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**The 10th National Public Health Conference on Managing Pandemic, Controlling
Endemic, and Preventing Future Endemics Through Public Health Approach**

18th – 19th DECEMBER 2021

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KEYNOTE ADDRESS

Managing Pandemics, Controlling Endemics and Preventing Future Epidemics Through a Public Health Approach

Dato' Dr Zainal Ariffin Omar
President, The Malaysian Public Health Physicians' Association (PPPKAM)

To this day, the whole world is still in the midst of COVID-19 pandemic, which is unprecedented in terms of speed, area of spread and has no doubt created a major public health crisis. This pandemic has not only claimed millions of lives, but also disrupted societies and devastated the economies of many countries. Lessons from the past and current knowledge, we know that COVID-19 will not be the last pandemic. Major outbreaks and pandemics will become more frequent with continuous urbanization, highly mobile populations, and changes in environment and climate. Furthermore, even interventions that are effective in a Public Health sense, can have a negative impact on individuals' economy and liberties.

Pandemics and health crises pose great challenges at the national and global scale. The WHO stated that the COVID-19 pandemic has taught us that many developed and developing countries were insufficiently prepared.

Therefore, all nations and international bodies should modify their existing strategies to prepare for future epidemics and pandemics.

Basically, the major principles of the epidemic/pandemic management are almost the same but with advances in technology and knowledge, we will be able to undertake better actions: Four main areas of focus are:

1. Data-driven methodologies for pandemic modelling and control and evidence-based Public Health especially in the area of monitoring the epidemic evolution and assessing the effectiveness of the adopted countermeasures; (ii) modelling and forecasting the spread of the epidemic; (iii) making timely decisions to manage, mitigate and suppress the contagion.
2. Preparedness for epidemics/pandemic. Whole system and international approaches including organization restructuring.
3. Risk communication & science-based infodemic management to reduce negative impact on health behaviours during pandemic
4. Community engagement & new normal. It has been easier to adapt to the necessary lifestyle changes due to the way technology has changed the workplace, the classroom, and the delivery of healthcare.

PLENARIES

PLENARY I

Adapting to The Health Needs of Global Change: What and How?

Prof. Datuk Dr Lokman Hakim Bin Sulaiman
International Medical University

Global change encompasses population, climate, the economy, resource use, energy development, transport, communication, land use and cover, urbanization, globalization, atmospheric circulation, ocean circulation, the carbon cycle, the nitrogen cycle, the water cycle and other cycles, sea ice loss, sea-level rise, food webs, biological diversity, pollution, health, overfishing, global climate disruption and more. The impact of global change on health is very broad and aligning to the theme of this conference, the focus of this presentation will be on infectious disease. Learning from the past and reflecting on the current challenges, the health needs of global change will be discussed from the global perspective and how it relates to local needs to prepare for the future. One Health, Eco Health and Planetary Health are three important holistic and interdisciplinary approaches being promoted to protect human health. WHO Pandemic Influenza Preparedness Framework was built upon the successful Global Influenza Surveillance and Response System (GISRS). Convention of Biodiversity Diversity (CBD) is the international legal instrument for the conservation of biodiversity, the sustainable use of its component and equitable sharing of its benefit. But there is a serious concern that the Nagoya Protocol, an instrument to implement equitable benefit sharing of CPD, may impact negatively on health and pandemic preparedness initiatives. Malaysian public health physicians should embrace these challenges and take up the leadership role in inter-ministerial and regional conversation towards amicable solutions.

PLENARY 2

Sustainability of Health Financing During Economic Challenges

Professor Dato' Dr Syed Mohamed Aljunid
Chair, Department of Health Policy and Management,
Faculty of Public Health, Kuwait University

Getting adequate resources for health system is always one of the major challenges facing policy makers in the world especially in developing countries. For the past 70 years there have been at least four major global economic crises in 1975, 1982, 1991 and 2009. In each episode of global crisis, the annual global per capita GDP undergone significant reduction leading to decrease in government spending on public services including health care. The current covid-19 pandemic is the potential trigger point for the next global recession. To date, the global GDP has declined by at least 10% with the value of more than USD 9 trillion. The flows of financial resources to health sector are currently affected due to reduced revenue from the government budget and reduced household financial security due to high level of unemployment. In most developing countries, three main source of health financing are general taxation, social health insurance and user fees. Public health services depending mainly on general taxation will experience major constraints due to increase in demand for health services related to COVID-19 such as vaccination and in-patient care for severe cases. Social health insurance will struggle to maintain its viability due to reduction in mandatory contributions from individuals and families affected by unemployment during the pandemic. User fees is proven to be unreliable source of funding for essential health services. During the pandemic, most high-risk population will not afford to pay for health services, and many will turn their demand from private to public providers. Low interest loans from World Bank and Asian Development Bank might offer limited support to some countries but may not be desirable in long-term. Alternative financing arrangements such as through trust fund and social impact fund are most probably not able to provide sustainable solutions to health financing needs of most developing countries. In conclusion, most countries in the world are facing huge challenges in mobilizing adequate funds to manage COVID-19 pandemic. Public funding mechanisms through taxation and social health insurance are more likely to provide sustainable solutions to meet the financial gap in the next economic crisis due to COVID-19 pandemic.

SYMPOSIUM COMMUNICABLE DISEASES: COVID-19: UNLOCKING THE BETTER PUBLIC HEALTH FUTURE

What COVID-19 Has Taught Us in Public Health?

Prof Virasakdi Chongsuvivatwong
Prince of Songkla University

COVID-19 pandemic has emerged in the absence of any warning. It disrupted our normal way of life all over the world, caused over a quarter of billion illnesses and over 5 million deaths. The pandemic is a war of evolutions of this coronavirus against human evolution of scientific knowhow and technology advancement. Rapid identification of the virus genome has helped the world to have a good diagnostic tool for COVID-19. Yet detection alone could prevent disease rapid spreading. Within one year after the commencement of the pandemic, vaccines were developed and marketed. Yet, the speed of COVID-19 transmission gave no mercy to the middle- and low-income countries, who are short of vaccines. By the end of the second year, the world has been divided into populations who have passed the suffering experience of infection, those up class who have been fully immunized and those neither vaccinated nor infected. So, there are still fuels waiting for the arrival of sparking new variants of concern of SARS CoV 2. With this diversified background of populations, the Public Health profession must come up with good plans for research, monitoring and giving feedback of information to all stakeholders.

Community Empowerment and Engagement in Managing COVID-19

Prof Dr Tin Tin Su

Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia

During the COVID-19 outbreak, research suggests that more than a third of the global population may not benefit from crucial information due to lack of accessibility, understandability, ability to appraise, or applicability of public health messaging. The relational community engagement (RCE) has a promising potential for the response and recovery of the COVID-19 outbreak with effective empowerment of the community. RCE is distinguished from the other typology of CE [Information- Consultation - Involvement] by its nature with the usage of a range of sustained communication and interaction with the community. RCE is not bounded by a project or issue but is an ongoing orientation and investment on social level engagement to earn the communities' trust and build long-term shared interest with the community. This talk will focus on how meaningful community engagement should be implemented and integrated into COVID 19 response and recovery efforts.

Preparing for The Next Pandemic

Prof Datuk Dr Awang Bulgiba

Department of Social and Preventive Medicine, Faculty of Science, University of Malaya

Despite COVID-19 being the most severe pandemic to afflict the world since the Spanish Flu of 1918, the Malaysian response has not been outstanding even among developing nations. Pandemic preparation is a national responsibility, and the current Pandemic Preparedness Plan needs to be revised and updated if the country is to prepare properly for another pandemic. It has also become clear that the country needs to go beyond merely revising the Pandemic Preparedness Plan. Indeed, opportunities abound for a reset of the economy and the country. This reset is a great opportunity to push for widespread automation and adoption of artificial intelligence in the Malaysian economy, adoption of E- in work and life, introduction of a more efficient food supply chain, delivery of education through alternative means and to have vaccines and medicines security. In addition, future pandemic preparedness must heed lessons learned during this pandemic and use a whole-of-community approach in its planning. There is a great need to recognize the combined threats of unsustainable healthcare financing, climate change, the rise in lifestyle diseases, an ageing population and rapidly spreading infectious diseases which must be tackled and included in any future planning. Advocacy for change is no longer a luxury or an option. It needs to happen quickly, and the country needs to adapt and innovate. If it fails to adapt and innovate then risks will emerge, it will be left further behind, and Malaysia will be even less prepared for another catastrophic health event.

SYMPOSIUM NON-COMMUNICABLE DISEASES (NCD): HOW TO BUILD BACK BETTER

Pragmatic Solutions in Building Resilience Among People Living With NCD

Dr Arunah Chandran
Non-Communicable Disease Intervention Sector
Disease Control Division, Ministry of Health Malaysia

NCDs remain the most pressing threat to the sustainability of the Malaysian health system and our resilience to stressors such as the COVID-19 pandemic. Risk factors and outcomes of people living with NCDs are often shaped by factors beyond the health services and thus require an integrated approach across all sectors. Actions taken need to truly address inequalities among the disadvantaged. Solutions must focus on addressing the social, economic, commercial, environmental, and behavioral determinants of NCDs and health in general. Emphasis must also be placed on social care and education as part of a broader societal endeavor towards a sustainable effort to build a resilient society.

How Can We Deliver Mental Health Support and Services Differently?

Mr Azran Osman-Rani
CEO and Co-founder of NALURI

Naluri's digital therapeutics application addresses four key shortcomings of traditional mental healthcare: (a) from reactive and transactional, to proactive and programmatic, on-going care; (b) from a siloed specialized care model to a coordinated, multi-disciplinary care that addresses mental health together with physical health, (c) from a fee-for-service model to an outcomes-based model, and (d) from one-one-one consultations to asynchronous care than amplifies a mental health professional's reach by ten-fold. Having worked with 80 corporate clients and supporting 250,000 employees, Naluri digital employee assistance programme has yielded improvements of over 20 points of patient-reported DASS-21 scores, with a p-value of < 0.001 .

How Do We Address Inequalities to Delivery and Access Through NCD Interventions Among Vulnerable Populations?

Dr Daniel Reidpath

Senior Director, Health Systems and Population Studies Division, icddr,b Bangladesh

The term “vulnerable population” usually refers to socioeconomic, demographic, and geographic factors that stratify a society, with those strata that are at greater risk of poor outcomes identified as “vulnerable”. In health, one may refer to the vulnerability of a population being associated with an increased risk of getting a disease; that is, the social inequalities are risk factors for disease. Also, one may refer to the vulnerability of a population being associated with greater difficulties accessing services; that is, the social inequalities are risk factors for more limited access to services. Unfortunately, the populations that are at greater risk of NCDs are very often the same populations with more limited access to services. That is, the vulnerable populations are doubly affected by the socioeconomic, demographic, and geographic strata they occupy. The requirement under Universal Health Coverage to “leave no one behind” creates particular challenges for governments to ensure that the vulnerable populations receive fair access to preventive measures (reducing their risk factors for disease) and fair access to treatment and management (reducing their risk of morbidity and mortality once they have a disease). Leaving no one behind has political and economic challenges because the socioeconomic, demographic, and geographic factors that created the stratification of risk can diminish political will and increase costs. Mechanisms for overcoming the challenges are discussed.

SYMPOSIUM ENVIRONMENTAL AND OCCUPATIONAL HEALTH: ENVIRONMENTAL AND OCCUPATIONAL HEALTH CHALLENGES AND PANDEMIC CRISIS: ARE WE PREPARED?

Can air cleaners and purifiers protect you from COVID-19?

Assoc. Prof Dr. Mohd Shahrul Mohd Nadzir
Department of Earth Sciences and Environmental, UKM

The rapid spread of the SARS-CoV-2 in the COVID-19 pandemic had raised questions on the route of transmission of this disease. Initial understanding was that transmission originated from respiratory droplets from an infected host to a susceptible host. However, indirect contact transmission of viable virus by fomites and through aerosols has also been suggested. Herein, we report the involvement of fine indoor air particulates with a diameter of $\leq 2.5 \mu\text{m}$ (PM_{2.5}) as the virus's transport agent. PM_{2.5} was collected over four weeks during 48-h measurement intervals in four separate hospital wards containing different infected clusters in a teaching hospital in Kuala Lumpur, Malaysia. Our results indicated the highest SARS-CoV-2 RNA on PM_{2.5} in the ward with the number of occupants. We suggest a link between the virus-laden PM_{2.5} and the ward's design. Patients' symptoms and numbers influence the number of airborne SARS-CoV-2 RNA with PM_{2.5} in an enclosed environment.

Social Security Responses to Pandemic COVID-19

Dr Azlan Darus
Head of Prevention, Medical and Rehabilitation,
Social Security Organization (SOCSO), Malaysia

The pandemic that swept through the country and the world and the country requires a comprehensive effort by multiple stakeholders, government, and non-governmental entities. In Malaysia, the roles played by the NSC, MOH, enforcement agencies and economic agencies are well known. Social security organizations also play a vital role in supporting the response within the country. The paper will highlight the role played by the Social Security Organization (PERKESO). The programmes by the organization responded to the requirement for pandemic mitigation from the early phase of the pandemic and continues to the post pandemic phase. These programmes can generally be categorized into infection control assistance, employees benefit and economic stimulus packages. The pandemic mitigation includes mass screening packages, foreign workers screening, RTK tests and currently, the self-test kits provided to Malaysian companies. PERKESO had enhanced its benefit structure to include COVID-19 as part of its employment injury benefit and participated in the enforcement activities for the housing standards for foreign workers. And finally, PERKESO is instrumental in the management of the economic stimulus by the government amounting to billions to be distributed to employers and employees. The job placement programmes were also enhanced to assist those who lost their jobs due to the pandemic. The pandemic was an event that requires mitigation across multiple agencies. The social security organization played its part to enable the country to survive the pandemic and build the nation in the next phases.

