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ORAL PRESENTATION

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Existence of Multidrug-Resistant ESKAPE Pathogens in The Environment of Poultry Farms

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Abstract:

Introduction: ESKAPE is an acronym for six pathogens (*Enterococcus Faecium, Staphylococcus Aureus, Klebsiella Pneumoniae, Acinetobacter Baumannii, Pseudomonas Aeruginosa,* and *Enterobacter Spp.*), which are referred as "superbugs" due to their diversity in exhibiting multidrug-resistance (MDR) and high virulence. Persistent use of antibiotics in animal husbandry is a global public health concern as they have the capacity to acquire resistance to most of the available antibiotics and pose the foremost challenges in treating infectious diseases in both humans and animals. This study aimed to determine the pervasiveness of MDR among ESKAPE pathogens in poultry farm environments.
Methods: A total of 131 ESKAPE bacterial isolates were retrieved from soil and effluent samples in 33 poultry farms that were registered under the Department of Veterinary Services, Selangor. VITEK®2 system was used for bacterial identification and susceptibility testing of isolates. In the laboratory, serial dilution and spread plate method were performed for isolation and enumeration of the desired isolates, while VITEK®2 system was used for bacterial identification and susceptibility testing of isolates.
Results: Results showed all Enterobacter spp. isolates (n=38) were MDR, followed by Enterococcus faecium (n=35) with 54.3% having MDR. K. pneumoniae showed 15% (7/46) of the isolates having MDR. High resistance was detected in particular antibiotics including tetracycline (78.5%, 33/42), erythromycin (73.8%, 31/42), amoxicillin-clavulanic acid (50.6%, 43/85), cefazolin (55.1%, 49/89), and cefoxitin (50.6%, 43/85). It was found all K. pneumoniae isolates (n=46) were resistant to ampicillin, and 8.7% (4/46) exhibited resistance to penicillin, cephalosporins, and monobactam, labeled as Extended-Spectrum Beta-Lactamase (ESBL)-producing strains.
Conclusion: The high rate of MDR-bacteria and presence of ESBL-producing K. pneumoniae indicate the presence of MDR genes in the environment, which pose an advancing threat to effective management of infectious diseases. Therefore, more comprehensive guidelines and a coordinated holistic approach involving all stakeholders are vital in combating the development of antibiotic-resistant bacteria and preventing the spread of the diseases.

Keywords: ESKAPE, multidrug-resistant, environment, farm

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Saving Carbon Emissions Via Tele-Rehabilitation – The Green Solution

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Abstract:

Introduction: Tele-rehabilitation is the delivery of rehabilitation services using information and communication technologies (ICT) to clients. It is the go-to solution to increase access in rehabilitation services, while saving travelling time, costs and carbon emissions. To describe the estimated carbon emission savings and travelling cost of patients receiving tele-rehabilitation in a rural hospital in Malaysia.
Methods: An audit was performed on all patients who received tele-rehabilitation at the Rehabilitation Medicine clinic at Hospital Tuanku Ampuan Najihah, Kuala Pilah, Negeri Sembilan, Malaysia from June 2021 to December 2021. Distance from the patients' home address to the hospital and travelling time were calculated using Google Maps. Carbon dioxide emission was calculated using the formula 120.4g/km (return trip). The travelling cost was set at RM 0.50 per km.
Results: A total of 110 out of 316 (34.8%) patients received tele-rehabilitation services during the audit period. The estimated total carbon emission savings were 865,989 g (median 7,994.5 g; min 228.8 g, max 21,310.8 g). The estimated total travelling cost savings were RM 3,596.30 (median RM 33.20; min RM 0.95, max RM 88.50). The estimated travelling time saved in total was 136 hours and six minutes (median 1 hour 12 mins; min 6 mins, max 3 hours 10 mins).
Conclusion: Tele-rehabilitation may prove to be a green solution to reduce carbon emissions, travelling costs and time.

Keywords: Tele-rehabilitation, carbon emission, travelling cost, time, green solution.

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Community-Based Rehabilitation as A Strategy to Achieve Sustainable Development Goals – An Experience from CBR Batu Kikir

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Abstract:

Introduction: The World Health Organisation (WHO) outlined 17 sustainable development goals (SDGs) to eradicate poverty, hunger and disease. Community-based rehabilitation (CBR) Batu Kikir, Negeri Sembilan, Malaysia; is a social enterprise founded in 2021. It aims to empower the local community into building an age-friendly and sustainable future by adopting the SDGs in its endeavors. To describe CBR Batu Kikir activities based on SDGs during the Covid-19 pandemic in Malaysia.
Methods: CBR Batu Kikir projects were divided into three main themes: education and gender equality, quality health and social security and lastly sustainable environment and energy consumption. A pilot project called *Adopt-an-Orang Asli-student* was launched in June 2021 to overcome barriers to online education faced by the indigenous community in Kampung Orang Asli Chergun, Batu Kikir, Negeri Sembilan, Malaysia. The *Balai Raya Kampung Chergun* (community hall) was refurbished as an information and technology (IT) hub and recreation centre. Electricity was installed to three Orang Asli (OA) homes. Twenty-one self-employed OA rubber-tappers were registered with the Social Security Organisation (SOCSO) and Employee Provident Fund (EPF) in September 2021. More than 90% of the OA and Malay communities received two doses of Covid-19 vaccinations by December 2021. Experiential learning workshops were held at the CBR Batu Kikir rehabilitation centre to create awareness on environmental access, stroke care, wheelchair skills and crisis-preparedness. Locals were encouraged to recycle instead of burning their waste products.
Conclusion: CBR may be used as a strategy to achieve SDGs through social wellness and engagement.

