The Medical Journal of Malaysia

11ᵗʰ Kelantan Health Conference
4-5 September 2023

PP 2121/01/2013 (031329)	MCI (P) 124/1/91	ISSN 0300-5283

The Medical Journal of Malaysia
MJM
INSTRUCTION TO AUTHORS

The *Medical Journal of Malaysia (MJM)* welcomes articles of interest on all aspects of medicine in the form of original papers, review articles, short communications, continuing medical education, case reports, commentaries and letter to Editor. Articles are accepted for publication on condition that they are contributed solely to *The Medical Journal of Malaysia*.

NOTE: MJM is published bimonthly ie. January, March, May, July, September and November.

REQUIREMENTS FOR ALL MANUSCRIPTS
Please ensure that your submission to MJM conforms to the International Committee of Medical Journal Editors Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals.

Neither the Editorial Board nor the Publishers accept responsibility for the views and statements of authors expressed in their contributions.

The Editorial Board further reserves the right to reject papers read before a society. To avoid delays in publication, authors are advised to adhere closely to the instructions given below.

MANUSCRIPTS
Manuscripts should be submitted in English (British English). Manuscripts should be submitted online through *MJM Editorial Manager*, http://www.editorialmanager.com/mjm.

Instructions for registration and submission are found on the website. Authors will be able to monitor the progress of their manuscript at all times via the *MJM Editorial Manager*. For authors and reviewers encountering problems with the system, an online Users' Guide and FAQs can be accessed via the "Help" option on the taskbar of the login screen.

MJM charges a one-time, non-refundable Article Processing Charge (APC) upon submission. Waiver of the APC applies only to members of the editorial board, and authors whose articles are invited by the editor. In addition, recipients of the MJM Reviewer Recognition Award from the previous year may enjoy a waiver of the APC for the next calendar year (e.g. recipients of MJM Reviewer Recognition Award 2022 will enjoy waiver of APC for articles submitted between January and December 2023).

The MJM processing fee is based on the categories stated below:
MJM
1. MMA Member - RM 400.00
2. Non-Member - RM 600.00
3. Overseas - USD 150.00

MJM Case Reports (effective 1st July 2022 up to further notice):
1. MMA Member - RM 200.00
2. Non-Member - RM 300.00
3. Overseas - USD 100.00

The MJM Article Processing Charge is a non-refundable administrative fee. Payment of the APC does not guarantee acceptance of the manuscript. Submitted articles will only be sent for reviews once the MJM APC has been successful completed.

All submissions must be accompanied by a completed **Copyright Assignment Form**, **Copyright Transfer Form and Conflict of Interest Form** duly signed by all authors. Forms can be download from MJM website at https://www.e-mjm.org/

Manuscript text should be submitted as **Microsoft Word** documents. Tables and flow-charts should be submitted as **Microsoft Word** documents. Images should be submitted as separate **JPEG files** (minimum resolution of 300 dpi).

PEER REVIEW PROCESS
All submissions must include at least two (2) names of individuals who are especially qualified to review the work. All manuscripts submitted will be reviewed by the Editor in-charge before they are send for peer review. Manuscripts that are submitted to MJM undergo a double-blinded peer review and are managed online. Proposed reviewers must not be involved in the work presented, nor affiliated with the same institution(s) as any of the authors or have any potential conflicts of interests in reviewing the manuscript. The selection of reviewers is the prerogative of the Editors of MJM.

ELIGIBILITY AS AN AUTHOR
MJM follows the recommendation of the International Committee of Medical Journal Editors (ICMJE) for eligibility to be consider as an author for submitted papers. The ICMJE recommends that authorship be based on the following four (4) criteria:
1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
2. Drafting the work or revising it critically for important intellectual content; AND
3. Final approval of the version to be published; AND
4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

TYPES OF PAPERS
Original Articles:
Original Articles are reports on findings from original unpublished research. Preference for publications will be given to high quality original research that make significant contribution to medicine. Original articles shall consist of a structured Abstract and the Main Text. The word count for the structured abstract should not exceed 500 words. The main text of the articles should not exceed 4000 words, tables/illustrations/figures/images up to five (5) and references up to 40. Manuscript describing original research should conform to the IMRAD format, more details are given below.

Original articles of cross-sectional and cohort design should follow the corresponding STROBE check-lists; clinical trials should follow the CONSORT check-list.

Review Articles:
Review Articles are solicited articles or systematic reviews. *MJM* solicits review articles from Malaysian experts to provide a clear, up-to-date account of a topic of interest to medical practice in Malaysia or on topics related to their area of expertise. Unsolicited reviews will also be considered, however, authors are encouraged to submit systematic reviews rather than narrative reviews. Review articles shall consist of a structured Abstract and the Main Text. The word count for the structured abstract should not exceed 500 words. Systematic Review are papers that presents exhaustive, critical assessments of the published literature on relevant topics in medicine. Systematic reviews should be prepared in strict compliance with MOOSE or PRISMA guidelines, or other relevant guidelines for systematic reviews.

Short Communications:
Shorts communication are short research articles of important preliminary observations, findings that extends previously published research, data that does not warrant publication as a full paper, small-scale clinical studies, and clinical audits. Short communications should not exceed 1,500 words and shall consist of a Summary and the Main Text. The summary should be limited to 100 words and provided immediately after the title page. The number of tables/illustrations/figures/images should be limited to three (3) and the number of references to ten (10).

Continuing Medical Education (CME) Articles:
A CME article is a critical analysis of a topic of current medical interest. The article should include the clinical question or issue and its importance for general medical practice, specialty practice, or public health. It shall consist of a Summary and the Main Text. The summary should be limited to 500 words and provided immediately after the title page Upon acceptance of selected articles, the authors will be requested to provide five multiple-choice questions, each with five true/false responses, based on the article. For guideline, please refer to: Sivalingam N, Rampal L. Writing Articles on Continuing Medical Education for Medical Journals. Med J Malaysia. 2021 Mar;76(2):119-124.

Case Reports:
Papers on case reports (one to five cases) must follow these rules: Case reports should not exceed 2,000 words; with a maximum of two (2) tables; three (3) photographs; and up to ten (10) references. It shall consist of a Summary and the Main Text. The summary should be limited to 250 words and provided immediately after the title page. Having a unique lesson in the diagnosis, pathology or management of the case is more valuable than mere finding of a rare entity. Being able to report the outcome and length of survival of a rare problem is more valuable than merely describing what treatment was rendered at the time of diagnosis. There should be no more than seven (7) authors.

Please note that all Case Reports will be published in the new MJM Case Reports Journal (www.mjmcasereports.org).

Commentaries:
Commentaries will usually be invited articles that comment on articles published in the same issue of the *MJM*. However, unsolicited commentaries on issues relevant to medicine in Malaysia are welcomed. They should not exceed 2,000 words. They maybe unstructured but should be concise. When presenting a point of view, it should be supported with the relevant references where necessary.

Letters to Editor:
Letters to Editors are responses to items published in *MJM* or to communicate a very important message that is time sensitive and cannot wait for the full process of peer review. Letters that include statements of statistics, facts, research, or theories should include only up to three (3) references. Letters that are personal attacks on an author will not be considered for publication. Such correspondence must not exceed 1,500 words.

Editorials:
These are articles written by the editor or editorial team concerning the *MJM* or about issues relevant to the journal.

STRUCTURE OF PAPERS
Title Page:
The title page should state the brief title of the paper, full name(s) of the author(s) (with the surname or last name bolded), degrees (limited to one degree or diploma), affiliation(s), and corresponding author's address. All the authors' affiliations shall be provided after the authors' names. Indicate the affiliations with a superscript number at the end of the author's degrees and at the start of the name of the affiliation. If the author is affiliated to more than one (1) institution, a comma should be used to separate the number for the said affiliation.

Do provide preferred abbreviated author names for indexing purpose, e.g. L Rampal (for Lekhraj Rampal), BS Liew (for Liew Boon Seng), B Abdullah (for Baharudin Abdullah), Hoe VC (for Victor Hoe Chee Wai).

Please indicate the corresponding author and provide the affiliation, full postal address and email.

Articles describing Original Research should consist of the following sections (IMRAD format): Abstract, Introduction, Materials and Methods, Results, Discussion, Acknowledgment and References. Each section should begin on a fresh page.
Scientific names, foreign words and Greek symbols should be in italic.

Abstract and Key Words:
A structured abstract is required for Original and Review Articles. It should be limited to 500 words and provided immediately after the title page. Below the abstract provide and identify three (3) to 10 key words or short phrases that will assist indexers in cross-indexing your article. Use terms from the medical subject headings (MeSH) list from Index Medicus for the key words where possible. Key words are not required for Short Communications, CME articles, Case Reports, Commentaries and Letter to Editors.

Introduction:
Clearly state the purpose of the article. Summarise the rationale for the study or observation. Give only strictly pertinent references, and do not review the subject extensively.

Materials and Methods:
Describe your selection of the observational or experimental subjects (patients or experimental animals, including controls) clearly, identify the methods, apparatus (manufacturer's name and address in parenthesis), and procedures in sufficient detail to allow other workers to reproduce the results. Give references to established methods, including statistical methods; provide references and brief descriptions of methods that have been published but are not well-known; describe new or substantially modified methods, give reasons for using them and evaluate their limitations.

Identify precisely all drugs and chemicals used, including generic name(s), dosage(s) and route(s) of administration. Do not use patients' names, initials or hospital numbers. Include numbers of observation and the statistical significance of the findings when appropriate.

When appropriate, particularly in the case of clinical trials, state clearly that the experimental design has received the approval of the relevant ethical committee.

Results:
Present your results in logical sequence in the text, tables and illustrations. Do not repeat in the text all the data in the tables or illustrations, or both: emphasise or summarise only important observations in the text.

Discussion:
Emphasise the new and important aspects of the study and conclusions that follow from them. Do not repeat in detail data given in the Results section. Include in the Discussion the implications of the findings and their limitations and relate the observations to other relevant studies.

Conclusion:
Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not completely supported by your data. Avoid claiming priority and alluding to work that has not been completed. State new hypotheses when warranted, but clearly label them as such. Recommendations, when appropriate, may be included.

Acknowledgements:
Acknowledgements of general support, grants, technical assistance, etc., should be indicated. Authors are responsible for obtaining the consent of those being acknowledged.

Referencing guide:
The Medical Journal of Malaysia, follows the Vancouver numbered referencing style. Citations to someone else's work in the text, should be indicated by the use of a number. In citing more than one article in the same sentence, you will need to include the citation number for each article. A hyphen should be used to link numbers which are inclusive, and a comma used where numbers are not consecutive. The following is an example where works 1.3,4,5.have been cited in the same place in the text.

Several effective drugs are available at fairly low cost for treating patients with hypertension and reducing the risk of its sequelae.[1,3-5]

The list of all of the references that are cited in the article should be presented in a list labelled as 'References'. This reference list appears at the end of the paper. Authors are responsible for the accuracy of cited references and these should be verified by the author(s) against the original documents before the manuscript is submitted. It is important that the author should never place in the list of references a document that he or she has not seen. The Journals names should be abbreviated according to the style used in the Index Medicus. All authors when six or less should be listed; when seven or more list only the first six and add et al.

If you are citingthe author's name in your text, you must insert the citation number as well. Jewell BL (8) underlined that as focus in the SARS-CoV-2 pandemic shifts to the emergence of new variants of concern (VOC), characterising the differences between new variants and non-VOC lineages will become increasingly important for surveillance and maintaining the effectiveness of both public health and vaccination programme. If you are citing more than one author's name in your text and you want to cite author names in your text, use 'et al.' after the first author. Example: Rampal et al. (9) highlighted that the. disregard of the manuscript guidelines and instruction to authors of the journal you submit, is one of the common reasons for 'Rejection' of the article.

Example references Journals:
Standard Journal Article
Rampal L and Liew BS. Coronavirus disease (COVID-19) pandemic. Med J Malaysia 2020; 75(2): 95-7.
Rampal L, Liew BS, Choolani M, Ganaseseran K, Pramanick A, Vallibhakara SA, et al.

Battling COVID-19 pandemic waves in six South-East Asian countries: A real-time consensus review. Med J Malaysia 2020; 75(6): 613-25.

NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in hypertension prevalence and progress in treatment and control from 1990 to 2019: a pooled analysis of 1201 population-representative studies with 104 million participants. Lancet 2021; 11; 398(10304): 957-80.

Books and Other Monographs:
Personal Author(s)
Goodman NW, Edwards MB. 2014. Medical Writing: A Prescription for Clarity. 4 th Edition. Cambridge University Press.

Chapter in Book
McFarland D, Holland JC. Distress, adjustments, and anxiety disorders. In: Watson M, Kissane D, Editors. Management of clinical depression and anxiety. Oxford University Press; 2017: 1-22.

Corporate Author
World Health Organization, Geneva. 2019. WHO Study Group on Tobacco Product Regulation. Report on the scientific basis of tobacco product regulation: seventh report of a WHO study group. WHO Technical Report Series, No. 1015.

NCD Risk Factor Collaboration (NCD-RisC). Rising rural body-mass index is the main driver of the global obesity epidemic in adults. Nature 2019; 569: 260–64.

World Health Organization. Novel Coronavirus (2019-nCoV) Situation Report 85, April 14, 2020. [cited April 2020] Accessed from: https://www.who.int/docs/defaultsource/coronavirus/situationreports/20200414-sitrep-85-covid-19.

Online articles
Webpage: Webpage are referenced with their URL and access date, and as much other information as is available. Cited date is important as webpage can be updated and URLs change. The "cited" should contain the month and year accessed.

Ministry of Health Malaysia. Press Release: Status of preparedness and response by the ministry of health in and event of outbreak of Ebola in Malaysia 2014 [cited Dec 2014]. Available from: http://www.moh.gov.my/english.php/database_stores/store_view_page/21/437.

Other Articles:
Newspaper Article
Panirchellvum V. 'No outdoor activities if weather too hot'. the Sun. 2016; March 18: 9(col. 1-3).

Magazine Article
Rampal L.World No Tobacco Day 2021 -Tobacco Control in Malaysia. Berita MMA. 2021; May: 21-22.

Tables:
All tables and figures should have a concise title and should not occupy more than one printed page. The title should concisely and clearly explain the content of the table or figure. They should be numbered consecutively with Roman numerals (e.g Table I) and figures with Arabic numerals (e.g. Figure 1), and placed after the sections of the manuscript which they reflect, particularly the results which they describe on separate pages. Cite tables in the text in consecutive order. Indicate table footnotes with lower-case letters in superscript font. Place the information for the footnote beneath the body of the table. If a table will be submitted as a separate document, the filename should contain the surname of the first author and match its label in the manuscript (e.g., SMITH Table 1).Vertical lines should not be used when constructing the tables. All tables and figures should also be sent in electronic format on submission of the manuscript as supplementary files through the journal management platform. Clinical Photographs should conceal the subject's identity. Tables and flow-charts should be submitted as Microsoft Word documents. Images should be submitted as separate JPEG files (minimum resolution of 300 dpi).

Photographs of Patients:
Proof of permission and/or consent from the patient or legal guardian must be submitted with the manuscript. A statement on this must be included as a footnote to the relevant photograph.

Colour reproduction:
Illustrations and diagrams are normally reproduced in black and white only. Colour reproductions can be included if so required and upon request by the authors. However, a nominal charge must be paid by the authors for this additional service; the charges to be determined as and when on a per article basis.

Abbreviations:
Use only standard abbreviations. The full-term for which an abbreviation stands should precede its first use in the abstract, article text, tables, and figures, unless it is a standard unit of measurement. Abbreviations shall not be used in the Title. Abbreviations should be kept to a minimum.

Formatting of text:
Numbers one to ten in the text are written out in words unless they are used as a unit of measurement, except in tables and figures. Use single hard-returns to separate paragraphs. Do not use tabs or indents to start a paragraph. Do not use the automated formatting of your software, such as hyphenation, endnotes, headers, or footers (especially for references). Submit the Manuscript in plain text only, removed all 'field codes' before submission. Do not include line numbers. Include only page number.

BEST PAPER AWARD
All original papers which are accepted for publication by the MJM, will be considered for the 'Best Paper Award' for the year of publication. No award will be made for any particular year if none of the submitted papers are judged to be of suitable quality.

11th Kelantan Health Conference
Organising Committee

Organising Chairman	Dato' Dr Zaini Hussin
Advisor	Dr Haniah Yusoff
Chairman	Dr Izamin Idris
Vice Chairman	Dr Nik Mohd Hafiz Mohd Fuzi
Secretary	Dr Ummu Atiyyah Hasan
Deputy Secretary	Dr Nur Izzati Mohammad
Finance Manager	Dr Mohd Norhalimi Ab Halim
Scientific Committee	Professor Dr Aziah Daud
	Assoc. Prof. Dr Tengku Alina Tengku Ismail
	Assoc. Prof. Dr Mohd Nazri Shafei
	Dr Raishan Shafini Bakar
	Dr Suhaily Mohd Hairon
	Dr Surianti Sukeri
	Dr Hazlienor Mohd Hatta
	Dr Suhana Hasan
	Dr Ahmad Mu'az Kamalul Sahar

CONTENTS

Page

CONTENTS   Page

ORAL PRESENTATION

CONTENTS   Page

CONTENTS   Page

CONTENTS Page

POSTER PRESENTATION

CONTENTS

CONTENTS

Page

CONTENTS

CONTENTS

Page

Application of machine learning methods in healthcare

Kamarul Imran Musa

Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan

SUMMARY

Artificial intelligence (AI) is a branch of Machine Learning (ML) that allows machines to learn from training data and predict the future. ML methods use mathematics, statistics, and computer science and are classified into parametric versus nonparametric or supervised versus unsupervised. In medicine and health, ML techniques have been applied to various tasks, including computer vision for detecting medical conditions, decision trees and random forests for identifying prognostic factors, support vector machines and natural language processing for recognising symptom severity. Researchers have used diverse sources such as clinical incident reports, social media activity, and feedback from doctors and patients. To apply machine learning, datasets must be imported and prepared, algorithms must be trained and tested, and algorithm performance must be assessed. Specific ML techniques include the K-nearest neighbour algorithm, shrinkage and selection operators, and elastic nets. ML has limitations, for example, the need for high-quality instructions for practical development in the medical context, dependence on data quality, and challenges related to generalizability over time. Privacy, quality control, explainability, and patient safety must also be considered. To address these challenges, acquiring skills in managing and analysing big data and developing a computer-like mindset is essential. Knowledge and skills in quantitative bias analysis and related techniques are becoming crucial in public health training, especially in epidemiology and biostatistics, as more integrated and complex data sets are used.

Towards integrated healthcare: Putting the mouth back in the body

Noormi Othman, Mustaffa Jaapar

Oral Health Programme, Ministry of Health, Malaysia

SUMMARY

This presentation explores the importance of integrated healthcare, specifically focusing on the integration of oral health into general healthcare. The oral-systemic connection is emphasized, highlighting the significant impact of oral health has on overall well-being. Integrated healthcare is defined as a holistic approach that considers the interconnectedness of various aspects of health. Successful integration efforts in other healthcare domains serve as examples, demonstrating improved patient outcomes and cost savings. However, achieving integrated healthcare faces challenges, such as interdisciplinary collaboration and patient education. Policy and advocacy play a crucial role in promoting integrated healthcare such as the National Oral Health Policy, programme guidelines across life course for maternal and child, adolescent, adult and elderly, clinical practice guidelines for managing non-communicable diseases and health conditions such as diabetes, cancer, tobacco, mental health, personal hygiene, among others through common risk factors approach. Various initiatives and organizations are working towards this goal, necessitating increased support and investment including the *Agenda Nasional Malaysia Sihat* (ANMS). Real-case studies showcase the benefits of integrated healthcare, including enhanced patient outcomes, reduced costs, and increased patient satisfaction. Recommendations are provided for healthcare providers, policymakers, and patients to support integrated healthcare. Next steps for implementing integrated healthcare models are discussed, emphasizing the importance of further research and collaboration in the field such as through particularly the healthcare system research and the National Health and Morbidity Surveys across life course. In conclusion, integrating oral health into general healthcare is vital for comprehensive patient care. The mouth is recognized as an integral part of the body, and by adopting an integrated approach, we can improve patient well-being and advocate for a more holistic and effective healthcare system.

Cybersecurity in healthcare

Mohd Nawawi Mustafa

ICT Consulting Division, Malaysian Administrative Modernization and Management Planning Unit (MAMPU), Malaysia

SUMMARY
COVID-19 has transformed our way of doing things, where digital transformation is prevalent. The healthcare industry has embraced technological advancements to deliver better patient care and streamline operations. However, these innovations also open the door to cybersecurity threats that can compromise patient data and disrupt services. In delivering fast and efficient healthcare services to the clients, highly sensitive electronic health information is at risk. It is handled by most clinics and hospitals in numerous digital systems without proper ICT security assessment. Providers such as physicians and pharmacists use electronic health records and other software working with medical information. And this data is a very tempting target for cybercriminals. Even though the advancements in ICT technologies such as adoption of public clouds and usage of personal electronic devices in managing and accessing patients' data enables physicians to deliver healthcare services to the patients at any time, it also introduces risk of data breach and other cybersecurity threats to the health data if not properly addressed. This session discusses an in-depth explanation of the challenges in the healthcare industry in Malaysia from the perspective of people, process and technology, the importance of cybersecurity in healthcare, emerging cybersecurity threats and best practices to protect healthcare data as required by laws, government circulars and ICT security best practices.

Management of antibiotic-resistant typhoid fever outbreak in Kelantan detention centres

Nik Mohd Hafiz Mohd Fuzi

Communicable Disease Control Unit, Disease Control Branch, Kelantan State Health Department, Kelantan

SUMMARY

Typhoid fever is indeed a significant public health concern in many parts of the world, particularly in developing countries with inadequate sanitation and limited access to clean water. Typhoid fever is caused by the bacterium Salmonella Typhi which is primarily transmitted through the consumption of contaminated food and water, and it can spread through person-to-person contact. The disease is characterized by symptoms such as high fever, headache, abdominal pain, and gastrointestinal disturbances. The overall incidence rate of typhoid fever in Malaysia has been decreasing since 2005, although typhoid fever remains endemic in certain areas, particularly in Kelantan. However, antibiotic-resistant typhoid cases were uncommon in the region. On 17ᵗʰ August 2022, there was an outbreak of typhoid fever among inmates in three detention centres located in Kelantan. Various agencies led by Kelantan Health State Department have worked together in identifying the source and implementing measures to prevent its further spread and control the outbreak. The earliest cases involved foreign inmates before it spread to local inmates which total up to 27 cases. It was found that all the typhoid strains isolated from these cases were resistant to Ciprofloxacin, a commonly used antibiotic. The most probable source of the outbreak was chronic typhoid carriers among the immigrants who were detained in the same cell. The spread of the disease was facilitated by overcrowding and unsanitary practices in the detention centres. Various challenges were faced during the investigation, including difficulties in tracking the movement of inmates between detention centres due to inadequate documentation. Language barriers also posed obstacles in conducting case investigations and providing health education. Several measures were implemented to contain the outbreak, such as mass screening of inmates and food handlers, contact tracing, continuous active case detection, decontamination of affected cells and dormitories, restrictions on inmate transfers, isolation of exposed and symptomatic inmates, vaccination of the contacts and the development of multi-language health education materials to promote better personal hygiene among inmates. With the collaboration and cooperation of multiple agencies including the prison department, immigration and police, these measures successfully brought the outbreak under control. It was officially declared over on 18ᵗʰ November 2022. Considering the high number of immigrants in Malaysia and the potential for future outbreaks, an interim guideline for managing enteric fever outbreaks in prisons and other detention facilities was developed to enhance preparedness and response in the future.

Clinical presentation and management for cases in antibiotic resistant typhoid fever outbreak in Kelantan detention centres

Anilawati Mat Jelani

Medical Department, Hospital Raja Perempuan Zainab II, Kota Bharu Kelantan

SUMMARY

Typhoid fever is transmitted through the faecal-oral route. Risks of contracting Typhoid include staying in closed institutions such as squatter housing areas, detention centres or prison where there are risks of poor sanitation and lack of safe drinking water. This review illustrates several challenges in clinical management of typhoid fever in three prisons located at the Northeast of Peninsular Malaysia, Kelantan involving a number of immigrants mainly Burmese. The challenges faced were in the aspect of antibiotic management, finding a carrier in the attempt to end the outbreak and developing the first interim guideline to suit the local setting of prisons in Kelantan.

Update on laboratory support for typhoid

Aziah Ismail

Institute for Research in Molecular Medicine (INFORMM), Universiti Sains Malaysia, Kubang Kerian, Kelantan

SUMMARY
Typhoid fever has subsequently been largely controlled in many parts of the world due to considerable developments in water, sanitation, and hygiene (WASH), although it was still estimated to have caused 10.9 million illnesses and 116,800 deaths globally in 2017. As the threat of emerging infectious diseases grows, it is crucial to detect illnesses early and prevent further spread. The genetic diversity and relatedness of the Salmonella isolates were determined using culture and genotyping methods. A pattern in the spread of typhoid is also discovered using spatial analysis. With the capability of whole-genome comparisons, we were able to gather data from biologically similar organisms. The illness screening process uses antibody-based detection, whereas the confirmation test uses a molecular approach. Data from diagnostic laboratories, point-of-care test readers, and devices must be linked to health practitioners in order to provide timely information for the early diagnosis of infectious disease epidemics.

Innovative digitalization of prison registry system: The cyber risk and resilience

Solahuddin Shamsuddin

Cybersecurity Malaysia

SUMMARY
Digitalization has opened new possibilities in various sectors, enabling advancement in the management and organization's facilities, streamlined processes, and improved outcomes. By leveraging digital technologies and electronic communications, the prison registry system has transitioned from traditional paper-based record-keeping to a digital platform. This evolution allows for the seamless integration of detainee's information, tracking of detainee's movement, and real-time updates on critical data. As a result, administrator's personnel can access accurate and up-to-date information promptly, leading to faster decision-making and improved detainees' management. However, this digitalization effort also creates significant cyber risk challenges that need to be addressed with effective cyber resilience strategies. The transition to a digital prison registry system opens potential vulnerabilities that malicious actors may exploit. Cyber threats, such as data breaches, unauthorized access, and ransomware attacks, pose significant risks to the confidentiality and integrity of sensitive information. Addressing these cyber risks, it emphasizes how critical it is for organizations to create an ecosystem that is resilient to cyberattacks. This entails the implementation of strong cybersecurity measures, regular risk assessments, and ensuring staff training are essential steps to safeguard the prison registry system from cyber threats. Incident response plans should be in place for effective responses in the event of a cyber-attack, ensuring minimal disruption to prison operations and data integrity. Furthermore, it is important to understand the significance of collaboration and information sharing among entities to bolster collective cyber resilience efforts. Platforms for disseminating relevant information can help spread Threat Intelligence and best practices while maintaining data privacy and compliance, fostering a community-based defence against cyber threats. However, to achieve solid cyber defence is difficult due to resource shortages, budgetary restrictions, and a constantly changing cyber threat landscape. It urges organizations to take a forward-thinking stance by integrating cutting-edge technologies such like Biometric Security Controls, Cyber Security solutions powered by Artificial Intelligence, Digital Risk Protection, Attack Surface Management, and regular penetration testing to discover vulnerabilities and proactively address potential breaches. Embracing cyber resilience as part of the digitalization journey is essential for safeguarding digital information, maintaining trust in organization's systems, and ensuring uninterrupted delivery of quality services in the presence of persistent cyber threats. By acknowledging the need for a proactive Cyber Security culture, fostering collaboration, and prioritizing cyber risk management, organizations can navigate the digital landscape securely and create a resilient future against cyber threats.

Improving stroke referral from home to hospital

Rose Izura Abdul Hamid@Abdul Razak

Medical Department, Hospital Raja Perempuan Zainab II, Kota Bharu, Kelantan, Malaysia

SUMMARY
In Malaysia, stroke represents the third leading cause of mortality, and it is projected that by 2040 stroke would become the second cause of mortality with one in four Malaysians expected to suffer from stroke. Raising and maintaining awareness of the symptoms of stroke and transient ischaemic attack in the population as well as improving our prehospital services will ensure its recognition, and the need to immediately seek help are key to optimising treatment and outcomes. Early assessment and triage for people with stroke is important because the time windows for delivering the most effective interventions, such as thrombolysis, thrombectomy and commencement of secondary prevention, are measured in hours. The earlier treatment is started the more effective it is. In a progressive stroke pathway, it will be important to ensure ambulance response times are as short as possible, through appropriate assessment and prioritisation of emergency calls. Transfer to hospital is a vital part of a progressive stroke pathway. .