COVID-19 and Migrant: Lessons Learnt from The Malaysian Experience

Dr. Sharuna Verghis
Jeffrey Cheah School of Medicine and Health Sciences
Monash University Malaysia Healthy Equity Initiative

Malaysia is host to one of the largest migrant populations in Asia and is one of the top destination countries for low skilled migrant labor and urban refugees. As in other parts of the world, the COVID-19 pandemic has had a significant impact on the country's economy and migrants who are the mainstay of the plantation, manufacturing, and construction sectors. Based on a scoping review of scientific literature and online newspapers, this paper covers the Malaysian government's COVID-19 response to migrants and identifies the impact of government policies that were instituted to govern migrant populations in Malaysia during this period. The policies cover the key areas of immigration control and undocumented workers, workplace policies and human resource management, social protection policy, and freedom from xenophobia and racial discrimination. Adopting an interdisciplinary approach, the paper highlights emerging issues for public health policy, research, and practice.

SYMPOSIUM FAMILY HEALTH: FAMILY LIFE IN PANDEMIC

COVID-19 and Adults' Mental Health

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Disease Control Division, Ministry of Health

COVID-19 pandemic has brought about an unprecedented impact on Malaysian's mental health contributed by various social factors such as changes in daily routines, loss of loved ones, adaptation to the new norms, loneliness due to self-quarantine or movement control order, financial crisis and difficulties, unemployment as well as struggles in interpersonal conflict and relationship. For those who had been infected by COVID-19, they may experience conditions upon which symptoms may present in various ways for a different length of time. For some; physical, mental and emotional symptoms can prolong. Physical health conditions can affect mental health. Among the mental health related symptoms resulting from impact of COVID-19 are anxiety, low mood, depression, difficulty in sleeping, loss of appetite which may affect quality of life and the ability to work. Ultimately, suicidal behaviour has been identified as one of the outcomes of those struggling with mental health issues. Sources from the Royal Malaysian Police (PDRM) found that there was an increase in number of suicide cases reported in Malaysia in 2020 which was 631 cases compared to 609 cases in 2019. As of July 2021, a total of 638 suicides were reported by PDRM compared to 262 cases for the same period in 2020 (January - July 2020). MOH has taken several initiatives to strengthen strategies towards addressing mental health problems, namely provision of Mental Health and Psychosocial Support (MHPSS) services to the community and target groups. This is implemented through Psychosocial Support Helplines, mobilisation of Mental Health and Psychosocial Support teams at the ground, as well as placing counsellors at districts and health clinics to provide mental health services. In addition, other efforts are advocacy of Mental Health Awareness Campaign : Let' TALK *Minda Sihat* across agencies in an integrated manner involving the mass media, social media and stakeholders; training on Psychological First Aid for frontliners and volunteers; and development of SOPs and Guidelines on Mental Health Another important initiative was the engagement sessions between MOH and various stakeholders including Ministries such as the Ministry of Education, Ministry of Women, Family and Community (KPWKM), Ministry of Communications and Multimedia, Ministry of Youth and Sports, JAKIM, PDRM, Fire Department and non-government agencies (NGOs) to ensure a whole-of-government and whole-of-society efforts in addressing mental health problems and suicidal behavior issues in an integrated manner. Mental health issues will be the next wave of this pandemic due to the psychosocial impacts of the COVID-19 pandemic. As such psychological impact that occurred during this pandemic needs to be given serious attention. This can be attained though task-shifting and strengthening inter-sectoral and inter-institutional collaborations related to mental health, social and economic forces; and a policy and decision-making process that affects mental health care. It is hoped that all the efforts put will support those individuals in needs to address mental health issues in the country.

Educational Disruption on Children's Mental Health

Dr Khadijah Hasanah Abang Abdullah

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The COVID-19 pandemic has resulted in school closure worldwide, which serves as a risk mitigation measure. Remote schooling with online learning has been implemented to minimize the disruption. However, these measures can have significant effects on the children, especially their mental health. Additionally, other factors may contribute e.g. loss of parent(s) or caregiver and household financial constraints. Surveys from parents and children have shown that both have reported worsening mental health status. Children are affected by the loss of social connection, disrupted routines and lack of structure, stress related to online learning, missed free and reduced-price meals, lack of identification & support for those experiencing abuse or maltreatment at home, and decreased access to mental health services. Older children seem to be more affected compared to the younger ones. Understanding these issues would help the relevant authorities to plan and implement strategies that would help these children bounce back.

COVID-19 And Domestic Violence

Prof Sajaratulnisah Othman
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Faculty of Medicine, University of Malaya

Domestic violence is a major public health burden as it impacts the victims, their children and those around them. The health consequences are immediate and at the same time can be long lasting. The complex nature of domestic violence requires an integrative multidisciplinary effort to ensure optimal support is being given. Since March 2020, the COVID-19 pandemic has resulted in the worsening of the domestic violence situation worldwide. The violence perpetration at home is not only limited between intimate partners but also between parent-child and vice-versa. The lifestyle changes to suit the demand of the 'new normal' has led to psychological distress, stress, loneliness, post-traumatic stress disorder, anger, sleep disorder and substance use. Victims' difficulty to access resources for help during the 'stay-at-home' order, fear of contracting the COVID19, and wanting to avoid burdening an already overwhelmed health system are some of the reasons for the reduced presentation of victims to the health facilities. The reorientation from face-to-face service delivery to online platform has the advantage of increasing service accessibility during the pandemic. However, with changes in the execution of health services due to the pandemic, supporting victims of violence during this pandemic may require special precaution to avoid overlooking these cases or causing more harm to victims. Further elaboration on the existing challenges in addressing domestic violence will be given. The principles and specific approaches to support victims of violence within the capacity of the health system will be discussed.

ORAL PRESENTATION: COMMUNICABLE DISEASE CONTROL

CDC001

Time to Swab from Onset among COVID-19 Confirmed Case: A Time to Event Analysis

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The COVID-19 pandemic has caused devastating effects worldwide. Early case detection through screening is pivotal in breaking the chain of transmission. However, there is minimal knowledge on time to screening from the onset of confirmed COVID-19 cases. This study aims to determine the median time to screening from the onset of disease and its associated factors. A retrospective cohort study was conducted among 685 confirmed COVID-19 cases in targeted enhanced movement control order areas. Data was collected from electronic records. Data were analyzed using Kaplan-Meier Estimates and Cox Proportional Hazard Regression. Results showed that the median time needed to screen from the onset was two days (95%CI 1.75, 2.25). Comparison between age groups indicated that among older age groups, there was a delay in screening by one day. The median time for the age group of 18 years below was one day (95%CI: 0.55, 1.46), 18-59 years old was two days (95%CI: 1.66, 2.34), and 59 years old above was three days (95%CI: 2.36, 3.64). Cox regression showed significant findings for age (HR: 0.994, 95%CI: 0.991, 0.998). Comparison between cases with no comorbidity and cases with diabetes (Median: 3 days [95%CI: 1.92, 4.08]), hypertension (Median: 3 days [95%CI: 2.21, 3.80]) and ischemic heart disease (Median: 3 days [95%CI: 0.23, 5.77]) also showed a delay by one day. However, both the log-rank test and Cox regression analysis did not yield significant results. There is a need to educate the public and increase awareness of the importance of early screening, especially among older adults and individuals with comorbidities.

Keywords: COVID-19, Screening Time, Factors, Time to Event

CDC002

Coronavirus (COVID-19) Outbreak at Perhentian Island in Terengganu State of Malaysia in 2021

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The spread of COVID-19 was inevitable and has not spared small and isolated communities, including the community of Perhentian Island in Besut District, Terengganu. Managing clusters in small islands can be difficult, given the limited resources. This study explores the characteristics of COVID-19 cases and the experience of outbreak containment at Perhentian Island. A retrospective record review of COVID-19 cases and at-risk individuals registered under Perhentian Cluster were retrieved from the Besut District Health Office COVID-19 online registry from the 16th August 2021 until 6th October 2021. All notified cases and close contacts who fulfilled the inclusion criteria were extracted and analysed using descriptive statistics. One thousand ninety-three community members of Perhentian Island were screened; 170 (15.5%) tested positive for COVID-19, while 923 (84.5%) tested negative. Among individuals who tested positive, the majority were adults (52.4%), male (51.8%), Malays (98.8%), and villagers (96.5%). Clinical characteristics were categorized into: asymptomatic (55.9%), had no known medical comorbidities (90.6%), low-risk groups (87.1%), vaccinated (57.6%), and admitted to PKRC (97.1%) for treatment. Multiple agencies were involved in the outbreak containment of *the* Perhentian Cluster, working collectively and in good coordination. The outbreak was attributed to community gatherings and close interactions among villagers. Prompt actions, targeted planning, and inter-agency collaboration were the key factors in successful containment of further spread of COVID-19 in Perhentian Island.

Keywords: COVID-19, Island, Community Transmission, Terengganu

CDC003

Prediction Modelling for Cholera Occurrence in Borneo, The Way Forward

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Cholera is endemic in Sabah, and proactive measures are required for cholera elimination. This study aimed to develop predictive modeling of cholera occurrence using surveillance indicators. The indicators include weekly number of acute gastroenteritis and food poisoning cases; weekly-averaged water quality; and meteorological parameters. The indicator variables were obtained from Semporna Health District Office and Malaysian Meteorological Department, covering 364 weeks (2013-2019). Significantly correlated surveillance indicators were lag from zero to 7 weeks and used as predictors of cholera incidences. The multivariate Poisson Regression Model followed by Negative Binomial Regression was used to develop prediction modeling. Correlated surveillance indicator selected as predictors were cholera cases at lag 1-week ($r=0.613$, $p=0.000$), acute gastroenteritis cases at lag-1 week ($r=0.250$, $p=0.000$), water pH level at lag-3 weeks ($r=0.184$, $p=0.002$), total rainfall level at lag-5 weeks ($r=0.125$, $p=0.018$) and sea surface temperature at lag-3 weeks ($r=0.127$, $p=0.024$). The best model was Model 2, which used weekly number of cholera cases and acute gastroenteritis cases at lag-1 week ($p\leq0.01$), weekly total rainfall at lag-5 weeks ($p\leq0.01$), and weekly sea surface temperature at lag-3 weeks ($p\leq0.01$) to produce an AIC of 545.437, BIC of 564.215, and Pearson Chi-square value with degree of freedom (1.423) close to 1. This study's model proved the ability to predict possible cholera outbreaks one week ahead of time. Therefore, this might help the district health office make the appropriate preparations for early planning, resource allocation, and advanced preventative actions to avoid a cholera outbreak.

Keywords: Cholera, Prediction model, Surveillance indicators, Sabah

CDC004

Case Report on A Case With *Vibrio Furnissii* Infection In Kota Marudu District

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Vibrio furnissii was first defined in 1977. It is ubiquitously present in marine environments and is one of the 11 non-cholera *Vibrio* species pathogenic in humans, leading to human gastroenteritis and extra-intestinal manifestations. A 13-year-old girl from Kota Marudu district presented with loose stools and vomiting after eating undercooked anchovies and a type of fish called 'Ikan Sulit' (Fusiliers) among the locals. She was admitted to the hospital for treatment. Upon microbiological investigation, it was known to be *Vibrio furnissii* infection, a family Vibrionaceae. The patient was treated with oral doxycycline and discharged home in good condition. *Vibrio furnissii*, an emerging pathogen known for quite some time as an aetiological agent responsible for acute gastroenteritis cases, deserves more clinical attention. In-depth studies need to be conducted in identifying the virulence, pathogenesis, and clinical importance of this bacteria to ensure preventive measures against any outbreak in future.

Keywords: *Vibrio Furnissii*, Emerging pathogen

CDC005

Predictors of Pain During Nasopharyngeal Swab for COVID-19 Screening at A Drive-Through Screening Centre: A Cross-Sectional Study

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Nasopharyngeal swab (NPS) is the screening tool for Coronavirus Disease 2019 (COVID-19). It is a painful procedure that leads people to refuse it. Since no pain evaluation was conducted, this study examines the pain prevalence and predictors during NPS among COVID-19 suspected cases at the Central Malacca drive-through screening centre. A cross-sectional study was conducted among 365 screened respondents, selected through simple random sampling in May 2021. The pain category was divided into clinically significant pain (CSP) and Non-CSP using the Ministry of Health Pain Scale. Independent variables were the sociodemographic factors, frequency of NPS, operators' experience score and swab tip type. Data was collected using a validated, self-administered Google form questionnaire, blasted via WhatsApp and the analysis was done using IBM SPSS software version 26. The response rate was 86.4%, with 53.5% reported having CSP. Binary Logistic Regression revealed frequent NPS procedures (OR= 1.18, 95% CI 1.01-1.38, p=0.040) and the nylon-flocked swab tip (OR= 2.08, 95% CI 1.24-3.49, p=0.006) have higher odds of CSP. Operator with more experience score is less likely to cause CSP to respondents (OR = 0.94, 95% CI 0.89-0.99, p <0.048). The predictors of CSP during NPS among COVID-19 suspected cases are of higher frequency of NPS and nylon-flocked swab tip. Increased operators experience score is the protective factor for CSP. Thus, the painless saliva self-testing modality screening for COVID-19 is highly recommended.

Keywords: Predictors of Pain, COVID-19 Screening, Nasopharyngeal Swab, Drive-through Screening Centre

CDC006

Analysis on Measles Surveillance in Penang, Malaysia from 2015 to 2019

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Accurate methodology in identifying measles cases is critical in Measles Elimination Program. In a low measles-prevalent area like Malaysia, there is concern about measles clinical-case definition (CCD) accuracy in confirming the cases. The study aimed to analyse the trend of incidence of measles and evaluate the use of CCD in detecting serologically confirmed cases in Pulau Pinang. Data on suspected measles were obtained from an online database (e-Measles) between 1st January 2015 and 31st December 2019 in Pulau Pinang. Cases without clinical samples were excluded from the analysis. Sensitivity, specificity, positive and negative predictive values were calculated for test accuracy. A total of 384/418 (91.9%) with serological status included in analysis. 64 (16.7%) were laboratory-confirmed measles infections. The incidence of measles shows increasing trend from 0.63 per 100,000 population (95%CI: 0.07,0.63) in 2016 to 1.23 per 100,000 population (95%CI: 0.72,1.74) in 2019. The majority of the patients notified are below 10 years of age (72.6%), Malay (76.8%), and full-fill CCD at the time of notification (64.3%). The sensitivity, specificity, PPV and NPV of CCD were 79.7% (95% CI: 67.8%, 88.7%), 38.8% (95% CI: 33.5%, 44.3%), 20.7% (95% CI 18.3%, 23.2%) and 90.5% (95% CI 85.2%, 94.1%) respectively. The measles trend in Penang shows an increasing trend during the study period but is still relatively low. CCD in measles surveillance shows high sensitivity and NPV but lower specificity and PPV. Laboratory confirmation and thorough outbreak investigation are critical to avoid misdirection of public health response as measles elimination is approached.