Keywords: Community-based rehabilitation, CBR, SDG, WHO.

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Effectiveness of Common Nasopharyngeal Masks: An Experimental Assessment on Reduction of Respirable Atmospheric Aerosol in Kathmandu, Nepal

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Abstract:

Introduction: The experimental set-up (Mannequin head) was fabricated to test the filtering efficiency of randomly collected (N=36) inexpensive cloth masks (CMs), (N=13) surgical masks (SMs), and (N=7) N95 filtering facepiece respirators (FFRs) against ambient aerosols (PM2.5 and PM10 µg/m3) at two different airflow rates (55LPM and 10LPM).
Methods: Commercial facemasks are widely used worldwide to reduce the inhale of airborne particulates (PM) and viral exposures.
Results: The average efficacy against PM10 particulates at a 10 LPM airflow rate was 52% for CMs, 58% for SMs, 81% for N95 FFRs, and 80% for Prototype cloth masks (PTCMs), and 82% for PTCMs with tissue paper as a filter (TPaF). The average efficacy against PM2.5 particulates at 10 LPM airflow rate was 48% for CMs, 57% for SMs, 80% for N95 FFRs, 78% for PTCMs, and 81% for PTCMs (TPaF) respectively. The filtering efficiency of facemasks followed the order N95 FFRs > SMs > CMs in which efficacy of PTCMs or TPaF was found almost equivalent to N95 FFRs potent to substitute in the time of emergency. The eco-friendly PTCMs can protect human health from fine particulate matter < 2.5 µm and can reduce the risk of microplastic pollution incurred from the use of polypropylene (PP) commercial masks.
Conclusion: The primary objectives were to measure the efficacy of different commercial facemasks considering their surface morphology and develop prototype cloth masks whose efficacy can be equivalent to commercial facemasks and provide stagnant performance in different drying and washing cycles.

Keywords: Respirable atmospheric aerosol, nasopharyngeal mask, effectiveness.

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Multiple Antibiotic Resistance (MAR) Index from Poultry Environment in Selangor, Malaysia

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Abstract:

Introduction: A total of 33 farms were selected randomly from the registry provided by the Department of Veterinary Services, Selangor. Soil and effluent samples were collected from three different areas in each farm. Identification and susceptibility testing were performed using the vitek-2 system. MAR index was calculated by dividing the total antibiotic resistance with total antibiotic tested. The tested antibiotics were selected based on World Health Organization (WHO) AWaRe classification.
Methods: The implication of antibiotic resistance is well discerned with growing public health concern. Recently, research involving the environment has attracted attention since the domain plays an important role in the emergence and dissemination of resistant bacteria to humans.
Results: A total of 511 isolates were recovered with 24 farms (72.7%) having MAR index value above 0.2, which is a high-risk source of contamination. All farms that had MAR index value 0.3 and above (n=8) belong to the commercial chicken production system. Isolates recovered from the environment of commercial chicken production were significantly higher in MAR index compared to village chicken production ($p < 0.001$). All five farms that recorded antibiotic usage had a high MAR index value.
Conclusion: This study concentrated on determining MAR index, which tracks the source of antibiotic resistant bacteria, of the poultry environment in Selangor, Malaysia since this industry has conquered the majority of livestock activity.

Keywords*:* MAR index, poultry, environment.

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Lead Aggravates The Diabetic Induced Renal Dysfunction and Reno-Protective Effect of Eugenol

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Abstract:

Introduction: Diabetic Nephropathy is the most common cause of end-stage renal disease. Therefore, novel therapies for the suppression of diabetic nephropathy must be developed. Diabetes, an unresolved metabolic disorder and lead contamination are prevalent problems in contemporary society. Previously, reports suggested that either diabetes or lead exposure resulted in renal dysfunction in male rats. The aim of this study was to evaluate whether diabetic rats exposed to lead demonstrate a higher degree of hepatotoxicity when compared with lead-exposed control rats.
Methods: Diabetes was induced by injecting a single dose of Streptozotocin (40 mg/kg body weight). Control and diabetic rats were exposed to lead through oral gavage for a period of 21 days and assessed for hepatic and oxidative end points.
Results: Treatment of diabetic rats with eugenol decreased the values of blood glucose and creatinine. The serum lipids like LDL, TC and TG, were decreased and HDL was increased in D-C rats when compared with those of diabetic rats. Significant reduction in blood antioxidant enzyme activity, metabolic enzymes, Na+-K+ ATPase levels and glutathione levels were observed in diabetic rats. Further, lead-exposed diabetic rats showed additional deterioration in renal function and inflammation endpoints and noteworthy elevation in oxidative toxicity suggesting that treatment with lead exacerbates nephrotoxicity in streptozotocin-induced diabetic rats.
Conclusion: The ameliorative efficacy of eugenol was observed in diabetic rats exposed to lead. The present study shows that the eugenol protects against the development of diabetic nephropathy and ameliorates renal function via improving the oxidative status and regulating the expression of IL-6 and TNF- α.