Diagnostic imaging and endovascular treatment of stroke

Mohd Hafizuddin Husin

Advanced Minimally Invasive Endovascular and Neurointervention Unit (AMIEN), Department of Radiology, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

SUMMARY
Stroke is a significant global health issue with a high prevalence and impact on individuals and communities. Over the years, stroke treatment has undergone a significant evolution from only supportive care and rehabilitation to more advanced treatments. The evolving landscape of stroke treatment emphasizes the importance of early intervention and the need for ongoing research to optimize patient care and outcomes. Mechanical thrombectomy has revolutionized stroke care and has significantly improved patient outcomes when performed within the appropriate time window. This minimally invasive procedure removes blood clots directly from the blocked arteries, improving outcomes and reducing disability. In suspected stroke cases, various imaging modalities are employed to accurately diagnose the condition and guide subsequent treatment decisions. These imaging techniques serve distinct purposes in assessing the stroke's type, location, and severity, enabling timely intervention. Non-contrast computed tomography (CT) is often the initial imaging modality employed to rule out haemorrhagic stroke, which requires a different treatment approach. Magnetic resonance imaging (MRI) with diffusion-weighted imaging (DWI) is highly sensitive for detecting early ischemic changes, assisting in determining the extent and location of the infarcted brain tissue. CT angiography provides detailed information about the cerebral vasculature, identifying occluded blood vessels. More advanced imaging modalities like CT Perfusion and MRI with fluid-attenuated inversion recovery (FLAIR)/DWI mismatch analysis can help identify patients who might benefit from endovascular treatment, even beyond the traditional time windows for intervention.

Stroke rehabilitation

Daryani Darus

Rehabilitation Medicine Department, Hospital Raja Perempuan Zainab II, Kota Bharu, Kelantan, Malaysia

SUMMARY
Rehabilitation services are the primary mechanism by which functional recovery and the achievement of independence are promoted in disabled patients. Stroke rehabilitation is a progressive, dynamic goal oriented process that aims at enabling persons with impairment to reach their optimal physical, cognitive, emotional, communicative and social functional level after stroke. It is a carefully directed program, well focused and with repetitive practice. The ultimate aim for stroke rehabilitation is to help the stroke survivor to become independent as possible after the event. Strokes are increasing and despite the development of stroke centre designation and improved systems to deliver care promptly, many stroke survivors remain with residual functional deficits. Hence, demand for stroke rehabilitation services is going to increase and the need for effective stroke rehabilitation is an essential part of the continuum of stroke care. Estimate at least 30 of stroke patients admitted to acute inpatient care should get stroke rehabilitation. Evidence-based shows that with stroke rehabilitation, it can save money and improve lives. Hence, ideally all stroke patients should be seen by the interdisciplinary rehabilitation team of physicians, therapists, and nursing staff.

Healthcare partnership: Diabetes tuition

Nur Haida Muhamad

Pharmaceutical Services Division, Kelantan State Health Department, Kelantan, Malaysia

SUMMARY
The main challenge in the care of diabetic patients is to ensure that blood sugar levels are always under control to prevent or delay complications. Various efforts have been taken by health providers to achieve this objective. The Pharmacy Integrated Community Care (PICC) Programme was originally introduced by the Terengganu State Pharmacy Services Division. In 2020, the Pharmacy Services Program, Ministry of Health Malaysia has taken the initiative to expand this program throughout Malaysia. Structured modules have been created to improve the program namely Diabetes Introduction, Healthy Lifestyle (healthy eating and exercise), Diabetes Medications and Diabetes Complications. After the program began to expand, The Kelantan State Pharmacy Services Division has taken proactive steps by establishing collaboration with the Public Health Division for health care partnerships where various professions are involved including family physicians, medical officers, nurses, assistant medical officers, dietitian and physiotherapists. Using the concept of 'diabetes tuition', ten localities in ten districts were selected to implement this project. Each locality selected 10-15 patients who have an HbA1c reading above 7.0 as participants. PICC teams were given training at the state level before starting the program at the district level. Uniform scripts and teaching aids including presentation slides, participant activity books and participant record books were provided to all teams. Patients must complete at least 3 of the 4 sessions held. HbA1c readings were taken before the start of session 1 and after the end of session 4. Out of 100 participants who successfully completed at least 3 sessions, 84 participants managed to record a decrease in HbA1c readings. Various issues related to the use of medicines, diet and lifestyle of diabetic patients can also be identified. The implementation of this program has successfully created a support group that helps increase patient motivation in controlling diabetes and enables participants to recognize and understand diabetes, medication management and diabetes complications to ensure patients receive optimal treatment results.

Enabling the disabled: The visually impaired friendly drug label

Muhammad Azzim Izuddin

Pharmaceutical Service Division, Pahang State Health Department, Malaysia

SUMMARY

The Visually Impaired Friendly Drug Label is an innovation product from the collaboration of the Pharmacy Services Division, Pahang State Health Department and *'Pertubuhan Pembangunan Orang Buta Malaysia'* (PPOBM) to help visually impaired patients when receiving medication at the health clinic. This label makes it easier for the visually impaired to obtain accurate drug information. Clear medication information will ensure patient compliance with medication intake and improve treatment effectiveness. Labels are printed with Braille writing for 15 types of drug indications and 15 types of drug intake including tablet and syrup preparations. The instructions for the dose were changed in the code so that the sticker could fit in the small area on the existing drug label provided. For example, instructions for a medication for 'one tablet to be taken three times a day' are printed as 1/3. All medication labels (seven acute diseases and eight chronic diseases) and the way of taking the medicine are printed on the sticker separately. These stickers help make it easier for visually impaired patients to identify the name and brand of the medication they are receiving and to be able to read the instructions correctly when they are at home. Braille drug labels were launched on 6 January 2023 by the Malaysian Health Minister and have been distributed to 250 selected health facilities in Malaysia benefiting 55,000 visually impaired people in Malaysia. Malaysia was one of the first countries in Asia to introduce visually impaired medicine labels. This reflects the seriousness and concern of the government to ensure that people with disabilities have the right to receive accurate information about medicines.

Facial harmonization: Team approach

Mohd Rosli Yahya

Oral and Maxillofacial Department, Hospital Raja Perempuan Zainab II, Kota Bharu, Kelantan, Malaysia

SUMMARY

Facial harmonization or facial balance is very important in determining the good function and aesthetic of the facial region. The relation of facial soft tissues, dentition and facial skeleton are playing a major role in function and aesthetic. Good in food chewing (mastication), good word pronunciation in speech, health of the temporo-mandibular joint, and aesthetic is achieved in facial harmonization. A dentoalveolar malocclusion refers to bite misalignment due to crooked or incorrectly positioned teeth. Skeletal malocclusions caused by distorted shape and/or size of the jawbones. Any discrepancies of soft tissues, dentition and facial skeleton need a correction and intervention by the interdisciplinary specialist namely Oral and Maxillofacial Surgeon and orthodontist. Teeth malocclusion, crowding, misalignment corrected with the braces followed by the orthognathic surgery. Orthodontists will align both dental arches (with or without tooth extraction), levelling of both dental arches, decompensation of any dental compensations and coordination of dental arches. Then followed by Orthognathic surgery by the Oral and Maxillofacial Surgeon. Orthognathic surgery is a versatile surgery, which is a combination of science and art for correction of teeth position and facial skeleton discrepancies. Reposition of maxilla by Le Fort I, Le Fort II or Le Fort III osteotomy. Reposition of mandible via bilateral sagittal split osteotomy. Anterior segmental for correction of anterior dentoalveolar segment. Chin correction by genioplasty. The movement of the maxilla and mandible could be done in 3 planes direction either in vertical, horizontal, or antero-posterior to achieve facial balance.

Clearing the air: Overcoming obstacles in the fight against smoking

Nor Aryana Hassan

Disease Control Division, Ministry of Health, Malaysia

SUMMARY

Tobacco use remains a global health challenge, causing millions of deaths and diseases each year. This presentation explores obstacles and strategies in the fight against tobacco. High smoking prevalence is deeply rooted in societal norms, necessitating comprehensive efforts to shift attitudes through education and targeted interventions. The influential tobacco industry employs aggressive tactics, requiring robust regulations, enforcement, and graphic warnings. Financial considerations, such as affordability, hinder progress and can be addressed by increasing taxes and funding cessation programs. Political commitment is vital, with strong policies and leadership prioritizing public health over industry interests. International collaboration facilitates knowledge sharing and strengthens the collective voice against tobacco. By changing attitudes, countering industry tactics, addressing finances, fostering political commitment, and promoting collaboration, we can strive for a smoke-free society and improved public health.

Mental health landscape and way forward in Malaysia

Nurashikin Ibrahim, Noor Raihan Khamal, Nur Syahiirah Mohd Rosdi

National Centre of Excellence for Mental Health (NCEMH), Public Health Programme, Ministry of Health, Malaysia

SUMMARY

The COVID-19 pandemic has posed unprecedented challenges to our healthcare systems, with significant impacts on individual's mental health. WHO estimates that depression and anxiety has increased by more than 25% since the pandemic began. Malaysia has taken significant strides to bolster our mental health services. The establishment of the National Mental Health Promotion Advisory Council since 2011 has shown a high commitment of leadership governance in addressing the mental health agenda. In addition, the Ministry of Health has also taken the effort to develop the National Strategic Plan for Mental Health (2020-2025). Our approach focuses on enhancing mental health promotion, increasing access to mental health through digitalization of mental health, stepping up collaborations in between agencies and non-governmental organizations, addressing suicide prevention in youth through gatekeepers' training, strengthening mental health disaster preparedness through supported community-based. The National Centre of Excellence for Mental Health was established to serve as a focal point for the coordination of mental health initiatives and programmes in Malaysia through strategic partnerships with governmental and corporate organisations, academic institutions, and non-governmental organisations. Each stakeholder has its strengths and shortcomings and should not work in silo. The Ministry of Health envisioned incorporating mental health into all policies and transforming stigma into solutions.

Key to healthy nutrition: Changing from curative to prevention

Tee E Siong

Nutrition Society of Malaysia

SUMMARY

One of the country's main health challenges is the double-burden of malnutrition. On one hand is the high prevalence of non-communicable diseases (NCDs) driven by lifestyle-related risk factors such as unhealthy diet and physical inactivity on the other hand is the persistent under-nutrition problems of stunting and wasting. The health care system is based on a reactive approach to illness wherein we wait until people are sick before we treat them and focus on symptoms and disease treatment. At the same time, people will wait until they are very well before they actively seek care from doctors. This approach causes unnecessary strain on the health care system because of the high cost for management and treatment. It is thus imperative that we change from curative to prevention, requiring a shift in mindset from 'sick-care' to 'well-care'. The second pillar of the proposed health system reform in the Health White Paper (HWP) of the Ministry of Health focuses on advancing health promotion and disease prevention. To realise the shift to promotive and preventive health care, the Nutrition Society of Malaysia (NSM) advocates that promoting healthy nutrition across all stages of the life cycle is one of the key approaches. Recognising that healthy nutrition is the cornerstone to good health, NSM believes in improving lives through nutrition. The NSM urges that the strategies and programmes outlined in the National Plan of Action for Nutrition Malaysia must be activated and systematically implemented. Sufficient resources must be provided to enable these to be implemented. This includes sufficient manpower in the form of an adequate number of capable, well-trained nutritionists, as well as dedicated funding to implement these activities. The Allied Health Professions Act 774 has recognised that nutritionists are the key professionals tasked with the prevention and control of nutrition-related diseases. Nutritionists must advocate nutrition to professionals in the agriculture, education, social welfare and other relevant disciplines. We must form strategic partnerships with all stakeholders: government, academia, professional bodies and the private sector to build a system that supports the population to stay healthy.

Food industries smart partnership: Strengthening food safety and trade

Norrani Eksan

Food Safety and Quality Division, Ministry of Health, Malaysia

SUMMARY

Food safety is a pressing global concern, drawing continuous public attention and media coverage. In Malaysia, the food industry's annual economic value reaches RM 313.8 billion, with consumers spending RM 175.2 billion annually on food. Additionally, food exports contribute RM 82.1 billion, and imports amount to RM 56.7 billion. To meet the demand for safe food, the Ministry of Health assumes the role of guardian, tasked with providing guarantees to the people. The Competent Authority in Malaysia, responsible for food safety and quality, enforces regulations under the Food Act 1983. These regulations, including the Food Regulations 1985, Food Hygiene Regulations 2009, and Food Irradiation Regulations 2011, establish standards for food additives, labelling, hygiene, and irradiation. Maintaining food safety becomes challenging due to the complexity of the food supply chain. Lengthy and intricate supply chains increase the risk of contamination, counterfeit products, and quality issues. Factors like raw material availability, cross-border procurement, and centralized production further compound the difficulties. Moreover, emerging hazards, changing consumer trends, and media influence also impact food safety. Ensuring food safety presents various issues and challenges, such as intensified agricultural practices, large-scale production, new ingredients, processing technologies, and differing regulations across nations. Addressing these challenges involves adopting risk assessment-based approaches and directing resources to high-risk areas. Collaborative efforts with producers and exporting countries' authorities are essential to foster cooperation. To address food safety risks beyond the government and health sectors' control, a regional framework in the Western Pacific emphasizes shared responsibility among food businesses, consumers, and multiple government sectors. Numerous organizations and programs engage in food safety work, promoting greater scrutiny and science-based approaches in the industry. The Smart Partnership Programme, such as the Sustainable Supplier Development Programme, Petronas Supplier Programme and Government and Non-Government Agency facilitates collaboration between the public and private sectors to enhance food safety throughout the supply chain. By implementing these collaborations benefits students, premises, stakeholders, retailers, and The National Food Safety and Nutrition Council. International cooperation plays a vital role in strengthening food safety efforts. Collaborations with organizations like the Codex Committee on Fats and Oils, ASEAN Risk Assessment Centre for Food Safety, and the International Food Safety Authorities Network provide valuable expertise, cost-sharing opportunities, and complementary efforts. In conclusion, ensuring food safety requires multifaceted partnerships and collaborations at both national and international levels. In the rapidly globalizing food industry, close cooperation among food safety regulatory authorities is crucial to effectively reduce risks and respond promptly to incidents and emergencies. Through these partnerships, supply chain efficiency can be enhanced, and safe food can be ensured for consumers worldwide.

The future of cardiac surgery

Gerard Francis Lopez

Department of Cardiothoracic Surgery, Hospital Raja Perempuan Zainab II, Kota Bharu, Kelantan, Malaysia

SUMMARY

Cardiac surgery has evolved over the last 50-75 years massively from crude removal of World War II shrapnel to fine delicate microsurgery. All these advancements were made possible by the surgeons who understood anatomy and physiology and also dared to dream. From closed heart pediatric procedures, the advent of extracorporeal circulation, to imaging of the heart and heart structures. All this has made cardiac surgery safe, accessible, and routine procedures to everyone with low mortality and morbidity rates. The future of cardiac surgery not only to make the incision wounds smaller, and the procedure faster but also making the procedures safer and more durable. With advancement of extracorporeal circulation, better valve repair techniques, better and longer lasting artificial valves, arterial grafting and complex procedures including aortic procedures. The use of robotics and minimally invasive procedures now provides a new dimension to open heart surgery – taking the taboo of a long median sternotomy scar away, making the procedure more accepting. In looking forward we must not forget the past, as newer technology provides new dimensions and attractiveness - emphasis on long-term results and outcomes should always be paramount. Cardiac surgery will remain what it has always been: a profession where art and science mix with skill and decisiveness rule for the betterment of our patients.

Optimizing pre-transfusion testing using the Lean initiative in transfusion medicine laboratory of the Hospital Raja Perempuan Zainab II, Kota Bharu, Kelantan

Rahimah Abdul Wahab, Sazlin Che Shamsuddin, Juwaini Mohd Yusoff, Nurfarhana Ab Aziz, Syuhada Zulkifly Apandi, Nur Aklina Ramli, Muhammad Aiman Salman

Transfusion Medicine Department, Hospital Raja Perempuan Zainab II, Kota Bharu, Kelantan, Malaysia

SUMMARY

Pre-transfusion testing consists of two essential tests that are blood grouping with antibody screening (GSH) and crossmatching (GXM). Analysis of local GSH data between years 2017 and 2019 showed high GSH load (40,000 - 50,000 tests per year) with 60-70% samples not been crossmatched (unconverted GSH), which indicated the high likelihood of unnecessary GSH requests. High GSH load led to increase of workload, resources wastage and risk of blood sampling error. We aim to overcome these issues with the lean approach by reducing the rate of unconverted GSH to less than 30% as key performance indicator (KPI). Current data showed that processing and waiting time denoted 208 minutes and 31 minutes, respectively, in a testing batch of 12 samples involving 22 steps. Value stream mapping of processes throughout sample reception until disposal were category 9 value-added, 12 value enablers, and 1 waste. Wastage refers to GSH tests performed but eventually not proceeding for crossmatching and thus disposed. Fishbone Diagram used to elicit the causes that showed multiple factors of high unconverted GSH that were lack of knowledge among clinicians, insufficient information of test request guideline and inadequate work process review. The multiple Kaizen events showed that a low-effort high-impact action was GSH vetting by laboratory medical officers together with continuous education among clinicians regarding the indication of the test. Moreover, automation testing using IH-500 GSH-analyser aimed to streamline processes and reduce errors. Comparing pre-Lean (August-October 2021) to post-Lean (August-October 2022) data depicted almost achieved KPI (32.37% unconverted GSH), resulted in reduction of test workload, specimen rejection, and expenditure cut by RM 42,182.10. Sustainability of this project was planned by implementing the Kaizen approach as part of our quality culture, continuous knowledge sharing with other clinician colleagues and extending the practice to other hospitals in Kelantan.

Exploring benefits of a 12-week structured dietary counselling program in non-communicable disease patients in Bandar Kuala Krai Health Clinic

Ahmad Mukhlis Rahimi[1], Nasibah Tuan Yaacob[1], Nur Aziela Ismail[1], Tuan Muhammad Izzat Haizam Tuan Mohd Tamizi[1], Siti Hartini Ishak[2], Hazura Mat Zubir[3], Sarah Saizan[3]

[1]Bandar Kuala Krai Health Clinic, Kuala Krai, Kelantan, Malaysia, [2]Dabong Health Clinic, Kuala Krai, Kelantan, Malaysia, [3]Kuala Krai District Health Office, Kelantan, Malaysia

ABSTRACT

Introduction: Chronic diseases such as diabetes, dyslipidaemia, and hypertension are significant contributors to the global burden of non-communicable diseases (NCDs). Dietary interventions, including structured dietary counselling by a dietitian, have been shown to have positive effects on disease management. However, limited research has focused on the effects of a structured dietary counselling program specifically over a 12-week period on HbA1c control, LDL-cholesterol control, and blood pressure control among patients with these chronic conditions especially in primary care settings. This cross-sectional study aimed to assess the effects of a 12-week structured dietary counselling program provided by a dietitian on HbA1c control, lipid control, and blood pressure control in a group of NCD patients. **Materials and Methods:** A total of 103 patients diagnosed with diabetes, dyslipidaemia, and/or hypertension were enrolled in the program between January 2022 and December 2022. Baseline clinical parameters, including HbA1c levels, lipid profiles, and blood pressure measurements, were recorded. The structured dietary counselling program consisting of individualized meal planning and nutrition education, including carbohydrate counting, sodium and fat food content, and reading food labels. Follow-up assessments were conducted at 12 weeks to evaluate changes in the clinical parameters. **Results:** Preliminary findings from this study demonstrated significant improvements in HbA1c control, lipid control, and blood pressure control following the 12-week structured dietary counselling program. Mean HbA1c levels decreased from baseline (baseline: 9.4% ± 2.1; 12 weeks: 8.0% ± 1.9, p<0.001). Patients also exhibited improvements in LDL-cholesterol (baseline: 3.8mmol/L ± 1.5; 12 weeks: 3.2mmol/L ± 0.9, p<0.05). Furthermore, blood pressure measurements indicated significant decreases in both systolic and diastolic blood pressure (p<0.05). **Conclusion:** This cross-sectional study provides preliminary evidence supporting the benefit of a 12-week structured dietary counselling program led by a dietitian in improving HbA1c control, lipid control, and blood pressure control among patients with diabetes, dyslipidaemia, and/or hypertension. These findings emphasize the potential benefits of incorporating structured dietary counselling as an integral part of the management plan for individuals with chronic conditions in primary care. Further research with larger sample sizes and controlled studies is warranted to validate these results and explore the long-term effects of structured dietary counselling programs.

Determinants influencing medication refill non-adherence among patients with type 2 diabetes mellitus in Pasir Mas district, Kelantan

Wan Maisarah Wan Daud[1], Muhammad Iqbal Haji Mukhti[2], Nurhani Syafiqah Mohd Rusdi[3], Muhammad Fikriey Shafie[4], Abdul Rahman Mohamad Badaruddin[4], Muhaini Abdul Hadi[5], Nik Aida Nik Adib[2]

[1]Tendong Health Clinic, Pasir Mas, Kelantan, Malaysia, [2]Pasir Mas District Health Office, Kelantan, Malaysia, [3]Cherang Hangus Health Clinic, Pasir Mas, Kelantan, Malaysia, [4]Bandar Pasir Mas Health Clinic, Pasir Mas, Kelantan, Malaysia, [5]Meranti Health Clinic, Pasir Mas, Kelantan, Malaysia

ABSTRACT

Introduction: The World Health Organization (WHO) emphasizes that medication adherence can have a more significant impact on patient outcomes, quality of life, life expectancy, and healthcare costs than the actual treatment itself. Medication refill non-adherence is typically caused by multifaceted issues related to the health care system and providers, patients, and treatment. This study aims to determine the proportion of medication refill non-adherence and its determinants among patients with Type-2 Diabetic Mellitus (T2DM) in Pasir Mas, Kelantan, Malaysia in 2022. **Materials and Methods:** A cross-sectional study was conducted involving   adult patients with T2DM in four government health clinics with specialists in Pasir Mas and registered under Pharmacy Information System (PhIS) and National Diabetic Registry (NDR) databases from January 2022 to December 2022. The Medication Possession Ratio (MPR) was retrieved from PhIS and categorized as non-adherence if less than 80%. Simple random sampling was applied. Those aged at least 18 years old and who have active prescriptions were the inclusion criteria. Multiple logistic regression was performed to demonstrate its determinants with medication non-adherence using IBM SPSS version 27. **Results:** A total of 440 respondents were included. The mean age of T2DM patients was 63.2 years old (SD ± 10.19) with mean diabetic age of 10.5 years (SD ± 5.62). The mean MPR was 38.6 (SD ± 43.64), whereas 6.1 (SD ± 1.82) and 1.9 (SD ± 1.07) were the mean medications number and comorbidities respectively. The majority of respondents were female (65.2%), Malay ethnic group (97.9%), presence of comorbidities during the T2DM diagnosis made (53.2%), and presence of comorbidities in the current year, 2022 (91.8%). In addition, hypertension (79.3%) and dyslipidaemia (71.6%) were the most comorbidities reported. During multivariable analysis, the multiple logistic regression indicated that the number of visits (AOR: 0.64; 95% CI: 0.54, 0.75; $p < 0.001$) and the number of comorbidities (AOR: 1.37; 95% CI: 1.02, 1.83; p=0.037) were statistically significant and fitted in as the best model. **Conclusion:** This study revealed that medication refill non-adherence was significantly determined by the number of visits and the number of comorbidities. Thus, it is crucial to develop strategic and targeted approaches for implementation in practice in order to decrease the rate of non-adherence. This entails proactive and focused interventions in health promotion, raising awareness among all stakeholders, and encouraging regular attendance of T2DM patients at healthcare clinics.

Strategies and challenges in managing measles outbreak in Pasir Puteh: A public health perspective

Ahmad Munir Che Husin, Noorhidayu Monyati Mohamed Noor, Nor Azlina Abdullah, Nur Asmah Roseli, Zawiyah Dollah

Pasir Puteh District Health Office, Kelantan, Malaysia

ABSTRACT

Introduction: Measles is one of the most contagious illnesses, and despite the widespread availability of vaccines, Measles outbreaks continue to provide serious public health challenges globally, especially in the Pasir Puteh district. The purpose of this study is to examine the difficulties experienced during the management of the measles outbreak, as well as the Public Health measures adopted to contain the outbreak. **Materials and Methods:** A cross-sectional study was conducted on 108 private school pupils and staff. Comprehensive epidemiologic, environmental, and laboratory investigations were conducted. Measles investigation forms, e-notifikasi, e-wabak, lab forms, as well as data from active case detection, passive case detection, and mopping were collected. The data were then imported into Microsoft Excel and descriptively analysed. Prevention and control measures were done based on available guidelines and adapted to local circumstances. **Results:** A measles outbreak has been declared on May 5, 2023, affecting 25 out of 108 students, or 23% of the population. The majority of them were younger than 4 years old, and 64% were male. One hundred percent had not been vaccinated against measles. The epidemiology curve indicated that the spread has been propagated. The outbreak has been successfully contained despite the high number of cases. Assembling an epidemic control team, enhancing surveillance activities, disseminating information to the public and relevant health authorities, and increasing patient awareness are among the tactics employed during outbreak control. Dealing with pockets of vaccination rejection, collaborating with other organisations, and collecting correct statistics on vaccine coverage constituted some of the obstacles encountered. **Conclusion:** The immunity gap among the pockets of vaccine refusals had created an opportunity for the measles virus to spread among them and led to the outbreak. Although the strategies taken have successfully abated the outbreak, it is often insufficient to control measles transmission in the long term. The challenges addressed need to be tackled more vigorously to prevent a new outbreak from emerging.

The association between body mass index and health related problems among adolescents in Machang district, Kelantan

Nur Nasuha Edid[1], Nik Suhaila Zakaria[1], Mohd Azimullah Abdullah @ Zakaria[2], Norazlan Mohd Amin[1]

[1]Labok Health Clinic, Machang, Kelantan, Malaysia, [2]Machang District Health Office, Kelantan, Malaysia

ABSTRACT

Introduction: The global rise in overweight and obesity among adolescents has led to an increased prevalence of various health problems. In line with the National Health and Morbidity Survey: Adolescent Health Survey 2022 conducted in Malaysia, it has been observed that one out of every three adolescents is either overweight or obese. This study aimed to examine the association between body mass index (BMI) and the occurrence of health problems among adolescents in the Machang district. **Materials and Methods:** A cross-sectional study was conducted on a sample of 337 adolescents aged 10 to 19 years in Machang in 2022. BMI was determined using height and weight measurements and categorized into underweight, normal weight, overweight, and obese groups. The prevalence of health-related problems was assessed based on self-reported information on physical health, mental health, sexual health and high-risk behaviours. The association between BMI and the number of health problems was evaluated using chi-square test and logistic regression analysis while adjusting for potential confounding variables. **Results:** The prevalence of overweight and obesity was found to be 16.6% and 12.2%, respectively. The commonly reported adolescent health problems were physical health (51.6%), mental health (12.1%), sexual health (3.3%) and risky behaviour (10.6%). There was a significant association between BMI and the occurrence of health problems ($p < 0.001$) with every unit of BMI increment showing 19% higher odds (95% CI: 1.120, 1.265) of experiencing health problems. The occurrence of health problems was also significant among adolescents attending secondary school as compared to primary school students ($p = 0.03$) with the odds ratio of 2.3 (95% CI: 1.094, 4.957). **Conclusion:** This study establishes a robust association between BMI and the prevalence of health-related problems among adolescents in the Machang district. Overweight and obese adolescents face an increased risk of encountering multiple health problems. Emphasizing preventive measures, such as promoting a nationwide healthy lifestyle to prevent obesity and overweight is crucial to mitigate the burden of health problems among adolescents.

Under-five mortality in Kota Bharu district, Kelantan: Factors associated with preventable deaths

Mohd Khairi Safwan Johar, Siti Aisyah Zakaria, Ahmad Zulfahmi Mohd Kamaruzaman, Wan Haziq Wan Kamarul Zaman

Kota Bharu District Health Office, Kota Bharu, Kelantan, Malaysia

ABSTRACT

Introduction: The definition of under-five mortality, according to the World Health Organization (WHO), refers to the likelihood of a child dying before reaching the age of five, expressed as a rate per 1,000 live births. This is a significant global public health issue, with an estimated 5.2 million children under the age of five dying each year, predominantly in low- and middle-income countries. In Malaysia, the under-5 mortality rate has gradually decreased from 50.5 deaths per thousand live births in 1972 to 7.6 deaths per thousand live births in 2021. However, in Kelantan, the under-five mortality rate was 8.7 per 1,000 live births in 2014, surpassing the target of 6.9 per 1,000 live births. The objective of this study was to determine the under 5 mortality rate in Kota Bharu from 2017 to 2022, as well as to calculate the proportion of preventable deaths among children under five years old and to determine the associated factors contributing to under five mortality in Kota Bharu. **Materials and Methods:** This was a retrospective cross-sectional study utilizing data from ""U5MR-N Pindaan 2019"" between 1 January 2017 until 31 December 2022. The study was conducted at government health clinics in Kota Bharu district. Multiple variables were considered, including maternal sociodemographic factors, maternal medical factors, children factors, service provider factors with the outcome of preventable death. Descriptive, simple logistic regression, and multiple logistic regression analyses were performed to answer the study's objectives. **Results:** A total of 460 subjects who fulfil the inclusion and exclusion criteria were studied. This study showed that under five mortality rates were around 7 per 1000 per estimated live birth from 2017 until 2022. The proportion of preventable deaths in Kota Bharu accounted for 46% of under-five mortality during the study period. Further analysis using simple logistic and multiple logistic regression done, showed that under five mortality was significantly associated with children age group (Adj. OR 0.388,95 CI:0.214,0.702 ; p 0.002), children gender (Adj. OR 0.645 CI:0.441, 0.943 ; p 0.024), maternal education level (Adj. OR 3.083 CI:1.100 , 8.639 ; p 0.032), maternal comorbidities (Adj. OR 3.100 CI:2.087, 4.604 ; p <0.001), and substandard care (Adj. OR 0.123 CI:0.056, 0.267 ; p <0.001). **Conclusion:** The findings of this research will contribute to a better understanding of the factors influencing under-five mortality especially in Kota Bharu. Hence, policy decisions can be catered accordingly.

