health Legislation, Environmental Health Risk Assessment, Environmental Health Epidemiology, Drinking Water Quality, Food Quality and Safety, Vector Control, International Health Control, Industrial Hygiene in workplaces) to strengthen and maintain life-cycle competencies. In addition, with the establishment of this competency body, the Environmental Health profession can determine the appropriate qualifications of each of its members. These professional bodies can also focus and supervise matters relating to Environmental Health Professions which include training, competency and professional development. From this qualification, Evaluation Committee for Expert will verify and recommend to Council for Expert Registration and certification. Examples of recent work on competencies in this field that were implemented in United States include The Public Health Functions Workgroup Project, Competency-Based Curriculum Work Group, The National Public Health Performance Standards Program, The Crossroads Colloquium: An Examination of the Educational Needs for Environmental Health and Protection, The Public Health Faculty/Agency Forum and Committee of National Environmental Health Association (NEHA) on the Future of Environmental Health (Tobergte and Curtis, 2013).

The disaster and outbreak management body can achieve their target during the join venture of interagency collaboration, vertical and horizontal integration. The definition of vertical integration is the collaboration between a single organization such as the local government between two different levels. Horizontal integration is the integration among different disaster management organization. For example, the incorporation in management and organize the development between the government body, private sector and other stakeholders in disaster management such as the participation from the Fire and Rescue Department Malaysia (HAZMAT Team), National Disaster Management Agency (NADMA), Ministry of Health Malaysia (MOH), Royal Malaysian Police and Ministry of Defence Malaysia (MinDef). Stakeholders should engage with Environmental Health practitioners in line with the decision that they need to establish. According to Menya et al. (2016), the collaboration efforts bring a lot of benefits to the disaster and outbreak management as it can boost the process of decision making among government and stakeholders. Among them, Research and Development (R&D) between stakeholders' especially Ministry of Science, Technology and Innovation who are involved in innovation and intervention study in overcoming environmental health problems. During the Malaria outbreak, Environmental Health practitioners will investigate, survey and control the disease. Environmental Health practitioners will collaborate with laboratories for sending the sample, survey and control will involve public and local agencies. Besides that, Bryson et al., (2010) also had stated that this collaboration contributes a lot to improve the way of the service delivery and solving complicated problems. In addition, the Epidemic Intelligence Program (EIP) should be included as the key element in the Environmental Health domain. It aims to strengthen the practice of applied epidemiology for enhancing public health surveillance and outbreak investigation. Therefore, the development of competencies in surveillance and rapid response, and conduct of study projects will contribute directly to the enhancement of public health surveillance.

Participation of Structured Stakeholders' in Operational Guideline Production.

The preparedness of Environmental Health practitioners in the face of future challenges, especially in relation to environmental issues, must be mobilized. According to Linzalone et al. (2019), local authorities and government agencies should have compact and precise operational guidelines to provide case-related health information in reports. The involvement of Environmental Health Practitioners is crucial in the implementation of tasks facing the risk of infection to investigate, screen and isolate at-risk individuals in law enforcement. Enforcement of the Public Health Law in Malaysia includes legislation such as the Prevention and Control of the Infectious Diseases Act 1988 (Act 342), Destruction of Disease-Bearing Insects Act 1975 (Act 154), Food Act 1983 (Act 281) and Food Regulation 1985, Food Hygiene Regulation 2009, Tobacco Product Control Regulations 2004 and the Hydrogen Cyanide Act (Fumigation) 1953 and etc. For example, the power given under the Prevention and Control of the Infectious Diseases Act 1988 (Act 342) allows District Health Officers and Public Health Physicians in a supervisory role of Environmental Health Officers to prosecute individuals who have made or violated legal instructions order to protect the public from health hazards.

Court actions are often initiated against individuals who refuse to pay a compound imposed on other notices that could be compounded by statute. For offenses that cannot be compounded, prosecution in court is carried out from time to time by an authorized officer. Enforcement of public health laws aims to raise awareness among the public. The role of the Environmental Health Officer in providing information and awareness to the public to understand that a lack of health can have a negative impact on them and ultimately be at risk. In addition, public enforcement activities include the issuance of notice and merger of offenses such as mosquito breeding, smoking in non-smoking areas that are gazetted and notices of closure of premises. This shows the scope of the environmental health field in law enforcement is very challenging. The challenges and risks that Environmental Health Officers face are increasing with new emerging issues. Risk assessments need to be carried out as health threats remain.