Keywords: Environmental pollutant, diabetes, nephrotoxicity, anti-inflammation, phytochemicals

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Sustainable Development Goals' Smart Village Concept Pilot by South African Institute of Environmental Health in a Rural Community

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Abstract:

Introduction: Many of the household practices use firewood for food preparation with the risk of causing permanent health damage and increasing the risk of disease, due to poor indoor air quality. The South African Institute of Environmental applied funding from Swiss Embassy to conduct a pilot study project through research for the adoption of applied technology and innovation as a cleaner, safer, healthier and affordable model project to demonstrate the adoption of appropriate technology together with a change in community behaviour to have a cleaner, safer, healthier and affordable household model.
Methods: Five households will be supplied with a smart household appliance called the African PowerQueen which also connects to the internet. The South African Institute will be providing those equipment to improve health and hygiene while providing an alternative cooking method to burning local wood on an open fire indoors. Each of the five households will receive the following: First, a solar panel and Li Ion Battery; second, a water storage container with a Katadyn filter; third, a basic kitchen equipment that will be made by the community; fourth a biomass cooking stove with a fan to improve combustion efficiency; fifth a retained heat cooker bag to reduce energy use for longer cooking tasks; sixth an accessory kit comprising four LED lights, seventh a torch and a radio; eighth a smart communications device to provide connectivity and; lastly, a TV connectivity from a connected platform comprising a WIFI router/GSM connection, an Android TV processor, and connectors.
Results: To sustain the project, the entire model is designed to be installed, maintained and operated with the community itself, with special focus on creating jobs and empowering women. The financial structure intends to create income and ongoing jobs through servicing the model, incentivizes behaviour change to perpetuate the model, not require any special skills or training outside of the village and runs on a simple and accessible local economy that requires no additional income or funding.
Conclusion: The key objectives of the pilot project are to prove that the interventions have a measurable and positive impact; to determine the willingness and affordability by the community to adopt and contribute to a new approach to energy and connectivity poverty; Reduce Carbon emissions while generating an ROI; to improve human health and hygiene; and to determine the adoption of media services: entertainment and e-education

Keywords: SDG, smart village, rural, community

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Home Remedies for Treatment of Dermal, Oral and Other Ailments in Selected Areas in Botswana, Implications for Public Health Interventions and Research

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Abstract:

Introduction: Traditionally home remedies involved the use of medicinal plants. However, non-food products such as industrial chemicals have been reported by few studies. This study documents the use of potentially harmful substances for treatment of dermal, oral and other ailments and the motivations for use in selected areas in Botswana.
Methods: A cross-sectional survey study design was adopted comprising 231 participants aged 18 years and above from Botswana's capital city, Gaborone and surrounding areas. A pretested questionnaire was used to collect data on the types of therapies, the purposes and motivation for use. Descriptive statistics were computed using SPSS software,V27.
Results: Industrial chemicals, tobacco snuff and cigarettes were the most commonly used products. Methylated spirit was used by most (76%) participants to treat bruises, wounds, aftershave rash and bites from snakes and insects. Alum was used by 62% of participants, to treat throat infections whilst paraffin was used by over a third of respondents to treat psoriasis, burns, snake and insect bites. One third of participants used tobacco snuff to treat nose bleeding, toothache and stress whilst 28% of respondents used more than 3 products at a time.
Conclusion: This study revealed a high prevalence of potentially hazardous substances used as home remedies likely to result with adverse effects as well as interfering with medical management of diseases. Health workers need to be aware of the products patients and the public use in order to raise relevant awareness. Further research is needed to study potential effects of these products on their users.

Keywords: Home remedies, dermal, oral, ailment, intervention

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High Prevalence of Self reported Respiratory Symptoms Among Students Exposed Secondhand Smoke (SHS) in Academic Institutions in Gaborone: Implications for Interventions

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Abstract:

Introduction: The World Health Organization Framework Convention on Tobacco Control (WHO/FCTC) preamble gives 'priority to the right to protect public health.' The WHO/FCTC recognizes that exposure to second-hand smoke (SHS) can lead to cardiovascular, respiratory, cancer and other severe diseases. Preventing SHS exposure therefore remains a key health priority particularly among the youth. The prevalence of SHS and associations with respiratory symptoms among non-smoking students was assessed.
Methods: A cross-sectional survey was carried out among students in randomly selected universities in the city of Gaborone. Smoking status, exposure to SHS and self-reported respiratory symptoms were evaluated among students aged ≥18 years. Ethical approval and student consent were sought prior to conducting the study. Logistic regression was used to analyse respiratory symptoms among non-smoking students.
Results: Out of 450 students surveyed, current smoking was reported by 142 (32%) with males (68%) smoking the most. Exposure to SHS was highest on campus and in public places(≥90%) compared to home (47%). Non-smoking students were 2.7 times (OR: 2.66, 95% CI: (1.76 – 4.00) and 3.3 times (AOR: 3.34, 95% CI: (2.21 – 5.05) more likely experience respiratory symptoms such as cough or flu-like symptoms and headaches respectively after exposure to tobacco smoke. Additionally, non-smoking students were 6 times (AOR: 5.52, 95% CI: (3.42 – 8.90) more likely to feel irritated by tobacco particles in a place/car someone previously smoked than smokers. Students believed SHS would increase their chance of developing cancer (>70%) and adversely affect their academic performance (>20%). Over 50% of students would support a ban on smoking in their institution.
Conclusion: SHS exposure and self reported respiratory symptoms are alarmingly high among students despite undisputed evidence of no safe level of exposure to SHS. The students' fundamental right to health is violated and anti-smoking programs and policies are needed to reduce smoking and exposure to SHS.