Health issues among adolescents with intellectual disabilities in Kelantan: A qualitative study from caregivers' perspective

Nur Akmal Ismail¹, Azriani Ab Rahman¹, Surianti Sukeri¹, Mohd Zulkifli Abdul Rahim²

¹Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, ²School of Health Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

ABSTRACT

Introduction: Adolescents with intellectual disabilities have a greater prevalence of health issues that can significantly impact their overall well-being and quality of life. This qualitative study aimed to explore the health issues of adolescents with intellectual disabilities from the perspective of their caregivers. **Materials and Methods:** In depth interviews using the phenomenological approach were conducted among 12 purposely selected caregivers in Kelantan who consisted of parents of adolescents with intellectual disabilities and teachers in community-based rehabilitation centres. An interview guide was developed, and the questions include asking caregivers on health issues related to adolescents with intellectual disabilities. Data was analysed using thematic analysis. **Results:** Eight parents and four teachers from community-based rehabilitation centres were interviewed. This study identified five themes on health issues: medical conditions, sexual and reproductive health, developmental disabilities, high risk behaviour and nutrition. Medical conditions included acute and chronic medical conditions, oral health problems as well as injury or trauma. Issues related to sexual and reproductive health were sexual grooming, sexual violence, inappropriate sexual behaviours, sexual implications and poor knowledge on sexual health. Caretakers also highlighted issues on developmental disabilities pertaining to cognitive functioning and adaptive behaviours among adolescents with intellectual disabilities. High risk behaviours such as vulnerability to smoking, substance abuse and being subjected to bullying were significant concerns. Overnutrition, undernutrition, unhealthy eating habits and abnormal eating behaviours were prominent health issues related to nutrition among adolescents with intellectual disabilities. **Conclusion:** The perspectives of caregivers provided additional insights on a variety of health issues affecting adolescents with intellectual disabilities that have not been adequately addressed in previous studies. The study's findings can be used to improve healthcare delivery that catered to the specific health needs of adolescents with intellectual disabilities.

An early warning surveillance system for predicting hand, foot and mouth disease outbreak in Kelantan

Ahmad Zulfahmi Sha'ari, Nik Mohd Hafiz Mohd Fuzi

Communicable Disease Control Unit, Disease Control Division, Kelantan State Health Department, Malaysia

ABSTRACT

Introduction: Early warning systems play a crucial role as a proactive mechanism to identify and respond to potential disease outbreaks. It enables public health officials to implement preventive measures, allocate resources efficiently and make informed decisions promptly. This study aims to know the effectiveness of using a threshold line with a 5-year moving and static means for early prediction of an outbreak in monitoring HFMD in Kelantan for the years 2022 and 2023. **Materials and Methods:** Descriptive observational method was used to analyse the data of HFMD from the electronic surveillance system (e-Notifikasi) from 1st January 2014 to 11th June 2023 and outbreak reports using Microsoft Excel 365. For the threshold line, data from the past five years, excluding years with exceptionally high case numbers or outbreaks or the minimum values were used. Only years with the number of cases that did not exceed the third quartile were selected. The 5-year static mean threshold line was obtained by calculating the mean over the entire five years duration. The 5-year moving weekly mean was calculated by summing the number of cases for the current week, the two weeks preceding and the two weeks following the current week, for a total of five preceding years. Following the Cullen method, the alert line was established by increasing the mean value by one standard deviation (SD), whereas the epidemic threshold or action line was defined as two SD above the mean. The trend when the cases crossed the epidemic thresholds and the occurrence of an outbreak in which epidemiology week (EW) were observed. **Results:** Until EW23 2023, it was observed that the trend of HFMD cases in Kelantan surpassed the 5-year moving mean epidemic threshold line at EW18. Subsequently, four HFMD outbreaks were recorded in EW19, 20, and 21. Comparatively, the trend of cases only crossed the 5-year static mean epidemic threshold line at EW20. Similar observations were made in the Kota Bharu district HFMD threshold line. In the Bachok district, the trend of cases surpassed the 5-year moving mean epidemic threshold at EW17. While the 5-year static mean epidemic threshold line, it surpassed later at EW19, coinciding with the outbreak. In the Pasir Mas district, the trend of cases crossed the 5-year moving mean epidemic threshold line at EW19. While the 5-year static mean threshold line, the trend of cases also crossed later at EW21. Despite a tenfold increase in the magnitude of HFMD cases in 2022, the utilization of double vertical axes still exhibited a similar pattern in 2023. **Conclusion:** The 5-year moving means threshold line demonstrated superior sensitivity in predicting early outbreaks in Kelantan compared to the static 5-year means approach. These findings have important implications for improving public health surveillance systems, enhancing preparedness and response strategies for HFMD outbreaks in Kelantan, and potentially benefiting other regions facing similar challenges.

Acceptability of new approach of syphilis management among Bateq aborigines in Kuala Koh, Gua Musang

Rosli Harun[1], Nur Raihan Ismail[2]

[1]Surveillance, Communicable Disease Control (CDC) and Health Promotion Unit, Inspectorate Unit, Gua Musang District Health Office, Kelantan, Malaysia, [2]Inspectorate Unit, Gua Musang District Health Office, Kelantan, Malaysia

ABSTRACT

Introduction: Syphilis is common among the Bateq aborigines in Gua Musang district. Socioeconomic structure and cultural factors determine the prevalence of syphilis in this community. This study aims to describe the prevalence of syphilis and sociodemographic characteristics of Bateq aborigines tested syphilis positive in Kuala Koh, Gua Musang. It also demonstrates acceptability of a new approach of syphilis management among the aboriginal community. **Materials and Methods:** It was a retrospective cohort study involving 247 residents of Bateq aborigines. Secondary data was collected using STD/Ver1/2011 Investigation Form from Centre for Disease Control Unit, Gua Musang. Descriptive statistical analyses were performed using Microsoft Excel 2019. **Results:** About 40.0% of the residents were tested positive for syphilis in a period of 10 years. Most of them were aged 21 to 30 years old and 54.0% were females. Sexual promiscuity (80.8%) was an important cause for the spread of syphilis. The new approach suggests that the syphilis rapid test kit (RTK) is able to provide quicker results compared to blood VDRL/TPHA test. A single, 2-g oral dose of azithromycin is an alternative to a 2.4-MU intramuscular dose of penicillin G benzathine in the treatment of syphilis. The overall acceptability rate of the new approach of syphilis treatment was 65.7%. The major perceived strengths for were quicker and easier RTK screening tests and painless syphilis treatment. **Conclusion:** The acceptability noticed in this study is rather high. Having benefits on quicker RTK screening test and painless oral treatment were found to be important predictors of acceptability of new approach of syphilis management. Hence, this new approach should be continuously in place to facilitate syphilis early detection and prompt treatment to reduce the transmission among the aboriginal community.

Predictors of COVID-19 recurrent infection in a tertiary teaching hospital in Kelantan, Malaysia

Ijlal Syamim Mohd Basri, Nor Azwany Yaakob, Ahmad Mu'az Kamalul Sahar, Noor Aman A. Hamid

Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

ABSTRACT

Introduction: COVID-19 pandemic was the first modern pandemic declared by the WHO. The virus's capacity for antigenic shift and drift increases the host's susceptibility to recurrent infection and potential complications. This heightened risk is specifically associated with the potential for recurrent COVID-19 infections within the population, especially those who are in an enclosed population like a university campus. The aim of this study was to examine the predictors of the occurrence of recurrent COVID-19 infection within a health campus situated in Kelantan, Malaysia. **Materials and Methods:** The data were analysed using SPSS version 26 from COVID-19 Registry of health campus in Kelantan, Malaysia. All cases registered were included according to inclusion criteria. The characteristics studied include age, sex, place of residence, healthcare worker status, identification of close contact, presence of symptoms, COVID-19 vaccine doses received, category of transmission, and data for samples collected between 1 January 2021 and 31 December 2022. **Results:** This study encompassed a cohort of 3469 individuals who tested positive for COVID-19. The observed proportion of COVID-19 recurrent infection cases within this sample was determined to be 3.95%. Further analysis using single and multiple logistic regression revealed that several factors served as predictors for recurrent COVID-19 infection. These significant factors included being a middle-aged adult with aOR 0.265 (95% CI: 0.15,0.47), two doses of COVID-19 vaccine received with aOR 0.254 (95% CI: 0.15,0.43), and the category of transmission in the workplace of aOR 1.815 (95% CI: 1.06,3.10). Being of young age increases the risk due to engagement activities in public spaces, as was the case prior to the pandemic. Those who received two doses of COVID-19 vaccine exhibit a lower risk of recurrent transmission due to the high efficacy and effectiveness of the vaccine. The most likelihood of recurrent infection can be observed in workplace environments, particularly in healthcare facilities, which are widely recognized as high-risk settings for various types of infections. **Conclusion:** COVID-19 recurrent infection was low in the health campus setting. Understanding the factors associated with a disease outbreak is crucial for stakeholders to prepare for and address the situation effectively. This knowledge allows for the implementation of targeted health promotion and education initiatives, as well as the development of prevention and control strategies specific to the disease in question.

Glycaemic control of type 2 diabetes mellitus patients in Kota Bharu district, Kelantan: Proportions and associated factors

Erwan Ershad Ahmad Khan, Sharina Dir, Siti Aisyah Zakaria, Wan Soliha Wan Mohd Hanafi

Kota Bharu District Health Office, Kota Bharu, Kelantan, Malaysia

ABSTRACT

Introduction: Achieving acceptable glycaemic control is essential in reducing the complications of Diabetes Mellitus. The objective of the present study was to determine the proportion of glycaemic control and identify factors associated with uncontrolled HbA1c level among diabetic patients treated at government primary health clinics in Kota Bharu. **Materials and Methods:** This secondary data registry review study utilised data from the latest Diabetes Clinical Audit Data of 2022 that was available from the National Diabetes Registry. The registry recorded patients' socio demographic characteristics, latest laboratory investigations and treatment modalities. Simple random sampling was done to select 607 patients from a total of 2194 active patients that were recorded in the registry. HbA1c level was categorised into ≤ 6.5% as controlled status and > 6.5% as uncontrolled status. Multiple logistic regression analysis was used to determine factors associated with uncontrolled HbA1c level among diabetic patients using GLM function in RStudio version 2022.02.3. **Results:** The mean HbA1c level was 7.90% (SD = 2.07%). The proportions of HbA1c levels were 36.2% with controlled status and 63.8% with uncontrolled status. Factors associated with uncontrolled Diabetes Mellitus include age (AdjOR:0.97, 95%CI: 0.95, 0.98), duration of diabetes (AdjOR:1.10, 95%CI: 1.05, 1.16), triglycerides level (AdjOR:1.22, 95%CI: 1.01, 1.49), LDL level (AdjOR:1.19, 95%CI: 1.01, 1.42) and usage of insulin (AdjOR:2.29, 95%CI: 1.49, 3.57). **Conclusion:** The proportion of patients with uncontrolled Diabetes Mellitus in this study is lower than in other published studies. Comprehensive strategies and more effort by primary health care professionals are required in tackling other blood parameters and improving patients' compliance towards provided treatment to assist more patients in achieving better glycaemic control, hence reducing mortality and morbidity associated with Diabetes Mellitus.

Utilizing the Framingham risk score (body mass index model) as a community screening tool for cardiovascular risk assessment in rural areas of Kelantan

Nasibah Tuan Yaacob[1], Norzaihan Hassan[2], Nor Khairi Deris[3], Effah Leiylena Yaacob[4], Nor Azura Ismail[5], Rusni Dollah[6], Nik Harlina Roza Nik Kazim[7], Nik Norashikin Nik Ab Rahman[8], Shimilaaida Mohd Ali Janaf[9], Hazlina Ishak[10], Tuan Zailina Tuan Ngah[11], Hasni Ibrahim[12], Jusoh Awang Senik[13], Rahiza Ab Rahman[14], Norashidah Abdullah[15], Roshana Mohd Yasin[16], Noraza Abdul Rahman[17], Nor Asmah Hasan[18], Azura Mat Seman[19], Mohd Ezani Mohd Yassin[20], Zukri Mat Ail[21], Masliza Yusoff[2], Nor Azah Mohamad Nawi[22], Nor Asyikin Yahya[23], Azila Abas[24], Nik Suhaila Zakaria[25], Ahmad Abir Ab Ghani[26], Rodziah Ali[27]

[1]Bandar Kuala Krai Health Clinic, Kuala Krai, [2]Bandar Kota Bharu Health Clinic, Kota Bharu, [3]Gual Ipoh Health Clinic, Tanah Merah, [4]Kuala Nerus District Health Office, Terengganu, [5]Pengkalan Kubor Health Clinic, Tumpat, [6]Pasir Puteh Health Clinic, Pasir Puteh, [7]Wakaf Bharu Health Clinic, Tumpat, [8]Wakaf Che Yeh Health Clinic, Kota Bharu, [9]Batu Gajah Health Clinic, Tanah Merah, [10]Kota Jembal Health Clinic, Kota Bharu, [11]Bandar Tumpat Health Clinic, Tumpat, [12]Gunong Health Clinic, Bachok, [13]Pasir Mas Health Clinic, Pasir Mas, [14]Ketereh Health Clinic, Kota Bharu, [15]Pengkalan Chepa Health Clinic, Kota Bharu, [16]Peringat Health Clinic, Kota Bharu, [17]Batu 30 Health Clinic, Machang, [18]Meranti Health Clinic, Pasir Mas, [19]Bandar Gua Musang Health Clinic, Gua Musang, [20]Selising Health Clinic, Pasir Puteh, [21]Beris Kubor Besar Health Clinic, Bachok, [22]Kubang Kerian Health Clinic, Kota Bharu, [23]Penambang Health Clinic, Kota Bharu, [24]Pulai Chondong Health Clinic, Machang, [25]Labok Health Clinic, Machang, [26]Tendong Health Clinic, Pasir Mas, [27]Kangkong Health Clinic, Pasir Mas, Kelantan, Malaysia

ABSTRACT

Introduction: Cardiovascular diseases (CVDs) cause a significant health burden in Malaysia. In Kelantan, approximately 22.3% of individuals who were screened in the general population had at least one risk factor for CVD, necessitating effective community screening tools for early identification of high-risk individuals. The Framingham Risk Score (FRS)-BMI Model is a validated tool for estimating the 10-year CVD risk in a community setting. **Objectives:** This study aims to assess the usability of Framingham General CV Risk Score in rural areas of Kelantan, Malaysia. **Materials and Methods:** A cross-sectional study was conducted in a rural community of Kg. Peralla, Tanah Merah, Kelantan. A convenient sample of 140 individuals aged 18 years old and above were recruited. Data on demographic characteristics, medical history, and CVD risk factors were collected. FRS calculations were based on age, systolic blood pressure, smoking status, diabetes status and body mass index (BMI). Participants were categorized into low, moderate, or high-risk CVD risk groups using predefined levels of the FRS. **Results:** The study population had a mean age of 54.5 years, with 50.7% were males. Approximately 42.1% of participants were classified as high risk, 16.4% as moderate risk, and 40% as low risk based on FRS-BMI Model assessment. Smoking (27.9%) and hypertension (27.1%) were the most predominant risk factors. The FRS-BMI Model usability score was 83% suggestive of an excellent usability of global-CV risk tool for community screening. **Conclusion:** This study demonstrates the excellent usability of FRS-BMI Model as a community screening tool in rural areas of Kelantan, providing valuable insights into the cardiovascular risk profile of the population although in the absence of laboratory investigations. The prevalence of high and moderate risk categories emphasizes the urgent need for targeted interventions to prevent CVDs in the community. Further research is warranted to refine the usage of FRS for rural communities and assess its impact on reducing CVD-related morbidity and mortality in Kelantan.

A review on telemedicine utilization in Kuala Lumpur and Putrajaya public primary health clinic

Mohd Ali Imran Ab Rahaman[1], Hazayri Jamaluddin[1], Haliza Haji Abdul Manaf[2]

[1]Primary Health Division, Wilayah Persekutuan Kuala Lumpur & Putrajaya Health Department, Malaysia, [2]Wilayah Persekutuan Kuala Lumpur & Putrajaya Health Department, Malaysia

ABSTRACT

Introduction: The COVID-19 pandemic has accelerated the implementation of telemedicine in healthcare facilities for its care delivery. The primary care setting is the best place for adopting teleconsultation because it is where most chronic conditions management takes place. This study aimed to determine the extent of utilization of teleconsultation in Kuala Lumpur and Putrajaya public primary health clinics. **Materials and Methods:** Secondary data analysis was extracted from the Teleprimary Care system (TPC) data warehouse of public primary health clinics in the Federal Territory of Kuala Lumpur and Putrajaya between Mac 2022 and Dec 2022, as well as from the data reported to the Primer Unit of Kuala Lumpur and Putrajaya Health Office. **Results:** Five clinics were equipped with the TPC, while ten public health clinics were providing Virtual Clinic services, and those five clinics were included, which was 21.3% (10/47) out of all available public health clinics. The number of consultations given has shown an increasing in trend from 180 sessions in Mac 2022 to 1139 sessions in December 2022. Most of the consultations were contributed from the Outpatient department, which is mainly a non-communicable disease clinic, while Communicable Disease Clinic does show an increasing trend. Other health services such as Maternal and Child Health, Pharmacy and Other Allied Health care providers contributed less than 10% of the consultations. However, there is an increasing trend in the uptake of consultation in Maternal and Child Health and dieticians. **Conclusion:** Our findings show that teleconsultation was less utilized by Maternal and Child Health, Pharmacy and Allied Health care providers. Proactive efforts should be underway to tackle the underutilization of such facilities to promote better healthcare access and reduce congestion in the physical public primary health clinics.

Epidemiological profiles and microbiological agents of microbial keratitis in Johor state, Malaysia

Vidhubala Balasegar[1], Rafidah Md Saleh[2], Leslie Than Thian Lung[1], Azmiza Syawani Jasni[1], Rosni Ibrahim[1]

[1]Department of Medical Microbiology, Faculty Medicine and Health Sciences, Universiti Putra Malaysia, Selangor, Malaysia, [2]Department of Ophthalmology, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Selangor, Malaysia

ABSTRACT

Introduction: Microbial keratitis is an eye threatening condition which requires immediate treatment especially when the infection sets in due to ocular trauma or contact lens usage. This study aimed to describe the epidemiology and microbiological profile and risk factors of microbial keratitis. **Materials and Methods:** A cross-sectional study was conducted for 18 months involving patients aged 18 years and above with suspected microbial keratitis attending the eye clinic in selected government hospitals in Johor, Malaysia from June 2019 till December 2020. Patients' data such as age, gender, occupation, risk factors, aetiological agent and symptoms at the point of diagnosis were collected either from the medical notes in the Ophthalmology Clinic or from the patients' records. Patients' details consist of positive and negative data from the microbiology laboratories. Any missing data such as occupation and risk factors were obtained by calling the respective patient. All data were analysed statistically using SPSS version 26. Descriptive statistics used for analysing socio-demographic factors, risk factors and to determine the proportion of aetiological agents whereas Chi-Square analysis used to find association between socio-demographic factors, risk factors and microbial keratitis. **Results:** A total of 276 patients' data were collected and analysed. Out of 276, 69.2% were males with an overall mean age of 42.03 (SD17.2). Office workers are the most affected occupation category (n=50, 18.1%). Among 276 identified cases, ocular trauma is the most commonly identified risk factor (n=153, 55.4%). Out of 276 patients, 120 (43.5%) patients had culture-proven microbial keratitis in which 74.2% had bacterial keratitis and 22.5% had fungal keratitis. *Pseudomonas aeruginosa* was the predominant isolated bacteria (n=55), whereas *Fusarium spp.* was the most common isolated fungus (n=7). In addition, there was significant associations observed between construction workers (p=0.019), retirees (p=0.054), ocular trauma (p=0.005), previous eye surgery (p=0.018), ophthalmic steroid usage (p=0.052) and microbial keratitis. **Conclusion:** The proportion of microbial keratitis in the southern region of Malaysia was nearly half of the suspected cases in which bacterial keratitis was more prevalent than fungal keratitis. The information from this study contributed additional data on the epidemiology of microbial keratitis in Malaysia. The most common risk factor identified in this study was ocular trauma, this important information will be conveyed to the ophthalmologists so that prompt treatment and prevention can be applied to reduce the incidence of ocular trauma and microbial keratitis. Future studies are recommended to be extended to a larger group of the population from the different geographical areas in Malaysia.

Knowledge, attitude, and practice towards COVID-19 pandemic among adults in Kota Bharu district, Kelantan

Yusra Zahir, Munirah Mohd Adnan, Normastura Abd Rahman

Dental Public Health Unit, School of Dental Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

ABSTRACT

Introduction: The National Immunization Programme in Malaysia was implemented starting in February 2021, made progress in lowering the risk of COVID-19 infection until Malaysia entered the endemic phase on April 1st, 2022. However, awareness and practice of COVID-19 preventive measures at the individual level are still important. This study aimed to determine the knowledge, attitude and practice towards COVID-19 and its associated factors among adults in Kota Bharu, Kelantan. **Materials and Methods:** A cross-sectional study was carried out among 131 adult patients who attended USM Hospital and were selected through randomized convenient sampling during the COVID-19 pandemic between 22nd April 2021 and 27th May 2021. The knowledge, attitude and practices on the pandemic COVID-19 were assessed via a validated online questionnaire using a Google form. Data were analysed using IBM SPSS version 26.0. The analyses used were independent t-test, one-way ANOVA and Pearson and Spearman correlation coefficient with a significant value set at P<0.05. The significant level was set at p<0.05. **Results:** The mean age was 33.4 (11.47). The respondents' race were mostly Malays (96.9%) with the majority with at least a degree of academic qualification (65.6%). The mean scores of knowledge, attitude and practice during the COVID-19 pandemic were 19.6 (1.76), 15.7 (0.78) and 40.5 (4.80), respectively. Statistical analysis showed a significant negative correlation between household income and the mean score of the practice related to COVID-19 preventive measures. A higher mean score of practice related to COVID-19 preventive measures was found among low household income compared to high household income after being analyzed using the Spearman correlation coefficient (r=-0.188, p=0.031). The knowledge of the COVID-19 pandemic score was positively correlated with the attitude towards the COVID-19 pandemic (r=0.29, p=0.001) and practice related to COVID-19 (r=0.21, p=0.019). **Conclusion:** The mean score of knowledge, attitude and practice on COVID-19 among adult patients attending Hospital USM was found to be relatively good. Household income was found to be correlated with the practice related to preventive measures during the COVID-19 pandemic. This study proved that good knowledge of COVID-19 will translate into positive attitudes and good practices on COVID-19. Therefore, progressive health education implemented by the authorities is crucial to cultivate a knowledgeable community that plays one of the main roles in the success of the battle against COVID-19 pandemic.

Acquired immunodeficiency syndrome among patients with human immunodeficiency virus in northern Kelantan district

Mohd Khairul Hanan Mohd Wajiah[1], Muhammad Naim Ibrahim[2], Mohamad Hafiz Harun[1], Hasneezah Hassan[1], Mohd Hazwan Baharuddin[3]

[1]Tumpat District Health Office, Kelantan, Malaysia, [2]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [3]HIV, STI, Hep C Unit, Kelantan State Health Department, Malaysia

ABSTRACT

Introduction: Acquired Immunodeficiency Syndrome (AIDS) is one of the world's most fatal conditions which leave a massive impact on health, economic and social outcome. Malaysia and several other countries reported decreasing trends of Human Immunodeficiency Virus (HIV) infection and AIDS but the notification rate as well as mortality for AIDS has been plateaued since 2007. HIV prevalence in Kelantan state is above the national level. In addition, Tumpat district was known to have the highest HIV incidence in Kelantan with 8.78 cases per 100,000 population. Thus, the situation possessed a higher risk of AIDS if no focus action was taken. The aim of this study was to determine the occurrence of HIV infection and AIDS patients, to describe the characteristics of HIV and AIDS patients and to determine factors associated with AIDS among HIV patients in Tumpat district from 2013 to 2022. **Materials and Methods:** A cross-sectional study was conducted among HIV patients in Tumpat district who were registered in the National AIDS Registry from 2013 to 2022. This study was conducted from April to July 2023. All HIV patients in the time frame were included in this study. Variables of sociodemographic characteristics and risk factor were analysed descriptively and for association, multiple logistic regression was utilised. **Results:** A total of 287 patients fulfilled the study criteria and were used as the sample. Majority (31.7%) of them were diagnosed with HIV at the age of 30-39 years old, male (83.6%), Malay (90.9%), single (60.6%), received secondary education (67.6%) and work in the non-government sector (54.4%). Intravenous drug use was identified as the most common risk behaviour (41.4%) compared to heterosexual (36.2%), homosexual or bisexual (20.9%) and vertical infection (1.7%). The HIV incidence for each year from 2013-2022 ranged between 5.0 to 17.0 cases per 100,000 population while AIDS was 4.9 to 13.2 cases per 100,000 population. Both have plateaued trends. Overall, 183 (63.8%) among HIV patients were having AIDS and significantly associated with the age group of diagnosis at 30 to 39 years old (Adjusted Odds Ratio (AOR): 4.70; 95%CI: 1.11, 20.00, $p<0.005$) and risk behaviour of heterosexual (AOR: 0.34; 95%CI: 0.21, 0.411, $p<0.001$) and homosexual or bisexual (AOR: 0.20; 95%CI: 0.08, 0.49, $p<0.001$) compared to IVDU. **Conclusion:** Stakeholders should adopt a targeted approach to tackle the problem among HIV patients in the district from progressing into AIDS. Early screening programs for HIV need to be enhanced to prevent late diagnosis and initiation of early treatment. Empowerment on health-seeking behaviour and treatment adherence should be focused especially among the age of 30 to 39 years old and IVDU groups. Active collaboration between agencies and society is warranted in accelerating the effort of ending the AIDS epidemic by 2030.

Prevalence and characteristics of drug-resistant tuberculosis cases in Selangor and Wilayah Persekutuan Kuala Lumpur

Mohd Fahmin Kamarul Zaman[1], Mohd Yusof Sidek[1], Nik Rosmawati Nik Husain[1], Zamzurina Abu Bakar[2]

[1]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [2]Institute of Respiratory Medicine, Kuala Lumpur, Malaysia

ABSTRACT

Introduction: Drug-resistant tuberculosis (DR-TB) poses a serious global health threat, leading to high morbidity and mortality rates. Malaysia has witnessed an increase in DR-TB cases, but there is a need for more research on the trends and characteristics of these cases in the country. This study aims to determine the prevalence and describe the characteristics of DR-TB cases in Selangor and Wilayah Persekutuan Kuala Lumpur from 2016 to 2020. **Materials and Methods:** A retrospective record review was carried out, utilising secondary data obtained from MyTB. All reported DR-TB cases in MyTB between 2016 and 2020 that met the study criteria were analysed. Descriptive statistics were performed to examine the sociodemographic and clinical characteristics. **Results:** This study examined 403 cases of drug-resistant tuberculosis (DR-TB) out of the 444 cases registered in the MyTB database for Selangor and WPKL over five years. The prevalence of DR-TB increased from 0.31 to 1.83 per 100,000 population between 2016 and 2020. Favourable treatment outcomes were observed in 58.0% of cases, while 42.0% had unfavourable outcomes, mainly due to loss to follow-up (21.0%), death (18.0%), and treatment failure (3.0%). The average age of the cases was 40.95 years, and the majority were male (71.2%) and Malaysian (79.7%), with Malays comprising 49.6%. Most patients had up to secondary school education, were married, and were employed. Among the DR-TB patients, 23.6% had diabetes, and 11.4% were HIV-positive. Retreatment cases accounted for half the total, and 82.8% had positive smear results. Minimal chest X-ray lesions were observed in 54.8% of cases. The majority (66.3%) received supervised treatment from healthcare providers, and 36.5% were classified as multi-drug resistant. Additionally, 35.7% of DR-TB cases were smokers. **Conclusion:** The rising cases of DR-TB call for comprehensive public health interventions and stakeholder commitment to reduce its occurrence and transmission. These findings can guide policymakers in developing strategies for DR-TB control and prevention.