Keywords: Measles Elimination Program, Clinical Case Definition, Sensitivity, Specificity, Positive Predictive Value, Negative Predictive Value

CDC007

Factors Associated with Asymptomatic COVID-19 Infection in A District Setting in Malaysia

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We aimed to determine the prevalence, characteristics, and risk factors of asymptomatic COVID-19 cases in a district setting in Malaysia. We included all confirmed COVID-19 cases within the district from inception to March 2021. Out of 3,051 confirmed COVID-19 cases, 1,862 (61.0%) were asymptomatic. Asymptomatic cases were mostly men, younger, non-Malaysians with fewer comorbidities. The highest prevalence of asymptomatic cases was from prisons and factories. Male gender (OR 2.02; 95%CI 1.69 - 2.43), non-Malaysians (OR 20.00; 95%CI 14.75 - 27.64), currently smoking (OR 12.06; 95%CI 6.74 - 23.94), prisoners, and higher CT values were significantly associated with asymptomatic COVID-19 infection. Male gender, non-Malaysian, current smoking status, prisoners, and higher CT value were more likely to present with asymptomatic COVID-19 infection. The overcrowding and restrictions in healthcare accessibility, especially linked to migrant workers and prisoners, encourage authorities and employers to have better prevention and infection containment strategies to manage the pandemic.

Keywords: COVID-19, asymptomatic, infectious diseases, district setting

CDC008

Factors Associated with Late Treatment-Seeking Among Mammal Bite Victims in Mukah Division, Sarawak From 2018-2019

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Rabies is a zoonotic disease caused by an RNA virus. Although it is a fatal disease, rabies is highly preventable. Avoiding bites from rabid mammals is key to prevent rabies infection; however, prompt wound management with post-exposure prophylaxis (PEP) must be initiated after exposure to rabid mammals. Delay in treatment-seeking can increase the risk of being infected with rabies, leading to death. This study aims to determine factors associated with late treatment-seeking among bite victims. This is a cross-sectional study that used data from reported cases of mammal bites in Mukah Division, Sarawak, from 2018 to 2019. A universal sampling method was used, and 457 cases of mammal bites were included in the analysis. Early treatment-seeking and late treatment-seeking is the outcome of the study. Late treatment-seeking is defined as treatment-seeking after 24 hours post bite at nearest health facilities. Matu district (AOR 11.40, 95% CI 3.08-42.23), location bite incident (educational institution) (AOR 60.50, 95% CI 15.97-229.26), free-roaming pet (AOR 3.38, 95% CI 1.34 - 8.57), category wound 1 (AOR 7.940, 95% CI 1.63 - 38.66), and category wound 2 (AOR 2.808, 95% CI 1.20-6.16) were significantly associated with late treatment-seeking. Health awareness and education should be emphasized to the community and medical personnel prevention of rabies

Keywords: Rabies, Delayed Treatment-Seeking, Zoonotic Disease

CDC009

Vaccine Breakthrough Infections of COVID-19 Cluster Among Residents and Staffs of An Elderly Home in Georgetown Pulau Pinang

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COVID-19 vaccines are effective in reducing mortality and hospitalisation. However, vaccine breakthrough COVID-19 infections can still occur. This study aimed to describe the characteristics and outcomes of the vaccine breakthrough COVID-19 cluster among residents and staff of an elderly home in Georgetown, Pulau Pinang. A retrospective cross-sectional study was conducted with data from district CPRC for 144 COVID-19 confirmed cases from Penang Home, from 5th to 18 October 2021. Out of 192 screened, including the index case, 144 (75%) COVID-19 cases were identified among 133 residents and 11 staff. They completed two doses of COMIRNATY vaccines, with a mean of 127.5 days from the second dose. The mean age of residents was 82.0 years (SD=7.4), with the majority being females (66.2%) and Chinese (97%). About two-thirds of residents (64.7%) had comorbidity, with hypertension as the commonest disease (58.6%) and followed by diabetes mellitus (17.3%). Most of the residents were independent in their activities of daily living (67.7%). The majority of the residents (72.9%) were asymptomatic. The mean age for staffs was 42.3 years (SD=18.5), and all were females. Most of the staffs had no known medical illness (72.7%). For staffs, most of them were symptomatic (54.5%) with cough (18.1%) and lethargy (18.1%) as the commonest symptoms. Only 38 residents (28.6%) and one staff member (9.1%) required hospitalisation. All were discharged well with no mortality. A good outcome with a low hospitalisation rate and no mortality was observed among postvaccination COVID-19 infections in this cluster involving high-risk groups.

Keywords: Vaccine Breakthrough Infections, COVID-19, Elderly

CDC010

Association Between Age, Comorbid and Obesity with COVID-19 Severity in Putrajaya

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The Federal Territory of Putrajaya has reported a cumulative total of 7,697 COVID-19 cases until 20th November 2021. A small percentage of patients appear to have a severe form of the disease at presentation. This cross-sectional analysis aims to measure the association between elderly age, comorbidity, and BMI with the severity of COVID-19 cases. This study analyse the 7,697 positive confirmed cases investigated by the Putrajaya Health Office from 1st January 2021 to 20th November 2021. Descriptive and chi-square analyses were performed using SPSS version 23. Around 98.03% (n=7,545) of positive cases have mild symptoms (Category 1 to 2), while 1.97% (n=152) have severe symptoms (Category 3 to 5). The proportion of severe cases was more prominent in the elderly population, aged 60 years and above (23.68%, n=36), those with comorbidity (64.47%, n=98), and obesity (BMI 30 and above) (10.53%, n=16) as compared to those with mild cases. Chi-square analysis revealed the factors which significantly associated with disease severity were elderly age (OR: 8.46, 95% CI: 6.04, 11.86), those with comorbid (OR: 10.0, 95% CI: 6.73, 18.87), and obesity (OR: 2.48, 95% CI: 1.46-4.20). Thus, preventive strategies should prioritize these groups for vaccination, health education, and early referral for prompt treatment.

Keywords: COVID-19, Factors, Severity

CDC011

Epidemiological Investigation and Public Health Measures Taken On A Workplace COVID-19 Cluster With Community Transmission in Georgetown Pulau Pinang

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Workplace COVID-19 clusters are challenging to investigate and implement public health action due to crowded settings and high-level interaction within the community. We aimed to describe the epidemiological characteristics and public health measures taken on a workplace COVID-19 cluster with community transmission in Georgetown, Pulau Pinang, using a retrospective cross-sectional study by obtaining the data from the district Crisis Preparedness and Response Centre. The index case was a trader of Pulau Mutiara Wholesale Market, detected by symptomatic screening on 28th June 2021. Subsequent contact tracing and active case detection involved screening of 1602 individuals from 30th June to 24th July 2021. A total of 274 COVID-19 cases were detected from the targeted screening (17.1%). These cases involved 89 market workers, 58 closed contacts, and 128 cases from the neighbouring community. The mean age of cases was 38.1 years (SD= 17.6), with the majority being Malaysian (64.7 %), Chinese (35.8%), and Male (62.4%). One-fifth of cases (20.0%) had comorbidities, while hypertension was the commonest disease (13.1%). The majority of the cases were not vaccinated (93.8%). Half of the cases (44.2%) were asymptomatic. 75.1% of cases required admission, with 59.4% going to Low-Risk Covid Centres and 15.7% warded in hospitals. Public health measures taken included health awareness, isolation and quarantine, disinfection of public places, temporary closure of the market, and a vaccination outreach programme. Timely epidemiological investigation and public health measures are important in controlling the COVID-19 transmission in the workplace and community.

Keywords: COVID-19, Cluster, Workplace, Community

CDC012

COVID-19 Construction Site Cluster Management Under the Titiwangsa District Health Office in June 2021: A Descriptive Study

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Titiwangsa District Health Office, including Setiawangsa, Wangsu Maju, and Titiwangsa Parliament, has recorded 49 499 COVID-19 cases till November 2021 and a quarter of them are related to construction site clusters. Within this cluster, most of the COVID-19 cases were foreign workers. Henna Residence construction site was one of the Titiwangsa construction clusters recording a high number of COVID-19 cases from the 16th of June 2021. This report describes how COVID-19 cases were controlled and why multi-agency collaboration is important in handling construction site clusters. A risk assessment was conducted to investigate the COVID-19 cluster, which included the data on the Titiwangsa DHO COVID-19 registry with an analysis of close contact screening of the Henna Residence construction site from the 31st of May 2021 until the 13th of June 202. The result depicted a total of 128 cases where 100% of them were foreign workers - 66% Bangladeshi 13.2%, Indonesian 1.5%, Myanmar 1.5%, Vietnamese 0.78%, Pakistani, and Indian 1.5%. In addition, data showed the cases related to the male workers were higher than the female workers, with 97.6% male workers and 2.3% female workers. The rising number of cases was related to the confined space residency for the workers and the lack of cooperation from the construction site management. Thus, to reduce the number of cases related to construction sites, other government agencies such as the Construction Industry Development Board, the Department of Occupational Safety and Health, and the Department of Immigration should effectively collaborate with the Ministry of Health Malaysia.

Keywords: COVID-19, Henna Residence construction site cluster, Titiwangsa District Health Office (DHO).

CDC013

Factors Contributing to COVID-19 Brought-In-Dead (BID) Cases Among Non-Malaysians in Lembah Pantai Health District, Kuala Lumpur

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The COVID-19 pandemic has claimed more than 30,000 lives in Malaysia since early 2020, of which 20% were brought-in-dead cases. This study aims to determine factors influencing COVID-19 BID cases among non-Malaysians in Kuala Lumpur. This was an observational study of 168 BID cases notified to Lembah Pantai Health District, Kuala Lumpur, from January 2021 to October 2021. The proportion of BID cases were mainly males (60.7%), equally distributed between Malaysians (51.8%) and non-Malaysians (48.1%) with a mean age of 55.6 ± 15.3 . The majority had comorbidities (61.3%), were symptomatic (83.3%), a covid status known after death (61.3%), and were unvaccinated (68.8%). Simple logistic regression showed a significant association of those aged between 31-59 years old (OR 14.7, CI 5.85-32.16), employed status (OR 6.43, CI 3.19-12.99), no comorbid (OR 2.03, CI 1.09-4.32), a covid status known after death (OR 2.12, CI 1.12-4.00) and unvaccinated (OR 4.85, CI 1.53-15.4) among non-Malaysians BID. Further multivariate analysis found that age 31-59 years old (aOR 7.4, CI 2.65-20.64), employed status (aOR 4.45, CI 1.71-11.52), partially vaccinated (aOR 7.00, CI 1.30-37.48), and unvaccinated (aOR 14.46, CI 3.10-67.37) were significant predictors of COVID-19 BID cases among non-Malaysians. This study highlights that younger, working-class, partially vaccinated, or unvaccinated non-Malaysians were at higher risk to succumb to BID due to COVID-19. This could reflect unexplored socio-cultural-environmental barriers in seeking early and timely healthcare services. Understanding their health needs is crucial to shaping public health planning and policy in current and future pandemics to ensure that these vulnerable populations are not neglected.

Keywords: COVID-19, Brought-in-dead (BID), Non-Malaysians, Kuala Lumpur

CDC014

Vaccine-Preventable Diseases (VPD) in Penang from The Year 2016-November 2021: Is VPD Surveillance in Penang Affected by Pandemic COVID-19?

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In the current situation of Pandemic COVID-19, many countries with confirmed cases of COVID-19 have initiated lockdown as a response to this disease with the implementation of strict social distancing isolation and quarantine. This scenario will likely reduce community transmission of many Vaccine-Preventable Diseases (VPDs). Therefore, continuation notifying communicable diseases and monitoring surveillance systems are essential in preventing and controlling such outbreaks and evaluating the impact of the pandemic on the surveillance of VPDs. Therefore, this study aims to assess and evaluate the impact of COVID-19 on the reported confirmed cases of VPDs from 2016- November 2021 in Penang, Malaysia. We conducted a descriptive data review from the e-notification surveillance Ministry of Health (MOH) Malaysia. VPDs notification in Malaysia covering 6 diseases Diphtheria, Measles, Tetanus, Viral Hepatitis B, Pertussis / Whooping Cough, and Polio. We calculated and compared median VPDs cases during pandemic COVID-19 years 2020 - November 2021 with median VPDs cases pre-pandemic years 2016-2019. During pandemic COVID-19 years the VPDs with highest decline reported for Tetanus (-100%), Measles (-87.5%), Pertussis (-84.9%), Diphtheria (0%) and Polio (0%) .Viral Hepatitis B increased in the notification of confirmed cases (+250%.) In Penang, there was an evident decline in reported cases of five VPDs, whereas Viral Hepatitis B showed an increase in reported cases during Pandemic COVID-19. Our VPDs vaccination program reached above 95% in the community throughout these years. So other factors such as risk assessment and enhanced surveillance are necessary to prevent potential outbreaks for years to come.

Keywords: Vaccine-Preventable Diseases, COVID-19, Surveillance, Affected, Penang

CDC015

Co-infection of Dengue and Chikungunya Viruses in Federal Territory of Kuala Lumpur, 2021

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Dengue is endemic and has been a huge burden in the Federal Territory of Kuala Lumpur. In contrast, Chikungunya is an arboviral disease that has been on a significant decline from 2011 until 2018 despite its endemicity in the Northern part of Malaysia. However, Chikungunya re-emerged in 2019 with two cases followed by substantial multiple outbreaks in 2021. This study explores the likelihood of co-infection cases of chikungunya and dengue infections that remain subtle. Clinical and laboratory data were extracted and analysed from E-Notifikasi from 1st January 2021 until 4th November 2021. From 2,735 dengue and 430 chikungunya cases registered until Epid Week 44, there were 13 cases identified as co-infection. The most common presentation is fever (100%), followed by arthralgia (87%), myalgia (62%), rash (50%), headache (50%), and the least reported were diarrhea (15%). Rapid test was used in dengue diagnosis, which showed 15% NS1 and 76% IGM positive while on the contrary for Chikungunya, 46% were using PCR and 54% with rapid test showed positive IgM. Out of 13 cases, 5 cases were diagnosed with co-infection during the first consultation, and the rest were diagnosed as dengue initially and subsequently as Chikungunya on average 12 days later. The majority of cases (77%) were diagnosed at private facilities, and 23% were diagnosed at government facilities. Total two-third of patients were admitted for these infections. Our results demonstrate the need for clinicians to recognize the probability of co-infections.