Keywords: Second-hand smoke, current tobacco smoke, respiratory symptoms, students, interventions

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Heavy Metal Contamination, Its Associated Health Risks and Awareness Level of Drinking Water Quality from Negeri Sembilan State, Malaysia

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Abstract:

Introduction: Water has an important part in human health and well-being which should be free from any substances that can cause harmful effects to humans. Drinking water source in Negeri Sembilan mostly originated from river water. Frequent river pollution from industrial and agricultural runoff is one of the major sources of heavy metal contamination in rivers in Negeri Sembilan.
Methods: This study was focused to evaluate the concentration of heavy metal (Al, Hg, As, Cr, Cu, Fe, Pb, Zn and Cd) in drinking water from auxiliary point from the secondary data in Drinking Water Quality Surveillance System Database, Ministry of Health for ten consecutive years (2010 – 2020) and to estimate the health risks (non-carcinogenic and carcinogenic) in Negeri Sembilan. The study also aims to identify the possible sources (natural and/or anthropogenic origin) of heavy metals contamination in drinking water together with the awareness levels (knowledge, attitude, and practice) in the community regarding heavy metal contamination in drinking water.
Results: Results showed that the heavy metal concentrations in drinking water at auxiliary points in Negeri Sembilan from 2010 to 2020 were found to be within the permitted levels. The health risks estimation indicated that Lifetime Cancer Risks for Pb exceeds the permission limit for adults and children. The correlation and Principal component analysis output showed a significant correlation between the heavy metals which justify the origin from both natural and anthropogenic factors. The questionnaire survey shows that, community of Negeri Sembilan has a good knowledge (65%), a less favorable attitude (56.7%), and a good practice (72%) when it comes to heavy metal contamination of drinking water.
Conclusion: The estimated risk exposure level along with KAP findings involving Negeri Sembilan population can be utilized by the Negeri Sembilan Health Department to improve the integrated drinking water quality management.

Keywords: Drinking water, heavy metal, health risks, awareness level

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Knowledge, Practice in Hand Hygiene and Level of Hand Microbial Contamination on Food Handlers Hand: A Satay Processing Factory Case Study

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Abstract:

Introduction: Increasing cases of foodborne illness in Malaysia show that food handlers still fail to maintain food safety. Therefore, this study was conducted to compare knowledge and practices regarding hand hygiene and assess hand microbial contamination of food handlers as indicators of hygiene practices in food premises.
Methods: This study involved 16 food handlers who work at a satay processing factory in Malaysia. Food handlers' knowledge and hand hygiene practices (n = 16) were assessed using the questionnaire form, while hand swabs (n = 16) were tested for total plate count, coliform, Escherichia coli, and Staphylococcus aureus. A Handwashing Technique Observation Tool (HTOT) was also developed to monitor the food handler's hand washing techniques.
Results: Food handlers had a good hand hygiene knowledge score of 89.69 ± 6.45 and an excellent self-reported practice score of 92.5 ± 7.46. Statistical analysis showed that there was no significant correlation between knowledge score ($r = -0.045$, $p > 0.05$) and practice ($r = -0.347$, $p > 0.05$) with hands' total bacterial count. However, there was a strong negative correlation between hand washing scores and the level of microbial contamination on the workers' hands ($r = -0.653$, $p < 0.05$). It was also observed that most respondents do not comply with the 7-step hand washing techniques proposed by the Malaysian Ministry of Health.
Conclusion: In conclusion, theoretical hand hygiene knowledge and monitoring of the actual technique practised by the food handlers are essential in ensuring good hand hygiene practices for safe food production.

Keywords: Food handler, KAP, microbiological assessment, hand hygiene, hand washing technique

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Survey of Mosquito Breeding Sites in The Sunyani Municipality, Bono Region, Ghana

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Abstract:

Introduction: The main objective of this study is to assess mosquito breeding sites within the Sunyani Municipality in Ghana. We hypothesized that mosquito breeding sites within the Sunyani Municipality are mainly naturally induced.
Methods: A survey for mosquito breeding sites along with sampling of mosquito larva were undertaken within the Sunyani Municipality between the periods of December 2019 to February 2020. Mosquito species breeding sites were diagnosed following a guideline provided by Service (2008) and the mosquito larva collected were diagnosed to the genera level as per the taxonomic keys of Knight and Stone (1977). The breeding sites of the mosquito genera were also characterized as anthropogenic and naturally induced.
Results: Of the 1421 possible mosquito breeding sites identified in the municipality, 69.5% (987) of the sites were anthropogenic induced and 30.5% (434) were natural based breeding sites. 28.2% (401) of the sites were possible breeding sites of *Anopheles* species with 174 of the *Anopheles* possible sites positive for *Anopheles* species. 27.7% (111) of the *Anopheles* sites were associated with wetlands (swampy/marshy areas). *Aedes* mosquito breeding sites constituted 19.1% (272) with the majority 65% (177) constituting container receptacles and lorry tyres. Of all 52.6% (748) identified as possible breeding sites for *Culex* mosquito species, the majority 73.1% (547) were anthropogenic induced. 55.6% (79) of the breeding sites were associated with waters emanating from bath houses.
Conclusion: Mosquito breeding sites during the dry season between December and February in the Sunyani Municipality were mainly anthropogenic induced. Residents of the Sunyani municipality require education on health risks associated with producing mosquito breeding sites. Larva control during the dry season (between October and March annually) should be considered as an essential aspect of mosquito control programmes in the study area.