Audit of hypertension management at public primary care clinics in Machang district, Kelantan, Malaysia

Azila Abas

Pulai Chondong Health Clinic, Machang, Kelantan, Malaysia

ABSTRACT

Introduction: Hypertension is a major risk factor for cardiovascular diseases. Lowering the blood pressure can reduce the risk of complications to the brain, heart, and kidney. The audit was conducted to assess the adequacy of blood pressure control and adherence to optimal care including for other cardiovascular risk factors. **Materials and Methods:** A cross-sectional study of hypertensive patients was done in September 2022. Samples were from 8 public primary care clinics in Machang, Kelantan. Data was collected based on standard questionnaires (socio-demographic, clinical parameters including blood pressure and body mass index, laboratory parameters, cardiovascular risk stratification, non-pharmacological and pharmacological intervention status). **Results:** A total of 232 patients with hypertension were selected in this study. Those who were diabetic or pre-diabetic were excluded. The demographic data showed that 70.7% (n=164) were female patients and 29.3% (n=68) were males. The median age was 61 years old. The ethnicity of the patients followed the local demographic profile: Malay 96.6% (n=224), Chinese 3% (n=7) and others 0.4% (n=1). Approximately 50.9% (n=118) of hypertensive patients were obese and 94.4% (n=219) had at least one comorbidity. Controlled blood pressure (<140/90 mmHg) was achieved in 62.1% (n=144) of patients. The mean age of the controlled blood pressure group was 59.76 compared to 63.01 in the uncontrolled group (p=0.029). There was no significant difference in terms of gender (female vs male, 69.4% vs 30.6%, p > 0.05) and obesity status (obese/overweight vs normal body mass index, 80.4% vs 19.6%, p > 0.05) in blood pressure control. Most of the patients received optimal care (>90%), in terms of evaluation of target organ damage and complications, and non-pharmacological and pharmacological management. Overall, 97.8% (n=227) were risk stratified in the past year. Out of overweight and obese patients, 53.7% (n=102) have gained weight in the past year. Meanwhile, 64.6% (n=104) did not achieve the targeted level of low-density lipoprotein according to their risk stratification. **Conclusion:** These findings indicated that blood pressure control was better compared to 45% in NHMS 2019. Older patients tend to have more uncontrolled blood pressure. The process of care was appropriate. However, control of other cardiovascular risk factors like obesity and dyslipidaemia is still lagging. This warrants a more holistic approach to improve the overall outcome of these hypertensive patients.

Food poisoning outbreak: Poisonous mushroom in the Tanah Merah district

Farah Wahida Mohamad[1], Muhammad Fikri Idris[2], Aliff Ridzwan Hamidun[1], Mohd Rujhan Hadfi Mat Daud[3], Muhammad Zahin Abd Ghani[1], Tuan Jah Tuan Soh[1]

[1]Tanah Merah District Health Office, Tanah Merah, Kelantan, Malaysia, [2]Kelantan State Health Department, Kelantan Malaysia, [3]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

ABSTRACT

Introduction: Food poisoning is a result of eating contaminated or toxic food. The clinical presentation can vary depending on the source of the infection. Bradycardia is one of cardiac complications associated with food poisoning. Food related bradycardia were reported in mushroom poisoning, ciguatera fish poisoning, organophosphate poisoning, mad honey poisoning and candlenut poisoning. The study objective was to describe an outbreak of food poisoning related to poisonous mushroom causing bradycardia at Kg Ayer Batu, Batu Gajah, Tanah Merah. **Materials and Methods:** The study used cross-sectional design. It involved food poisoning cases defined as any person from Kg Ayer Batu, Batu Gajah, Tanah Merah, who developed any of these symptoms; nausea or vomiting or giddiness or abdominal pain or diarrhea between 20th May to 23rd May 2023. Epidemiological, environmental and laboratory investigations were performed. Epidemiological investigation included active and passive case detection, food attack rate and epidemiologic curve. Laboratory investigation included full blood count, electrolyte, renal function test, liver function test and ECG. Environmental investigation included premise inspection and mushroom foraging area assessment. Mushroom sample was sent to the Mushroom Research Centre. Data was entered in Microsoft excel. Food attack rate was calculated, and descriptive statistics were described using frequency and percentage. **Results:** Epidemiological investigation showed that the outbreak involved six cases. All cases developed vomiting and giddiness. Three developed bradycardia (50%) and were admitted. Another three cases did not seek treatment. Laboratory investigation showed normal FBC, electrolyte, renal and liver function. The epidemiologic curve showed that the food poisoning outbreak was a common source of single exposure with minimum incubation period of two hours and maximum incubation period of four hours. The food attack rate for mushrooms was 100%. Environmental investigation revealed no evidence of organophosphate pesticide available in the house and no sign of pesticide usage in the mushroom foraging area. The mushroom was identified as *Amanita sp* with muscarinic toxin. **Conclusion:** The food poisoning outbreak at the Kg Ayer Batu, Batu Gajah, Tanah Merah occurred following the consumption of *Amanita sp.* which contain various toxins. The aetiologic agent for the outbreak is muscarinic toxin in the *Amanita sp.* mushroom. An effective health promotion is needed to avoid recurrence of such outbreaks in the future.

Five-year profiling of *Plasmodium knowlesi* malaria and its associated factors in Kelantan

Omar Nazmi[1], Ahmad Shaarani Yasin[2], Mohd Hafiz Che Ismail[3], Suhana Adura Mohamad[2], Najihah Mahfuzah Zakria[4]

[1]Non-Communicable Disease Unit, Kelantan State Health Department, Malaysia, [2]Vector Unit, Kelantan State Health Department, Malaysia, [3]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [4]Pasir Mas District Health Office, Kelantan, Malaysia

ABSTRACT

Introduction: South-East Asia has the 2nd highest estimated malaria burden globally. The most common form of malaria in Malaysia is zoonotic malaria, caused by *Plasmodium knowlesi*. The high burden of *Plasmodium knowlesi* malaria affects Malaysia's progress towards attaining elimination certification by WHO. Kelantan recorded the highest number of *Plasmodium knowlesi* cases in the Peninsula and 3rd in Malaysia after Sabah and Sarawak. This study aimed to describe the sociodemographic characteristics and to determine the factors associated with *Plasmodium knowlesi* infection in Kelantan from 2018-2022. **Materials and Methods:** A cross-sectional study was conducted from January to March 2023. All confirmed malaria cases from e-Notification data (Malaysian Communicable Disease Online System) in 5 years duration (2018 till 2022) were selected as samples. Variables with more than 30% missing data were excluded. Data was analysed using SPSS Version 26. Categorical variables displayed in frequency (%) and numerical data in mean (SD) or median (IQR) if data were skewed. Multiple logistic regression analysis was conducted to determine the factors associated with *Plasmodium knowlesi* infection. Endemic areas in this study are cases that occurred in districts Kuala Krai, Gua Musang, Jeli and Tanah Merah. **Results:** A total of 640 malaria cases are included in this study. Among all malaria cases, the prevalence of *Plasmodium knowlesi* infection in Kelantan was 88.1% (95% CI: 85.4%, 90.5%), whereas non-*Plasmodium knowlesi*, 11.9% (95% CI: 9.5%, 14.6%). The mean age of *Plasmodium knowlesi* infection is 37 years (SD = 14.65). Most of them were male (84.8%), 49.7% were Malay, 66.1% were Malaysian citizens, and 76.1% were related to agricultural work. Most malaria cases (98.3%) occurred in the endemic area. *P. knowlesi* infections are associated significantly with Malaysian citizens (AOR 8.63, 95% CI: 4.28, 18.8), working groups, (AOR 6.54, 95% CI: 2.97-14.9), and passive case detection (AOR 8.22, 95% CI: 4.57-15.0). **Conclusion:** In conclusion, malaria caused by *Plasmodium knowlesi* is a significant concern in Kelantan, particularly in endemic areas. Passive case detection, which involves individuals seeking medical care when they experience symptoms, plays a crucial role in identifying and treating cases of *Plasmodium knowlesi*. Prompt and accurate diagnosis, followed by appropriate treatment, is essential for managing and controlling Plasmodium knowlesi infections. Therefore, effective inter-agency collaboration is vital in the fight against malaria.

Association between pre-pregnancy body mass index and gestational weight gain on adverse pregnancy outcome among gestational diabetes mellitus patients in Pasir Mas district, Kelantan

Aimi Syairah Ismail[1], Munira Mahmud[2], Nur Farha Adnin Azmi[3], Nor Asmah Hassan[1], Nik Aida Nik Adib[2], Zubaidah Ismail[1]

[1]Meranti Health Clinic, Pasir Mas, Kelantan, Malaysia, [2]Pasir Mas Health District Office, Kelantan, Malaysia, 3Chekok Health Clinic, Pasir Mas, Kelantan, Malaysia

ABSTRACT

Introduction: Gestational diabetes mellitus (GDM) is a growing concern among antenatal mothers worldwide, with gestational weight gain (GWG) and pre-pregnancy body mass index (pBMI) being key factors for adverse pregnancy outcomes (APOs). These complications include pregnancy-induced hypertension, pre-eclampsia, Caesarean section, macrosomia, neonatal jaundice and prematurity. The study aims to determine association between pBMI and GWG on APOs among GDM patients in Pasir Mas. **Materials and Methods:** A cross-sectional study was conducted from January to June 2023, utilizing secondary data obtained from antenatal record books in four government health clinics with specialists located in the Pasir Mas district. The data collected spanned from June 2020 to June 2022. The study included Malaysian women with registered GDM who were over 18 years old and had their first antenatal visit during the first trimester. Participants with known pre-existing diabetes or chronic illnesses and multiple pregnancies were excluded. A total of 143 respondents were included in the study. The association between pBMI and GWG on APOs were analyzed using the Chi-square test and the relationship between pBMI and GWG using Pearson's correlation. The IBM SPSS version 26 was used for analysis. **Results:** The mean age of respondents is 30.3 ± 4.90 years, majority respondents have attained secondary education level (55.9%), housewife (56.6%), multipara (60.8%) and with diet control alone (84.6%). In terms of delivery modes, 64.3% had spontaneous vaginal delivery. Mean pBMI is 28.5 ± 6.91 kg/m², majority of respondents are obese (34.3%) and have inadequate GWG (44.8%). There is statistical significance between pBMI and delivery modes ($p < 0.036$). 80.4% of respondents undergoing Caesarean section were those having abnormal pBMI. There is also statistical significance between GWG and maternal complication ($p < 0.020$). Pearson's correlation showed there was a significant and moderately negative correlation between pBMI and GWG ($r = 0.48$, $p < 0.001$). **Conclusion:** The research indicates that pBMI plays a role in determining the method of delivery, as abnormal pBMI is linked to Caesarean section. Additionally, abnormal GWG is associated with maternal complications. The research emphasizes the importance of effectively managing pBMI and promoting appropriate GWG to enhance the health outcomes of both mothers and babies. Health care providers can implement suitable interventions and strategies to optimize these outcomes.

Determinants of client-initiated viral testing among human immunodeficiency virus positive clients with risky sexual behaviour in Gua Musang district, Malaysia

Nur Raihan Ismail[1], Wan Muhamad Norazwan Wan Abu Bakar[1], Noor Amalina Jamal[2]

[1]Gua Musang District Health Office, Kelantan, Malaysia, [2]Star Health Clinic, Gua Musang, Kelantan, Malaysia

ABSTRACT

Introduction: In Malaysia, new HIV infection has declined by more than 50%, from 28 cases per 100,000 population in 2002 to 9.3 cases per 100,000 population in 2020. Client-initiated HIV testing and counselling (CITC), also known as voluntary counselling and testing, is one of the key strategies in the HIV/AIDS prevention and control. Clients with risky sexual behaviour should actively seek HIV testing for early diagnosis and prompt targeted HIV care. This study aims to explore the determinants of CITC among HIV positive clients with risky sexual behaviour in Gua Musang District. **Materials and Methods:** A district-wide record review study using National AIDS Registry (NAR) Investigation Form (NAR/ investigation/ 2008) from the district health office was conducted. CITC involves clients actively seeking HIV testing at a facility that offers this service while provider-initiated HIV testing and counselling (PITC) is recommended by health care providers to clients attending health care facilities as a standard component of medical care. A logistic regression model (LR) was performed to assess determinants influencing the CITC model. **Results:** A sample of 114 HIV positive clients registered in Gua Musang was included, 31.6% of the clients tested positive for HIV through CITC. In the final LR model, determinants for CITC were younger age groups (Adj. OR 2.98; 95% CI: 1.14, 7.77, p=0.026), unmarried (Adj. OR 3.83; 95% CI: 1.39, 10.55, p=0.009) and bisexual and homosexual identity (Adj. OR 3.37; 95% CI: 1.17, 9.77, p=0.025). **Conclusion:** Recognition of these determinants of CITC is crucial to improve the testing uptake in order to facilitate early diagnosis and prompt treatment. Key determinants of CITC include; younger age, unmarried and bisexual and homosexual identity. Effective educational programs and awareness raising campaigns should be consistently in place to increase participation in HIV testing and counselling especially among the key population groups.

Teamwork makes the dream work

Kishwen Kanna Yoga Ratnam

Institute for Public Health, National Institutes of Health, Malaysia

ABSTRACT

Introduction: The COVID19 pandemic posed a profound challenge necessitating united and coordinated efforts to contain the outbreak. In the bustling region of Malaysia's Klang Valley, the Kepong Health District Office found itself in the spotlight, tasked with the demanding job of repurposing *Dewan Pusat Komuniti Manjalara* into a fully functioning vaccination centre to facilitate the National COVID-19 Vaccination Programme. A challenge of such magnitude beckoned for a significant shift from traditional siloed working models to innovative and cooperative strategies incorporating various government and non-governmental agencies. **Materials and Methods:** Understanding the critical role of community buy-in for the success of our initiative, we prioritised engagement with the local populace. We orchestrated a strategic meeting with *Gabungan Persatuan Penduduk* Kepong Kuala Lumpur, a conglomerate of multiple Residents Associations within the Kepong District. More than a cordial meet and greet, this interactive session served as a platform to strengthen bilateral relationships, discuss potential challenges, and brainstorm collaborative strategies for a seamless vaccination rollout. Addressing vaccine hesitancy, a notable barrier in global vaccination campaigns, was paramount in our mission. We embarked on a unique public awareness campaign, establishing information booths at the lively weekend night market spots in Kepong Baru. These booths served as a point of dissemination for reliable and crucial information about the vaccine and the vaccination program, dispelling myths, and addressing concerns. Recognising that the digital divide could hinder our progress, particularly among the elderly, we employed tech-savvy volunteers to provide on-site technical assistance for downloading and registering the *MySejahtera* application. Our team of dedicated staff also took the time to teach the elderly on how to navigate the app to check their appointment date for their vaccination. The interactions between our healthcare staff and the elderly citizens from all walks of life was a beautiful sight to behold. It truly depicted unity within diversity. This innovative strategy not only boosted accessibility but also functioned as a tangible cue for action, encouraging vaccine uptake. **Results:** The Vaccination Centre operations kicked off on 3rd May 2021. In the span of 25 days, up until 28th May, we administered a remarkable total of 11,425 doses of vaccines. This achievement, which represented a significant proportion of the district's target population, was a clear testament to the acceptance and trust our community placed in our efforts, marking substantial headway towards achieving widespread immunity. **Conclusion:** The success story of the Kepong Health District Office underscores the transformative power of collaboration, proactive leadership, and strong organizational camaraderie in overcoming complex challenges. The experience aptly demonstrates the validity of the saying: teamwork makes the dream work. The COVID-19 vaccination drive has not only strengthened our public health response but also fortified the community's resilience and spirit of solidarity. Beyond its immediate outcomes, this initiative has provided invaluable lessons and reinforced our commitment to public health. It has demonstrated the profound potential of community-based strategies and cross-sectoral collaboration. This accomplishment, therefore, serves not only as a landmark in our battle against COVID-19 but also a beacon guiding our future public health initiatives. We stand testament to our community's capacity to rise to any occasion, united in purpose, and relentless in our pursuit of equitable healthcare.

Risk factors of mortality among elderly COVID-19 patients in Kelantan state, Malaysia

Muhammad Saufi Abdullah[1], Suhaily Mohd Hairon[1], Suhaiza Sulaiman[2]

[1]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [2]Surveillance Unit, Kelantan State Health Department, Kelantan, Malaysia

ABSTRACT

Introduction: The COVID-19 pandemic has had a disproportionate impact on the elderly, as they exhibit a greater vulnerability to severe symptoms and a higher risk of mortality compared to younger individuals. This study aims to determine the risk factors contributing to death due to COVID-19 among the elderly population in Kelantan, Malaysia. **Materials and Methods:** A case-control study was conducted using secondary data from the Surveillance Unit of the Kelantan State Health Department, which included COVID-19 cases diagnosed between 1st April 2020 to 31st March 2022. Sample size was calculated using two proportion formulas and cases were selected by simple random sampling. The term ""elderly"" in this study refers to individuals who are aged 60 years and above. COVID-19 mortality was classified into two categories: deaths due to COVID-19 and deaths with COVID-19. However, only deaths due to COVID-19 were included in the National COVID-19 Mortality Statistics. Data analysis was performed utilizing both simple and multiple logistic regression methods. **Results:** There were 28,295 elderly COVID-19 patients (≥60 years old) diagnosed within this study period. These patients were then divided into case and control groups, with 780 patients randomly selected from the case group and 3,120 patients from the control group. Out of the total 28,295 elderly COVID-19 patients, 27,204 patients (96.1%) successfully recovered from the COVID-19 infection, 1,024 patients (3.6%) died due to COVID-19, and 67 patients (0.2%) died with COVID-19. The significant risk factors contributing to death due to COVID-19 included: (i) age at diagnosis (adjusted OR 1.09; 95% CI: 1.07, 1.10; p < 0.001); (ii) receiving a single dose of the COVID-19 vaccine (adjusted OR 0.70; 95% CI: 0.51, 0.97; p = 0.034); (iii) receiving two doses of the COVID-19 vaccine (adjusted OR 0.13; 95% CI: 0.11, 0.16; p < 0.001); and (iv) receiving three doses of the COVID-19 vaccine (adjusted OR 0.004; 95% CI: 0.001, 0.030; p < 0.001). **Conclusion:** The findings of this study provide valuable information about the risk factors contributing to death due to COVID-19 in this vulnerable population. Recognizing the significance of age at diagnosis and vaccination status in determining outcomes for elderly COVID-19 patients allows healthcare professionals and policymakers to develop targeted interventions and public health strategies aimed at lowering mortality risk and improving the overall prognosis for this vulnerable population.

The distribution of common oral lesions in infants attending the Department of Paediatric Dentisry, Hospital Sultan Ismail Petra

Muna Muhammad¹, Nik Nurhannan Mohd Badarudin¹, Noor Adeefarra Mohd Adkaa², Masturina Md Amin³

¹Department of Paediatric Dentistry, Hospital Sultan Ismail Petra, Kuala Krai, Kelantan, Malaysia, ²Gua Musang Dental Health Clinic, Gua Musang, Kelantan, Malaysia, ³Bertam Baru Dental Health Clinic, Gua Musang, Kelantan, Malaysia

ABSTRACT

Introduction: Infants may exhibit some oral characteristics throughout the first few months of life that could also be caused by physiological changes associated with development or tumours, which can cause parents to be unsure. The purpose of this study was to determine the distribution of common oral lesions in infants visiting the Department of Paediatric Dentistry, Hospital Sultan Ismail Petra, Kelantan. The specific objectives were to study the socio-demographic data of infants with oral lesions, to determine the distribution of oral lesions in infants, to investigate whether oral lesions had any relationship with maternal medical problems, and to describe the diagnosis and management that have been carried out. **Materials and Methods:** This study was a cross-sectional retrospective study using secondary data from patient clinical records. The collected data was recorded in the data collection form. All infants from birth to 12 months old who were referred to our department for management of oral lesions between January 2019 and December 2021 were included in this study. The data were presented as percentages, and Pearson's Correlation was used for categorical comparison. A P-value of less than 0.05 was considered statistically significant. **Results:** This study enrolled 71 infants, with 46 (64.8%) boys and 25 (35.2%) girls. The infants were divided into three groups: 0–1 month old, 2–5 months old, and 6–12 months old. Clinical findings were more frequent in infants within the first month of life, with 92% being Malays and 8% Indians and others. This study found that the most common oral lesions were ankyloglossia (33.3%), followed by eruption cysts (25.0%), gingival cysts and Bohn's nodules (9.5%), lip frenulum and natal tooth (6.0%), oral candidiasis (2.4%), congenital epulis (1.2%), and congenital Blandin-Nuhn mucocele (1.2%). Six infants had more than one clinical finding at different sites. Our study observed that almost 60% of mothers with maternal medical problems had infants with oral lesions. Most of them had gestational diabetes mellitus, followed by anaemia and maternal obesity. Statistically, the data suggested that maternal medical problems and oral lesions were not related to each other. Oral lesions in infants were mainly managed with conservative management. However, dental extraction was done for selected natal/neonatal teeth, and surgical correction by frenotomy was performed for severe ankyloglossia. **Conclusion:** Ankyloglossia was the most common lesion referred to us and about 76% of the oral lesions in infants occur during the first month of life. All lesions found were benign, asymptomatic, and unrelated to maternal medical problems.

Association between mothers' utilization of oral health care and oral health status of their toddlers in Kota Bharu district, Kelantan

Wan Salina Wan Sulaiman[1], Raja Mohamed Zulzaim Raja Husni[2], Sayed Hashim Mohsin[3], Nizamuddin Pardan[4]

[1]Pahang State Deputy Director of Health (Oral Health) Office, Ministry of Health, Pahang, Malaysia, [2]Kota Bharu District Dental Health Office, Ministry of Health, Malaysia, [3]Jeli District Dental Health Office, Ministry of Health, Malaysia, [4]School of Dental Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

ABSTRACT

Introduction: Dental utilization is viewed as the primary marker of oral care and mothers' attendance pattern and denominated as an indicator of dental attendance and oral health in young children. The objective of this study is to determine the oral health care utilization of mothers, their toddlers' caries status and the association between the toddlers' caries status and mothers' utilization pattern in Kota Bharu, Kelantan. **Materials and Methods:** This is a cross sectional study with participation of 185 pairs of mothers and toddlers that visited Mother and Child Health clinics in Kota Bharu. A validated self-administered questionnaire was used to collect the data on mothers' oral health care utilization and the oral health status of the toddlers was assessed by clinical examination using standardized dental chart form. The data analysis was performed using SPSS. **Results:** Majority of participants are Malay. The mean age of mothers was 31.6 (6.09) years old. Approximately 38% claimed they had visited a dental clinic less than a year ago despite only 13% of the mothers having gone for a regular oral health check-up. Most of them (80%) utilized government facilities. Three quarters of the mothers perceived that having a dental examination is not scary. Among the toddlers, 52.4% of them were male with mean age of 2.31 (1.06) years old. One and two toddlers having repaired cleft lip and cleft palate consecutively. Nearly half (49.2%) have good oral cleanliness. For caries status, 53.6% were caries free with decay, while the mean number of missing and filled teeth was 2.95 (4.35). No statistically significant association was found between caries status of the toddlers with the mothers' oral health care utilization pattern. **Conclusion:** It is imperative to encourage mothers to have a routine dental check-up jointly with their family members to achieve better deliverance of preventive care for better oral health status amongst children predominantly in Kelantan.

The impact of bullying in schools on female adolescents' mental health: A case series

Nik Suhaila Zakaria[1], Nur Nasuha Edid[1], Mohd Azimullah Abdullah@Zakaria[2], Nani Draman[3]

[1]Labok Health Clinic, Machang, Kelantan, Malaysia, [2]Machang District Health Office, Machang, Kelantan, Malaysia, [3]Department of Family Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

ABSTRACT

Individuals who are bullied are at heightened risk of developing mental health problems. This case series delves into personal adolescents' experiences impacted by bullying and its subsequent effects on their mental well-being. Case 1 "Girl's Rival" describing a 17-year-old girl faced physical and emotional bullying at 14 years old at a boarding school due to an argument with a fellow female student. The bully was the boyfriend of the other girl and his friends. Despite wanting to change schools, she was persuaded by her parents to stay until completing her form 3 exams, which prolonged the bullying. After switching to an ordinary school in form 4 and living with her stable family, her anxiety persisted and worsened, affecting her studies and daily life. She sought help during form 5 and was diagnosed as having generalized anxiety disorder. With psychotherapy and antidepressant treatment, she managed to achieve 2 As in her SPM exam and further study in Fine Metal Art Diploma. Case 2 "Boyfriend's torture" describing a 16-year-old girl who became a target of verbal bullying in a boarding school since form two after entering a relationship. Even after breaking up, one of her ex-boyfriends continued to harass her on social media platforms. As a result, she experienced a depressed mood, disturbed sleep, and poor concentration in class. Her symptoms worsened during the pandemic, and she resorted to self-harm behaviours, including wrist and thigh cutting, and one instance of consuming Clorox bleach. Raised by her father and grandparents after her parents' divorce, she received support from her stepmother, who brought her for treatment. She was diagnosed with Major Depressive Disorder, and later was referred to a psychiatrist due to ongoing self-harm behaviour and a drug overdose incident. She is stable on medication and obtained 8 As for her SPM. Case 3 "School Refusal" describing a 17-year-old girl who experienced bullying during form one at a boarding school, leading her to switch schools during form two. As a result, she developed depressive symptoms and attempted suicide at the boarding school. Raised by her grandparents and aunties after her parents' divorce, her symptoms worsened due to elements of parental alienation syndrome. She eventually refused to attend school and was brought for treatment by her aunt. Diagnosed with Major Depressive Disorder with anxiety symptoms, she showed improvement with antidepressant and psychotherapy. Her aunt managed to resolve parental issues through communication with both parents. She subsequently obtained her driving license and achieved 4 As for her SPM. The psychological effects on the victim's mental health were explored, as well as the family dynamics and interventions implemented. These case studies shed light on the diverse manifestations and consequences of bullying on female adolescents' mental health. They reveal commonalities in terms of the timing of bullying incidents and seeking healthcare treatment. The series underscores the significance of recognizing and addressing the impact of bullying on adolescents' mental health and providing effective intervention as early as possible to promote their overall well-being.

World Diabetes Day 2022: Celebrating using multisectoral approach in Tumpat communities

Maizatul Madiyana Ashari[1], Wan Siti Sarah Wan Md Nawi[1], Mohamad Hafiz Harun[2], Nik Salauddin Embong[3], Hasneezah Hassan[2]

[1]Wakaf Bharu Health Clinic, Tumpat, Kelantan, Malaysia, [2]Tumpat District Health Office, Kelantan, Malaysia, [3]Diabetes Malaysia Association (Tumpat branch), Tumpat, Kelantan, Malaysia

ABSTRACT

The prevalence of diabetes in Malaysia is increasing in trend based on the National Health and Morbidity Survey 2019. It was estimated about 3.9 million of Malaysian adult populations have diabetes. In conjunction with the World Diabetes Day on 14 November, the Diabetes Malaysia Association collaborated with the Tumpat District Health Office to organize the World Diabetes Day on 17 December 2022. Hospital USM, the Tumpat Dental Office, and the Pasir Mas Health Office also participated in the celebration. The aim of this event was to raise awareness regarding the importance of healthy diet, footcare and proper exercise among participants. There was also demonstration of proper insulin injection techniques and health promotion on diabetes. The event was attended by 74 diabetic patients from 10 health clinics in Tumpat. The event was held at the Tumpat Unity Hall and began at 8:00 a.m. with registration of participants and ended at 12:30 p.m. Activities started simultaneously with a traditional game and an exercise session led by a group of physiotherapists and occupational therapists. A talk entitled 'Empowering yourself with diabetes self-management' was delivered by a Family Medicine Specialist from the Clinic Kesihatan Wakaf Bharu,. There was also a welcoming speech by Dr Mohamad Hafiz Harun, from Tumpat District Health Office and Dr Mohd Sukarno Saud as the Chairman of Diabetes Malaysia Association of Tumpat Branch. The event was inaugurated by the Honorable Dato' Dr Izani Hussin, as the Kelantan Local Government, Health, and Housing Committee Chairperson. There was also an exhibition from various disciplines, including health screening, health promotion, diet and nutrition, dentistry, and pharmaceutical booths. A short play to give more understanding on the myth and fact on diabetes was also organized by the Diabetes Malaysian Association. A closing ceremony was held, which included lucky draws for participants, prize-giving awards for diabetic patients who achieved their targeted HbA1c, sharing of clinical experiences in diabetes to the public and the presentation of tokens of appreciation to invited guests. The World Diabetes Day celebration is focused in educating and care for people living with diabetes. It is an opportunity to raise awareness for diabetes and the impact to a person and a good platform to introduce healthy lifestyle and diet control. Using multi-sectorial approach, the World Diabetes Day 2022 celebration in Tumpat had successfully raised the awareness for diabetes among participants and carers. Diabetes is a complicated disease with multifactorial aetiology and consequences; hence, a multi-sectoral approach is required to combat diabetes and its risk factors.