Keywords: Dengue, Chikungunya, Co-infection

CDC016

Wide Area Larvaciding Spray (WALS) of *Temophos* as Dengue Prevention in Kuala Lumpur and Putrajaya

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In 2021, a novel approach was taken by the State Health Department to initiate WALS activities in localities with high dengue burden and frequent outbreaks. WALS is a vector prevention method in dengue transmission covering large and cryptic breeding areas. This study determines the outcome of WALS by assessing Container Index (CI) and dengue cases by comparing intervention (WALS) and control localities that were selected randomly. *Temophos* was sprayed via vehicle-mounted ULV/mist blower to the outdoor area and conducted weekly for four consecutive weeks with two cycles, three months apart. This study observed 142 localities consisting of 46 WALS and 96 control localities with a ratio of 1:2. Mean CI was higher in WALS localities 8.104 (5.8) compared to control 6.287 (4.8), but the difference was not significant, $p=0.07$. The findings indicate that there are high breeding indices in most localities in Kuala Lumpur & Putrajaya. A significant difference was $p=0.02$ in dengue cases, with median dengue cases recorded the highest in WALS localities 4.478 (Q1=2.9; Q3=6.0) compared to control localities, 2.0 (Q1=0; Q3=4.0). Both CI and dengue cases were higher in WALS localities, suggesting WALS activities should be carried out as an integrated component in conjunction with other preventive measures to suppress the vector population and interrupt disease transmission.

Keywords: WALS, Dengue, Dengue Prevention, Vehicle-Mounted Ulv

CDC017

Predacious Efficacy of Three Odonata Nymphs as Biocontrols against Mosquito Larvae in Malaysia

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Many synthetic insecticides are widely used for controlling adult and larval mosquito populations. However, there are multirole effects such as the harmful effects of chemicals on non-target populations, the development of resistance to these chemicals in mosquitoes, and the recent resurgence of different mosquito-borne diseases. The Biocontrol approach has been proposed to be an effective method in controlling immature mosquito populations. Odonata nymph's species predacious efficiency, namely *Neurothemis fluctuans*, *Orthetrum sabina*, and *Orthetrum chrysis* as biocontrols against *Aedes albopictus*, *Aedes aegypti*, and *Culex quinquefasciatus* larvae was tested under laboratory conditions. There was no significant difference [$F(2, 4) = 3.42$, NS] among these three species of Odonata nymphs in terms of mosquito larvae consumption. However, in terms of prey preference, there was a significant difference [$F(2, 4) = 5.35$, $p < .05$]. The Odonata nymphs showed specific prey preference; *N. fluctuans* and *O. sabina* consumed more *Ae. aegypti* larvae than *Ae. albopictus* larvae and *Cx. quinquefasciatus* larvae, while *O. chrysis* do not show any larvae preference. All predators exhibited diurnal activities, were daytime stalkers, and actively consumed more mosquito larvae during the daytime compared to nighttime [$F(2, 216) = 14.09$, $p < 0.05$]. It shows that all three species of Odonata nymphs could consume a good number of all three common mosquito larvae species in Malaysia. These results established the Odonata nymphs as a potential biocontrol agent against immature mosquitoes.

Keywords: Biocontrol, Mosquito-Borne Diseases, Odonata Nymph's Species, Mosquito Larvae

CDC018

Perception and Communication in Combating Pandemic COVID-19 Among Malaysian Army Personnel

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In the last few years, the outbreak coronavirus was the main issues in the worldwide. Coronavirus is a type of virus that can cause respiratory tract infections and the virus can also lead to death. The coronavirus found in China is Coronavirus 2019 (COVID-19). The effectiveness of these mitigation measures is highly dependent on cooperation and compliance of personnel of Malaysian Army. The perception and communication of the personnel hold toward the disease play an integral role in determining a personnel readiness to accept behavioral change measures from health authorities. The objective of this study in to determine the relationship between the perception and communication with the combating pandemic Covid-19 among Malaysian Army personnel. A quantitative research method of the correlational research design was conducted using questionnaires with 249 respondents from the Malaysian Army personnel and analyzed using the Statistical Package for the Social Sciences 25.0 and Smart PLS 3.3.2. The findings confirmed that perception and communication and does act as an important determinant in the relationship of managing pandemic Covid-19. With respect to a practical contribution, the findings of this study can be use as useful guidelines by commanding officers in particular to upgrade the expertise of their soldiers in coping with future challenging operations. Most of the soldiers believed that knowledge, awareness, communication is essential and needs to be properly invent to the respective soldiers in order to increase their perception and communication for any crisis.

Keywords: Perception, Communication, Malaysian Army

CDC019

Co-Circulation of Chikungunya and Dengue Outbreak in Kuala Lumpur, 2021

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Dengue is responsible for an enormous burden of morbidity, especially in tropical and subtropical regions where *Aedes* mosquitoes are abundant. In addition, in 2021, Chikungunya concurrently caused major outbreaks at several localities in Wilayah Persekutuan Kuala Lumpur (WPKL). This study aims to determine factors associated with dengue and chikungunya co-circulation in a locality based on residential types, yearly consecutive dengue cases and outbreaks, and pattern of breeding indices. Up to Epid Week 44, WPKL recorded 2,698 dengue cases with 330 outbreaks, whereas, for Chikungunya, there were 414 cases and 50 outbreaks. The further breakdown revealed a total of 25 localities with dengue and chikungunya outbreaks. Out of this figure, 15 (60%) localities were identified as co-circulation with the simultaneous outbreak. The majority (80%) of the co-circulation localities are high-rise buildings with numerous structural breeding potential. In addition, most (84%) reported indoor breeding sites. For the past three years, from 2018 to 2020, 6 (40%) localities contributed to yearly consecutive dengue cases, whereas 5 (33%) localities reported yearly successive dengue outbreaks. Entomological Risk Assessment (ERA) demonstrated a high *Aedes* Index (AI) with a mean of 2.1% and Container Index (CI) with a mean of 4.3%, which indicates high breeding indices, especially indoor premises. Both *Aedes aegypti* and *Aedes albopictus* increase the chance of co-infection and pose challenges in vector control. This led to possible Chikungunya becoming endemic in urban and semi-urban areas in the Federal Territory of Kuala Lumpur.

Keyword: Co-Circulation, *Aedes* Index, Container Index, Arboviruses

ORAL PRESENTATION: NON-COMMUNICABLE DISEASE

NCD001

Colorectal Cancer Screening: Exploring Predictors of Faecal Occult Blood Test Uptake in Public Healthcare Facilities in Kota Kinabalu, Sabah

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Colorectal cancer (CRC) is still a major concern globally. CRC disease and mortality are highly preventable, yet it is still one of the common causes of cancer deaths, mostly due to late presentation. Faecal occult blood test (FOBT) is a screening tool widely used in the early detection of CRC. However, the screening uptake is below the optimal level. Therefore, this study aims to determine prevalence and factors associated with Never Screened for FOBT (NS-FOBT). A cross-sectional study was conducted in five Kota Kinabalu, Sabah, Malaysian Borneo public health facilities. Subjects were recruited using systematic random sampling among 162 health clinics attendees aged 50 years old and above. Data collection was performed using a validated questionnaire. Multiple binary logistic regression analysis was performed to identify factors associated with NS-FOBT. NS-FOBT prevalence was 85.8% (n=139). Using multivariate analysis, factors that are independently associated with NS-FOBT including age (aOR: 0.922; 95% CI: 0.855 - 0.995; p=0.035), Bumiputera ethnicity (vs Non Bumiputera; aOR: 4.285; 95% CI: 1.384, 13.263; p=0.012), knowledge score (aOR: 0.921; 95% CI: 0.856, 0.99; p=0.027), and attitude score (aOR: 0.801; 95% CI: 0.702, 0.913; p=0.001). The prevalence of NS-FOBT was high. Younger age, Bumiputera ethnicity, lower knowledge, and attitude towards CRC and its screening independently associated with NS-FOBT. Strengthening the role of family physicians and socio-culturally tailored health promotion programs are recommended to increase FOBT screening participation and ultimately reduce CRC incidence and mortality.

Keywords: Faecal Occult Blood Test, Colorectal Cancer, Factors, Predictors

NCD002

Psychological Impact Among Healthcare Workers in Hulu Langat District During COVID-19 Pandemic: A Cross Sectional Study

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COVID-19 is a severe global threat to the health, the economy, society, and the mental health of healthcare workers (HCW). Numerous studies in hospital settings found that HCW's psychological well-being has been severely affected. This study investigates the prevalence of depression and anxiety in public health settings. It explores the factors associated with psychological impact among HCW in public health settings during the COVID-19 pandemic. A cross-sectional study was conducted from 4th to 18th Mei 2021, involving 291 job categories from 13 health clinics and one District Health Office in Hulu Langat. A self-administered questionnaire consisting of sociodemographic, job characteristics, and validated PHQ-9 and GAD-7 was used. Descriptive statistics and logistic regression were performed. The prevalence of depression and anxiety among HCW was 22.7% and 11.7%, respectively. Non-frontliner had a higher prevalence of depression than frontliner (14.1% vs. 8.1%), while frontliner had a higher prevalence of anxiety than non-frontliner (6.2% vs. 5.5%). Female (AOR=2.01, 95% CI=1.016, 3.55), stress at work (AOR=3.22, 95% CI=1.48, 7.02), conflict among colleagues (AOR=3.33, 95% CI=1.72, 6.34) and never attended training on COVID-19 management (AOR=2.30, 95% CI=1.13, 4.7) were significantly associated with depression. Female (AOR=3.54, 95% CI 1.64, 7.63) never used the MHPSS program (AOR=4.00, 95% CI=1.43, 8.76) and thinking of resigning (AOR=3.71, 95% CI=1.50, 8.22) were significantly associated with anxiety. The prevalence of depression and anxiety were comparable with international studies conducted during pandemic COVID-19 but lower than in local settings. The mixed picture on the prevalence of depression and anxiety among frontliner and non-frontliner suggested similar psychological support should be given equally among frontline and non-frontline HCW.

Keywords: Depression, Anxiety, Psychological Impact, Healthcare workers, Public Health

NCD003

E-cigarettes A Rising Epidemic and Contributing Factor Among Universiti Malaysia Sabah Students

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The public health community is still fighting the tobacco epidemic. Still, a new nicotine delivery device is in the market, which creates a rising epidemic: e-cigarettes. E-cigarettes' initial marketing was to promote quitting smoking, but currently, it is attracting non-smokers as well. This study aimed to investigate the rising epidemic and the contributing factors among the Universiti Malaysia Sabah students; 383 students were included in this cross-sectional study and examined using a Google Form questionnaire. The proportion of e-cigarettes users was 27.2%, with a 95% CI of 22.8% to 31.9%. This study also reported that 39.5% (female) and 24.2% (male) e-cigarette users were non-smokers, and 70.2% of students were dual users. Male students have a 3.6 higher relative risk of picking up e-cigarettes than female students ($X^2=61.7$, $p<0.01$). Only a small number of e-cigarette users picked up vaping to help in quitting smoking (34.6%). Noted that 53.7% of the e-cigarette users believe it is less harmful than cigarettes ($X^2=37.4$, $p<0.01$). In this study, we also revealed one concerning issue whereby 55.6% of the non-e-cigarette users will try vaping if offered free by a vendor ($X^2=9.50$, $p<0.01$). Thus, we can prove a paradigm shift whereby e-cigarettes have become a new nicotine delivery device among university students. The evidence-based factors identified in this study can be a good landmark for related agencies to develop future programs, regulations, and research to fight this rising epidemic.

Keywords: E-cigarettes, Dual user, University student, Free e-cigarettes.

NCD004

Does Social Support Influence Unsuccessful Quitters' Status from Stop Smoking Programme: State Data from A Stop Smoking Service in Northern Peninsular Malaysia

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Smoking is a significant cause of non-communicable diseases all over the globe. The World Health organisation advocated the Stop smoking programmes as a preventative strategy to reduce smoking prevalence. However, the effectiveness of the strategy varied globally. Social support has been associated with successful quitting. This research aims to determine whether social support may predict unsuccessful quitters among smokers in Stop Smoking Services provided by government health clinics at North Peninsular of Malaysia. This retrospective record review research used smoking cessation service registration and patients' file card data between January 2017 and June 2019. The independent factors are sociodemographic, comorbidities, number of appointments attended, length of smoking, age at first light, prior effort to stop, Fagerstrom score, and type of the therapy. Unsuccessful quitters, defined as those who continued to smoke six months after attending the programme, are particularly important. Marital status was used as a proxy for social support. A total of 427 samples were randomly chosen for examination from 490 eligible samples. Multiple logistic regression was used to predict social support in unsuccessful quitters. The multiple logistic regression showed that clients who attended 0-3 clinic sessions (AdjOR 6.57; 95 percent CI: 4.14, 10.43) and were single or unmarried (AdjOR: 2.78; 95 percent CI: 1.07, 7.18) were more likely to be failed quitters among smokers in Malaysia's Northern state. Therefore, from the result, we conclude that social support predicts the unsuccessful quitters among smokers in stop smoking services in Malaysia's Northern state. However, providing counseling services to smokers may not be adequate; instead, involvement and education of family members in providing an enabling social support environment should be considered.