Keywords: Mosquito, breeding sites, survey, anthropogenic, Sunyani Municipality

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Prevalence, Perception of Knowledge, Attitude and Practice of Workplace Second-Hand Smoke Within the Smoke-Free Workplace among University Employees

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Abstract:

Introduction: Since 2005, Malaysia's Educational institutions have been gazetted with a smoke-free policy. However, the National Health Morbidity Survey 2015 recorded that one-third of Malaysians were exposed to workplace second-hand smoke. Hence, this study aimed to identify the prevalence of WSHS and the associated perception of knowledge, attitude and practice among University employees.
Methods: A convenience sampling technique was used to recruit 336 employees at the University of Malaya between October 2018 to January 2019 in a cross-sectional study. The findings were analysed by the Man-Whitney test and Kruskal-Wallis using SPSS IBM software.
Results: Three hundred five participants completed the questionnaires (91 % response rate). The mean age was 37.95 (SD: 9.98). 69% of the participants were female, 67% of them were married, and 5.9 % of them were a smoker. 37% reported exposure to WSHS. 94.8% of the participants "agree to strongly agree" with the perception of SHS Knowledge. 56% of them reported "to always" shows a negative attitude towards WSHS, and 53.4% of them recorded "always" practice WSHS protection, respectively. The gender ($p<0.001$), marital status ($p= 0.004$), Smoking status ($p= 0.001$) and Perception of SHS Knowledge ($p= 0.021$) were significantly associated with the exposure to WSHS.
Conclusion: These findings highlight that WSHS exposure exists within the educational institution despite a smoke-free policy. Understanding the associated factors of WSHS can help the policymaker or the employer tighten the policy enforcement and protect their employees from the risks of second-hand smoke.

Keywords: Workplace, second-hand smoke, KAP scale

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The Truth is Out There: How to Effectively Communicate and Promote Resilience to Misinformation

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Abstract:

Introduction: We live in an information-rich environment, and social media has become an engaging source for information, especially if the event is a crisis, is unique, and has its followers' interest. Social media allows people to express their thoughts, opinions, and share information with their friends, family, and others. These social media messages come with content and guidance from different sources. Because misinformation can spread quickly via social media, it's especially important to speak first, communicate first, and engage first with your audience.
Methods: Promoting public health requires effectively communicating guidance and recommendations to a variety of audiences. However, the public receives an overwhelming amount of information from many channels. In order to encourage healthy behaviors in communities, it has become imperative to help the audience navigate the overload of information and promote resilience to the glut of misinformation abundant in various forms in society. Examples of environmental health issues and solutions will be discussed.
Results: Participants will learn how to use resources, tools, and methods to help overcome misinformation and effectively communicate with their communities.
Conclusion: Participant will be able to apply the six principles of Crisis Emergency and Risk Communication (CERC), resources, and tools for effectively communicating

Keywords: Communication, misinformation, disinformation, communication outreach

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Personal Protective Equipment Usage and Risks of COVID-19 Infection among Clinical Students at University Hospital

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Abstract:

Introduction: Healthcare workers should wear appropriate personal protective equipment (PPE) due to their susceptibility to COVID-19 infection. Thus factors that may influence the effectiveness of PPE are essential to explore whether these can contribute to COVID-19 infections. This study aimed to investigate the association between PPE effectiveness and risks of COVID-19 infections.
Methods: 61 clinical students (medical and nursing) in Hospital USM were involved (20% response rate) in this cross-sectional study through simple random sampling. The data were collected through the online survey and analysed using SPSS version 26. Data were analysed using Pearson Chi-Square and Logistic Regression tests.
Results: 23% of the students were infected with COVID-19 and 67% became close contact 1 (CC1) of COVID-19. Significant associations were found between the importance of wearing PPE (p=0.011) and uncomfortableness of PPE (p=0.038), with COVID-19 infection. Mobility of PPE (p=0.031), non-breathable PPE material (p=0.024) and comfortableness of PPE (p=0.043) were the significant factors associated with the risks of becoming CC1. Students who wear non-breathable PPE materials might have 2.6 times higher risk of becoming CC1 than those who wear breathable PPE. Students who wear their PPE all time during the clinical could be 70% less likely to become infected compared to students who take off their PPE during the practical.
Conclusion: The study findings suggested that education is an essential factor that can affect the effectiveness of PPE in preventing the risk of COVID-19 infection. More training programmes on the importance of proper use and care of PPE is recommended.

Keywords: PPE, COVID-19, clinical, University Hospital

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Integrated Malaria Prevention in Low- and Middle-Income Countries: A Systematic Review

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Abstract:

Introduction: The aim of this systematic review was to collate and summarise the impact of integrated malaria prevention in low- and middle-income countries on malaria burden.
Methods: Several databases including PubMed, CINAHL, and Web of Science were searched for literature. Integrated malaria prevention was defined as the use of two or more malaria prevention methods holistically. The primary outcome variables were malaria incidence and prevalence, while the secondary outcome measures were human biting and entomological inoculation rates, and mosquito mortality.
Results: After screening 10,931 studies, 57 articles were included in the review. Various interventions were used, mainly combinations of two or three malaria prevention methods including insecticide treated nets (ITN), indoor residual spraying (IRS), repellents, insecticide sprays, microbial larvicides, and house improvements including screening, insecticide treated wall hangings, and screening of eaves. The most common methods used in integrated malaria prevention were ITNs and IRS, followed by ITNs and repellents. There was reduced incidence and prevalence of malaria when multiple malaria prevention methods were used compared to single methods. Mosquito human biting and entomological inoculation rates were significantly reduced, and mosquito mortality increased in use of multiple methods compared to single interventions. However, a few studies showed mixed results or no benefits of using multiple methods to prevent malaria.
Conclusion: Use of multiple malaria prevention methods was effective in reducing malaria infection and disease, and mosquito density. Results from this systematic review can be used to inform future research, practice, policy and programming for malaria control in malaria endemic countries.