Imported human malaria cluster in a rubber plantation-subdistrict Bertam, Gua Musang, Kelantan

Mohamed Hizamudin Mohamed Nor[1], Noorfariza Nordin[1], Nik Mohd Shahrir Md Ghazali[2], Ab Rahman Ibrahim[3], Mohamad Ikhram Azman[3]

[1]Gua Musang District Health Office, Kelantan, Malaysia, [2]Entomology Unit, Gua Musang District Health Office, Kelantan, Malaysia, [3]Vector Unit, Gua Musang District Health Office

ABSTRACT

Introduction: Kelantan has the highest number of malaria cases in Peninsular Malaysia in 2022. Human malaria is still a threat in Gua Musang, Kelantan as it is a forested district with conducive climate conditions and ecosystems that support breeding and survival of anopheles species. The number of imported human malaria cases is increasing following the influx of immigrants into Gua Musang's district to fulfil job requirements in plantation areas. The imported human malaria cases present a risk of initiating outbreaks, epidemics, or increasing local transmission levels in high receptivity areas. This study aimed to describe the epidemiology characteristic of imported human malaria clusters that occurred in a rubber plantation and recommend control measures. **Materials and Methods:** A descriptive study was conducted in September 2022. Case was defined as a person with positive Blood Film Malaria Parasite (BFMP) or Polymerase Chain Reaction (PCR) from 27th July 2022 and living/working at a rubber plantation in subdistrict Bertam or those epidemiologically linked with or without malarial symptoms. Case detection among contacts were conducted through active and passive case detection within 2 km radius including BFMP and PCR among contact level 1. Interview, record review, laboratory, environmental and entomological investigation were conducted. **Results:** There were 84 workers in a rubber plantation who resided in 5 blocks (A, B, B1, B2, and C) in Bertam. An imported human malaria cluster was declared on 28th July 2022 after two cases were identified. All 82 contacts were investigated including 72 contacts level-1. There were 8 confirmed cases with BFMP and/or PCR positive. All confirmed cases were male immigrants with mean (SD) aged 31.6 (14.0) years old; 5 (62.5%) cases from Myanmar, 2 (25.0%) cases from Thailand and 1 (12.5%) case from Indonesia. Two cases (25.0%) were detected through passive case detection and remaining cases were through active case detection. Out of 8 confirmed cases, 5 (62.5%) were asymptomatic. Three cases (37.5%) were sub microscopically infected and were asymptomatic. Laboratory results revealed all 8 (100%) cases were positive for *Plasmodium Vivax*; 5 (62.5%) positive BFMP and 3 (37.5%) PCR detected. Gametocytes were detected in 2 cases from Thailand. The overall attack rate was 9.52% (8/84). Specific attack rate according to ethnicity was higher among Thais 13.3% (2/15) as compared to Myanma 12.8% (5/39). Entomological investigation was conducted, and RV scored 9 (high risk for malaria re-introduction). **Conclusion:** Influx of immigrants warrants active participation in malaria case detection, prevention, and control. Interagency collaboration is needed including strengthening of public-private partnership, training, regular vector control activities and production of multilingual health education materials.

Proportion of COVID-19 workplace transmission among healthcare workers in the Kelantan State Health Department

Muhammad Naim Deraman[1], Yelmizaitun Osman[2], Mohd Nazri Shafie[1]

[1]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [2]Occupational and Environmental Health Unit, Kelantan State Health Department, Malaysia

ABSTRACT

Introduction: Healthcare workers (HCWs) played an important role in managing COVID-19 pandemic. Healthcare facilities had become a high-risk place for the HCWs getting infected. The study objective was to determine the proportion of COVID-19 workplace transmission among HCWs in *Jabatan Kesihatan Negeri* (JKN) Kelantan. **Materials and Methods:** A retrospective record review using secondary data of COVID-19 HCW Case from a registry by *Unit Kesihatan Pekerjaan dan Alam Sekitar* (KPAS) JKN Kelantan and was analysed using Excel and SPSS version 26. A descriptive analysis was performed to determine the proportion of COVID-19 infection among HCWs in JKN Kelantan. **Results:** A total of 660 HCWs were notified as positive for COVID-19 between 1 March 2020 and 31 December 2021. The cases were mainly non-workplace transmission (77.1%), with workplace transmission cases 22.9%. The biggest proportion of COVID-19 infection occurred in hospitals (55.0%) followed by HCWs from health and dental health clinics (28.5%) while the least infection occurred among HCWs in health offices (16.5%). Managing more severe cases and performing high-risk procedures were the main reason most of the infections occurred in the hospital. **Conclusion:** JKN Kelantan had implemented control measures based on risk stratification in different facilities however the transmission still occurs. Further study is needed to identify significant associated factors of COVID-19 workplace transmission among HCWs in JKN Kelantan. Identifying these factors would help in the development of effective preventive measures to contain the spread of the virus at the workplace especially at the government healthcare facilities.

Knowledge, attitude and practice towards tuberculosis and its predictive factors among indigenous population in Pos Hau, Gua Musang, Malaysia

Nur Raihan Ismail, Noor Aida Abdullah, Zahratulfatin Mohd Mahfoz, Rosli Harun, Abiswari Ahmad, Mohd Hamidi Hassan

Gua Musang District Health Office, Gua Musang, Kelantan, Malaysia

ABSTRACT

Introduction: Tuberculosis remains one of the main health concerns affecting indigenous populations in Malaysia. Pos Hau, Gua Musang is facing a high tuberculosis burden with more than 50% of death cases involving tuberculosis positive patients. Studies on knowledge, attitude, and practice (KAP) toward tuberculosis among indigenous in Malaysia were lacking. This study aims to determine knowledge, attitude and practice toward tuberculosis and its predictors among indigenous population in Pos Hau, Gua Musang. **Materials and Methods:** A descriptive cross-sectional study was conducted among 114 indigenous in Pos Hau. A 35-item validated English version of tuberculosis KAP survey was used to collect data. Face-to-face interviews were carried out from May 21 to May 25 2023. The survey consisted of sociodemographic data and measured participants' KAP toward tuberculosis. Descriptive and linear regression statistical analyses were performed using SPSS version 21. **Results:** Majority of participants were females (53.5%), unemployed (62.5%) and had no formal education (47.9%). About 81.3% denied history of contact with tuberculosis patients. The overall mean score of knowledge was 40.76 (32.68), attitude 11.94 (11.51), and practice 23.47 (14.51). The predictive factors of knowledge were formal education (B=20.401; 95% CI: -22.998, 3.630, p<0.001) and married status (B=11.135; 95% CI: -0.115, 22.385, p=0.052). The predictive factors of attitude were had history of contact with confirmed tuberculosis cases (B=5.133; 95% CI: -9.884, -0.382, p=0.034) and younger age (B=-0.132; 95% CI: -0.260, -0.004, p=0.043). The predictive factors of practice were had history of contact with confirmed tuberculosis cases (B=-7.007; 95% CI: -12.972, -1.042, p=0.022) and formal education (B=7.575; 95% CI: 2.939, 12.211, p=0.002). **Conclusion:** Overall, knowledge and practices toward tuberculosis were rather good, but attitude was poor. The predictors of knowledge, attitude and practice were younger age, formal education, married status and had history of contact with confirmed tuberculosis cases. Effective educational programs and awareness raising campaigns should be consistently in place to improve the knowledge, attitude, and practice toward tuberculosis among this special indigenous population.

Development and validation of knowledge and attitude on COVID-19 infection and vaccination towards pregnancy questionnaire and validation of adult vaccine hesitancy scale among pregnant women

Nur Azreen Che Mood[1], Zainab Mat Yudin @ Badrin[1], Wan Muhamad Amir Wan Ahmad[1], Erinna Mohamad Zon[2], Azidah Abdul Kadir[3], Norhayati Mohd Noor[3], Norsiah Ali[4], Noorfaizahtul Hanim Md Nawawi[3]

[1]School of Dental Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [2]Department of Obstetrics and Gynaecology, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [3]Department of Family Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [4]Masjid Tanah Health Clinic, Masjid Tanah, Melaka, Malaysia

ABSTRACT

Introduction: Pregnancy is one of the risks for severe COVID-19 infection and COVID-19 vaccination acceptance among pregnant women is still an issue. This study aims to develop and validate the knowledge and attitude questionnaire to examine the COVID-19 infection and vaccination among pregnant women. It is also to validate the adult Vaccine Hesitancy Scale (aVHS) to assess vaccine hesitancy among pregnant women in Malaysia. **Materials and Methods:** There were eight expert panels involved in content validity after the items for knowledge and attitude were identified. About 10 pregnant women were involved in the face validity followed by reliability testing involving 200 pregnant women attending at Obstetrics and Gynecology Clinic, Universiti Sains Malaysia, Kelantan. **Results:** The item-level content validity index (I-CVI) is 0.96 for knowledge and 0.99 for attitude while 1.00 for perception, demonstrating good relevance of the 20 items to assess knowledge and the 22 items used to assess attitude while 10 items used to assess perception. Item-level face validity index (I-FVI) obtained is 0.99 for knowledge, 0.98 for attitude and 0.99 for perception questionnaires, indicating that the items were clear and comprehensible. The final model of questionnaires consisted of 20 items, 19 items and 9 items for knowledge, attitude, and perception, respectively. The Cronbach alpha scores were 0.91, 0.70 and 0.93 for knowledge, attitude, and perception, respectively. **Conclusion:** This newly developed and validated Malay version of the questionnaires is a valid and reliable tool for assessing knowledge and attitude questionnaire to examine the COVID-19 infection and vaccination among pregnant women. The revised Adult Vaccine Hesitancy Scale (aVHS) for pregnant women in assessing COVID-19 vaccine hesitancy is a reliable tool to be used.

Prevalence of female sexual dysfunction, its associated factors and quality of life among postmenopausal women attending primary care clinic in Kelantan

Harmy Mohammed Yusof[1,2], Lakhsmi Sivashunmugam[2], Saidi Abd Rahman[3], Hanif Ismail[4], Ayuni Ramli[5], Norhafiza Abd Rahim[6], Farah Adila Abdul Muttalib[6]

[1]Faculty of Medicine, Universiti Sultan Zainal Abidin, Terengganu, Malaysia, [2]Academy Family of Physician Malaysia, [3]Bandar Kuala Krai Health Clinic, Kuala Krai, Kelantan, Malaysia, [4]Gunong Health Clinic, Bachok, Kelantan, Malaysia, [5]Labok Health Clinic, Machang, Kelantan, [6]Wakaf Che Yeh Health Clinic, Kota Bharu, Kelantan, Malaysia

ABSTRACT

Introduction: Sexual dysfunction is common worldwide but is underdiagnosed and not properly treated, partly because patients are not likely to discuss it with their physician unless prompted. The purpose of this cross-sectional study was to determine the prevalence of female sexual dysfunction (FSD) among menopausal women in selected primary health care in Kelantan and investigate its association with chronic diseases and quality of life. **Materials and Methods:** This is a cross sectional study involving selected health clinics in four (KK Bandar Kuala Krai, KK Labok, KK Gunong, KK Wakaf Che Yeh) out of ten districts in Kelantan involving post-menopausal women attending outpatient clinic for general illness, chronic disease and wellness programmed, fulfil the inclusion criteria. **Results:** The study shows the prevalence of FSD was 51.2% among the study participants. There was a significant association between chronic diseases of both the husband and wife and FSD. The Post-menopausal women whose husbands had hypertension (odds ratio [OR] = 2.48, 95% confidence interval [CI]: 1.49-4.15), diabetes (OR = 2.06, 95% CI: 1.18-4.15), hyperlipidaemia (OR = 1.88, 95% CI: 1.08-3.27), or heart disease (OR = 3.42, 95% CI: 1.59-7.35) had increased odds of experiencing FSD. Furthermore, women with hyperlipidaemia themselves also had higher odds of FSD (OR = 1.94, 95% CI: 1.8-3.21). The duration of marriage was found to be associated with FSD, with longer marriages having slightly lower odds (OR = 0.96, 95% CI: 0.93-0.99). Additionally, a lower frequency of sexual intercourse (< once a month) was significantly associated with FSD (OR = 4.60, 95% CI: 2.26-9.37). Correlation analyses indicated negative and weak associations between FSD and various domains of physical health, psychological health, social relations, and environment as assessed by the MVFSFI and WHOQOL-BREF questionnaires. However, no significant association was found between FSD and overall quality of life. **Conclusion:** The prevalence of sexual dysfunction was 51.2%. Chronic diseases such as heart disease, hypertension, diabetes mellitus and hyperlipidaemia of either husband or wife were the common factors associated with female sexual dysfunction in the menopausal woman. Duration of marriage and frequency of intercourse were also associated with FSD. However, this study found no significant association between female sexual dysfunction and quality of life.

Lean clinic: Improving lead time, productivity and patient satisfaction through lean principles and digitalization of workflow in Gunong Health Clinic, Bachok

Hanif Ismail[1], Hasni Ibrahim[1], Dzyan Azlina Azman[1], Razan Ab Samat[2]

[1]Gunong Health Clinic, Bachok, Kelantan, Malaysia, [2]Bachok District Health Office, Bachok, Kelantan, Malaysia

ABSTRACT

Introduction: Long waiting time has always been a major problem in healthcare facilities including Gunong Health Clinic. Patients attending Gunong Health Clinic were 120,00 yearly and non-communicable diseases (NCD) patients were 10,000 (8%). Long waiting times result in dissatisfaction among NCD patients. In order to tackle the issue, Gunong Health Clinic has implemented lean principles and digitalization of workflow in Gunong Health Clinic. **Materials and Methods:** Lean Principle in Healthcare, analysis of pre-lean value stream mapping (VSM), NCD patients needed to go multiple stations which were registration, NCD room, consultation room and pharmacy. Few roots cause analysis was determined which were, not enough manpower, confined space and manual system. Kaizen burst have been implemented, which were changes location of NCD room, mobilize staff in charge in NCD room, Drive-Thru Pharmacy and implementing computerized system in clinics Advanced Clinic Management (ACM), In future VSM, the changes significantly reduce time, motion, extra processing and human error while improving efficiency, productivity and patient satisfaction. **Results:** The data is collected 3 times within the year 2017 to 2023 and has shown improved lead time from 87 minutes down to 40 minutes. It also reduces cost RM15K within 1 year, enables properly preserved documentations, and increases patient safety (survey by Lickert scale improved from 3 to 5 points). A few steps were taken to maintain and further improve the program by doing regular audits at six monthly, updates about the Lean program at Lean corner and continuous medical education for all staff. Due to the positive outcome of the study, Lean principle has been extended to all units in Gunong Health Clinic and subsequently adopted by Administrative Unit, Bachok District Health Office. **Conclusion:** Implementation of lean principles and digitizing workflow are good tools to improve overall performance, staff, and patient satisfaction. These measures should be implemented in all health facilities to innovate the healthcare system in Malaysia.

A decade of tuberculosis mortality and its determinants in Pasir Mas district, Kelantan

Nik Nur Liyana Che Hasan[1], Jusoh Awang Senik[1], Muhamad Yusof Zainal[2], Mohd Ihsan Mustapha Abdul Aziz[3], Zulaikha Mat Jusoh[3], Mohd Hazwan Baharuddin[4], Nik Aida Nik Adib[5]

[1]Bandar Pasir Mas Health Clinic, Kelantan, Malaysia, [2]Tendong Health Clinic, Kelantan, Malaysia, [3]Rantau Panjang Health Clinic, Kelantan, Malaysia, [4]Kelantan State Health Department, Kelantan, Malaysia, [5]Pasir Mas Health District Office, Kelantan, Malaysia

ABSTRACT

Introduction: Tuberculosis (TB) is a highly contagious and serious illness that necessitates appropriate treatment and care to prevent mortality. It is essential to comprehend the factors influencing TB mortality in order to enhance treatment outcomes. The study aims to determine the proportion of TB mortality and identify its determinants in Pasir Mas, Kelantan. **Materials and Methods:** A retrospective record review analysis was conducted by obtaining the relevant information from myTB database from 2012 to 2012. A total of 900 TB patients were selected using simple random sampling methods to be included in the study. Multiple logistic regression analysis was used to identify the determinants of TB mortality. **Results:** The proportion of TB mortality was 23% (95%CI: 0.20, 0.26). The factors associated with death among TB patients are patient being notified at hospital [AdjOR 2.58 (1.44, 4.64), p<0.05]; living in urban areas [AdjOR 0.38 (0.18, 9.78), p<0.001]; and had history of TB [AdjOR 0.45 (0.22, 0.94), p<0.05]. **Conclusion:** In short, nearly a quarter of deaths were recorded among TB patients in Pasir Mas and are contributed by hospital notification, rural residency, and newly diagnosed TB. Thus, comprehensive, and targeted intervention addressing these factors are needed. Implementing culturally relevant approaches in the management of TB patients can enhance the sustainability and effectiveness of the treatment program.

Perception of healthcare providers on their body image: Am I fat or fit?

Siti Fatimah Samsury[1], Mohd Nazri Shafei[1], Mohd Ismail Ibrahim[1], Noriah Mahmud[2]

[1]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [2]Occupational and Environmental Health Unit, Terengganu State Health Department, Terengganu, Malaysia

ABSTRACT

Introduction: Body self-image is an essential issue among healthcare providers (HCPs) that requires attention and intervention. Understanding body image is crucial in defining the social and psychological consequences of obesity, the medical effects of psychological issues, psychological factors that contribute to the aetiology of obesity. This study aimed to determine the perception of body image among excess body mass index (BMI) HCPs in Terengganu. **Materials and Methods:** A cross sectional study was conducted among 208 HCPs with excess BMI. The list of HCPs with mass index of 25 kg/m^2 and more, was obtained from Health screening records in Terengganu districts and the state health department. Study criteria exclude those who were pregnant, working less than 1 year and not available during data collection. The perception of Body self-image is assessed using a validated Malay Version of Body Self-Image Questionnaire-Short Form (Malay version BSIQ-SF). Scoring for negative affect and height dissatisfaction were between 1 to 40, and 1 to 15, respectively. The higher scores indicate a higher degree of body dissatisfaction. Meanwhile, the scoring for attractiveness evaluation and physical functionality awareness was between 1 to 30 and 1 to 20, respectively; a higher score indicates higher body satisfaction and higher awareness of maintaining good physical functionality. Data were entered and analysed using SPSS version 25. **Results:** The study participants were 150 women and 58 men with a mean (SD) age of 39.6 (7.17) years. We found that the mean (SD) score for the domain negative affect, attractive evaluation, physical functionality awareness and height dissatisfaction were 27.2 (7.73), 18.5 (5.21), 15.8 (3.48) and 8.6 (3.79) respectively. **Conclusion:** Healthcare providers in Terengganu showed dissatisfaction toward one's own height and their body image on negative emotional well-being. However, they were satisfied with their appearance and health fitness, and also had good awareness to maintain good physical functionality. These findings showed that there is a need for an intervention program focusing on healthy lifestyles to improve body image perception among healthcare providers.

Mentari@Hospital Universiti Sains Malaysia: A recovery hub for people with mental illness back to community by improving quality and satisfaction of life

Nor Asyikin Fadzil[1], Nuha Naimah Johari[2]

[1]Psychiatry Department, Hospital Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [2]Psychology Department, Universiti Teknologi Malaysia, Johor, Malaysia

ABSTRACT

Introduction: The latest national health survey showed an increased number of people suffering mental illness. The current Madani government gives priority to the prevention, treatment and recovery of this group of people to prevent serious consequences to the nation. Supporting the government policy, the health care practitioner should provide good quality care and continuous support to help patients strive for recovery. In a mental health setting, recovery is not only emphasised on managing the symptoms but building the resistance and resilience to survive as a mental health patient. In this pilot study, the role of psychiatric rehabilitation is observed to see how it affected the quality of life (QOL) and satisfaction with life (SWL) of psychiatric patients in Mentari@Hospital Universiti Sains Malaysia (Mentari@HUSM). **Materials and Methods:** A total of 20 participants participated in this pilot study and the instruments used are the WHOQOL- BREF and the Satisfaction with Life Scale (SWLS). **Results:** The findings indicate that the QOL in all domains of WHOQOL-BREF among the participants had increased compared to before they joined rehabilitation. **Conclusion:** The improvement in the participants QOL may be explained by the accepting environment that exists within MENTARI HUSM. The patients may also feel a sense of inclusion despite the difference between them which has improved the general social domain. QOL may have also improved due to the facility providing the patients with an opportunity to be trained and earn money which may have increased acceptance by their families and the community. SWL had slight improvement albeit not drastically which could be justified by the participant's personal acceptance and early stage of improvement. The subjective score of SWL differs as some show great improvement in their SWL while others remain constant.

Fluoride concentration of well water in Kelantan: A cross-sectional study

Aira Syazleen Ahmad[1], Asmani Abd Razak[2], Nor Azlina Hashim[1], Nor Hasliza Mohamed Yusoff[2]

[1]District Dental Health Office Kuala Krai, Kelantan, Malaysia, [2]Kelantan State Health Department, Kelantan, Malaysia

ABSTRACT

Introduction: Water supply in Kelantan comes from two main sources: the public water supply and the alternative source from the groundwater which is drained through wells. The treatment plants for public water supply were equipped with fluoride feeders but the fluoride concentration was far below the optimum level. The natural fluoride concentration of the domestic water supply should be assessed to ascertain whether the Kelantan population is genuinely experiencing fluoridated water shortage. This study aimed to determine the fluoride concentration of well water gathered from all districts in Kelantan. **Materials and Methods:** In this cross-sectional study, water from dug wells and tube wells were sampled from 137 mukims selected via random sampling. From these selected mukims, two houses with tube wells and two houses with dug wells were selected through convenience sampling technique. Water samples were collected from June to July 2023. For each sample, a volume of 250 ml was collected in clean and dry bottles and stored at room temperature in tightly sealed bottles until analysis. A total of 553 water samples were analysed using a HACH spectro-photometer model DR 1900 with SPADNS 2 Fluoride Reagent AccuVac. The fluoride concentration of each sample was obtained from the average of triplicate determination. The fluoride concentration across all districts were analysed by Kruskal-Wallis test, while the fluoride concentration between types of well were analysed by Mann-Whitney test. All significance levels were set at $p < 0.05$. **Results:** Findings showed that the fluoride concentration ranged between 0.00 – 0.75 ppm and a total of 488 wells had 0.00 ppm fluoride concentration readings. The fluoride level of well water in Kuala Krai was the highest (Median = 0.1 ppm). Kruskal-Wallis indicates that the fluoride level of well water in Kuala Krai was the highest (Mean Rank = 447.89), followed by Pasir Puteh (Mean Rank = 341.45), Jeli (Mean Rank = 351.17), and Kota Bharu (Mean Rank = 275.14), H (corrected for ties) = 174.19, df = 9, N = 553, p = 0.00. The fluoride concentration in water from tube wells and dug wells were 0.00 – 0.75 ppm and 0.00 – 0.30 ppm respectively. However, Mann-Whitney indicates no significant difference between fluoride level of tube well water (Mean Rank = 277.62, n = 277) and dug well water (Mean Rank = 276.38, n = 276), U = 38055.5, z = -0.16 (corrected for ties), p = 0.87. **Conclusion:** The present study demonstrated that fluoride concentration in well water in Kelantan is below the cut-offs established by the Ministry of Health Malaysia (0.4 – 0.6 ppm) for optimum level of fluoride in drinking water. It is advised that in addition to resuming fluoridation of the public water supply, stakeholders consider other fluoride delivery strategies that are effective for caries prevention in Kelantan.

Trends of disease outbreaks in Kelantan from 2018-2022: A descriptive study

Raja Hafendi Raja Abdullah, Nursuhailee Che Zake, Suhaiza Sulaiman, Mohd Faiz Md Ariffin, Tan Kean Teong, Muhammad Fikri Idris, Mohd Aidinniza Mohd Adib, Mohd Pazli Zainol

Surveillance Unit, Kelantan State Health Department, Kelantan, Malaysia

ABSTRACT

Introduction: Outbreaks of various infectious diseases have posed significant challenges to public health systems worldwide. This study aims to analyse the trends of outbreaks in Kelantan from 2018 till 2022, a state in Malaysia, in order to gain a comprehensive understanding of the patterns and characteristics of these outbreaks. Understanding these patterns were crucial for effective disease control measures and intervention strategies. **Materials and Methods:** A descriptive study design was conducted, utilizing data collected from multiple sources, including Kelantan Outbreak Registry Data, e-Wabak system, and official outbreak reports. The study period was from January 2018 to December 2022, focusing on the occurrence of outbreaks within Kelantan. Data entry and analysis were done using Microsoft Excel and presented with graphs, numbers, and percentages. **Results:** Over the five-year period, a total of 2,915 outbreaks were reported, with 222(10.1%) outbreaks in 2018, 533(24.3%) in 2019, 445(20.3%) in 2020, 767(34.9%) in 2021, and 228(10.4%) in 2022. Kota Bharu had the highest number of outbreaks, 1,396(63.6%), followed by Pasir Mas with 261(11.9%) and Bachok with 123(5.6%). The most prevalent outbreaks were dengue (1,051 outbreaks (47.88%)), and COVID-19 (845 outbreaks (38.50%)). Majority of outbreaks (1,234 outbreaks (56%)) were detected early within 1 day, and occurred in communities (1,734 outbreaks, 79.00%) with a mean duration of 27 days. **Conclusion:** The study provided an overview of disease outbreaks over a five-year period, highlighting the number and distribution of outbreaks across districts, type of diseases, duration of outbreaks as well as the time frame of outbreak declarations. The findings emphasize the need for effective public health planning and intervention strategies to mitigate the impact of these outbreaks. Further research is recommended to explore specific risk factors, evaluate the effectiveness of control measures, and enhance outbreak preparedness in the state.

The prevalence of type 2 diabetes mellitus among healthcare workers and its associated factors in Pasir Mas district, Kelantan

Anis Dhuha Fakri[1], Nur Shuhaiza Supian[2], Nur Dalilah Zin[3], Mohd Hazwan Baharuddin[4], Nik Aida Nik Adib[2], Noor Nazli Din[2], Najihah Mahfuzah Zakria[2]

[1]Bandar Pasir Mas Health Clinic, Pasir Mas, Kelantan, Malaysia, [2]Pasir Mas District Health Office, Pasir Mas, Kelantan, Malaysia, [3]Department of Family Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [4]HIV/STD/Hep C Unit, Kelantan State Health Department, Kelantan, Malaysia

ABSTRACT

Introduction: Type 2 Diabetes Mellitus (T2DM) has become a significant public health threat as the prevalence keeps increasing internationally and locally. Health care workers (HCWs) involved in managing and controlling T2DM serve and important role in increasing awareness on T2DM prevention. Despite working in an environment related to disease prevention and health promotion, HCWs are not spared from being affected with T2DM. Consequently, this would impair the health system function as T2DM is associated with countless acute and chronic complications which lead to negative impact to the quality of life of the HCWs. However, knowledge on prevalence and factors contributing to T2DM among HCWs is still scarce. This study aimed to determine the prevalence of T2DM among HCWs and its associated factors in Pasir Mas Health District, Kelantan. **Materials and Methods:** A cross-sectional study was conducted using secondary data extracted from HCWs screening records from January to May 2023 in Pasir Mas Health District. HCWs who fulfilled the study criteria were included in the study. All samples taken. All information was collected using proforma and analysed using IBM SPSS Version 26. The outcome was categorized into T2DM and non-T2DM. The parameters related to factors associated with T2DM were determined using Multiple Logistic Regression. **Results:** A total of 467 HCWs were included in the study. The mean age was 40.72 (SD 7.34) with the majority of them are female (70.2%). The prevalence of T2DM among HCWs in Pasir Mas Health District was 11.6% (95% CI 9%, 14%). HCWs with age ≥ 45 years old (AdjOR 4.71, 95% CI 2.43,9.13, p< 0.001), family history of T2DM (AdjOR 7.91, 95% CI 4.08,15.3, p<0.001) and hypercholesterolemia (AdjOR 0.47, 95% CI 0.24,0.92, p 0.028) were significantly associated with T2DM. **Conclusion:** The prevalence of T2DM among HCWs Pasir Mas Health District was 11.6%. The contributing factors for T2DM among HCWs were age, family history of T2DM and hypercholesterolemia. Therefore, these findings have the potential to assist in developing more focused interventions aimed at decreasing the occurrence of T2DM among HCWs. Consequently, this could lead to an enhancement in the quality of health services by promoting the well-being of HCWs and portraying a positive image.