Keywords: Unsuccessful Quitters, Stop Smoking Services, Social support, Factors Associated

NCD005

The Characteristics of Weight and Outcomes of Diabetic Patients before and during COVID-19 Pandemic in Hulu Terengganu, 2018-2021

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Implementation of Movement Control Order during COVID-19 pandemic had resulted in sedentary lifestyles and reluctance to seek treatment due to the fear of contracting this disease which could have affected diabetic patients' weight and disease control. This study aimed to determine the characteristics of weight and outcomes (LDL, HbA1c) of diabetic patients in Hulu Terengganu District before (2018-2019) and during (2020-2021) COVID-19 pandemic. A cross-sectional study was conducted from 1 January 2018 till 31 October 2021. Data were extracted from the National Diabetic Registry, which included active diabetic patients aged ≥ 18 years old. Samples with incomplete data were excluded. A universal sampling method was used to include 5279 data for analysis. The percentage of overweight/obesity ($\text{BMI} \geq 23$) among active diabetic patients was higher during a pandemic; 86.12% ($n=2500$) as compared to before pandemic; 84.17% ($n=2779$). The percentage of overweight/obesity was also increasing in both male and female diabetic patients; 84.9% to 85.1% and 83.8% to 86.6%, respectively. The Age-group of 20-39 years had the highest percentage of overweight/obesity among diabetic patients; 96.2% (before pandemic) and 95.6% (during a pandemic). The percentage of abnormal LDL > 2.6 among diabetic patients was increased from 70.8% (before pandemic) to 72% (during a pandemic). Meanwhile, the percentage of diabetic patients with well-controlled HbA1C of $\leq 6.5\%$ was improved during the COVID-19 pandemic, from 34.5% to 35.7%. In conclusion, healthy lifestyles should be practiced at all times despite the pandemic, especially among those with diabetes, for a better quality of life and health outcomes.

Keywords: BMI, Overweight, Obesity, Diabetic

NCD006

Readiness to Change for Weight Loss Among Type 2 Diabetes Mellitus Adults with The Body Mass Index of ≥ 23 kg/m² in Kemaman, Terengganu and Its Associated Factors

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The high prevalence of obesity, particularly among Type 2 Diabetes Mellitus (T2DM) patients, has become a major public health burden. This study investigated the readiness to change for weight loss among T2DM adults and its association with socio-demographic factors, disease profile, and social support for physical activity and a healthy diet. This was a cross-sectional study involving 381 T2DM patients aged 20 - 60 years who have a body mass index of 23 kg/m² living in Kemaman, Terengganu. The readiness for weight loss was assessed using stages of change as incorporated in the Transtheoretical Model. This study showed that 50.4% of the patients were not ready, whereas 49.6% were ready for weight loss. Multiple logistic regression revealed, patients who are not married ($p = 0.001$), had higher household income ($p = 0.001$), received better family encouragement for healthy eating ($p < 0.001$), and less family discouragement for healthy eating ($p = 0.042$) tend to be more ready for behavioural change for weight loss. Since more than half of the patients were not ready for weight loss, specific intervention may be needed targeting this group of patients, and this may enhance the effectiveness of the available obesity care delivered by the primary healthcare services.

Keywords: Readiness to change, Stages, Obesity, Diabetes, Weight loss, Body mass index

NCD007

Glycaemic Control Among Older Patients with T2DM and Its Associated Factors in Johor: A Retrospective Registry Based Study

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Type 2 diabetes mellitus (T2DM) among older persons is an increasing global health problem in developed and developing countries. However, limited studies focus on T2DM in patients aged ≥ 60 years. Hence, this study aimed to identify the factors associated with poor glycaemic control among older patients with T2DM in Segamat, Johor. This cross-sectional study used the data of 2,095 patients aged ≥ 60 years old with T2DM from the National Diabetic Registry (NDR) database between June 2019 and September 2020. General and clinical information were retrieved from the registry. Glycaemic control was categorised as good ($HbA1c \leq 7.0\%$) or poor ($HbA1c > 7.0\%$). Univariable and multivariable logistic regressions were performed to assess the factors associated with poor glycaemic control. A total of 72.9% of patients were female, and 57.3% were Malays. More than half of the patients (55.1%) had poor glycaemic control, and 41.7% of the patients were obese. Patients with a disease duration of more than ten years were two times more likely to have poor glycaemic control (AOR=2.14, 95% CI: 1.79-2.55). Patients who were overweight or obese had a higher risk of poor glycaemic control (AOR=1.67, 95% CI: 1.28-2.13) and (AOR=1.77, 95% CI: 1.36-2.27) respectively. Dyslipidemia and retinopathy were also among the factors associated with poor glycaemic control among older patients, (AOR=1.72, 95% CI: 1.58-1.90) and (AOR=1.35, 95% CI: 1.01-1.80) respectively. Healthcare professionals should consider the factors of poor glycaemic control in targeting preventive measures as its complications will be debilitating for patients.

Keywords: Diabetes Mellitus, Hyperglycaemia, Determinants, Glycaemic Control, Predictors, Complication, Elderly

NCD008

The Effect of Hypovitaminosis D on Patients with Diabetes Mellitus Type 2: A Scoping Review

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Diabetes mellitus type 2 (T2DM) is an emerging public health issue with a high prevalence worldwide. Hypovitaminosis D is one of the public health concerns and has contributed to health effects. Evidence from multiple studies has shown that vitamin D levels may play an important role in glycaemic control and the occurrence of diabetic complications. The goal of this study was to determine the effects of hypovitaminosis D in T2DM patients. This study utilised the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) extension for scoping reviews. Data search was performed using Google Scholar, PubMed, and Scopus databases. The review only included literature published in the last five years. After the screening process, only 16 studies were eligible (4 prospective cohorts, ten cross-sectional studies, and two case-control) and met the inclusion criteria for the review. The findings demonstrated that hypovitaminosis D contributed to poor glycaemic control among patients. In addition, four observational studies reported that hypovitaminosis D was related to poor mental health, which is depression. Diabetic complications such as hypertension, dyslipidemia, diabetic foot ulcers, and an increase in body mass index were also found to be associated with hypovitaminosis D. In conclusion, hypovitaminosis D may affect diabetic control and the risk of diabetic complications. Thus, screening for vitamin D level among T2DM patients might be beneficial due to the varying effects of hypovitaminosis D. Future research is needed to inform better clinical guidelines and assess the effectiveness of vitamin D supplementation in T2DM.

Keywords: Hypovitaminosis D, Vitamin D deficiency, Effect, Impact, Diabetes Mellitus, Hyperglycaemia

NCD009

Factors Associated with Psychological Distress Among Youths In Peninsular Malaysia: A Cross-Sectional Study

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Diabetes mellitus type 2 (T2DM) is an emerging public health issue with a high prevalence worldwide. Hypovitaminosis D is one of the public health concerns and has contributed to health effects. Evidence from multiple studies has shown that vitamin D levels may play an important role in glycaemic control and the occurrence of diabetic complications. The goal of this study was to determine the effects of hypovitaminosis D in T2DM patients. This study utilised the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) extension for scoping reviews. The prevalence of psychological distress among youths in Malaysia has increased over the years. Psychological distress among youths is a major public health concern and various social and environmental factors may cause it. Studies that examine the factors associated with psychological distress among Malaysian youths are currently limited. This study measured the prevalence of psychological distress and determined its associated factors among youths in Peninsular Malaysia. A cross-sectional study was conducted among 416 youths with a median age of 20 years old who participated in the Malaysian Health and Adolescent Logitudinal Research (MyHeART) from January 2019 to March 2020 via telephone interviews and house visits. The questionnaire consisted of sociodemographic characteristics, anthropometric profile, high-risk behaviours, family characteristics, adverse childhood experience (ACE) and mental health status using locally validated General Health Questionnaire (GHQ-12). Regression analysis using complex samples in the SPSS version 23 was performed. Overall, a third of the respondents (34.6%, N=144) reported having psychological distress. Factors associated with psychological distress were childhood history of being bullied (AOR=3.14, 95% CI: 1.29,7.66) or molested (AOR=9.35, 95% CI: 2.04, 42.77), having parent(s) with mental health problem (AOR= 22.60, 95% CI: 2.24, 227.77) and residence in Selangor State (AOR: 2.41, 95% CI:1.08, 5.35). Preventive strategies should include identifying individuals at risk for early intervention, while providing support, increasing mental health screening, and widening the access to mental health services for the general population is warranted.

Keywords: Psychological Distress, Mental Health, Malaysian Youths

NCD010

A New Rising Threat: Amphetamine-type Stimulants (ATS) Illicit Use Among Methadone Clients in East Coast Malaysia.

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Amphetamine-type stimulant (ATS) misuse has been prevalent in Asian countries in recent years. It is one of the leading factors for relapse of opioid dependency among methadone clients. This study aimed to determine the prevalence of amphetamine-type stimulants (ATS) misuse and its associated risk factors among methadone clients in East Coast Malaysia in 2019. A cross-sectional study was conducted involving 310 methadone clients who were randomly selected from the main methadone maintenance treatment (MMT) client's registry in this region. The study utilized the information captured during the mandatory monitoring procedures that were carried out for methadone clients from 1 January to 31 December 2019. The prevalence of amphetamine-type stimulants (ATS) misuse among methadone clients in East Coast Malaysia was 50.3%. Amphetamine-type stimulants (ATS) misuse were more prevalent among methadone clients who were active smokers, seronegative Hepatitis B and C, concurrently misused opioid and received high doses of methadone treatment. Multiple logistic regression analysis found that the odd of misusing amphetamine-type stimulants (ATS) during methadone treatment is 42 times higher among those who concurrently used opioid (AOR: 42.38, CI 95%: 15.885-113.046) and 11 times higher among those who received high methadone dose (≥ 50 mg/day) (AOR: 11.433, CI 95%: 5.577-23.438). This study explicitly demonstrated a significant prevalence of amphetamine-type stimulants (ATS) use among methadone clients in East Coast Malaysia. Therefore, appropriate health education and rigorous monitoring should be focused more among higher risk groups as mentioned in this study to halt the relapse of opioid dependency among methadone clients in this region.

Keywords: Amphetamine type-stimulants (ATS), Methadone dose, Methadone maintenance treatment (MMT), Opioid dependency

NCD011

Burden of Mental Health Disease Among Chronic Patient with Underlying Disease

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Recently, there has been much focus on mental health issues. As our now-developing country has progressed, mental health issues and illnesses have become more prevalent. They continue to rise year after year. It was discovered that poor mental health was to blame for the considerable increase in suicide rates and mental disease over the last decade. As a result, the Titiwangsa District Health Office (PKDT) conducted a survey study for high-risk patients. The surveys were carried out to determine the mental status of high-risk patients and whether or not the high-risk patient suffers from depression. The survey was conducted using the Whooley questionnaire to 2157 high-risk patients in PKDT from January 2021 to September 2021 to identify participants with the risk of depression and subsequently proceed with the PHQ-9 questionnaire. The Whooley questionnaire is used as the screening tool to identify mental illness, and the PHQ-9 is screening for depression. In this study, 393 of the 2157 participants who completed the Whooley questionnaire were identified as having a mental illness. All of them were required to complete the PHQ-9. The results have shown, about 47 participants (11.96%) had a mild score, 56 participants (14.24%) had a moderate score, and 290 participants (73.8%) had a severe score. In conclusion, the conducted survey proves that mental health issues exist and might increase if there is no prevention conducted.

Keywords: Mental Health, Depression, The Whooley Questionnaire, The PHQ-9

NCD012

Disparities of Colorectal Cancer Screening Guidelines in Average-risk Individuals: A Systematic Review

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The increasing colorectal cancer (CRC) incidence and mortality worldwide have become a public health concern. CRC screening provides an opportunity to detect CRC at an early stage when intervention can be curative. The review aimed to characterize disparities in CRC screening eligibility and the access to CRC screening, focusing on average-risk individuals. Articles were systematically searched from four databases; Scopus, Web of Science, PubMed, and EBSCOHost. The approach for the identification of the articles follows PRISMA guidelines. The included articles were published between 2011 and 2021, written in English, and guidelines focused on the average-risk individuals. Any CRC screening guidelines older than ten years and focused on only one screening modality were excluded. Quality appraisal was performed using AGREE II tool, ranging from moderate to high-quality guidelines. Of the final 14 guidelines, more than half originated from the western countries (11 articles) and three from Asian countries. Factors that contributed to the disparities in CRC screening were categorised into ecology (access to healthcare facilities, screening modalities), biology (age, sex, ethnicity) and social (smoking status, screening uptake, socioeconomic status). Improving access to high-quality programs on CRC screening is essential to reduce the burden of CRC in the susceptible population.

Keywords: Colorectal Cancer, Screening, Guideline, Agree II, Average-Risk Individuals

NCD013

Adolescents' Mental Health Status and Its Association with Habitual Internet Use During School Closure Amidst COVID-19 Pandemic

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Mental health among adolescents is a potential ailment during the rapid spread of COVID-19 infection that has disrupted the education system mainly due to its closure. This had huge impacts on their daily routines, mental health status, and behavioral response. Our study aims to determine the prevalence of depression, anxiety, and stress among adolescents and their association with habitual Internet use during a pandemic. A cross-sectional study was conducted among students aged 13-17 via a self-administered online questionnaire from 15 May 2021 until 30 May 2021. Depression, anxiety, and stress were assessed using the Depression, Anxiety, and Stress Scale 21 (DASS-21). A total of 420 adolescents completed the survey, and the majority were female (70.7%), with a mean age of 15.5-year-old (± 1.5 years old). The DASS-21 mean score was 17 (± 13.4). Approximately 18.6% of respondents reported severe-to-extremely severe depression, 20% reported severe-to-extremely severe anxiety, and 6.9% reported severe-to-extremely severe stress. Analysis showed factors like older age, female, Malay ethnicity, higher education status, and habitual Internet use (higher frequency of use, higher frequency of uses after midnight, longer duration) were associated with higher levels of depression, anxiety, and stress ($p < 0.05$). Thus, late adolescence, Malay, female gender, and higher frequency of device use, midnight use, and duration of being online were potentially associated with adolescents' mental health status during this pandemic. Early identification of psychological problems among adolescents is required, particularly those who habitually use the Internet during stressful events like the COVID-19 pandemic.