Keywords: Integrated approach, malaria prevention, multiple methods, low- and middle-income countries

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Environmental Health and its Contribution to One Health

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Abstract:

Introduction: Environmental Health is a discipline that focuses on physical, chemical and biology factors in the environment that can impact on human health.
Methods: The One Health approach, that promotes collaborative efforts for human health, animal health, and the environment, has continued to grow in recent years. However, there is limited literature on the contribution of Environmental Health to the One Health strategy.
Results: This paper describes Environmental Health and its contribution to One Health particularly from a low- and middle-income perspective. Key Environmental Health roles that support the One Health approach include: food (including meat) safety and hygiene; control of vectors and vermin; prevention of environmental pollution; water, sanitation and hygiene; enforcement of legislation; and health promotion and education.
Conclusion: Environmental Health has a major role to play regarding the interaction between humans, animals and the environment hence should be considered a key profession in One Health initiatives.

Keywords: Environmental health, one health, environmental health practitioners, humans, animals, environment

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Timely and Effective Termination of Prolonged Dengue Outbreaks

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Abstract:

Introduction: Despite the adoption of the WHO Global Strategy for Prevention and Control of Dengue, member countries continue to experience prolonged episodes of uncontrolled dengue outbreaks. The economic and productivity implications for failing to break arboviral transmission within the 14 days target is related to the burden of dengue in Malaysia costing USD13 million per 10,000 cases in 2013.
Methods: Field studies on transmission dynamics confirmed the crucial finding that "dengue infections were being acquired away from home" mentioned in the Report of the Expert Committee on Dengue to the Government of Singapore in 2005. Japan in 2014, Hawaii in 2015 and Hong Kong in 2018 terminated epidemics by eliminating the epicentres of outbreaks.
Results: In 2003, field investigations were pioneered in Sitiawan, indicating that identification and elimination of a few active epicentres can concurrently shut down many distributed outbreaks. Pilot projects were carried out by the author in Setapak and Seri Iskandar. In 2014, a pilot carried out in KL led to the elimination of "hotspots" for 53 consecutive weeks, concurrently in all the 11 operational zones of DBKL.
Conclusion: The outcome demonstrates that eliminating epicentres can effectively interrupt dengue transmission with minimum community participation to end uncontrolled and prolongedoutbreaks to save lives, productivity, and human capital.

Keywords*:* Epicentre, cluster, hotspot, prolonged, uncontrolled outbreaks.

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Unregistered Food Premises Hygiene Management in Urban City Ampang Selangor

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Abstract:

Introduction: Rapid development in Ampang, Selangor area has a impact on the environment. The increase in the number of immigrants from outside with food operators from neighbouring countries demands dynamic and quality food premise management.
Methods: A total of 145 unregistered food premises were detected to operate without food hygiene monitoring by the Local Council and District Health Department in the study area. The quality of food presented to customers is plays an important role in curbing the spread of epidemics such as food poisoning, diarrhea, leptospirosis, salmonellosis and other foodborne illnesses.
Results: The analysis result of Pearson Coleration showed that all the variables between knowledge had a significant relationship with the attitude of the food operator ($p < 0.05$). The findings showed a significant relationship between knowledge and attitude ($r = 0.310$, $p < 0.05$). The results showed that the presence of unlicensed food premises would damage the scenery 71.9 percent and destroy the aesthetic value of the city 28.1 percent.
Conclusion: The development speed should be in line with the hygiene of food premises, especially in the rapidly developing township.

Keywords: Food hygiene management, food operators, safety food

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POSTER PRESENTATION

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Emerging Issues and Challenges in Managing Water Related Diseases : A Descriptive Review

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Abstract:

Introduction: Access to safe water is a birthright, and not a privilege. It is the elixir life, and the sustenance of the human race. According to the estimation of the World Health Organization (WHO), 4,000 children die every day from water-borne diseases and this condition is the worst in developing and under-developed countries.
Results: Water related illnesses fall into 4 major categories which are water-borne diseases, water washed diseases, water based diseases and water related insect vectors. Although a significant proportion of this immense burden of disease is caused by 'classical' water-related pathogens, such as typhoid and cholera, newly-recognized pathogens and new strains of established pathogens are being discovered that present important additional challenges to both the water and public health sectors. Developing nations are experiencing rapid expansion in economies, meaning booming industries, commercialization and urbanization, altering the natural landscape and ecosystem. New environments may favour the proliferation of pathogens or their vectors and bring about contact with a previously-unexposed population. Furthermore, climate change due to anthropogenic activities such as deforestation, and rapid industrialization has introduced a host of novel issues, many of which contribute to the increase in water related diseases.
Conclusion: Water should serve as a reservoir of sustenance and not for pathogens. Goal 6 in the United Nations Sustainable Development Goals targets to achieve universal and equitable access to safe and affordable drinking water for all by year 2030. Prevention measures that are inclusive and deal with a problem holistically will succeed. In order to accomplish this mission, world leaders, governments, captains of industry, local communities, and individuals must join forces and fulfill their roles.

Keywords: Water related diseases, issues, challenges

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Healthcare Waste Management during The COVID-19 Pandemic in Healthcare Facilities in Greater Gaborone, Botswana

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Abstract:

Introduction: Healthcare waste management, a critical component of infection control in healthcare facilities continues to be a challenge in developing countries. The possible adverse effects of healthcare waste that is poorly managed include transmission of communicable diseases such as HIV, hepatitis B and A, needle-stick injuries and burns. Research shows that due to COVID-19, healthcare waste (HCW) has increased due to high usage of personal protective equipment as well as chemicals for disinfection. We assessed the implementation of the WHO interim guidelines on the management of healthcare waste during COVID-19 in five health care facilities and an isolation center in greater Gaborone.
Methods: A descriptive cross-sectional study design was followed. Study population included clinical healthcare workers and support staff from 5 health facilities and one COVID-19 isolation center. Questionnaires were used to collect data and SPSS version 27 was used to generate descriptive statistics. The research proposal was submitted to the University of Botswana and Ministry of Health and Wellness Institutional Review Boards (IRB) for ethical approval.
Results: Two hundred and fifty five participants responded to the study and two thirds (158) were females with an average working experience of 4 (±1.9) years. Nursing staff formed the majority (161,63%) followed by doctors (56,22%). Almost all participants (99%) had adequate general knowledge on COVID-19. Over 90% (233) of participants reported a ≥100% increase on HCW since COVID-19 and 42% (108) felt the increase was caused by the use of Personal Protective Equipment. About a quarter (24%) of participants showed poor knowledge on HCWcolour coding and a third were not trained on risks associated with HCW. Poor compliance to WHO guidelines included COVID-19 waste collection bags that were not labelled 162(64%) and storage bins not always locked. Most participants (92%), showed the need for extra HCWM workshops and training on WHO COVID-19 guidelines.
Conclusion: Whilst participants reported that their facilities had adopted WHO COVID-19 HCW management protocols, poor knowledge among workers and partial compliance of WHO COVID-19 HCW guidelines were observed. To address these gaps, there is need to provide training on WHO guidelines.

Keywords: COVID-19, health care waste, healthcare workers, WHO guidelines

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A Study on Knowledge, Attitudes and Practices (KAP) on Food Hygiene and Safety among the Community in Bandar Enstek, Negeri Sembilan

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Abstract:

Introduction: This study involved 96 respondents from various educational backgrounds, all of them were over the age of 18 with 78.1% of them were male. Each KAP section had 20 sets of questions, which were distributed in 3-week time intervals using Google Forms survey. The questionnaire was highlighted on the FH&S principle at home which is handling, preparing, storing the food in the right manner including cross-contamination and personal hygiene principle.
Methods: Food hygiene and safety are really important in humans' daily life. Poor knowledge, attitudes, and practices (KAP) on food hygiene and safety, may cause food-borne diseases to people, and worst it may cause death. Statistically, there are huge numbers of food-borne disease cases happening worldwide including in Malaysia.
Results: The results indicate that overall respondents had sufficient knowledge on FH&S as the mean score on the knowledge was 14.7 ± 1.934 (73.3%). Meanwhile, the respondents also had positive attitudes and practices toward FH&S as the mean score for the attitudes section was 14.8 ± 2.531 (73.9%), and the practices section was 14.3 ± 2.984 (71.7%). The results also indicate there were statistically significant between all three KAP variables as a p-value is less than 0.05 ($p<0.05$). However, there were no statistically significant for the respondent's education level and the KAP variables due to the p-value being higher than 0.05. It indicates that the respondent's education level was not associated with their KAP on food hygiene and safety.
Conclusion: The purpose of this descriptive cross-sectional study was to analyze the knowledge, attitudes, and practices of the community in Bandar Enstek, Negeri Sembilan regarding food hygiene and safety (FH&S) that have been applied at home.

Keywords: Knowledge, attitudes and practices (KAP), food hygiene, food safety

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Quarry Respirable Dust Pollutant on Fractional Exhaled Nitric Oxide (FENO) and Interleukin-8 (IL-8) Concentration

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Abstract:

Introduction: The respirable dust from quarry sites may contain harmful minerals that can penetrate deep into the lungs. Mineral dust contains a variety of carcinogenic and non-carcinogenic substances. This study was to investigate the impact of exposure to quarry respirable dust on respiratory health performance by interpreting Fractional Exhaled Nitric Oxide (FENO) and Interleukin-8 (IL-8) concentrations.
Methods: A cross-sectional study was carried out among 173 school staff who have been exposed within a 10km radius of the quarry sites. An air sampling pump was used to collect personal exposure to quarry respirable dust. A human ELISA test-kit was used to analyze IL-8 concentrations, whereas NIOX MINO and Chestgraph H1-105 spirometers were used to measure FENO levels and lung function.
Results: The mean and standard deviation of quarry respirable dust was 1.19±0.77 mg/m^3. The FVC% predicted and FEV_1% predicted had normal lung function levels of 90.46±13.21 and 95.71±11.60. The geometric mean (GM) concentration of IL-8 was 121.12±2.38 pg/mL. The geometric mean (GM) concentration of FENO was 20.96±7.71 ppb. FENO concentrations among study respondents have poor significantly relationship with the exposure to quarry respirable dust (r=0.27, p=0.046). Quarry respirable dust exposure have low relationship with wheezing (r=0.18, p= 0.015).
Conclusion: The public is at high risk of lung impairment by developing respiratory health symptoms, reducing lung function levels and increasing high levels of FENO cause of their exposure to quarry respirable dust.

Keywords: Quarry respirable dust, Fractional Exhaled Nitric Oxide (FENO), lung function, Interleukin-8.

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Waste Separation among Household in Malaysia : A Systematic Review

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Abstract:

Introduction: Almost 95% of food waste goes to landfill in which food waste is converted into methane and other gasses that affect climate change. This scenario will affect our safety, health & environment.
Methods: A systematic literature review method was used to collect and analysed related works on household waste management in Malaysia. Literature has been compiled based on two major databases including, Google Scholar and Scopus. Literature was searched based on several relevant keywords. A total of 15 articles met the requirements set, and 12 of them are reviewed in this paper.
Results: The study on household waste separation is limited. From the literature, many factors contribute to the waste separation practice among households in Malaysia.
Conclusion: In conclusion, the community has moderate awareness of household waste management, especially in waste separation. Further study on the food waste policy is to stop the habit of wasting food in society.