From tasteful treats to tainted tables: Unveiling food-water borne outbreak at a girls' boarding school in Kelantan

Ahmad Zulfahmi Sha'ari[1], Hazlienor Mohd Hatta[1], Nik Mohd Hafiz Mohd Fuzi[1], Sharina Dir[2]

[1]Communicable Disease Control Unit, Disease Control Branch, Kelantan State Health Department, Kelantan, Malaysia, [2]Kota Bharu District Health Office, Kota Bharu, Kelantan, Malaysia

ABSTRACT

Introduction: Investigating the source of food and waterborne outbreaks poses significant challenges due to its complex nature, with diverse pathogens and a wide range of symptoms. This report presents an investigation into a recent food poisoning outbreak that occurred in an all-girls semi-boarding school with multiple contamination sources. To describe the outbreak's epidemiological characteristics, identify risk factors and the outbreak source, and detail the implemented control and preventive measures. **Materials and Methods:** Active and passive case detection, interviews, record reviews, laboratory and environmental investigation were executed. A case-control study was conducted involving individuals who had eaten in the school facilities within the incubation period or those who epidemiologically-link. The case was defined as individuals who experience one or more symptoms of stomach-ache, diarrhoea, dizziness, nausea, and vomiting, or fever. The asymptomatic control group was matched in a 1:2 ratio. Demographic data and three days' food history were digitally collected using an online form and were transferred to a spreadsheet template with statistical calculators. Descriptive data were analysed and the odd ratio for each food/water consumed was calculated. A Hazard Analysis and Critical Control Point (HACCP) was employed to identify critical control points. **Results:** A total of 34 cases were reported out of 1,931 individuals exposed, with an attack rate of 1.8%. All of them were students aged 13-17 years old and 70.6% (24) were boarding students and the rest were day students. Symptoms primarily included abdominal pain (94%) and diarrhoea (74%), with additional reports of nausea (44%), dizziness (44%), vomiting (24%), and fever (9%). The epidemiological curve displayed irregular patterns with multiple peaks, indicating multiple sources and an incubation period ranging from 3 to 44 hours. Prompt case-control analysis identified potential causative foods served in the school canteen over two days: tom yam fried rice (OR: 6.41, 95% CI: 2.012, 20.411), red chicken rice (OR: 4.93, 95% CI: 1.944, 12.499), and tom yam noodles (OR: 4.58, 95% CI: 1.503, 13.974). The suspected contamination was traced back to raw chicken, with Salmonella species as the likely agent. The HACCP analysis identified improper storage and thawing of chicken, and suboptimal cooking processes, as the main risk factors. Salmonella species were isolated from leftover raw chicken samples. The premises were temporarily closed, and comprehensive health education was provided to students and food handlers. **Conclusion:** This investigation emphasizes the significance of a well-coordinated and timely response, supported by digital advancements, in pinpointing the origins of food poisoning outbreaks, implementing suitable control measures, and providing education to those affected. Such measures are crucial in ensuring the health and safety of the affected population and preventing similar incidents in the future.

Poor glycaemic control and its associated risk factors among diabetic patients in Kuala Krai district, Kelantan

Mohd Fittri Fahmi Fauzi[1], Sarah Saizan[1], Hazura Mat Zubir[1], Mohd Hafiz Che Ismail[2]

[1]Kuala Krai District Health Office, Kuala Krai, Kelantan, Malaysia, [2]Department of Family Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

ABSTRACT

Introduction: Diabetes is a global public health concern with poor glycaemic control being a major challenge in developing countries despite availability of effective management strategies. Identification of the magnitude of the problem and risk factors enable us to devise targeted interventions. This study aimed to determine the prevalence and the associated risk factors contributing to poor glycaemic control among type 2 diabetes patients in Kuala Krai district. **Materials and Methods:** A cross-sectional study was done using the study population of T2DM cases registered in the National Diabetic Registry for Kuala Krai district from 2012 to 2022. Variables with more than 30% missing data were excluded. Sociodemographic and clinical information for the 1508 eligible samples were extracted from the registry. Glycaemic control was defined as good (HbA1c ≤6.5%) and poor (HbA1c >6.5%). Descriptive analysis, simple logistic regression and multiple logistic regression were performed to determine the prevalence and risk factors for poor glycaemic control. **Results:** 75.1% (95% CI: 72.9, 77.3) of diabetic patients in Kuala Krai have poor glycaemic control. The mean HbA1c of diabetic patients in Kuala Krai is 8.7% (SD 2.41). Male patients were better controlled than female (63.3%) while Indian ethnicity (80%) were relatively poorly controlled followed by Malay (76%) and Chinese ethnic (21%). Most patients with poor glycaemic control (63.9%) were overweight or obese. Among patients with poorly controlled HbA1c, more than half (56.3%) were 60 years old and below while 87.1% were first diagnosed when they were young adults (less than 40 years old). Multiple logistic regression revealed that younger age (AOR 0.96, 95%CI: 0.95, 0.97), longer duration of diabetes mellitus (AOR 1.08, 95%CI: 1.05, 1.11) and higher level of total cholesterol (AOR 1.22, 95%CI: 1.12, 1.33) were associated with poor glycaemic control. Gender, ethnicity, age of onset, BMI and presence of hypertension are not statistically significant in this study. **Conclusion:** This study highlights the need for healthcare practitioners to promptly identify and anticipate patients with potential poor glycemic control and deploy more aggressive approaches in managing them. From these findings, public health personnel should formulate more effective public health strategies to target specific risk factors known to contribute to poor glycemic control.

The effectiveness of the implementation of feeding centres for anaemic pregnant mothers among indigenous peoples in Gua Musang district, Kelantan

Nurul Asyifa Ezrin Ahmad Hapizudin[1], Mohammad Affendy MA[1], Siti Nuryati CY[2]

[1]Nutrition Unit, Gua Musang District Health Office, Gua Musang, Kelantan, Malaysia, [2]Kuala Betis Health Clinic, District Health Office Gua Musang, Kelantan State Health Department, Kelantan, Malaysia

ABSTRACT

Introduction: Anaemia during pregnancy is a significant problem globally. In Malaysia, between 19.3% to 57.4% pregnant women are found to be anaemic. Anaemia may cause premature birth complications and the risk of underweight babies. Poor nutrition is one of the risk factors for the occurrence of anaemia. The indigenous peoples *('Orang Asli')* community is a group at high risk of anaemia due to food insecurity, especially sources of protein and iron. This study was conducted to identify the effectiveness of the implementation of the feeding centre for pregnant mothers with anaemia (PuSIMA) among pregnant Orang Asli mothers in the Gua Musang district. **Materials and Methods:** This uncontrolled experimental study was conducted at the Kuala Betis Indigenous Transit Centre, Gua Musang, Kelantan from January to August 2022 involving seven mothers. Pregnant Orang Asli mothers, who were diagnosed with iron deficiency anaemia (haemoglobin level <11g/dL) in the gestational week between 32 and 34 weeks after being referred to a medical officer. The community cooking demo allocation of RM100 per month was used to provide a menu of high protein and iron foods (2 servings of protein) at three main meals for two weeks and their haemoglobin level readings were repeated using the Full Blood Count (FBC) investigation method. Anaemia prophylactic and therapeutic regimens were provided, as prescribed by medical officers based on the latest guidelines. **Results:** The average haemoglobin level of pregnant mothers in this study was 10.2g/dL at enrolment and increased to 10.9g/dL at discharge, with an average duration of 9.3 days in the study. No excess weight gain was recorded, and the average weight was 61.1kg at enrolment and 61.2kg at discharge. Protein sources provide heme iron that is easily absorbed and does not depend on the presence of promoters and inhibitors in the diet. **Conclusion:** PuSIMA was found to have succeeded in increasing the food availability for pregnant Orang Asli mothers, especially from protein sources, thereby increasing their haemoglobin levels. More controlled experimental studies such as randomized controlled clinical trials need to be done to determine the effectiveness of this implementation in the future. Sufficient allocation to carry out this study should be given attention by various parties to help reduce the anaemia problem especially among the Orang Asli community.

The effect of calcium supplements on levothyroxine after total thyroidectomy: A single centre analysis

Nazmi Liana Azmi, Wan Fazlinawati Wan Ismail, Wan Mastura Wan Mohamad Azlan

Department of Pharmacy, Hospital Raja Perempuan Zainab II, Kota Bharu, Kelantan, Malaysia

ABSTRACT

Introduction: Calcium supplements may be administered along with thyroid hormone replacement (levothyroxine) to overcome hypocalcaemia following total thyroidectomy. Even though clinically significant interaction between the two medications has been documented, such literature is still lacking in the local setting. This study aimed to assess the effect of calcium supplements on levothyroxine after total thyroidectomy. **Materials and Methods:** A retrospective study was conducted from 1 April to 30 September 2022 using a clinical registry which was the thyroid case proforma from the surgical department, Hospital Raja Perempuan Zainab II, Kota Bharu, Kelantan, Malaysia. The inclusion criteria were all patients who underwent total thyroidectomy in Hospital Raja Perempuan Zainab II from 1 January 2019 to 31 December 2020, prescribed either levothyroxine or levothyroxine with calcium supplements for at least three months after surgery. Those with incomplete data of thyroxine (T4), thyroid stimulating hormone (TSH) and calcium levels were excluded from the study. Eligible subjects were determined from the thyroid case proforma based on the study criteria. Since all patients who fulfilled the study criteria were included, no sample size calculation and sampling method was applied. Information on their demographic, clinical characteristics and laboratory results were further obtained from electronic medical records which was the Patient Management System (SPP) and documented in the data collection form. T4, TSH and calcium levels were compared between patients receiving levothyroxine with and without calcium supplements using independent t-test in Statistical Package for Social Sciences (SPSS) version 22. A statistically significant test result was set at a P-value of less than 0.05. **Results:** They were all Malay with mean (SD) age of 44.9 (15.2) years old, mostly female (82%, n=41) and married (86%, n=43). The diagnosis was mainly goitre (68%, n=34) with mean (SD) length of hospitalization after total thyroidectomy was 4.9 (1.8) days. Many of them had no comorbidities (60%, n=30) but were taking concomitant medications (78%, n=39) which were not known to interfere with levothyroxine (88%, n=44). Also, the majority were prescribed levothyroxine with calcium supplements (74%, n=37) When compared, it was found that the mean (SD) T4 levels were significantly different between patients receiving levothyroxine with calcium supplements and levothyroxine alone. The patients receiving levothyroxine with calcium supplements had lower T4 levels than those on levothyroxine only [11.56 (4.04) vs 15.68 (7.59) pmol/L, P=0.017]. The mean (SD) levels of TSH in both groups were also significantly different. The patients receiving levothyroxine with calcium supplements had higher TSH levels than those on levothyroxine only [9.66 (12.44) vs 1.13 (1.54) mIU/L, P<0.001]. However, there was no significant difference of calcium levels between patients receiving levothyroxine with and without calcium supplements [2.13 (0.22) vs 2.13 (0.16) mmol/L, P=0.929]. **Conclusion:** Calcium supplements were observed to have an effect on levothyroxine after total thyroidectomy. The interaction caused lower T4 levels and higher TSH levels in patients taking both medications. Thus, it is important for patients and healthcare providers to be aware that calcium supplements can interact with levothyroxine by affecting its absorption. Continuous education can help to decrease the risk of this clinically significant interaction.

Outbreak of typhoid fever at Machang Moral Rehabilitation Centre, Kelantan

Zulaiha Idris¹, Mohd Azimullah Abdullah@Zakaria², Mohd Azizul Ahmad¹, Siti Mursyidah Abd Aziz³, Zolnaidi Zakaria³

¹Inspectorate Unit, Machang District Health Office, Machang, Kelantan, Malaysia, ²District Health Office Machang, Kelantan, Malaysia, ³Communicable Disease Control Unit, Machang District Health Office, Machang, Kelantan, Malaysia

ABSTRACT

Introduction: Typhoid fever remains a major public health concern worldwide, particularly in developing countries with poor sanitation and hygiene conditions. In Malaysia, the disease is endemic in certain states, including Kelantan. In 2022, an outbreak of typhoid fever occurred at the Machang Moral Rehabilitation centre, involving an inmate. An outbreak is declared in a detention centre although there is a single case detected in the centre. This report aims to provide an epidemiological analysis of the typhoid fever outbreak at the Machang Moral Rehabilitation centre, focusing on the timeline, affected individuals, and contributing factors. Additionally, effective control and prevention measures are proposed. **Materials and Methods:** A descriptive epidemiological study was conducted, involving case investigations, identification of close contacts, active case detection, laboratory analysis of clinical samples (blood culture and serological tests), and environmental assessments. **Results:** The outbreak started with a confirmed typhoid fever case on December 11, 2022, involving a 40-year-old male inmate who had been transferred to the Amanah Block at the Machang Moral Rehabilitation centre. Subsequent investigations, a total of 86 inmates have been screened including the food handlers and there was no identified individuals affected within the Amanah, Tabah and Serving Unit Blocks. The source of infection and risk factors were explored, and control measures were implemented to prevent further transmission. **Conclusion:** This report highlights the occurrence of a typhoid fever outbreak at the Machang Moral Rehabilitation centre in Kelantan. Timely identification, effective case management, and implementation of preventive measures are crucial to containing and preventing the spread of the disease in similar settings.

Visit Checklist Krai: A digital healthcare management of risk stratification and disease monitoring database for patients with non-communicable diseases

Ahmad Mukhlis Rahimi[1], Nasibah Tuan Yaacob[1], Azhar Abd Ghani[1], Tuan Muhammad Izzat Haizam Tuan Mohd Tamizi[1], Fatin Atiqah Rosli[1], Hazura Mat Zubir[2]

[1]Bandar Kuala Krai Health Clinic, Kuala Krai, Kelantan, Malaysia, [2]Kuala Krai District Health Office, Kuala Krai, Kelantan, Malaysia

ABSTRACT

Summary: Visit Checklist (VC) Krai is a comprehensive offline database initiated in Health Clinic Bandar Kuala Krai since 2020 that encompasses individuals receiving outpatient care, including those with non-communicable disease (NCDs). It functions as a highly useful tool for categorizing the risk levels associated with NCDs, monitoring and tracking adherence to medication refills, clinic follow-ups and blood taking appointments. VC Krai incorporates a wide range of patient information, including demographic data, anthropometric measurements (such as weight, height, BMI, & waist circumference), as well as clinical parameters like random blood glucose and total cholesterol levels. Based on this data, individuals are stratified according to their risk profiling. For those individuals with established chronic diseases, their data management in VC Krai expands to include additional parameters such as HbA1c, lipid profile, renal profile, urine protein, estimated glomerular filtration rate (eGFR) and Framingham risk score (FRS). Furthermore, VC Krai monitors these individuals' adherence to clinic follow-ups, medication refills, and hospital appointments to ensure comprehensive disease management. This database offers numerous advantages. Healthcare providers can easily access up-to-date patient information, enabling effective monitoring and decision-making. The database helps identify and track patients who miss appointments or don't adhere to medication refills, ensuring timely interventions. It also offers valuable insights for developing targeted community programs and evaluating their impact. With the ability to monitor patients' health data over time, the database enables adjustments to treatment plans, resulting in improved outcomes. As many other systems, digitalization of the database presents several challenges that need to be addressed. This database requires trained personnel with expertise in data management, privacy regulations, and system administration to ensure accurate data entry and maintenance. It also needs a reliable backup system to mitigate the risk of data loss during device malfunctions or technical issues. Adequate facilities are also necessary for smooth database functioning. Furthermore, the offline nature of the database may require extensive data clean-up efforts to address issues like data overlap and ensure data integrity. Interoperability issues in offline databases also pose challenges for efficient data sharing mechanisms that make it harder for comprehensive disease management in different healthcare settings or regions. Overcoming these challenges requires careful planning, resource allocation, and ongoing maintenance to ensure a successful digitalization process. VC Krai undoubtedly represents a step forward in the digitization of health records, particularly for outpatient attendees in primary care. While it does face challenges, its benefits in improving patient care and management are undeniable. By recognizing the value of VC Krai and actively working together to address the challenges, the potential for improved healthcare outcomes and more efficient health record management can be realized.

Prevalence, barriers, and predictors towards pap smear screening in Kota Bharu district, Kelantan

Muhammad Faiz Che Yaacob[1], Ani Ismail[2], Zalani Zakaria[3], Raja Rosliza Raja Abdullah[4], Siti Sarah Mansor[3]

[1]Bandar Kota Bharu Health Clinic, Kota Bharu, Kelantan, Malaysia, [2]Kubang Kerian Health Clinic, Kota Bharu, Kelantan, Malaysia, [3]Cempaka Health Clinic, Kota Bharu, Kelantan, Malaysia, [4]Wakaf Che Yeh Health Clinic, Kota Bharu, Kelantan, Malaysia

ABSTRACT

Introduction: Cervical cancer is the second most common cancer among women worldwide since 1990. Screening for cervical cancer is important to detect early abnormal cells from the cervical epithelium. In Malaysia, the uptake of Pap smear screening remains low after more than 50 years of the implementation of Pap smear screening. The objective of this study was to determine the prevalence, barriers, and predictors towards Pap smear screening in Kota Bharu. **Materials and Methods:** This study used a cross-sectional study design. A simple random sampling of 392 women aged 18 to 65 years was recruited from the waiting rooms in Government Health Clinics in Kota Bharu. The consent form and validated self-administered questionnaire was distributed to the patients during their waiting hours. Then the data was collected and analysed. Simple logistic regression and multiple logistic regression were used in multivariate analysis. **Results:** 392 participants participated in this study; majority of them between 35 – 65 years old, Malay, with family monthly income more than 1500 Ringgit Malaysia. Regarding Pap smear Practice, 93.4% know about Pap smear and 77.8% had at least one Pap smear done once in their lifetime. Barrier towards Pap smear screening was being worried about the result identified (p=0.004). While age (p=0.002), health promotion from medical providers and media (p<0.001), self-awareness (p<0.001) and the practices of Pap smear screening after confinement (p<0.001) has significantly influenced the practice of Pap smear. **Conclusion:** This study showed good practice towards Pap smear test among study participants. The barriers of Pap smear screening were lack of basic knowledge regarding Pap smear procedure. While age, health education and promotion, own self-awareness and practices of Pap smear screening procedures after confinement have significantly influenced the practice of Pap smear test among women.

Mentari@Hospital Universiti Sains Malaysia an incubator for psychiatric rehabilitation, unite the diversity of patients with mental disorders back to community

Nor Asyikin Fadzil[1], Husna Najihah Zaini[2]

[1]Psychiatry Department, Hospital Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [2]Department of Psychology, Universiti Pendidikan Sultan Idris, Tanjong Malim, Perak, Malaysia

ABSTRACT

Summary: Mentari@Hospital Universiti Sains Malaysia (Mentari@HUSM) is a psychosocial rehabilitation unit under the Psychiatric department HUSM. It serves as a hub to integrate patients back into the community along with providing recovery and opportunity for them to live a normal life. In line with WHO and Mental Health Act 2001, it serves as a community mental health centre aimed to develop and maintain programs for mental health promotion, prevention and treatment of mental illness and also rehabilitation to patients who have been discharged from hospital. Adhering to the principle of 'Unity in Diversity', MENTARI@HUSM welcomes individuals with mental disability who have faced stigmatization and ostracization back to the community contributing rather than burdening. It also aims to provide continuity of mental health care in environments that are accessible to both public and mentally ill patients. In addition to that, to achieve its ultimate goals, MENTARI@HUSM has established a comprehensive sub-unit, including MENTARI Cafe, MENTARI Bakery and MENTARI Carwash which are accessible to both inpatients and outpatients. Furthermore, through collaborating with various agencies, MENTARI@HUSM has successfully developed programs for community integration and promoting independent living. Among the initiatives include, sending trainees to confectionery training at Mental Health Foundation Kuala Lumpur, contributing to trainees' personal needs and conducting public mental health screening at Kelantan State Government Secretary Office. Apart from vocational rehabilitation, MENTARI@HUSM also offered other services such as art and behavioral therapy, stress management, psychoeducation, instrumental activities and training programs. These programs aim to provide trainees with various benefits such as helping them to earn their own money, help to increase trainees' self-esteem and self-acceptance and develop skills and a sense of responsibility through the provision of certificate, incentives and recognition. This in turn will help trainees to live an independent life. The study conducted on the Quality and Satisfaction with Life Among MENTARI@HUSM's trainees has demonstrated the success of the program.

Factors associated with mortality among COVID-19 patients in Kota Bharu district, Kelantan

Anas Rosedi[1,2], Wan Soliha Wan Mohd Hanafi[2], Ahmad Zulfahmi Mohd Kamaruzaman[2], Siti Aisyah Zakaria[2], Sharina Dir[2]

[1]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [2]Kota Bharu District Health Office, Kota Bharu, Kelantan, Malaysia

ABSTRACT

Introduction: Kelantan had reported a significant COVID-19 mortality rate of 7 deaths per 10,000 people by the year 2022. Despite this, the state still has the lowest COVID-19 vaccination coverage in Malaysia, with only 65% of the population receiving at least one dose. Therefore, it is crucial to explore the factors associated with COVID-19 mortality, particularly the relationship between COVID-19 vaccination and death, to promote vaccination in Kelantan. The objective of this study was to determine the factors associated with mortality among adult COVID-19 patients in Kota Bharu in the year 2022. **Materials and Methods:** A retrospective cohort study was conducted from January 1, 2022, to December 31, 2022, using secondary data of confirmed COVID-19 cases from the surveillance unit of the Kelantan State Health Department. The study included confirmed COVID-19 patients aged 18 years and above. Multiple logistic regression analysis was then employed to examine the adjusted associations between the selected factors and COVID-19 mortality. **Results:** A total of 29,720 COVID-19 cases were reported in the year 2022, with 73 fatalities, resulting in a case fatality ratio of 0.2%. Multiple logistic regression analysis revealed that being vaccinated (at least one dose) decreased the odds of dying from COVID-19 by 49% (aOR 0.51, 95% CI; 0.30-0.89) compared to unvaccinated patients, after adjusting for age. Additionally, for each year of increase in age, the odds of dying from COVID-19 increased by 12% (aOR: 1.12, 95% CI: 1.10-1.14) after adjusting for vaccination status. **Conclusion:** This study underscores the importance of COVID-19 vaccination in preventing COVID-19-related deaths. Being vaccinated significantly reduces the risk of mortality among COVID-19 patients. Additionally, age remains a significant factor to COVID-19 mortality.

Factors associated with tuberculosis mortality in Kota Bharu district, Kelantan

Mohd Izrul Isham Rosidi[1,2]**, Ahmad Zulfahmi Mohd Kamaruzaman**[2]**, Wan Soliha Wan Mohd Hanafi**[2]**, Siti Aisyah Zakaria**[2]**, Sharina Dir**[2]

[1]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [2]Kota Bharu District Health Office, Kota Bharu, Kelantan, Malaysia

ABSTRACT

Introduction: Tuberculosis (TB) is a communicable disease causing significant morbidity and mortality worldwide, including in Malaysia. It is one of the leading causes of death from a single infectious organism and ranks higher than HIV/AIDS. The study aimed to determine the factors associated with TB mortality in Kota Bharu, Kelantan between 2018 to 2022. **Materials and Methods:** The study design used is a cross-sectional study design. All confirmed TB cases from 2018 to 2022 registered in National Tuberculosis Registry (NTBR) under Kota Bharu district were included. Factors associated with TB mortality were analysed by using simple and multiple logistic regression analysis. **Results:** A total of 1533 TB cases were included in the analysis, from which 224 cases (14.6%) occured in a period of 5 years. The prevalence of TB death was highest in 2021 (16.4%), while lowest in 2020 (13.7%). Analysis by multiple logistic regression analysis showed that factors significantly associated with TB mortality in Kota Bharu were age 45–64 years old (adjusted OR = 2.83; 95% CI: 1.86, 4.37), > 65 years old (adjusted OR = 7.22; 95% CI: 4.58; 11.6), Far Advanced X-ray (adjusted OR = 6.20; 95% CI: 3.45, 11.1), Moderately Advanced X-ray (adjusted OR = 1.98; 95% CI: 1.44, 2.74), and HIV-positive status (adjusted OR = 8.85; 95% CI: 5.54, 14.2). **Conclusion:** This study found that patients who were diagnosed with TB aged 45 years old and above, having far/moderately advanced chest x-ray and positive HIV had a higher risk for TB mortality. Early ad prompt diagnosis, enhanced screening, and close monitoring should be practiced to reduce TB mortality.

Diabetic control trends among type 2 diabetes mellitus in Kelantan state from 2012-2021

Omar Nazmi[1], Noor Hashimah Abdullah[1], Mohd Khairul Hanan Mohd Wajiah[2], Muhammad Amirul Juraimy Azhar[1], Norkhairul Jidin[1]

[1]Non-Communicable Disease Unit, Kelantan State Health Department, Kelantan, Malaysia, [2]Tumpat District Health Office, Tumpat, Kelantan, Malaysia

ABSTRACT

Introduction: Around 422 million people worldwide have diabetes mellitus (DM), the majority of whom reside in low- and middle-income nations. Malaysia is the 8th Country with the highest diabetic prevalence in Western Pacific Region. According to the National Morbidity Health Survey, The Prevalence of diabetes in Kelantan increased from 11.3% 2015 to 19.5% in 2019. A lack of glycaemic control results in uncontrolled diabetes, which causes numerous difficulties in people with diabetes mellitus. These problems, in turn, have the potential to significantly lower patient quality of life, shorten life expectancy, and raise the expense of treating the condition. The objective of the study is to monitor trends of QA diabetes control, percentage of reaching glycaemic control, and mean HbA1C among adult (≥ 18 years) Type 2 Diabetes Mellitus (T2DM) patients in Kelantan from 2012-2021. **Materials and Methods:** A retrospective data review of adult type 2 DM Clinical Audit (DMCA) from 2012-2021 was analysed descriptively in January - March 2023 using Microsoft Excel 2022. The sample of DMCA was randomly selected from adult (≥ 18 years) T2DM patients who registered in the National Diabetes Registry Database. The operational definition for QA diabetes control is the number of T2DM with HbA1c <6.5 over the total number of T2DM patients sampled whereas the denominator for percentage of reaching glycemic control was over the total number of T2DM with HbA1C test done. Percentage and mean were displayed for the trends. **Results:** All Districts QA diabetes trends in Kelantan showed an increment from 2012-2021. The range increments in all districts were 3.68%-14.29% in 2012 to 21.71%-36.08% in 2021. The district with the highest QA Diabetes in Kelantan in 2021 was Pasir Puteh 36.08%, followed by Pasir Mas 32.87%, Jeli 32.45%, and Kota Bharu 32.44%. 8 districts achieved QA diabetes above 30% in 2021. Pasir Mas and Tumpat achieved QA diabetes HbA1c <6.5 since 2017 and Kota Bharu achieved 30% in 2019. The Percentage of patients with T2DM reaching HbA1c <6.5% increased from 18.68% in 2012 to 35.06% in 2021. Furthermore, HbA1c <7% increased from 25.28% in 2012 to 40.85% in 2021. The Mean HbA1c <6.5% decreased from 2012 8.8 CI (8.8-8.9) to 2021 8.1 CI (8.0-8.1). **Conclusion:** Diabetic control among Adult T2DM in Kelantan showed improvement in 10 years duration in all districts. However, the performance still needs improvement since glycemic control is an important indicator to prevent complications.

Mammogram advocacy and women's health carnival: Healthy women, healthy nation

Lailatul Nur Noor Azmi[1], Mohamad Hafiz Harun[2], Nik Harlina Roza Nik Kazim[1], Tuan Zailina Tuan Ngah[3], Hasneezah Hassan[2]

[1]Wakaf Bharu Health Clinic, Tumpat, Kelantan, Malaysia, [2]Tumpat District Health Office, Tumpat, Kelantan, Malaysia, [3]Bandar Tumpat Health Clinic, Tumpat, Kelantan, Malaysia

ABSTRACT

Summary: Healthy women are vital in developing a healthier nation. However, women are at high risk to develop certain diseases like breast cancer and cervical cancer. According to the National Cancer Registry (2012-2016), the most common cancer among Malaysian women is breast cancer with an incidence of 34.1 per 100,000 population while cervical cancer is the 3rd most common cancer with an incidence of 6.2 per 100,000 population. So, women are entitled for early health screening because early detection saves lives. Kelantan Women's Welfare and Family Development Unit in collaboration with Tumpat District Health Office has organized Mammogram Advocacy and Women's Health Carnival on 18th May 2023. The aim of this carnival is to advocate for women's health, especially breast cancer and cervical cancer screening, as well as health screening for non-communicable diseases like diabetes, dyslipidaemia and hypertension, pre-pregnancy care and mental health awareness. A total of 155 women from Tumpat district participated in this carnival which was held in Tumpat Community Hall from 8:00 am till 1:00 pm. Each participant received a goodie bag containing breast cancer pamphlet, pink ribbon brooch and free meals for breakfast and lunch. The carnival started with morning exercise including Kegel's exercise by physiotherapist, followed by Breast Cancer Awareness Talk by Family Medicine Specialist, Pasir Pekan Health Clinic and then proceeded with launching ceremony by Tumpat District Health Officer. Various exhibitions were set up throughout the carnival like breast cancer screening booth using clinical breast examination and Braster test, cervical cancer screening using Pap Smear and HPV DNA test, pre-pregnancy care counselling, health screening with PEKA B40 registration counter, dental check-up, mental health screening using Depression, Anxiety and Stress Scale (DASS), and reproductive health exhibition by Reproductive Health Association of Kelantan (ReHAK). Overall, about 35 participants underwent health screening, 77 participants underwent mental health screening, 15 participants registered for pre-pregnancy care clinic, 20 participants underwent the Braster test for breast cancer screening, and another 20 participants underwent the Pap smear or HPV DNA test for cervical cancer screening. The result of the screening revealed 4 participants had abnormal Braster test and were referred for mammogram, whereas 9 participants were diagnosed with severe anxiety, 1 had severe depression, and 2 had severe stress and were referred to the counsellor, while the remainder of the screening revealed normal results. This carnival has successfully raised awareness about women's health among participants by multidisciplinary approach as well as emphasize on prevention, screening, early detection, and treatment. Moreover, using new technology such as the Braster test could increase the number of breast cancer screening among women aged 35 and older in the community.