Keywords: Adolescent's Mental Health, Depression, Anxiety, And Stress, Habitual Internet Use, School Closure During COVID-19

NCD014

Mental Health Impact of COVID-19 Outbreak on Malaysian Population: A Cross-Sectional Survey 18 Months Post-Pandemic Declaration

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Mental health issues have grown in importance during the COVID-19 pandemic. As the pandemic progresses, we aim to determine the prevalence of mental health symptoms and identify the most-affected groups. A cross-sectional online study was conducted among adults aged 18-65 years in Malaysia. The 21-item Depression, Anxiety, and Stress Scales (DASS-21) were used to assess symptoms. Multivariate logistic regression was conducted to identify the factors associated with severe/extremely severe depression, anxiety, and stress symptoms. The sample (n=10,330) was mainly female (80.1%), aged 18-29 (60.6%), and from the low-income group (82.4%). The prevalence of mild to extremely severe depression (76.0%), anxiety (72.0%), and stress (61.8%) symptoms were high. Females had increased odds of severe/extremely severe symptoms of depression (aOR:1.35; 95% CI:1.22-1.50), anxiety (aOR: 1.31; 95% CI:1.18-1.44), and stress (aOR: 1.31; 95% CI:1.18-1.46). Compared to low-income respondents, middle-income (aOR:0.83; 95% CI:0.73-0.94) and high-income (aOR:0.75; 95% CI:0.61-0.92) respondents had lower odds of severe/extremely severe depression. Meanwhile, only middle-income was significantly associated with lower odds of severe/extremely severe anxiety symptoms (aOR:0.79; 95% CI:0.69-0.89) and income level was not significantly associated with severe/extremely severe stress. For all three symptom domains, the odds of severe/extremely severe symptoms decreased across age groups, with 50-65-year-olds having the lowest odds (depression: aOR:0.20; 95% CI:0.14-0.29; anxiety: aOR:0.19; 95% CI:0.13-0.28; stress: aOR:0.16; 95% CI:0.09-0.26) compared to 18-29-year-olds. Our results indicate that the mental health of the internet users in Malaysia is poor 18 months post-pandemic declaration. Scalable solutions are needed to address this magnitude of psychological distress.

Keywords: Anxiety, COVID-19, DASS-21, Depression, Mental Health, Stress

ORAL PRESENTATION: FAMILY HEALTH

FH001

Web-Based Intervention (WIFI-SRY) Development and Feasibility of Empowering Sexual Reproductive Health Rights Among Youth

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There was limited availability of web-based intervention on sexual reproductive health rights (SRHR) for youth. As two-thirds of youth in Malaysia can enroll in higher education levels, a web-based intervention on this can serve as a platform to educate them. The present study aimed to develop and assess the feasibility of using web-based intervention in improving knowledge and attitudes on SRHR among them. A sequential exploratory mixed-method design was used. The first phase used document review analysis on 16 modules and in-depth interviews. The thematic analysis was identified by technical experts, followed by validation of the intervention content outline via survey and focus group discussion with similar experts. Using multimedia, Wifi-SRY was then developed on sexuality, relationship, marriage preparedness, and contraception domains. The participated experts gave S-CVI/Ave of 0.88 for content validation. In Phase 2, Wifi-FRY's feasibility was assessed in four areas - acceptability, demand, implementation, and preliminary efficacy. This was done among undergraduates of Universiti Kebangsaan Malaysia aged 20 -24 years from Medical and Social Sciences and Humanities Faculties. Three hundred thirty-six students were approached, with 54 using Wifi-SRY in Week 1 (RR of 16.1%). Only eight participants completed the post-intervention evaluation at Week 7. Acceptability scoring and its precursors had four and above mean scores, except for perceived enjoyment (1.63, s.d 0.74). The eight participants were knowledgeable at post-test (mean score increment: 6.0). They had a good attitude towards SRHR (mean score increment: 2.62). Wifi-SRY showed a good acceptability score. However, web design and content improvement are needed to ensure initial and sustainable user engagement.

Keywords: Web-based Intervention, Sexual Reproductive Health Rights

FH002

Improving Parental Practice on Preventing Unintentional Childhood Injury in Putrajaya: A Baseline Assessment on Intervention Study

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Unintentional injuries are among the leading causes of death and long-term morbidity among children under five years old. Therefore, effective interventions are needed to improve parents' practices to reduce childhood injury. This study aimed to develop, implement, and evaluate the effectiveness of health education intervention to improve parents' preventive practice. A single-blinded cluster randomised controlled trial was conducted among 190 parents attending government child health clinics in Putrajaya from January to September 2021. Ninety-five parents in the intervention group received online health education videos and posters developed based on Information Motivation Behaviour (IMB) theory which focussed on components of knowledge, motivation, and behavioural skills of injury preventive practice. The intervention was delivered via *WhatsApp* at predetermined intervals. The control group received regular, existing health education during clinic follow-up. Participants were evaluated at baseline pre-intervention, at 1-month and 3-months post-intervention using a validated self-administered questionnaire. The response rate was 91.3%. The majority of the respondents were mothers (91.1%), of Malay ethnicity (98.4%), and married (97.4%). The median age of the mother is 35 years old, the father is 36 years old, and the children were 2.8 years old with an almost equal distribution of males and females. The children's injury prevalence was 14.2%, and higher among boys (63.0%). The most common parenting style reported was authoritative (41.9%). The median score (IQR) at baseline for knowledge was 10(2), motivation 50 (6), behavioural skills 19 (3), and preventive practice 113(15). Baseline data showed no significant difference between the intervention and control groups in all variables studied.

Keywords: Injury Prevention, Childhood Injuries, Health Education Intervention, Unintentional Injuries

FH003

The Health-Seeking Behaviour Among Low-Income Adult Males In Petaling District, Selangor

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This study aims to determine the level and the determinants of health-seeking behaviour (HSB) among low-income adult males in the Petaling District, Selangor. A cross-sectional study was conducted among 282 adult males living in the People's Housing Project (PPR) in the Petaling district. Inclusion criteria were those between 18 and 59 years old and whose household incomes were RM 4,000 and less. Proportionate stratification to size random sampling was conducted, with the three PPR residencies being the strata. A validated online questionnaire was used to assess attitudes, subjective norms, perceived behavioral control, social support, and HSB. Descriptive and analytical analyses were performed using the IBM Statistical Package for Social Science Version 25.0. 52.7% of the respondents have a good level of HSB. Individuals who received strong social support were 2-3 times more likely to have good HSB than those receiving weak social support (AOR 2.56, 95% CI 1.264-5.185, $p < 0.009$). Meanwhile, higher educational level and good knowledge on symptoms were less likely to have good HSB respectively (AOR 0.098, 95% CI 0.011-0.853, $p < 0.035$) (AOR 0.341, 95% CI 0.119-0.980, $p < 0.046$). Health promotion that encourages appropriate HSB should be emphasized in this population group.

Keywords: Health-Seeking Behaviour, Low-Income Adults, Socioeconomic Status, Petaling District

FH004

Susceptibility to E-Cigarette Initiation Among Tobacco Product Naïve Adolescents in Malaysia: Findings from The Tobacco and E-Cigarette Survey Among Malaysian Adolescents (TECMA)

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Predicting adolescents' susceptibility to e-cigarette (EC) initiation is crucial to optimize preventive measures before the health risk behaviour persists through adulthood. Therefore, the identification of susceptible groups is needed in response to the surge of EC. This study aimed to determine the prevalence and determinants of EC susceptibility among tobacco product naïve school-going adolescents in Malaysia. Data were derived from the Tobacco and EC Survey among Malaysians (TECMA) in 2016, which recruited 13162 school-going adolescents aged 10-19 years from 138 randomly selected schools via a two-stage stratified cluster sampling design. A validated self-administered questionnaire adapted from the Global Youth Tobacco Survey was utilized as the study instrument. Approximately 15.7% of the tobacco naïve adolescents were susceptible to EC initiation. Multivariable logistic regression revealed that the male students (AOR=2.20; 95% CI: 1.86-2.59) from a rural locality (AOR=1.45; 95% CI: 1.23-1.71), those reporting no lessons on the danger of tobacco use at school (AOR=1.66; 95% CI: 1.39-1.99) and those exposed to tobacco advertisement (AOR=1.67; 95% CI: 1.07-2.61), were more susceptible to EC initiation, while no significant association was found between second-hand smoke exposure and EC susceptibility. Therefore, comprehensive EC preventive strategies are critically needed and the implementation of targeted, gender, and culturally impressionable interventions. In addition, future studies should focus on evaluating the impacts of the preventive and control efforts to ensure their effectiveness in preventing EC initiation among Malaysian adolescents.

Keywords: Susceptibility, E-Cigarette Initiation, Tobacco Naïve, School-Going Adolescents, TECMA

FH005

E-cigarette: Knowledge, Attitude and Practice Among Adolescents

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Electronic cigarettes have gained popularity among cigarette users and adolescents despite their uncertainty of health risks. It has evolved in shape, flavors that attract users. Male, young, poor knowledge and family history of smoking are common associated factors. The objective was to determine the prevalence, knowledge, attitude, practice, and related factors of e-cigarette among adolescents aged 15-19 years old in the Kota Bharu district in 2020. The study was an analytical cross-sectional study conducted in Mac 2020 on 440 adolescents in the Kota Bharu district, who were sampled by using snowball sampling. Data were collected by self-administered questionnaire (google form) and analysed using SPSS version 25.0. The majority of the respondents (90.6%, n=399) had ever heard of e-cigarette. More than half (64.9%) of the respondents had good knowledge on e-cigarette and 50.4% opposed e-cigarette. About 24.4% of the respondents were e-cigarette users, and 11.3% were dual users. Gender (male) was found to have an association between level of knowledge, attitude towards e-cigarette, and practice on the e-cigarette ($p<0.001$). The level of knowledge and attitude towards e-cigarette was found to have an association with the practice of e-cigarette ($p<0.001$). Males were 15 times more likely to practice e-cigarette ($p<0.001$). Attitude (supporting e-cigarette) was 4 times more likely to practice e-cigarette ($p<0.001$). From this study, gender and attitude toward e-cigarette were found to be predictors for the practice of e-cigarette. Our study recommends strengthening health education, communication, and collaboration with schools and parents to combat the practice of e-cigarette among adolescents.

Keywords: E-cigarette, Knowledge, Attitude, Practice E-cigarette

FH006

Factors Contributing to Mammography Screening Intention and Uptake Among Women in Kuching District Using the Protection Motivation Theory

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One in nine Malaysian women has a lifetime risk of developing cancer, where 31% of all cancer cases are breast cancer. Late-stage presentation of breast cancer reduced the survival rate. Mammography plays a major role in the early detection of breast cancer. Still, mammography uptake in Malaysia ranges from 3.6% to 30.9%, which is considered low. This study aims to identify the factors contributing to mammography screening intention and uptake among women in Kuching District using the Protection Motivation Theory (PMT). A cross-sectional study was conducted among 460 women using a PMT scale, self-administered via an online questionnaire: *Survey Monkey*. Data were analysed descriptively with Chi-square, t-test, multiple linear regression, and logistic regression. The respondent's mean (SD) age was 47.99 (6.36) years old. The mammography screening uptake among women in this study was 24.1%, higher among the Chinese and Indian ethnicity, higher education level, working women, married women, and had no family history of breast cancer. Response cost was the only significant predictor for the mammography screening uptake. While the predictors for mammography intention were perceived vulnerability, perceived severity, self-efficacy, response-efficacy and response cost with a total variance of 44.2%. PMT predictors that contributed almost half of the mammography screening intention should be considered in health promotion campaigns to boost mammography screening uptake, to increase survival rates of women with breast cancer.

Keywords: Intention, Mammography screening, Mammography uptake, Protection Motivation Theory

FH007

Could Online Victimization Predict Depression and Suicidal Behaviour Among Adolescents in Malaysia?

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Suicide among adolescents is one of the leading causes of death among young people aged 10 to 24 years. Several studies investigated how cyberbullying victimization affects mental health and suicidal behaviour. Other than cyber bullying, this study tested other types of online victimization such as passive sexting, unwanted sexual solicitation, violent content, sexual content, injury threat, and self-harm or suicidal related content to predict depression and suicidal behaviour among adolescents. PLS-SEM was used to analyse data of 897 adolescents (mean age=14.4 years old) from government secondary schools in Sarawak, Malaysia. A validated self-administered questionnaire consisting of a Malay version of the Online Victimization Scale (MyOVS), the Malay version of DASS-21, and the suicidal behaviour scale were used. The prevalence of depression in this sample was 34.3%, while suicidal ideation was 19.5%, a suicidal plan was 16.2%, and a suicidal attempt was 12.7%. The results found similar online victimization factors: cyberbullying, exposure to violent content, exposure to self-harm or suicide-related content, and unwanted sexual solicitation to predict adolescents' depression (23.6%) and suicidal behaviour (42.1%). Exposure to self-harm or suicide-related content was the strongest predictor for depression ($r=0.297$) and suicidal behaviour ($r=0.207$). Depression was found to be the strongest mediator of suicidal behaviour ($r=0.498$), which supports previous findings. Suicidal prevention program among adolescents should focus on reducing online victimization and depression.

Keywords: Online Victimization, Adolescent, Suicide, Depression

FH008

Gender Differences in Romantic Relationship among Adolescents in Seremban, Negeri Sembilan, Malaysia

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Adolescent romantic relationship exerts important influences on the future development of sexual behavior. However, adolescent romantic relationship is linked with detrimental health and social consequences such as sexually transmitted diseases, mental health disorders, and intimate partner violence. Therefore, knowledge on factors associated with romantic relationships should be explored based on gender. This research was undertaken as part of a larger study that aims to determine the prevalence of adolescent romantic relationships and its associated factors. This study aims to determine gender differences in individual factors associated with adolescent romantic relationships in Seremban, Negeri Sembilan. A cross-sectional study with random cluster sampling was conducted among 396 adolescents living in residential areas in Seremban who fulfilled selection criteria. A validated self-administered questionnaire comprising of individual factors such as age category, alcohol intake, illegal drug use, pornography website surfing, and social media use was used for data collection. Data were analyzed using the Chi-square test and multiple logistic regression analysis. Social media use was significantly associated with the romantic relationship among male adolescents (AOR: 3.500, 95% CI: 1.140-10.742), while pornography website surfing was significantly associated with romantic relationships among female adolescents (AOR: 2.194, 95% CI: 1.122-4.291). The age category, alcohol intake, and illegal drug use showed no statistically significant association with romantic relationships. Hence, parental monitoring on social media use among male adolescents should be strengthened. Furthermore, health education on the damaging effects of pornography website surfing should be incorporated into sexual and reproductive health modules targeting on female adolescents.