Keywords: Waste separation, waste management, household waste

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Indoor Pollutants and Its Impact on Respiratory Health Symptoms and Lung Functions among School Children Exposed to Bauxite Mining

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Abstract:

Introduction: Exposure to indoor dust pollution is one of the public health concerns especially in children. Children are more vulnerable in terms of exposure by virtue of their susceptibility and the doses of the receiving. The uncontrolled mining activities in Pahang has created a dusty environment that leads to health impacts especially respiratory health.
Method: A comparative cross-sectional study was conducted on 270 students randomly selected from the Primary 4 and 5 clusters. Questionnaires were used to collect the information on their background and their respiratory health symptoms. Lung function test was performed for each student using a spirometer according to the American Thoracic Society standards. Environmental sampling for particulate matter (PM_{10}) and indoor air and dust of heavy metals pollutants samples from each of the eight classes were collected using a Gillian Personal High-Volume Air Sampler and 400W vacuum cleaner that consists of a special filter. The heavy metals concentrations were analysed using ICP-MS.
Result: The concentration of PM_{10} and heavy metals (As, Cd, Ni and Pb) in indoor air and dust was significantly higher in the studied area ($p<0.001$). Highest reported symptoms in studied group was cough with flu (48.0%), nasal congestion (45.9%), runny nose (42.6%) and headache (41.2%). Symptoms such as diagnosed asthma ($p=0.033$), runny nose ($p<0.001$), nasal congestion ($p<0.001$), sore throat ($p<0.001$), dry throat ($p<0.001$) and chest tightness after outdoor activities ($p<0.001$) showed significant differences between two groups. This study also showed students in studied area have significantly lower ($p<0.01$) of FEV_1, FVC, and FEV_1/FVC ratio compared to the comparative group. Students from studied area have 68.2% of FEV_1 abnormalities, 50% of FEV_1/FVC abnormalities and 38.5% of FVC abnormalities. Higher pollutants concentration of PM10 and heavy metals in environmental samples were significantly associated with all reported health symptoms except for cough and chest tightness at night. PM_{10} and heavy metals exposure were significantly associated with reduction of lung functions ($p<0.05$). Lower values of FEV_1, FVC and FEV_1/FVC were found to be significantly associated with runny nose, nasal congestion, dry throat, chest tightness, chest tightness at night and chest tightness after outdoor activities
Conclusion: The elevated or increasing concentrations of these pollutants in the school investigated should be one of our cause for concern especially for stakeholders in the education sector.

Keywords: Indoor pollutants; respiratory health; school children; Bauxite mining; lung functions

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Risk Factors Associated with Blood Cholinesterase Level among Health Workers of Kuala Lumpur City Hall

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Abstract:

Introduction: Health workers of the vector control unit are always at risk of being exposed to danger due to the handling of hazardous organophosphate pesticide which may cause poisoning throughout mixing, spraying, loading and cleaning up of containers and machine. The use of pesticides in pest management has increased rapidly and occupational exposures had adversely affected human health. This study was aimed to determine the risk factors associated with the blood cholinesterase level (BCL), an indicator of pesticide exposure, among health workers of Vector Control Unit of Kuala Lumpur City Hall
Methods: A cross-sectional study was carried out from October 2021 to February 2022 at the Department of Health and Environment of Kuala Lumpur City Hall (DBKL). The study samples consisted of 2 groups, exposed (fogging workers, n=200) and comparison group (general health workers, n=200) from the Vector and Control Unit. Data obtained were the BCL, and background information of workers which include socio-demographic, duration of employment, smoking status, personal hygiene, PPE usage, fogging direction, and general health status of the workers. All data were analysed by using IBM SPSS version 22.
Results: Only 3 out of 400 workers showed abnormal BCL of less than 4620 uL. The BCL of the exposed was significantly lower than the comparative group ($\chi 2 = 21.077$, $p < 0.001$). Among the exposed, health symptom was the risk factor of BCL (b=0.176, 95% CI: 0.028, 0.325)
Conclusion: The result showed that pesticide exposure among the exposed worker was low and those who reported health symptoms were not among those who highly exposed. This may indicate the good practice among workers who handle the pesticides. Compulsory yearly medical surveillance and health monitoring is strongly recommended to assure the good health and well-being of the workers.

Keyword: Organophosphate, blood cholinesterase level, health workers

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Soap-Making from Waste Cooking Oil: A Review

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Abstract:

Introduction: Waste Cooking Oil (WCO) is known as a hazardous substance to the environment as it tends to damage and pollute the water body through direct disposal, reduce the treatment capacity of water treatment plant and tend to deposited in pipeline system and causing a blockage and damage the sewerage pipeline system.
Methods: As a waste product, WCO contain high level of free fatty acid, glycerol, monoglycerides, diglycerides and other oxygenated substance which is undesired and degrading the quality and made unsuitable and hazardous in food preparation. Through this parameter, the content of WCO can be identified and determined its quality and availability to be used as raw material.
Results: The acid value provides the amount of free fatty acid (FFA) exist in WCO as the FFA is one of important source require to produce material such as biodiesel component (Fatty acid Methyl Esther or FAME) and soap. The production of soap from WCO is one of the most economical and environmental ways as its production create no harm and waste with minimal energy required thus giving a prospect upon green product. The formation of soap is produced as the substance of free fatty acid react with base and forming carboxylic salt known as soap while the glycerol remain as it is.
Conclusion: Transformation from WCO to soap through saponification undergo cheap and non-complicated phase provide alternatives in production of new product from WCO. Further study is suggested in application for optimizing the correct formulation in producing soap from WCO and identify the additional ingredient in order to obtain high quality soap as end product.

Keyword : Waste cooking oil, saponification, soap-making process