Termite infestation and control in health facilities in Pasir Puteh district, Kelantan

Suraya Sulaiman¹, Zawiyah Dollah², Norjaiza Jaafar³, Noorhidayu Monyati Mohamed Noor²

¹Entomology & Pest Unit, Pasir Puteh District Health Office, Pasir Puteh, Kelantan, Malaysia, ²Pasir Puteh District Health Office, Pasir Puteh, Kelantan, Malaysia, ³Entomology & Pest Unit, Kelantan State Health Department, Kelantan, Malaysia

ABSTRACT

Introduction: Termites are a highly destructive group of insect pests in urban settings. Termite infestation causes negative economic impact by reducing the aesthetic value and the strength of buildings and structures. This leads to costly building maintenance and restoration. A common method of termite control is by using corrective soil treatment. Meanwhile, an alternative method of termite control is by using baiting treatment. A total of 19 complaints of termite infestations at health facilities in Pasir Puteh district were reported from 2016 to 2022. The baiting treatment method has just recently been used in 2022 at health facilities in Pasir Puteh over soil treatment to eliminate termite colonies. The objectives of this study are to determine the time frame of termite bait consumption and to perform cost analysis of using the termite baiting treatment method. **Materials and Methods:** Complaint records of termite infestations at health facilities in Pasir Puteh district from 2016 to 2022 were reviewed. Pest investigations were conducted accordingly to identify active mud tubes. The termites were sampled from active mud tubes and identified based on their morphology. Control activities using both corrective soil treatment and baiting treatment methods were conducted on active mud tubes only. For the corrective soil treatment method, quotations for control measure were enquired from registered pest control operators. Licensed pest control operators would pump termiticides into drilled holes along the perimeter of the house and this would only be done once. For the above-ground baiting method, the placement of bait stations with an active ingredient of Chlorofluarozon was carried out by the Entomology and Pest staff of District Health Office Pasir Puteh. These bait stations were placed overactive termite mud tubes. The bait stations were inspected bi-weekly and fresh bait were replaced until the bait consumption ceased. The time frame until the bait consumption ceased and the amount of bait used were recorded. The cost of termiticide usage for both methods were then recorded and analysed. **Results:** Out of 19 complaints, 5 (26%) soil corrective treatment method were done by pest control operators and 7 (37%) above-ground baiting treatment method were done by the Entomology and Pest staff of District Health Office Pasir Puteh. 79% of the complaints consist of lower termites (F: *Rhinotermitidae*) that have infested the health facilities, while 16% are of the higher termite group (F: *Terminitadae*), and the remaining 5% are of the drywood termites (F: *Kalotermitidae*). The results reported that 100% health facilities infected with higher and lower termites can be eliminated using the baiting treatment method with the aid of termite behaviour of trophallaxis. Chlorfluazuron bait needs an average of 8 to 16 weeks for lower termites and 16 to 20 weeks for higher termites to eliminate the infestation at the study sites. The baiting treatment method needs minimal usage of insecticides, and it is also less intrusive when compared to the corrective soil treatment method that requires extensive floor drilling to apply a relatively larger amount of termiticides into the ground. Furthermore, the baiting treatment method can reduce the cost by more than 50% compared to the corrective soil treatment method. **Conclusion:** Baiting treatment method using bait with Chlorfluazuron as an active ingredient may suppress and possibly eliminate termite colonies of both higher and lower within 2 to 5 months from the commencement of feeding. It can also save the treatment cost compared to the corrective soil treatment method. Further studies should be conducted to compare and contrast the entire treatment cost between the two methods.

Health service for the elderly in Klinik Desa Kolam, Kelantan

Azree Ali1, Satariah Yusoff¹, Hasni Ibrahim², Nazirul Munir Abu Hassan³, Azilawati Dollah³, Mohammad Fazrul Mohammad Basir³, Razan Ab Samat³

¹Mahligai Health Clinic, Bachok, Kelantan, Malaysia, ²Gunong Health Clinic, Bachok, Kelantan, Malaysia, 3Bachok District Health Office, Bachok, Kelantan, Malaysia

ABSTRACT

Summary: Population statistics has projected that Malaysia would be an ageing nation by 2030. To strengthen health promotion and disease prevention in the elderly population, the scope of geriatric services is expanded to the rural clinics or klinik desa (KD). The criteria for the selected KD are those with an average daily attendance of less than 15 clients per day and staffed by at least two permanent Community Nurses. The Elderly Health Service at KD Kolam was implemented in September 2020. A total of 280 seniors have been identified as being within the KD Kolam operating area. Most of the new and repeat screening activities are carried out in conjunction with antenatal, postnatal and child home visit sessions. The new registration and screening target is five senior citizens per month. There are four implementation indicators in this program: 1) elderly registration coverage in KD's operational area; 2) health screening coverage for the elderly in KD; 3) health screening coverage of the elderly detected to have a risk and 4) early intervention coverage for seniors at risk. The four indicators were successfully achieved in the KD Kolam elderly health program with 83.6% (184 individuals) at risk having been identified and all of them having been given early intervention. The Elderly Health Service at KD Kolam has proven to be successful in meeting the indicators that have been set and is capable of being an example of community-based services for the elderly.

A descriptive study on communicable diseases in Kelantan state, Malaysia from 2018-2022

Mohd Aidinniza Mohd Adib, Suhaiza Sulaiman, Raja Hafendi Raja Abdullah, Mohd Faiz Md Ariffin, Tan Kean Teong, Muhammad Fikri Idris, Mohd Pazli Zainol, Nursuhailee Che Zake

Surveillance Unit, Disease Control Branch, Kelantan State Health Department, Kelantan, Malaysia

ABSTRACT

Introduction: Communicable diseases pose significant public health challenges globally. By understanding the patterns and characteristics of these diseases, it will assist in the development of disease control measures and intervention strategies. This study aimed to describe the communicable diseases under the Control of Infectious Diseases Act 1988 reported in Kelantan from 2018 to 2022. **Materials and Methods:** A descriptive analysis was performed on data obtained from multiple sources of surveillance databases including eNotifikasi, eDengue, National TB Registry (NTBR), National AIDS Registry (NAR), and *eMeasles* systems. The study period was from January 2018 to December 2022. Data entry and analysis were conducted using Microsoft Excel and the results were presented with graphical representations, numerical values, and percentages. **Results:** A total of 43,771 infectious disease cases were reported in Kelantan during the study period. Majority of the cases were Malaysian (98.22%), Malays (95.91%), male (56.75%), and were notified within 24 hours from the date of diagnosis (91.22%). The mean age was 18.98 (SD 20.22). The highest number of cases occurred in 2022 (28.32%) while the lowest was reported in 2021 (4.85%). The three most common diseases were Hand, Foot & Mouth Disease (HFMD) (34.23%), Dengue fever (30.37%), and Tuberculosis (12.41%). Kota Bharu had the highest number of cases (41.09%), followed by Pasir Mas (8.75%) and Bachok (8.08%). **Conclusion:** Communicable diseases remain a significant health burden in Kelantan. The results highlight the burden and distribution of infectious diseases in Kelantan. Kota Bharu district has the highest burden of communicable diseases with the common reported disease being HFMD. Continued research and surveillance are necessary to understand the changing patterns of communicable diseases and to inform evidence-based interventions for better health outcomes in the region.

Predisposing factors towards potential metabolic syndrome among healthcare workers in Kota Bharu District Health Office, Kelantan

Nurul Fadhliah Abdullah[1], Sharina Dir[1], Siti Aisyah Zakaria[1], Wan Soliha Wan Mohd Hanafi[1], Mohd Ikhwan Azmi[2], Nora Aini Nawawi[1]

[1]Kota Bharu District Health Office, Kota Bharu, Kelantan, Malaysia, [2]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

ABSTRACT

Introduction: Metabolic syndrome (MetS), or "Syndrome X," is characterised by clustering of cardiovascular risk factors, namely, central obesity, elevated blood pressure, elevated plasma glucose, and dyslipidaemia. Several diagnostic criteria for MetS continued to emerge over the last few decades that recognised the variety of values in different populations. Workers involved with sedentary work may be predisposed to metabolic syndrome. The study objective was to determine the prevalence of metabolic syndrome risk factors and its predisposing factors among workers at the administrative and inspectorate unit in the Kota Bharu District Health Office. **Material and Methods:** The study design was a cross-sectional study using secondary data obtained from the Kota Bharu District Health Office KOSPEN WOW registry book. Health screening was carried out between 21st May to 31st May 2023 involving workers from the administrative and inspectorate unit. Harmonised definition from a Joint Interim Statement issued in 2009 was used to define the criteria of metabolic syndrome. Workers' age, waist circumference, height, weight, body mass index, blood pressure, fasting blood sugar, total cholesterol and depression, anxiety and stress test score were recorded. Workers with a minimum of two criterias were considered at high risk of potentially developing metabolic syndrome though the actual Harmonised Definition of Metabolic Disease must be at least three out of five criteria. Descriptive analysis, simple and multiple logistic regression were performed using SPSS version 26 software. **Results:** Secondary data was obtained from 141 Kota Bharu District Health Office workers from the administrative and inspectorate unit. The mean (SD) age of the workers was 36.4 (8.2) years old, were predominantly male (59.6%), from the inspectorate unit (66.7%) and non-smokers (94.3%). Almost 17% of the male workers had waist circumferences of more than 90cm while 57.9% of the female workers had waist circumference of more than 80cm. Around 40% of the workers had Body Mass Index (BMI) between 25.0 to 29.9, 16.3% had BMIs of more than 30 and 12.1% had fasting blood sugar of more than 5.6 mmol/L. The prevalence of blood pressure 130-139/85-89 was 55.3%. Mental health screening using the Depression Anxiety Stress Scales-21 showed 100% normal results. The predisposing factors for potential metabolic syndrome were waist circumference (AdjOR: 1.221 95% CI: 1.042, 1.431), systolic blood pressure (AdjOR: 1.128, 95% CI: 1.052, 1.210) and fasting blood glucose (AdjOR: 3.887, 95% CI: 1.415, 10.683). **Conclusion:** Workers involved with sedentary work who were at risk for metabolic syndrome require urgent KOSPEN WOW programme intervention. Comprehensive strategies and active participation by both workers and organizational commitment are vital to prevent metabolic syndrome. The registry book only captures data on total cholesterol, there is a need to detail out the actual components of triglyceride and high-density lipoprotein for every worker to detect those who fulfil the Harmonised criteria and those at risk in developing metabolic syndrome.

Situational analysis of epidemiological characteristics of dengue cases in Kota Bharu district, Kelantan from 2018-2022

Ahmad Zulfahmi Mohd Kamaruzaman, Zulhusni Najib, Sharina Dir, Wan Soliha Wan Mohd Hanafi, Siti Aishah Zakaria

Kota Bharu District Health Office, Kota Bharu, Kelantan, Malaysia

ABSTRACT

Introduction: Dengue fever is a significant public health concern in Malaysia, posing substantial challenges to healthcare systems and the population at large. As a vector-borne disease, the virus is transmitted by Aedes mosquitoes, which thrive in urban and semi-urban environments. The country's tropical climate provides favourable conditions for mosquito breeding, contributing to the persistence of dengue transmission. Dengue fever continues tobe a significant public health challenge worldwide, including in the district of Kota Bharu. The purpose of this study was to identify the epidemiological trend of dengue cases during a five-year period in Kota Bharu, characterise the epidemiological features, and offer insight into future dengue case management strategies. **Materials and Methods:** A descriptive study was done using data collected from E-Dengue from 1 January 2018 till 31 December 2022. The collected data were subsequently entered and analysed using SPSS version 26. **Results:** Between 2018 and 2022, Kota Bharu district registered 7504 dengue cases, with 2019 having the most cases (3365 cases). Majority of the cases involved adults (62.2%). There were nearly equal numbers of cases recorded among men and women, 3672(48.9%) and 3832(51.1%), respectively. According to the sub-district, the majority of cases were recorded in Panji (21.2%), followed by Kubang Kerian (15.7%), and Badang (12.5%). Other than fever, headache (92%), myalgia/arthralgia (90.3%), and nausea/vomiting (35.3%) were the most frequently reported symptoms. **Conclusion:** Dengue fever offers a serious health risk, particularly in Kota Bharu, where incidence rates are rising and its effects on people's lives and healthcare infrastructure are profound. This descriptive study provides an epidemiological insight for a comprehensive strategy that includes vector control, surveillance, community involvement, and ongoing research.

Detection of pathogenic *Leptospira sp.* from body surface of cockroaches by real time polymerase chain reaction

Latifah Ibrahim[1], Aliza Mohd Yacob[1], Mariana Ahamad[1], Roslina Husaini[1], Nurul Annissha Abd Saini[2], Asmah Hamid, Shafariatul Akmar[2]

[1]Institute for Medical Research, National Institutes of Health, Setia Alam, Selangor, Malaysia, [2]Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia

ABSTRACT

Introduction: Leptospirosis cases in Malaysia are increasing each year and are typically related to peridomestic rodents, specifically rats. They are the most important reservoirs of *Leptospira sp.* and have been significantly found sharing the same habitats with the cockroaches. Their interaction with humans is more or equal compared to the rats. Habitats that were contaminated with the urine of infected rats may contaminate the body of cockroaches with *Leptospira spp.* and probably their digestive tract too. This study has therefore attempted to demonstrate the potential role of cockroaches as carriers of pathogenic *Leptospira spp.* **Materials and Methods:** In this study, real time polymerase chain reaction (RT-PCR) method based on LipL32 gene was used to detect pathogenic *Leptospira spp* in selected locations in Selangor. One hundred thirty-seven cockroaches were captured using commercial cockroach traps from a wet market in Beranang, Selangor. Samples were taken from the body surface of each cockroach and cultured individually in EMJH media, then incubated in the dark condition for 2 month at 28°C, observed under x40 dark-field microscope to detect the presence of Leptospira spp. Genomic DNA was extracted from all 15 positive isolates which were subjected for RT- PCR assays using Agilent Brilliant III SYBR Master Mix which consists of a novel mutant Taq DNA polymerase. Primers LipL32-286R and LipL32-45F were used to amplify the targeted region of LipL32 gene, while probe Lip32-189P to detect the pathogenicity. Three pathogenic species (*Leptospira canicola, Leptospira javanica* and *Leptospira bataviae*) were used as positive controls and 2 negative control samples as references for this study. **Results:** Nine isolates from the body wash of the cockroaches produced Ct values ranging from 17.12 to 37.56, therefore were positive and pathogenic for *Leptospira spp.*, whereas 6 isolates (LS3, LS25, LS45, LS78, LS 87 and LS113 produced undetermined Ct values, therefore were free from any for pathogenic *Leptospira spp.* **Conclusion:** Cockroaches have the potential to be the mechanical carrier for Leptospira spp. Real Time PCR utilizing the mentioned set of primers and probes can be used to identify pathogenic *Leptospira spp.* from local cockroaches.

Prognostic factors of delayed sputum conversion among smear positive tuberculosis patients in Tanah Merah district from 2018-2022

Mohd Rujhan Hadfi Mat Daud[1], Aliff Ridzwan Hamidun[2], Farah Wahida Mohamad[2], Remie Aswarie Ramlan[2], Siti Nurul Fatihah Abdullah[2]

[1]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [2]Tanah Merah District Health Office, Tanah Merah, Kelantan Malaysia

ABSTRACT

Introduction: Tuberculosis is one of the oldest diseases known to affect humans and it is a major cause of death worldwide. The disease is completely curable with an at least 6-month course of treatment. Sputum smear conversion is an indication of patients responding well to tuberculosis treatment. However, previous studies have shown that 10 to 20 percent of cases have delayed sputum smear conversion. The aim of this study is to determine the prognostic factors of delayed sputum conversion among smear positive tuberculosis patients in Tanah Merah district. **Materials and Methods:** This study was conducted using secondary data from MyTB from 2018 to 2022. MyTB is a tuberculosis surveillance system managed by the TB and Leprosy Control Sector of Disease Control Division, Ministry of Health Malaysia. MyTB is input by well-trained health care workers in tuberculosis at health clinics and the data were monitored weekly at district health office and state health department level. All smear positive pulmonary tuberculosis patient's data were included in this study. The independent variables included in this study are age, gender, race, nationality, location of residence, type of residence, education level, working status, smoking status, diabetic status, HIV status, BCG scar status, treatment category and pretreatment chest x-ray findings. The dependent variable is the sputum smear result at the end of the intensive phase. The data were initially analysed using descriptive statistics and multiple logistic regressions were used to determine the association between delayed sputum smear conversion and the independent variables. The fitness of the regression model was assessed with Hosmer and Lemeshow goodness of fit, classification table and area under the receiver operating characteristic (ROC) curve. **Results:** A total of 253 cases of smear positive tuberculosis were reported in Tanah Merah district from 2018 to 2022. Thirty-one (12.3%) of them were reported to have delayed sputum conversion at the end of intensive phase treatment. The mean age of those with delayed sputum conversion is 52.5 with standard deviation of 13.1. Majority of them are male (80.6%), Malay (90.3%), Malaysian (93.5%), have BCG scar (90.3%) and not have HIV (96.8%). Almost half were not working and were nonsmokers. Having diabetic (AdjOR: 2.83; 95% CI: 1.28, 6.26) and living in urban area (AdjOR: 2.59; 95% CI: 1.06, 6.31) were found to be significant prognostic factors associated with delayed sputum conversion in smear positive tuberculosis patient. **Conclusion:** Patients with diabetic and patients living in urban areas need to be given extra attention during the intensive phase of treatment. Compliance on treatment and good diabetic control are important in managing tuberculosis to ensure success of tuberculosis treatment.

Profile of modern contraceptive use among healthcare providers in Kelantan

Nur Nabila Jusoh, **Tengku Alina Tengku Ismail**, **Suhaily Mohd Hairon**

Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

ABSTRACT

Introduction: Healthcare providers (HCPs) are important sources of contraceptive information compared to friends, family, or media. One-third of HCPs share their personal experience of contraception during contraceptive counselling with clients, which influenced the clients' decisions. Hence, it is crucial to explore the HCPs' personal contraceptive use. The aim of this study is to describe the personal use of modern contraception among HCPs and compare the characteristics between users and non-users. **Materials and Methods:** A cross-sectional study was conducted among doctors and nurses working in Maternal and Child Health services from 24 Health Clinics in Kelantan. The eligibility criteria were married females who are within the reproductive age group. A self-administered proforma was used for data collection. The chi-square test, Fisher exact test, and independent t-test were applied to compare the characteristics of modern contraceptive users and non-users. In this study, the users were defined as the HCPs who ever used any modern contraception. **Results:** A total of 338 doctors and nurses were involved in this study. Most HCPs were Malay (99.1%) and nurses (67.8%), with a mean (SD) age of 40.08 (5.66) years old. The most common modern contraception used is pills (50.0%), followed by injections (28.4%). Whereas the least popular contraceptive methods were implants (12.4%), intrauterine devices (10.4%) and bilateral tubal ligations (2.7%). Notably, 23.1% (n=78) HCPs never use any modern contraception. Among the non-users, 52.6% were older than 40 years old and 9.0% were grand multipara. The average number of children was significantly lower among the non-users compared to the users (2.27 vs 3.37, p<0.001). **Conclusion:** The study showed that modern contraception usage among HCPs was higher than that of the general population. Despite having vast experience in providing contraceptive services, these HCPs preferred short-acting reversible contraception compared to long-acting reversible contraception; and the non-use of contraception was a concern.

Quality levels of microbiology and heavy metals of unlicensed water vending machine in the state of Kelantan

Amran Hasan[1], Mohd Amir Bazli Mohd Rasdi[1], Natrah Abu Bakar[1], Nik Nurain Nik Hanafi[2], Rusdawani Abdullah[2], Norasmawati Ramli[3]

[1]Food Safety and Quality Division, Kelantan State Health Department, Kelantan, Malaysia, [2]Food Safety and Quality Laboratory, Kelantan State Health Department, Kelantan, Malaysia, [3]Gua Musang District Health Office, Gua Musang, Kelantan, Malaysia

ABSTRACT

Introduction: The use of a Water Vending Machine (WVM) has become one of the initiatives for users to obtain clean water supplies for urban and rural areas. Based on the Food Regulations 1985 oblige that all WVMs must be licensed before starting its operation and must use sources from public water supply. However, there are still applications for WVM license that operate using sources other than public water supply such as tube well, open well and Gravity Feed System (GFS). This study was conducted to determine the level of microbiological quality and the content of heavy metals Lead (Pb) and Cadmium (Cd) in WVM water by which WVM was operated using sources other than public water supply. **Materials and Methods:** A cross-sectional study was conducted in 10 districts of Kelantan state. Water samples were taken from Bachok, Gua Musang, Jeli, Kota Bharu, Kuala Krai, Machang, Pasir Puteh, Pasir Mas, Tanah Merah and Tumpat. The three main water sources for the WVM are tube well water, open well water and Gravity Feed System (GFS) water. A total of 83 WVM water samples were taken from various sources, namely 64 samples (77.10%) from tube wells, 6 samples (7.23%) from open wells and 13 samples (15.67%) from GFS. All samples were collected using random sampling and sent to Kelantan Food Safety and Quality Laboratory for analysis and quantifying the presence of coliform, *E.coli*, plumbum(pb) and cadmium (cd). **Results:** The results were compared with the requirements of Table 25, Subregulation 360(3), PPM 1985. The percentage of sample compliance showed coliform (62.65%), *E. coli* (73.49%) and 100% for Pb and Cd. 64 samples from the tube well showed that 42 samples (65.63%) were not detected with the presence of coliform and 22 samples (34.37) were detected with the presence of coliform. 4 samples (66.67%) from open well were not detected with coliform while 2 samples (33.33%) were detected with coliform. 6 samples (46.15%) from GFS were not detected with coliform and 7 samples (53.85%) were detected. *E. coli* was detected in 16 tube well samples (25%) and 48 tube well samples (75%) were not detected with *e.coli*. 5 open well samples (83.33) were not detected with *E.coli* but 1 sample (16.67%) was detected. 8 GFS samples (61.54%) were not detected with *E.coli* and 5 samples (38.46%) were detected. All 83 samples consisting of GFS, open well and tube well were not detected with plumbum and cadmium. **Conclusion:** WVM that operated using sources of water from other public supply was found to be microbiological hazardous for direct consumption. Enforcement must be emphasized to detect and seal those unlicensed WVMs to avoid public usage and prevent water-borne diseases. Health education needs to be continuous to increase public awareness in choosing a licensed and safer WVM.

The prevalence of generalised anxiety disorder and its associated factors among nurses in primary health care facilities in Kota Bharu district, Kelantan

Nurul Fadhliah Abdullah[1], Nur Raidah Hashim[2], Sharina Dir[1], Siti Aisyah Zakaria[1], Wan Soliha Wan Mohd Hanafi[1], Ahmad Zulfahmi Kamaruzzaman[1], Mohd Khairul Ashraf Khalid[3], Mohd Ikhwan Azmi[3], Erwan Ershad Ahmad Khan[3], Mohd Izrul Isham Rosedi[3], Diam Zaiffa Talib[1]

[1]Kota Bharu District Health Office, Kota Bharu, Kelantan, Malaysia, [2]Disease Control Branch, Kelantan State Health Department, Kelantan, Malaysia, [3]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

ABSTRACT

Introduction: Our health care system significantly relies on nursing, and patient care depends on their ability to work and provide the best care possible. Anxiety is the most common mental health disorder and nurses are at risk of anxiety as they are the frontliner of the patient care. The objective of this study is to determine Generalized Anxiety Disorder (GAD) prevalence and its associated factors among nurses in primary health care facilities in Kota Bharu in 2022. **Materials and Methods:** This cross-sectional study was conducted in September up to December 2022 among nurses in primary health care in the district of Kota Bharu, Kelantan. All nurses working in Government Healthcare facilities in Kota Bharu were recruited in this study. The study participants were required to complete the online Generalized Anxiety Disorder-7 (GAD-7) questionnaire. Those who scored ≥ 8 represent a reasonable cut-point for identifying probable cases of generalized anxiety disorder. No sampling method was done since all available data were included in the study as it was approximate to the number of the sample size calculated. The data was entered into IBM SPSS Statistics 26 and analysed with simple and multiple linear regression analysis to determine factors associated with anxiety among primary health care nurses in Kota Bharu. **Results:** The response rate was 85.4%, where 392 out of 459 nurses participated in the study. The prevalence of Generalized Anxiety Disorder in this study was recorded at 3.0% where 12 samples out of 392 got score 8 and above. Factors associated with GAD include marital status (β: -1.19, 95% CI: -2.3, -0.13), having people who needs special care at home (β:1.07, 95% CI: 0.62,2.78) and working experiences in KKM, (β: 0.626, 95% CI: 0.07,1.19). **Conclusion:** The prevalence of generalized anxiety disorder of nurses in this study was lower than other published studies. This study can serve as evident baseline data and can initiate comprehensive strategies to promote mental health and wellbeing of nurses in Kota Bharu hence ensuring the best professional performance and quality of patient care.

Factors associated with improved activities of daily living among stroke patients post domiciliary care in the district of Kota Bharu, Kelantan

Nik Nor Fatihah N Mahamed[1], Sharina Dir[1], Siti Aisyah Zakaria[1], Wan Soliha Wan Mohd Hanafi[1], Ahmad Zulfahmi Kamaruzzaman[1], Mohd Khairul Ashraf Khalid[2], Erwan Ershad Ahmad Khan[2], Mohd Ikhwan Azmi[2], Mohd Izrul Isham Rosedi[2]

[1]Kota Bharu District Health Office, Kota Bharu, Kelantan, Malaysia, Kota Bharu District Health Office, Ministry of Health Malaysia, Kota Bharu, Kelantan, Malaysia

ABSTRACT

Introduction: Stroke is a debilitating disease with a complex neurological impairment, adding to morbidity and mortality. Home-based rehabilitation therapy has been shown to have a huge influence on functional recovery and quality of life among stroke survivors. This study aimed to determine factors influencing the improvement in activities of daily living (ADL) among stroke survivors receiving domiciliary care service in the district of Kota Bharu. **Materials and Methods:** This secondary data registry review study utilised data from domiciliary care records from the total of 12 health clinics which offer domiciliary care in the district of Kota Bharu from 2014 until December 2022. A logistic regression (LR) model was performed to assess factors influencing ADL improvement. Improved ADL was defined as obtaining at least 30% improvement in Modified Barthel Index at the end of the program. No sampling method was done since all available data were included in the study as it was approximated to the number of the sample size calculated. The data was entered into IBM SPSS Statistics 29 and analysed with simple and multiple linear regression analysis to determine factors associated with improvement in ADL among stroke survivors after domiciliary care service in the district of Kota Bharu. **Results:** From the records review, 75.7% of the participants had improved ADL following domiciliary care service. The mean age of the sample was 65.8 years (SD = 12.40). The majority were ischemic stroke survivors (73.6%). In the single LR model, the influencing factors of ADL improvement were married (odds ratio [OR] = 0.09; p = .004) and history of previous stroke (odds ratio [OR] = 0.49; p = 0.075). The multiple LR model shows married (adjusted odds ratio [Adj. OR] = 0.11; p < .011). **Conclusion:** Marriedness was the only significant factor which influenced the improvement in ADL in stroke patient post domiciliary intervention. Lack of relevance & accuracy of the secondary data had caused less variability in the data collected.