Keywords: Romantic Relationship, Adolescents, Gender Differences, Individual Factors.

FH009

Evaluation of Program Doktor Muda through Health Seeking Information Behavior Among Peer in The Public Secondary School in Selangor

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Evaluation of the *Program Doktor Muda* (PDM) is time for improvement and expansion. It used the peer education concept in empowering the pupil with knowledge on health. This study objective is to evaluate the effectiveness of the PDM on the level of health-seeking information behaviour among peers at secondary school. A comparative cross-sectional study was conducted on 968 secondary school pupils in Selangor by comparing schools with PDM and schools without PDM. A stratified random sampling of daily government secondary school and simple random sampling of Form 2 and Form 4 at nine districts in Selangor was conducted. Results depicted that the positive level of health-seeking information behaviour among peers in the school PDM is higher (70.3%) than schools without PDM (69.7%). The most frequent sources of health information among school peers with PDM were “Young Doctors” and teachers, mothers, health fairs, the internet, and social media, while schools without PDM were mothers, teachers, and the internet. Factors that determine the effectiveness of PDM on health-seeking information behaviour were techniques in delivering the information and source of information; and factors significantly found for good behaviour in health were gender and age. PDM is shown effective in raising awareness of health-seeking information behaviour and practice on peers, but method and technique to get a good and reliable source of information must be improved. The implementation process for measuring the PDM effectiveness can be used to other states for assessment. The existing module needs to be enhanced to attract future generations.

Keywords: Program Doktor Muda, Doktor Muda, Health Seeking Information Behaviour

FH010

Online Training for Caregivers of Older Adults: A Quasi-Experimental Study Among B40 Youths in Perlis

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Empowerment and skills capacity building help youths in managing and overcoming problems in providing care for their elderly. Customized intervention packages for youth empowerment should be tailored according to youth preference. A mixed-method sequential explanatory study was conducted to improve the knowledge, skills and social support for caregiving. The quasi - experimental study was conducted online based on the basic package and focuses on four domains: importance of health information seeking approach, healthy lifestyle with healthy environment, healthy diet and social risk problem identification. A total of 10 low-income youths (19-30 years) (B40) caring for the elderly (age ≥ 60 years) were selected through voluntary participation. Questionnaires in Google Form were distributed before the intervention and after one month of the intervention. The questionnaire covers aspects of measuring the level of social support. The intervention was conducted using the Google Meet platform for 3 hours for 2 days. Participants receiving intervention were followed up weekly to see their ability to apply the training provided to perform day care activities for residents at home. Monitoring is carried out using video calls, video recordings and WhatsApp. The results of the quantitative study showed a positive and significant effect on the three domains of measurement from interpersonal support evaluation list (ISEL). Thematic analysis was derived from follow through qualitative study. In conclusion, feedback obtained from the respondents showed that it can help to improve the knowledge, skills, and social support of the youths in the field of health care gold.

Keywords: Youth, Elderly, Education Package, Social Support

FH011

The Self-Management of Young Women to Minimize Dysmenorrhea: A Study In Surakarta, Indonesia

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Dysmenorrhea is one of the common health-related complaints among young women. The prevalence of dysmenorrhea globally is 34 - 94%, while in Indonesia, this prevalence is not known. The main complaint of dysmenorrhea is a pain in the abdomen, which radiates to the legs, groin, and back. This situation often impacts daily life, including being absent from work or school and socializing with the surroundings. However, although dysmenorrhea has a significant impact on daily life, not all women need medical treatment. In Indonesia, the actions of young women to overcome dysmenorrhea are unclear. This study aims to determine the actions taken on the complaints of dysmenorrhea among young women in Surakarta, Indonesia. This study was a survey that involved young women aged 15 to 24 years living in Surakarta, Indonesia. A questionnaire developed by the researcher was distributed to 516 young women out of 63,164 people with a response rate of 135% of the initially planned respondents of 381 respondents. The questionnaire has four sections and 31 questions related to demography and dysmenorrhea. Statistical analysis was done using SPSS and descriptive statistics. A total of 404 out of 516 young women experienced dysmenorrhea (78.3%). Most women (n=229, 56%) choose to rest to deal with complaints. Another 13.1% (n=53) chose to rest and used a heating pad to reduce pain. Other actions include drug prescription by doctor, drugs self-purchased, and herbs. A total of 90.6% (n=366) experienced improvement after self-treatment measures, both resting and other actions. Dysmenorrhea prevalence in young women in Surakarta is high, with the main measure taken to treat pain being rest.

Keywords: Dysmenorrhea, Young Women, Self-Management, Surakarta

FH012

Maternal Predictors of Undernourished Infants

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The Global Nutrition Report in 2019 classified Malaysia as experiencing three forms of malnutrition: overweight, anaemia and stunting. Although Malaysia performs well in comparison with other developing countries, it is still experiencing malnutrition among the under-five year-old population. This study aims to examine the association between maternal and infant nutritional status in a sub-urban area in Johor. In this cohort study, the attendance of infants at 1-year old was observed from the list of Child Health Record, the undernourished infants were identified, and the records of the infants and their maternal antenatal care were extracted retrospectively. The average maternal body mass index at booking was $25.20 \pm 5.72 \text{ kg/m}^2$; 46.02% had a normal body mass index, 23.89% were overweight, 21.24% were obese and 8.85% were underweight. A total of 75 (66.37%) mothers had less gestational weight gain during the antenatal period. Mothers with advanced age (more than 36 years old) had a 6-times higher risk of having undernourished infants ($p=0.012$), while obese mothers had a 3-times higher risk ($p=0.03$) of having undernourished infants. Health care providers that provide maternal and child health services should be aware of the role of maternal age and body mass index during pre-pregnancy consultations in order to reduce the prevalence of under-nutrition in future infants.

Keywords: Maternal nutritional status, Undernourished infants

ORAL PRESENTATION: ENVIRONMENTAL AND OCCUPATIONAL HEALTH

EHOH001

Occupational Risk Assessment of Respiratory Symptoms Among Garbage Collectors in Coastal City Sabah.

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Surplus load of waste is likely to increase the risk of exposure to hazardous substances among garbage collectors. Excessive physical movement in the field provokes inhalation of contaminated droplets. If left unnoticed, this leads to adverse health effects. This cross-sectional study investigates the prevalence of respiratory symptoms and occupational risk factors among garbage collectors from January until April 2020 in Kota Kinabalu, Sabah. Data was collected using a self-administrated questionnaire on sociodemographic, medical status, environment contacts, and occupational characteristics. Occupation risk assessment included hazard identification, risk assessment, and risk control. The mean age of 290 garbage collectors who participated was 40 years old (SD= ±9). The majority of them were from Kadazan-Dusun-Murut ethnic backgrounds. The average income was roughly USD298.45 (SD= ±171.9) per month, with average working years as garbage collectors of 11 (SD=±9.04) years. Respiratory symptoms were noted among 21% of garbage collectors; cough with phlegm (91.7%), dry cough (10.0%), flu (11.7%), and chest tightness (1.7%). The risks for respiratory symptoms were 2.3 times higher (OR=2.3; 95% CI=1.05, 5.22) and almost 2 times higher (OR=1.9; 95% CI=1.00, 3.29) among those with chronic diseases and those who had pets, respectively. Occupational activities that include picking up garbage and disgorging them at the dumping site caused high-risk exposure to hazardous agents. With the ongoing Covid 19 pandemic, contaminated masks and salivary test kits have been thrown as domestic waste, posing risks for respiratory symptoms. Employees and employers in the waste collection industry are urged to strengthen occupational safety and health practice.

Keywords: Respiratory systems, Garbage collectors, Occupational health, and safety.

EHOH002

Compliance of Healthcare Workers toward Tuberculosis Preventive Measures in Workplace in Intermediate and High Burden Tuberculosis Countries: A Systematic Literature Review

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Despite the existing guidelines published by the World Health Organization (WHO) and national authorities, there is a general increase in the number of healthcare workers (HCWs) contracting tuberculosis. This review sought to evaluate the compliance of HCWs toward tuberculosis preventive measures (TPMs) at their workplace. Both electronic databases and manual searches were conducted to retrieve articles on the compliance of HCWs at the workplace published from 2010 onwards. Independent reviewers extracted, reviewed, and analyzed data using the mixed methods appraisal tool (MMAT) 2018. Altogether, the review included 15 studies that comprised 1572 HCWs and 249 health facilities. Results showed low compliance toward TPMs among HCWs and health facilities that are largely located in high-burden tuberculosis countries. The failure to comply with control measures against tuberculosis was mainly related to reporting at administrative levels, followed by engineering and personnel protective control measures. In addition, low managerial support, and negative attitudes among HCWs influenced compliance. Further studies are needed to elucidate how to improve the compliance of HCWs toward preventive measures against tuberculosis in order to reduce the disease burden.

Keywords: Compliance, Occupational tuberculosis; Healthcare workers; Tuberculosis prevention measures

EHOH003

Work-related Upper Limb Musculoskeletal Disorders and Psychosocial Work Factors among Manual Labour Workers in Sabah, Malaysia

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Manual labour workers are susceptible to develop work-related upper limb musculoskeletal disorders (WRULMSDs) due to repetitive movements, forceful exertions and prolonged awkward postures at work. This study aimed to determine the prevalence and the associations between psychosocial work factors and WRULMSDs among manual labour workers. This cross-sectional study involved cleaners and landscape workers at a university in Sabah, Malaysia, who were recruited via universal sampling. Workers with previous musculoskeletal disorders were excluded while workers with at least 12-months of working experiences in their current job were included. Validated Standardized Nordic Musculoskeletal Questionnaire (SNMQ) and Job Content Questionnaire were used. Data were analysed using SPSSv.26. Among 142 respondents, the prevalence of WRULMSDs was 76.8%, with the highest complaints in the shoulder regions (71.6%). 58.5% and 54.9% of workers experienced low levels of job control and social support at work, respectively. 41.5% claimed to have high psychological job demand while 34.5% shared a sense of job insecurity at work. Analyses using multiple logistic regression revealed that being landscape workers [aOR=3.07, 95% CI=1.04, 9.91], having more than three years of working experiences [aOR=2.47, 95% CI=1.06, 5.79], and having low job control [aOR=2.69, 95% CI=1.16, 6.23], were significantly associated with WRULMSDs. With the high prevalence of WRULMSDs, improvement in control and preventive measures include modification of working tools such as using powered or battery-operated equipment, as well as strengthening the administrative procedures like awareness campaign, hands-on training and job rotation, are recommended to prevent the occurrence of WRULMSDs.

Keywords: Awkward postures, Job control, Manual labour workers, Prevalence, RULA; Work-related upper limb musculoskeletal disorders

EHOH004

Association of Noise Mapping and Vector Workers Position Designation Towards Hearing Loss in Sabah

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Combating dengue that still remains endemic in Sabah has placed vector workers at increased risks of getting hearing loss due to frequent exposures to noise hazard from the fogging machine. As each designated position of vector workers poses different risk levels for hearing loss, this study aimed to determine the association between noise mapping and position designation with hearing loss among MOH vector workers in Sabah. A cross-sectional study was conducted in Sabah from May to June 2020 involving 116 vector workers from three randomly selected district health offices. Data was collected using a validated self-administered questionnaire. Noise mapping and audiometry test results were analysed using R Statistical Software version 4.1.1. Logistic regression and multivariate analyses were used with a p-value set at 0.05 and 95% Confidence Interval (CI) reported. The overall prevalence of hearing loss among vector workers was 44%. Duration of noise exposure, noise exposure of ≥ 95 dB, and associative lifestyles were significantly associated with hearing loss. The odds ratio of having hearing loss among workers who had noise exposure of ≥ 95 dB was 8.59 (95% CI = 4.54, 45.39) and among those with associative lifestyles was 25.39 (95% CI = 4.36, 199.18). Vector workers with shorter exposure duration were 99.4% less likely to have hearing loss after adjustment for other factors. Our study identified modifiable risk factors that can reduce the development of hearing loss among vector workers but can also be applied to other related occupations.

Keywords: Occupational-related hearing loss, Vector workers, Noise hazard, Noise mapping, Fogging machine.

EHOH005

Prevalence and Its Associated Factors of Acid Poisoning in Malaysia: A 10-Year Reviews (2010-2019)

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Poisoning has emerged as one of the significant public health threats due to its association with mortality and morbidity. Acid poisoning is among the leading cause of occupational injuries and common methods of suicidal attempts. Despite this, there is still a paucity of evidence that investigated acid poisoning and its associated factors. Thus, this study aims to determine the prevalence of acid poisoning in agricultural and industrial sectors from 2010 until 2019 and to determine the associated factors of intentional acid poisoning in Malaysia. A retrospective review of the National Poison Center (NPC) database on acid poisoning was conducted from 2010 until 2019. A total number of 527 cases were analyzed. For sociodemographic, the majority of acid poisoning occurs among males (68.0%), aged > 20 years (75.0%), and Malay (38.4%). The poisoning occurs mostly at home (66.0%) and through acid ingestion (79.9%), while exposure to formic acid (34.5%) was found to be the most prevalent case reported to NPC. Several factors were associated with intentional acid poisoning, including gender, age group, ethnicity, location of occurrence, and mode of exposure ($p < 0.05$). In Malaysia, agriculture and industrial sectors were predominantly participated by men and in their early twenties. Furthermore, formic acid is readily accessible and available in the market as it's used mainly for latex coagulants in rubber production, contributing up to 3.0% of GDP in 2019. Identifying the underlying factors contributing to acid poisoning can inform targeted strategies to further reduce the exposure to acid poisoning and its complication.