Municipal issues such as population density and economic sector growth and increased migration are seen to cause various infections. This threat is a serious concern for the involvement of Environmental Health practitioners in Malaysia as evidenced by the recent COVID-19 pandemic. The Malaysian government's action in implementing the Movement Control Order (MCO) has led to a decrease in the number of daily COVID-19 infections. In the early stages of confusion among the public and enforcement agencies on roles and jurisdictions in implementation, the challenge of obtaining compliance from the public for movement control measures was not effectively disseminated. For Environmental Health Officers the challenge in tracking contacts and obtaining movement history information properly is very critical. Therefore, short and long-term preparation in the face of any infection is necessary. In addition, the threat of infectious diseases such as dengue and tuberculosis are a major concern. For emerging diseases, strategies to strengthen the workforce's ability to detect new syndromes or new disease patterns are needed. Monitoring through case investigations and outbreaks will prompt early detection of new pathogens and enable the development of control and prevention methods. As a precursor to disease control and prevention activities, there is a need to strengthen the surveillance system in preparation for the new emergence of infections. All of these require a certain level of responsiveness by the Environmental Health practitioner. Steps must be taken to ensure proper control and prevention activities such as contact tracking, case investigation and enforcement procedures. Most importantly, standard guidelines and protocols are provided to every manpower in providing Environmental Health services. Periodic training for an

Environmental Health practitioner is another important step in ensuring preparedness in all situations.

The competency of policy development implies that an Environmental Health practitioner should be able to go to the Malaysian Allied Health Profession Council (MAHPC) and argue for a specific policy. This task may not be relevant to the starting position. While these tasks are very important to work effectively, they also represent a basic part of job knowledge rather than competence. Environmental Health practitioners, on the other hand, may be involved in policy development. For example, they may consult with each other about what specific regulations (e.g., Solid Waste Disposal Regulation) exist in their community and how those rules are developed. Indirectly, this individual works as an environmental health professional, health administrator and advisor. The Environmental Health Officer is one of the professions included in the Allied Health Profession Act 2016 under Act 477 which provides for the registration of persons practicing as associate health practitioners and persons conducting activities related to allied health, to regulate the practice of the Allied Health Profession, and for matters relating to the profession. The practitioner may apply to be registered as an expert who has undergone specialized training, is awarded a recognized certification and the council is satisfied as a suitable, proper and good person

More stakeholders should be invited during drafting of any Standard of Procedure (SOP), guidelines, acts, regulation and policy. Usually the majority of government stakeholders are involved but experts from NGOs and industries are sometimes neglected. This situation makes it possible for non-governmental stakeholders to contribute their expertise and experience to their environment in solving the environmental health issues.

CONCLUSION

In conclusion, the delivery of environmental health in Malaysia is still in the maturity progress. The collaboration between stakeholders such as at the government and private sector is growing steadily. Through the process of maturing environmental health deliveries, some barriers need to be looked into. Some of the barriers such as in information and communication, effective education and solving method among stakeholders can be solved if all agencies from the federal until the local council level work together strategically. In order to move forward in providing a comprehensive environmental health delivery, there are a few strategic ways to overcome the barriers such as to enable information and technology sharing among the stakeholders, producing quality decision-making processes that involved stakeholders active engagement, and participation of structured stakeholders' in operational guideline production that also involved not just government but also from private sectors. Lastly, for barriers to be broken, it just needs a few good strategies, cooperation, and determination. Over time, by having mutual understanding and overcoming the differences, one day Malaysia will succeed in providing a matured and comprehensive delivery of environmental health towards the community better than any developed countries. Strategic collaboration within the Malaysian environmental health service can be executed as seen in the country's handling of the COVID-19 pandemic. This pandemic had forced the Ministry of Health to work together with various agencies within the government at both federal and state level in an effective and efficient manner to curb the spread of the virus. The collaboration was proven to be a success story as Malaysia had become one of the countries that successfully managed to contain the virus, even better than developed countries such as the United States of America, the United Kingdom and Brazil. Malaysia has succeeded to handle COVID-19 and recognised as one of the leading countries in handling COVID-19 cases. If similar principles of collaboration during the handling of COVID-19 virus are applied towards the environmental health service, Malaysia can stand tall amongst the countries that have environmental health services in an effective manner.

CONTRIBUTION STATEMENT

MAEH Focus Group Discussion 2020 was held via teleconference from 25 June - 25 July 2020. NK, FSAA, SMSB, AAAM, MAAJ, and FAS conceived the forum and drafted the first version of the discussion. SK, SZ, MS, SAI, AAM, KAM, NNK, and SNAT analyzed the topic. All participants produced the article and approved the final version.

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