Keywords: Acid poisoning, National Poison Center, Formic acid, Intentionality

EHOH006

Burnouts Score Among Primary Healthcare Doctors in Kota Kinabalu During Second Wave Of Covid-19 Pandemic

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COVID-19 pandemic had overburdened the healthcare system, which resulted in a higher risk of burnout among the healthcare workers, including doctors. Most of the studies on burnout were conducted among doctors in hospitals. There is still a lack of study among primary healthcare doctors. This study aims to assess the burnout scores among primary healthcare doctors in Kota Kinabalu and its associated factors during the second wave of the COVID-19 pandemic. A cross-sectional study involving a total of 38 doctors out of 116 doctors working in Health Clinics in Kota Kinabalu district was conducted in June 2020. Copenhagen Burnout Inventory (CBI) as the assessment tool was disseminated online through a google form. Median scores of personal-related, work-related and client-related burnouts were 50.00 (IQR= 37.50), 50.00 (IQR= 20.54) and 45.83 (IQR= 19.80) respectively. The difference in median scores of personal-related burnouts were significant according to sex (U= 213.5, p= 0.02), marital status U= 252, p= 0.01), working experience U= 249, p= 0.04). Meanwhile, the difference in median scores were only significant according to sex for both work-related (U= 249, p= 0.02) and client-related (U=213, p= 0.02) burnouts. There were no significant correlations between burnouts scores and age as well as working hours among the participants. Doctors in primary healthcare, especially female, married, and the more experienced doctors, were significantly higher median scores during this COVID-19 pandemic. Providing technical and psychosocial support during disease outbreaks among these doctors is important to reduce the risk of burnout.

Keywords: Burnout, doctors, Copenhagen Burnout Inventory (CBI), COVID-19, pandemic.

EHOH007

COVID-19 Infection among Healthcare Workers in Kedah: Symptoms and Outcomes

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Healthcare workers (HCW) are the integral front liners in combating COVID-19 infection. There is an inadequate study on the clinical characteristics of COVID-19 infection among HCWs. This study aims to examine the clinical characteristics of HCWs with COVID-19 infection and the disease outcome. This is a retrospective cross-sectional study using data from a COVID-19 surveillance system. Standard investigation form from Occupational Health Unit was used as a tool in data collection. All positive cases among HCWs registered within the study period from 1st January 2020- 19th September 2021 were analysed for sociodemographic, clinical characteristics, and disease outcome. A total of 1679 HCWs were tested positive for COVID-19 infection. Majority of cases were below 40 years (68.7%), female (68.0%), Malay (89.0%), completed vaccination (78.1%) and 15.7% with co-morbidities. The cases were among doctors (17.3%), nurses (36.8%), assistant medical officers (6.7%), ancillary staff (24.2%), and others (15.0%). Majority cases were symptomatic (75.1%) namely fever (37.6%), runny nose (36.8%), cough (34.9%), sore throat (28.3%), anosmia/ageusia (14.3%), headache (12.3%), myalgia (8.1%), breathlessness (1.1%) and others (4.5%). Regarding disease severity, 24.9% were under Category I, 74.7% were Category II, 0.1% Category III, 0.2% Category IV, and 0.1% Category V (ventilated). The majority of cases were under home quarantine (87.2%), 11.3% were hospitalized and 1.5% were monitored in PKRC. Recovery was almost uneventful except for one deceased HCW. HCWs suffering from COVID-19 had mild symptoms and favorable outcomes attributed to the younger age group, no comorbidity, and completed vaccination. Therefore, a good surveillance system in testing, reporting, isolating, and vaccination remain key strategies in protecting HCW and ensuring continuity of the health system.

Keywords: COVID-19, Healthcare Worker, Clinical Characteristics

EHOH008

Prevalence of COVID-19 Infection Among Nurses in Government Hospitals in Malaysia

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The global pandemic triggered by the coronavirus has affected nursing care viciously. Nursing care in hospitals is crucial in managing patients, steering nurses to devote more time with patients. This role thus put nurses at substantial risk of contracting COVID-19, especially in hospitals. Hence, this study is assessing the epidemiological data on COVID-19 infection among nurses in hospitals throughout Malaysia. The study was a cross sectional surveillance review among infected COVID-19 nurses working at 147 government hospitals throughout Malaysia in 2020. As a result, 92 out of the 147 hospitals in Malaysia (62.5%) were affected with COVID-19 infection among nurses. Prevalence of COVID-19 infection among nurses in Malaysia hospitals was 1.08%. The highest prevalence of COVID infection was seen in Sabah (3.69%), followed by Selangor (2.20%), Labuan (1.16%), WPKL & Putrajaya (0.71%) and Negeri Sembilan (0.67%). A majority of infected nurses were female (92%), age between 25 to 34 years old (58.7%), Malay (48.9%) and no comorbid (89.7%). 56.1% of the infected nurses were symptomatic while the rest were asymptomatic. Most of the cases occurred in state hospitals (35.4%), followed by major hospitals (27.5%), non-specialist (district) hospitals (20.6%), minor hospitals (9.2%) and medical institutes (7.4%). 54.1% of COVID-19 transmission among nurses occurred due to work-related (staff to staff and patient to staff), while community was at 42.3%. The Occupational Health and Safety (OSH) Unit in Hospitals should anticipate the outcome with early intervention to alert the healthcare workers on potential COVID-19 transmission and strictly monitor compliance to standard operating procedures.

Keywords: Prevalence, Nurses, Healthcare Workers, Covid-19, Hospital, Malaysia

EHOH009

Associations of Living Environment Factors and Quality of Life Among Elderly in Selangor

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The living environment plays a major role in the elderly's quality of life as it has a significant bearing on the active aging process. The quality and accessibility of the living environment can promote physical, psychological, and social functioning among the elderly. The study aimed to develop an assessment tool to study the factors of elderly perceptions of their environment and the association to quality of life domains while controlling for background characteristics. Sixty-six participants aged 65 years and older who came for their vaccination appointment in Kuala Selangor who agreed to join the pilot study were recruited. They completed the forty-five item, "Elderly Living Environment Assessment Tool (ELEAT)," and WHOQOL-BREF was used to assess the quality of life domains. Twenty-five scales (comprising 3-5 items) of the living environment were constructed, namely on the individual, social, built and natural environment domains. ELEAT has an acceptable Cronbach's Alpha score of 0.817. The study found that at least one living environment scale was associated with every quality of life domain. COVID-19 in the natural environment affected all four domains of QoL among the participants. Also, individual, social and built environment scales affected 2,3 and 4 QoL domains, respectively. This study proved that ELEAT is an effective tool to assess multi environmental factors that affect elderly life quality.

Keywords: Living Environment, Quality of life, Elderly, Pilot study, Factor analysis, ELEAT

ORAL PRESENTATION: HEALTH MANAGEMENT

HM001

Out of Pockets (OOP) Spending for Breast Cancer Treatment in HUKM as Outpatient Basis

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The estimation of OOP spending among breast cancer women in Malaysia was unknown. Cost related to breast cancer treatment is usually underestimated by the patients especially cost spending for non-medicals and other intangible costs. This study intended to estimate the OOP spending among breast cancer women for out-patients basis in HUKM to understand their financial impact better. The sampling unit was a woman with breast cancer under outpatient follow-up in the Surgical and Oncological Department, HUKM for the duration between July to Dec 2017. All OOP spending as out-patients were collected by face-to-face interview using structured questionnaires. The dependent variable, OOP, was analyzed using SPSS version 23. Total 173 women were recruited out of 186 women with a participation rate of 93.0%. 172 women were considered for cost calculation as 1 respondent incurred no cost for her follow up. Total estimation of OOP spending involving 172 breast cancer women in 2017 was RM1,037,054.95 a year with the mean of spending per woman was RM6420.67 (SD+/- RM495.58). In term of cost component, the highest percentage of cost component contributed by cost of adjuvant therapy, RM334,056.00 (32.2%) followed by traditional/complementary medicine, RM268,278.00 (25.9%) and private hospital/other expenses, RM224,887.00 (21.7%). Other much lower costs were transportation RM79,772.52 (7.7%), chemotherapy RM67,300.00 (6.5%), dressing RM54,850.00 (5.3%), equipment/prosthesis RM50,550.00 (4.9%) and caretaker cost RM24,661.43 (2.4%). Breast cancer women spend a large number of costs related to breast cancer treatment on an outpatient basis.

Keywords: Out of pocket cost, Breast cancer

HM002

Awareness, Knowledge and Attitude of The Sustainable Development Goals Among Physiotherapy Students.

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In 2015, Sustainable Development Goals (SDGs) were established with a fifteen-year duration where all Member States adopted the 2030 Agenda for Sustainable Development with a pledge of no one left behind. Five years after implementing the SDGs, many studies were done to analyze the awareness and knowledge towards SDGs. However, relatively limited literature was available exploring or publishing it among physiotherapy students. This cross-sectional study aimed to determine physiotherapy students' level of awareness, knowledge, and attitude towards SDGs. An online questionnaire was designed and developed to collect the data among students pursuing a Bachelor of Physiotherapy (Honours). Out of 136 respondents, only 45 (33.1%) have ever heard of the term Sustainable Development Goals or SDGs, while 91 (66.9%) of the respondents indicated that they had not heard about the term SDGs before participating in this survey. A small portion of 2.2% (n=1) have poor knowledge in physiotherapy practice towards SDGs. More than half the respondents (57.8%, n=26) who have heard of the term Sustainable Development Goals recorded high knowledge. 66% (n=30) of students recorded a moderate attitude and 3,1.1% (n=14) showed a high level of attitude. The data indicate that physiotherapy students had a positive attitude towards SDGs. Further studies can be done to investigate the same objectives across all the students from other faculties & in other Universities. Attributes & components of SDG can also be added as a part of course curriculum & structure. This could inculcate and instill the concept of SDG among the students at the grass-grass-roots that we could be a part of a larger goal more effectively. Other means to increase students' awareness about SDG should also be discovered.

Keywords: Sustainable Development Goals, Physiotherapist

HM003

Will Muslim Communities in Selangor, Malaysia Accept and Willing to Pay for COVID-19 Vaccine?

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The novel coronavirus disease 2019 (COVID-19) has been a major public health crisis since early 2020. In Malaysia, the religious gathering in Seri Petaling was the largest cluster until November 2020. Cases involving religious institutions had risen again in 2021 after restriction policies were eased. The vaccination for COVID-19 with infection preventive practices is the way forward to end the pandemic. This research aims to measure the acceptability and willingness to pay (WTP) for the COVID-19 vaccine and its associated factors among the Muslim communities if available at private healthcare institutions. An online instrument applying the contingent valuation method (CVM) was used. The study targets committee members and the residents attending prayer at mosques and suraus in Bandar Baru Bangi, Selangor, representing the Muslim community. Data collection commenced in May 2021 until June 2021. Analysis revealed that 97.35% (n=478) out of 491 respondents accept COVID-19 vaccination, and 81.71% (n=388) of them are willing to pay for the vaccine with the mean value of MYR141.05 (± 98.70) (US\$34.07, ± 23.85) per dosage. The predictors of WTP analysed by multiple logistic regression analysis were age group less than 50 and monthly household income more than MYR4,850 (US\$1147). Most of the population accepts the COVID-19 vaccine, with more than 80% willing to pay for the health benefit. This research highlights the acceptability and price range citizens would rather pay if the vaccine is made available to be purchased in the future.

Keywords: Acceptability, Willingness to pay, COVID-19, Vaccine

HM004

Knowledge, Attitude, Practice and Barriers Towards the Implementation of Pulmonary Rehabilitation Program Among Physiotherapists in Peninsular Malaysia

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Despite being effective, the utilization of a pulmonary rehabilitation program (PRP) for patients with chronic obstructive pulmonary diseases (COPD) among physiotherapists in Malaysia is not known due to a lack of published research. Observations and informal surveys found low utilization of the program; however, such anecdotal evidence is insufficient to inform clinical practice. This study was conducted to assess the knowledge, attitude, and practice (KAP) of PRP for patients with COPD among physiotherapists in Peninsular Malaysia. This was a survey involving 70 experienced physiotherapists (age range from 25 to 45) working in the medical discipline of 16 state hospitals in Peninsular Malaysia. A newly developed 20-item KAP of PRP questionnaire was distributed to the physiotherapists through the physiotherapy manager of the respective hospitals. Collected data were entered into SPSS version 23 and analyzed using descriptive statistics. All 70 questionnaires were returned (response rate 100%) and analyzed. Results showed that a majority of the respondents (>70%) were knowledgeable and answered most of the questions in the knowledge domain correctly. As much as 78.6% (n=55) respondents have a positive attitude towards PRP implementation, and 81.4 % (n=57) agreed that PRP is effective for COPD patients. However, only 5.7% (n=4) and 8.6% (n=6) of the respondents implemented PRP for in-patients and outpatients COPD cases, respectively. Three main barriers were reported, namely lack of skills (n=51, 72.9%), insufficient manpower (n=47, 67.1%), and insufficient space to run the program (n=44, 62.9%). This study found that utilization of PRP among the physiotherapists is low despite having good knowledge and a positive attitude of the program.

Keywords: Pulmonary Rehabilitation, Physiotherapist, Knowledge, Attitude, Practice

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Community Empowerment Interventions During Natural Disaster Recovery: A Scoping Review

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Community empowerment refers to the process of aiding communities to gain control over their lives through involvement, participation, and commitment. Community empowerment plays an important role in disaster management during post-disaster recovery. Thus, this review aims to discuss the community empowerment interventions during the recovery phase of natural disasters and to highlight the strengths and challenges encountered in each intervention. Multiple online databases (PubMed, Medline, Scopus, and Cochrane) were searched to identify relevant literature using the respective keywords; “Community” or “non-governmental organisation” or “public” AND “empowerment” or “participation” or “engagement” or “involvement” AND “disaster” or “disaster recovery” or “pandemic” or “typhoon” or “earthquake” or “flood” or “hurricane” or “tsunami” or “tornado” or “volcanic eruption” or “cyclone” AND/OR recovery. All searches were limited to studies written in the English language and published between 2000 and 2020. A total of 14 articles on community empowerment interventions during the recovery phase of natural disasters were reviewed and classified based on four themes, including benefit-sharing, decision making, implementation, and evaluation. Community participation is the core of community empowerment required for successful results in the post-disaster recovery phase. This review revealed that most of the articles exhibit elements of community involvement in decision making, sharing of benefits, and implementation. Nevertheless, there is insufficient information on community participation in evaluation. Therefore, future studies may focus on this knowledge gap by considering community participation in evaluation.

Keywords: Community, Empowerment, Participation, Recovery, Natural Disaster