Evaluating the benefit of Trim and Fit program: An obesity management program utilizing a group-based multidisciplinary approach

Fatihah Fadil¹, Mohamad Azwan Hassan¹, Nasibah Tuan Yaacob², Hazura Mat Zubir³

¹Manek Urai Health Clinic, Kuala Krai, Kelantan, Malaysia, ²Bandar Kuala Krai Health Clinic, Kuala Krai, Kelantan, Malaysia, ³Kuala Krai District Health Office, Kuala Krai, Kelantan, Malaysia

ABSTRACT

Introduction: Obesity is an intensifying global health issue, including among healthcare professionals, that demands a multidisciplinary approach. According to a local survey, 21.1% of healthcare professionals (HCPs) are overweight and 33.1% of HCPs are obese. Due to the increased risk of non-communicable illnesses that obesity is linked to, a multidisciplinary approach is necessary. The aim was to assess the effectiveness of the Trim & Fit Program in weight management among healthcare professionals with overweight/obesity and determine the changes in the BMI, percentage of body fat, blood pressure, fasting blood sugar and cholesterol levels after the Trim and Fit Program. **Materials and Methods:** This intervention program explores the potential involvement of a group of experts including family physician, nutritionist, physiotherapist, counsellor, and pharmacist in the management program implemented in Health Clinic Manek Urai, Kuala Krai, Kelantan. Fifteen individuals with overweight and obesity willingly participated in the program, engaging in group sessions over eight months. Baseline assessments captured vital data on demographics, weight, height, body mass index (BMI), waist circumference, waist-hip ratio (WHR), arm circumference, calorie intake, fat percentage, energy intake, total cholesterol, and fasting glucose. Through structured nutritional education, behavioural therapy, and exercise prescription, participants experienced continuous intervention and support. A WhatsApp group was created between participants to share experiences on the weight loss journey as well as a support group to encourage one another. Post-intervention evaluations measure the outcome across these dimensions. **Results:** Exciting findings emerged after 8 months of post-intervention. A Wilcoxon Signed Rank Test showed a statistically significant reduction in BMI (Z=-3.410,p=0.001), weight (Z=-3.409,p=0.001), waist circumference (Z=-3.412,p=0.001), arm circumference (Z=-3.417,p=0.001), body fat weight (Z=-3.411,p=0.001), fat percentage (Z=-3.409,p=0.001), systolic blood pressure (Z=-2.918,p=0.004), fasting blood sugar (Z=-3.304,p<0.001), and cholesterol (Z=-3.297,p=0.001), but not in calorie intake (Z=-2.556,p=0.11) or water percentage (Z-625,p=0.532). **Conclusion:** This intervention program highlights the importance of group management for obesity within a local clinic. The collaboration of a nutritionist, family doctor, physiotherapist, and counsellor manifest invaluable benefits such as reduced weight, BMI, blood pressure, fasting blood sugar, cholesterol levels and body fat percentage. While this intervention program's sample size is small, it reveals the potential impact of the group management program to deliver evidentiary outcomes for individuals struggling with obesity. Further research encompassing larger cohorts and extended follow-up periods is warranted to validate these findings, enlightening the program's effectiveness in tackling obesity.

Prevalence and associated factors of intimate partner violence among women of reproductive age in Malaysia

Hamizatul Akmal Abd Hamid[1], Chan Ying Ying[1], Tania Gayle Robert Lourdes[1], Muhammad Fadhli Mohd Yusoff[1], Sajaratulnisah Othman[2], Mohd Ruhaizie Riyadzi[1], Thamil Arasu Saminathan[1], Noor Raihan Khamal[3], Rashidah Shuib[4], Mohamad Aznuddin Abd Razak[1], Mohd Shaiful Azlan Kassim[1]

[1]Institute for Public Health, National Institutes of Health, Ministry of Health, Malaysia, [2]Universiti Malaya, Wilayah Persekutuan Kuala Lumpur, Malaysia, [3]National Centre of Excellence for Mental Health (NCEMH), Cyberjaya, Ministry of Health, Malaysia, [4]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

ABSTRACT

Introduction: Intimate partner violence (IPV) against women is a global public health issue associated with detrimental social and health effects. Understanding the factors contributing to IPV will pave a way for the development of targeted policies and effective strategies against IPV in Malaysia. This study seeks to shed some light on the prevalence and associated factors of IPV among women of reproductive age in Malaysia. **Materials and Methods:** The study utilised data from the National Health and Morbidity Survey: Maternal and Child Health (NHMS MCH) 2022, a cross-sectional nationwide survey with a multistage stratified sampling design. Women of reproductive age (15 to 49 years) who have ever been married or living with a partner were selected to answer the self-administered questionnaire. The questionnaire was adapted from WHO Multi-country Study on Women's Health and Life Events Questionnaire. Lifetime IPV was defined as women's lifetime exposure to any of the three types of IPV: physical, psychological or sexual violence by a current or former husband or intimate partner. Complex sample design estimates and multivariable logistic regression were used in the analysis. **Results:** A total of 1,877 respondents participated in the study, giving a response rate of 86.6%. The prevalence of lifetime IPV among reproductive-age women was 7.1% (95% CI: 5.19, 9.69), with an estimated 432,089 women in Malaysia. The prevalence of women who ever experienced psychological, physical and sexual violence were 5.9% (95% CI: 4.13, 8.42), 3.6% (95% CI: 2.47, 5.20) and 1.6% (95% CI: 0.93, 2.83), respectively. Women who were of Indian ethnicity [aOR 2.3, 95% CI: 1.14, 4.58], currently not married or no current partner [aOR 10.4, 95% CI: 5.43, 19.90], no formal or primary education [aOR 2.3, 95% CI: 1.05, 5.14] and those who experience controlling behaviour by their intimate partner [aOR 4.6, 95% CI: 2.92, 7.35] were more likely to experience lifetime IPV. **Conclusion:** Despite finding a relatively low prevalence of lifetime IPV, this study unveils a crucial issue: controlling behaviours exhibited by intimate partners significantly contribute to IPV among Malaysian women. Hence, it is imperative to launch effective and strategic campaigns that foster public awareness and understanding of IPV. Furthermore, intervention strategies must prioritise prevention, specifically tackling controlling behaviour within intimate relationships. By doing so, we can foster a culture of non-violence and promote healthy, harmonious relationships.

Audit of clinical asthma management in health clinic in Machang district: A retrospective analysis

Mursyida Yusuf[1], Noraza Abdul Rahman[1], Mohd Azimullah[2]

[1]Batu 30 Health Clinic, Machang, Kelantan, Malaysia, [2]Machang District Health Office, Machang, Kelantan, Malaysia

ABSTRACT

Introduction: This retrospective study aims to audit the clinical management of asthma in the health clinics in Machang, focusing on evaluation of clinical aspects of asthma management by medical officers. The objective of the study is to identify the weakness and to improve the quality of asthma management by the medical officer in the health clinicc. **Materials and Methods:** Medical records of asthma patients attending primary care clinics in Machang were reviewed starting from 1 June until 30 November 2022. Data from the asthma book were collected during this audit. The adherence to key performance indicators, including asthma registry, 6 topics on health education, evaluation of asthma based on GINA or ACT score, asthma control, optimizing management, appropriate treatment given, and appropriate follow-up, was assessed. **Results:** A total of 135 asthma patients' records were included in the analysis. 100 % of the patients in this study were registered in the asthma registry. Overall, 86% of the patients were given health education based on the 6 main topics which include asthma pathophysiology, aggravating factors, treatment of asthma, inhaler/spaces techniques, asthma control level and action plan of asthma. In terms of evaluations of asthma 92 % were assessed based on GINA/ACT score and 96 % level of asthma control was assessed on the last visit. Only 68% of patients were given optimized management of their asthma. However, 95 % of the patients were given appropriate treatment, and 97 % of them were given appropriate follow-up. **Conclusion:** This audit highlights the areas for improvement in the clinical management of asthma in primary care settings in Machang district. It identifies the need for the medical officer to optimize their knowledge of asthma management. These findings emphasize the importance of continuous quality improvement initiatives in primary care to optimize asthma management and improve patient outcomes.

The impact of pre-pregnancy body mass index on weight gain: A two-year study among patients with gestational diabetes in Pasir Mas district, Kelantan

Munira Hj Mahmud¹, Aimi Syairah Ismail², Nur Farha Adnin Azmi³, Nik Aida Nik Adib⁴

¹Pasir Mas District Health Office, Pasir Mas, Kelantan, Malaysia, ²Meranti Health Clinic, Pasir Mas, Kelantan, Malaysia, ³Chekok Health Clinic, Pasir Mas, Kelantan, Malaysia, ⁴Pasir Mas District Health Office, Pasir Mas, Kelantan, Malaysia

ABSTRACT

Introduction: The prevalence of gestational diabetes mellitus (GDM) has been on the rise in Malaysia, reflecting a global trend of increasing rates of obesity. While previous studies have explored the association between pre-pregnancy body mass index (pBMI), gestational weight gain (GWG) and adverse pregnancy outcomes, limited research has focused specifically on the influence of pBMI on GWG among women diagnosed with GDM. Understanding this relationship is crucial for developing tailored interventions and guidelines that can effectively address the complexities of GDM management. The study aimed to determine the relationship of mean GWG between normal and excessive pBMI. **Materials and Methods:** A cross-sectional study was conducted in primary healthcare facilities with specialized personnel in the Pasir Mas District. The study focused on GDM patients who attended their initial antenatal visit during the first trimester. The participants were selected using a simple random sampling method. Data were collected retrospectively from June 2020 to June 2022 by reviewing antenatal records. The collected data included sociodemographic, clinical characteristics and the weight of the participants was measured at three different points. A two-way repeated measures analysis of covariance (RM ANCOVA) was performed to compare the GWG between normal and excessive pBMI groups. The analysis adjusted for age, parity, and the use of metformin. IBM SPSS version 26 was used for analysis. Model assumptions of normality, and homogeneity of covariance were checked, and the significance level was set at 0.05. **Results:** A total of 140 GDM patients were analysed. The mean age and pBMI of GDM patients were 30.1 (4.84) years old and 28.5 (6.80) kg/m2, respectively. The majority of participants were unemployed (58.6%), multipara (74.3%) and attained a secondary education level or below (62.1%). The mean gestational age at diagnosis of GDM was 20.8 (5.49) weeks and the majority of them were managed with diet control alone (87.1%). Based on Wilks' Lambda correction, there were overall significant changes in GWG based on diagnosis, regardless of time [Wilks' lambda, $F_{(1, 135)} = 0.968$, p=0.036, effect size $(\eta p2) = 0.032$]. Additionally, there was an overall significant difference in mean GWG between groups over time [$F_{(1, 135)} = 14.4$, p=<0.001, effect size $(\eta p2) = 0.13$]. There was no significant interaction between pBMI and GWG based on diagnosis [$F_{(1, 135} = 0.977$; P = 0.080, effect size $(\eta p2) = 0.096$]. However, a five-fold increment in GWG was observed in patients with abnormal pBMI compared to those with normal pBMI. **Conclusion:** The pre-pregnancy BMI may independently contribute to excessive weight gain during pregnancy, even in the absence of GDM. Timely identification of abnormal gestational weight gain and implementing lifestyle interventions are essential in managing excessive weight gain during pregnancy. Tailoring GDM management to the specific needs of pregnant individuals is crucial to prevent adverse pregnancy outcomes.

The epidemiological analysis of COVID-19 cases in Kelantan state from 2020-2023

Muhammad Fikri Idris, Suhaiza Sulaiman, Tan Kean Teong, Mohd Faiz Md Ariffin, Mohd Aidinniza Mohd Adib, Mohd Pazli Zainol, Nursuhailee Che Zake, Raja Hafendi Raja Abdullah

Surveillance Unit, Disease Control Branch, Kelantan State Health Department, Kelantan, Malaysia

ABSTRACT

Introduction: COVID-19 is a novel virus, first detected in Wuhan, China on 31st December 2019. The first case in Malaysia and Kelantan was detected on 25th January 2020 and 13th March 2020 respectively. Since then, it has spread and become one of the commonest diseases with various outcomes, from recovered to death especially among elderly and persons with comorbidities. The COVID-19 pandemic continues to pose significant challenges to public health worldwide. This study aims to analyse the trends, patterns, and characteristics of COVID-19 cases in Kelantan and to gain insights into the local epidemiology of the disease. **Materials and Methods:** A cross-sectional study was conducted, utilizing secondary data collected from Kelantan COVID-19 Cases Registry and e-COVID system. The study period encompassed the onset of the pandemic until the most recent available data (Epidemiological week 22,2023). Data on COVID-19 cases, including demographic information, clinical characteristics, testing outcomes, and temporal trends, were systematically analysed. Data entry and descriptive analysis was performed using Microsoft Excel. Confirmed case for Covid-19 was defined with positive RT-PCR or RTK Ag results. **Results:** The total number of cases of COVID-19 was 262,546 cases. The number of cases and Incidence rate by years were 758 cases (IR 38.68 /100,000 pop) in 2020, 168,285 cases (IR: 8,421.83) in 2021, 90,797 cases (IR: 4,458.04) in 2022 and 2706 cases (IR:132.86) in 2023 until Epid week 22. Majority of the cases were from Kota Bharu (101,257 cases), Pasir Mas (30,401 cases) and Tumpat (23,735 cases), meanwhile the highest incidence rate IR recorded at Kota Bharu (IR:9,588.14) in 2021 and lowest at Bachok (IR: 15.37) in 2020. Mean age was 32.01(SD 20.29) years, ranging from 16 days to 109 years. Female [140,478 cases (53.5 %)] had higher number cases compared to male [122,067(46.5%)]. The three age groups with highest cases were 18-29 [58,864(21.28%)], 30-39 [44,551(16.97%)] and 40-49[29,696(11.31%)]. Out of 262,522 cases, 258,216 (98.36%) were Malaysia nationality and the three highest cases among Malaysian were Malay race [250,526(97.02%)], followed by Chinese [5,080(1.97%)] and Aboriginal Peoples [1,056(0.41%)]. Among 230,544 cases, 147,661 cases (64.05%) were vaccinated, and 82,883 cases (35.95%) were unvaccinated. Most cases were mild and asymptomatic cases [220,377 cases (97.5%)]. The total number of deaths was 1,425 cases with a case fatality rate of 0.54%. **Conclusion:** This study provides valuable insights into the patterns and characteristics of COVID-19 cases in Kelantan. Majority of cases occurred in the year 2021, in Kota Bharu district, Malay race predominant, with mild presentation aged between 18-29 years old. The CFR was 0.54%. Further research is warranted to assess the long-term impacts of the disease, evaluate the effectiveness of control measures, and monitor emerging variants.

A six-year analysis of under-five mortality: The determinants of preventable perinatal death in Pasir Mas district, Kelantan

Asilah Khairul Anuar¹, Fadhilah Abdullah², Nur Dalilah Mohd Zin³, Nik Aida Nik Adib⁴, Najihah Mahfuzah Zakria⁴

¹Cherang Hangus Health Clinic, Pasir Mas, Kelantan, Malaysia, ²Tendong Health Clinic, Pasir Mas, Kelantan, Malaysia, ³Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, ⁴Pasir Mas District Health Office, Kelantan, Malaysia

ABSTRACT

Introduction: Under-5 mortality is a significant indicator for achieving the Sustainable Development Goal 2023. Perinatal death, including stillbirth and early neonatal death, is a major contributor to this mortality rate. The loss of a baby through stillbirth or shortly after delivery is a heartbreaking tragedy for parents and families. While high-quality and evidence-based interventions exist to prevent these losses, the global and local burden of perinatal death continues to increase. This study was conducted to identify the determinants of preventable perinatal death in Pasir Mas district from 2017 to 2022. **Materials and Methods:** A cross-sectional study was conducted from April to Jun 2023, utilizing data obtained from Stillbirth and Under-Five Mortality Form (SU5MR-1/2012). The data collected spanned from January 2017 till December 2022. IBM SSPS Version 26 was used to analyse. The outcome was categorized into preventable and non-preventable death. Multiple logistic regression was employed to establish the determinants of preventable perinatal death. **Results:** A total of 204 perinatal deaths were included in this study. Mean age of mothers that have preventable perinatal death was 30.69 (6.15). Preventable perinatal death was found higher among mother with lower educational level (71.7%), unemployed (71.7%), household income less than RM3000 (66.0%), multiparity (66.0%), vaginal delivery (66.0%) and male (69.8%). Meanwhile, the mean birth weight of babies having preventable perinatal death was 1.8 (1.05) kg. The comorbidities that contributed to preventable perinatal death included prematurity (18.9%), infection (13.2%), syndromic (3.8%), condition related to perinatal (3.8%), and cardiac (1.9%). In relation to obstetric factors, the place of delivery OR 12.9 (95% CI 2.69,62.33) (p=0.001) and maternal risk factors OR 0.38 (95% CI 0.16,0.89) (p= 0.026) demonstrated a significant association with preventable perinatal death. Regarding foetal factors, gestational age at delivery OR 4.97 (95% CI 1.46,16.96) (p=0.011), baby weight OR 5.2 (95% CI 1.66,16.33) (p=0.005) and number of foetus OR 6.6 (95% CI 2.03,21.47) (p=0.002) were determinants for preventable perinatal death. **Conclusion:** In summary, place of delivery, maternal risk factors, gestational age at delivery, baby weight and number of foetuses were significant determinants of preventable perinatal death. Hence, through prioritizing and enhancing interventions targeted at specific factors, it becomes feasible to further reduce preventable perinatal deaths and, in turn, enhance the perinatal mortality rate.

Dietary exposure and risk characterisation of glycidyl ester contaminants from common Malaysian fried dishes

Siti Hajar Muhamad Rosli[1], Nurul Izzah Ahmad[2], Norhayati Mustafa Khalid[3], Ami Fazlin Syed Mohamed[1]

[1]Herbal Medicine Research Centre, Institute for Medical Research, Kuala Lumpur, Malaysia, [2]Environmental Health Research Centre, Institute for Medical Research, Kuala Lumpur, Malaysia, [3]Nutrition, Metabolic and Cardiovascular Research Centre, Institute for Medical Research, Kuala Lumpur, Malaysia

ABSTRACT

Introduction: Food contaminants such as glycidyl esters (GE), are commonly formed in vegetable oils during high temperature refining. Food manufacturers and consumers use refined vegetable oils as an ingredient in foods and for cooking. There is possibility of these contaminants having genotoxic and carcinogenic risks on ingestion due to the release of glycidol (2,3-epoxy-1-propanol) on hydrolysis, which has been identified as a carcinogen in rats and mice through oncogenicity studies. At present, no tolerable daily intake value has been established for glycidol in the form of GE, thus risk management should follow the principle of 'as low as reasonably achievable'. The objective of this study is to measure the level of GE in selected cooked-fried dishes, as a part of a risk assessment study on dietary exposure among the Malaysian population. **Materials and Methods:** This study analyses eight common Malaysian fried dishes e.g., fried rice (nasi goreng), beef satay, char-kuey-teow, and indian flatbread (roti canai), as well as fast food items e.g., burger patty, french fries and chicken nuggets. Three food samples for each variety were purchased randomly from various restaurants/stalls in the Klang Valley, and were analysed for GE occurrence level using GC-MS. The daily dietary exposure for the average Malaysian adult was estimated using the food consumption data from the MANS survey (2014). Risk characterisation through Margin of Exposure (MOE) was calculated to identify food types with high concern for carcinogenic risk, with a benchmark dose: lower confidence limit (BMDL10) value for GE identified at 2.4 µg/kg body weight/day. **Results:** Our analysis showed that all our collected food samples contained traces of GE contaminants. Overall, the median occurrence level of GE in the food samples was 0.32 ± 0.36 mg/kg. Butter prawn recorded the highest level of GE content (1.30 mg/kg), followed by fried anchovies (1.22 mg/kg), and bergedil daging (0.68 mg/kg). The lowest values were detected in the fast-food samples, where both fried chicken nuggets and frankfurter sausages recorded values below 0.05 mg/kg. Daily dietary exposure was estimated to be 1.89 µg/kg body weight/day. The MOE estimates ranged from 3 to 2774, indicating all food items recorded values below 10000. This indicates potential concern of carcinogenic risk on daily consumption. **Conclusion:** Malaysian fried dishes were found to have low to moderate levels of GE, warranting mitigation strategies in food preparation and processing. However, the exposure of Malaysian citizens to these compounds through consumption of fried food alone does not present a significant health risk. Since there is no established recommended value for reference at this point, daily exposure should be kept to a minimum.

A seven-year study of parental vaccine hesitancy in Pasir Mas district, Kelantan

Noor Nazli Din[1], Mohd Hazwan Baharuddin[1], Nur Dalilah Zin[2], Munira Hj Mahmud[1], Nik Aida Nik Adib[1], Nur Shuhaiza Supian[1], Najihah Mahfuzah Zakria[1]

[1]Pasir Mas District Health Office, Pasir Mas, Kelantan, Malaysia, [2]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

ABSTRACT

Introduction: Despite extensive endeavours to promote and implement the National Immunization Programme, Malaysia is encountering a growing prevalence of parental vaccine hesitancy, leading to outbreaks of vaccine-preventable diseases. Similarly, Pasir Mas has also experienced a rise in parental vaccine hesitancy, ranking second highest in Kelantan over the past four years. This research aims to elucidate the epidemiology of parental vaccine hesitancy in Pasir Mas from 2016 to 2022 and examine the factors associated with the persistent parental vaccine hesitancy for childhood immunization. **Materials and Methods:** From 15th May 2023 to 31st May 2023, a cross-sectional study was undertaken by reviewing the vaccine refusal records in the database of the Pasir Mas Maternal and Child Health Unit between 2016 and 2022. The data was entered and analysed utilizing IBM SPSS version 26. The associations between factors were determined through Multiple Logistic Regression analysis. **Results:** A total of 97 instances of parental vaccine hesitancy were documented in Pasir Mas over the course of the past seven years. Among these parents, 32% had refused childhood immunization for more than one of their children. Consequently, 139 children faced delays or outright refusals of at least one childhood immunization, resulting in an incidence rate of 7.55 per 1000 live births. The highest number of parental vaccine hesitancy cases was observed at Health Clinic Rantau Panjang, accounting for 29.9% of the total cases. The average age of the parents was 29.8 years (SD 6.06), with most of them being unemployed (87.6%) and having completed up to secondary level education (74.2%). Most parents gave multiple reasons contributing to their vaccine hesitancy. The contributing reasons encompassed concerns related to the halal and haram status of vaccines (63%), worries about the safety of vaccine ingredients (23%), influence from family members or friends (19%), and fear of potential side effects (17%). Among the various reasons for vaccine hesitancy, only influence from family members or friends demonstrated a significant association with persistent parental vaccine hesitancy for subsequent children (AOR: 0.20, 95% CI 0.42-0.95, p=0.042), as revealed by the study findings. **Conclusion:** Parental vaccine hesitancy in Pasir Mas has shown an upward trend over the past seven years. The influence of family and friends has emerged as a key factor in shaping persistent parental vaccine hesitancy. These study findings can serve as an initial framework for devising health education strategies and interventions specifically targeted at high-risk groups of parents.

Five-year trend of measles and its associated factors in Kota Bharu district, Kelantan

Farah Sihanan Md Nor¹, Sharina Dir¹, Siti Aisyah Zakaria¹, Wan Soliha Wan Mohd Hanafi¹, Ahmad Zulfahmi Kamaruzzaman¹, Mohd Khairul Ashraf Khalid²

¹Kota Bharu District Health Office, Kota Bharu, Kelantan, Malaysia, ²Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

ABSTRACT

Introduction: Measles is a highly contagious disease and causes public health concern. Malaysia had started the Measles Elimination Programme since 2004, however, the prevalence of measles in Kota Bharu continues to be increased, showing limited improvement. This study aims to determine the incidence rate and trend of measles as well as factors that are associated with confirmed measles cases in Kota Bharu, Kelantan from 2018 to 2022. **Materials and Methods:** The five-year population-based surveillance data of the Kota Bharu district was extracted from SM2 e-measles. Data was analysed descriptively as numerical (mean and standard deviation) and categorical (count and percentage). Multiple logistic regression was used to examine the relationship between measles and available sociodemographic data. **Results:** A total of 1169 reported measles cases were investigated. The incidence rate ranged from 0.33 to 7.84 per 100,000 population. Out of the reported cases, 7.7 percent were confirmed measles. Confirmed measles cases were significantly associated with a history of contact with measles cases (AdjOR = 0.016, 95% CI: 0.005, 0.050), and incomplete vaccination (AdjOR = 0.447, 95% CI: 0.270, 0.742). **Conclusion:** In Kota Bharu, the occurrence of measles remains at a concerning level, comparable to the national incidence. The risk of contracting measles is higher for individuals who have not received vaccinations and have had contact with confirmed or suspected cases. It is crucial to prioritize the promotion of immunization, as it has proven effectiveness in preventing and eradicating measles.

Knowledge and attitude regarding childhood vaccination among nurses in Kota Bharu district, Kelantan

Mohd Ikhwan Azmi[1,2], Mohd Izrul Isham Rosidi[1], Sharina Dir[2], Siti Aisyah Zakaria[2], Wan Soliha Wan Mohd Hanafi[2]

[1]Department of Community Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [2]Kota Bharu District Health Office, Kota Bharu, Kelantan, Malaysia

ABSTRACT

Introduction: It is vital to determine the level of knowledge and attitude of nurses regarding childhood vaccination to ensure the success of the national immunization program (NIP) in Malaysia amid the increasing trend of vaccine hesitancy and refusal by parents or guardians. Objective: The objective of this study is to determine the level of knowledge and attitude of nurses under the Kota Bharu District Health Office regarding childhood vaccination and its associated factors. **Materials and Methods:** This was a cross-sectional study conducted among nurses under Kota Bharu District Health Office using a proforma of sociodemographic and work-related factors and a Malay-validated Knowledge and Attitude regarding Childhood Vaccination (KACV) questionnaire. A total of 105 nurses consented to participate in this study. Multiple logistic regression was used to determine factors associated with knowledge and attitude regarding childhood vaccination using SPSS version 26.0. **Results:** The mean (SD) age of nurses was 44.57 (4.86) years old. The majority were female (99.0%), Malay (98.1%), married (92.4%), and diploma holders (94.3%). 63.8% were staff nurses. 17.1% had post-basic training in public health, whereas 23.8% had post-basic training in another field. The mean (SD) year in service was 19.94 (5.12). 95.2% were confident in giving information and advice about childhood vaccinations to the parents or guardians. About 82.9% had faced vaccine hesitancy and 81.0% had faced vaccine refusal by parents or guardians. Around 45.7% had a positive attitude regarding childhood vaccination, and 18.1% had high knowledge regarding childhood vaccination. There was no statistically significant association between knowledge and attitude. It was found that age (Adj. OR 1.126; 95% CI: 1.002, 1.266; p-value 0.046) had a significant association with knowledge when adjusted for post-basic training and years in service. However, there was no association found between sociodemographic and work-related factors with attitude. **Conclusion:** This study found a small percentage of nurses under the Kota Bharu District Health Office had high knowledge of childhood vaccination and an almost indifferent attitude regarding childhood vaccination. Age was found to have a significant relationship with knowledge. Hence, it is important to periodically refresh and update nurses' knowledge regarding vaccines and immunization programs. The objective, aim, and importance of NIP can be regularly stressed in an effort to increase nurses' positive attitudes regarding childhood vaccination. This study can be conducted nationally, utilizing qualitative methods to truly grasp nurses' knowledge and attitudes regarding childhood vaccination.

Application of Fuzzy Delphi method to identify elements for designing and developing an immunization information system

Ahmad Syukri Radzran, Mohd Yusof Ibrahim, Muhammad Hanif Mohd Derisa, Lim Mei Ching, Hazeqa Salleh

Department of Public Health Medicine, Faculty of Medical and Health Sciences, Universiti Malaysia Sabah, Sabah, Malaysia

ABSTRACT

Introduction: The Fuzzy Delphi approach has been widely used in numerous research disciplines to systematically collect expert input on a specific topic. It has also in recent years started to gain popularity in health-related research, especially in gathering expert consensus. Immunization information system is defined as population-based systems that are confidential and computerized responsible for the collection and consolidation of vaccination data from providers of vaccination which can be used in the arrangement and sustenance of effective immunization strategies. Many elements, items and functions of an immunization information system need to be identified and included to develop a comprehensive system to support immunization efforts throughout the population. This study aimed to apply the Fuzzy Delphi Method in identifying elements and items for designing and developing an immunization information system. **Materials and Methods:** A list of items was collected from the literature review consists of elements and functions necessary in developing an immunization information system. A total number of 30 items were selected and categorized accordingly into 3 main groups which are data of a patient, data associated with the vaccination and functions of the system. The questionnaire was later sent to a group of experts in their respective fields, chosen due to their expertise in public health and immunization data systems; thus, for the checklist evaluation, twelve experts were involved in evaluating 30 items. Finally, for the validation process, the Fuzzy Delphi Method using Triangular Fuzzy Numbers and the Defuzzification process was used. The Fuzzy Delphi Method application in short requires the fulfilment of 3 prerequisite conditions for the items to be accepted which are, threshold value of (d) less or equal to 0.2, total percentage of expert consensus of at least 75% and average Fuzzy numbers (A value) of more than 0.5. **Results:** A 100% response rate was obtained from all the twelve experts with an average Likert scoring of three to five. Post Fuzzy Delphi Method analysis, for the first condition, 4 out of 30 items (13.33%) did not fulfil the requirements. As for the second condition, 3 out of 30 items (10.00%) seem to have less than 75% expert consensus while the third condition sees that 8 out of 30 items (26.67%) failed to meet the requirements. Overall, 9 out of 30 items (30.00%) did not fulfil one or more of 3 prerequisite conditions and thus all those 9 items were discarded from the list and the remaining 21 items were accepted into the list to further develop an immunization information system. **Conclusion:** The application of the Fuzzy Delphi Method is useful in obtaining expert opinion and consensus to decide on the item's suitability to be included in the immunization information system. These accepted items can be further used in developing the immunization information system as per experts' consensus.

Hand, foot, and mouth disease unmasked: Unravelling the patterns of a viral epidemic in Bachok district

Nazirul Munir Abu Hassan[1], Izyan Auni Mohamad[1], Syakinah Mohamed[2]

[1]Bachok District Health Office, Bachok, Kelantan, Malaysia, [2]Primer Unit, Kelantan State Health Department, Kelantan, Malaysia

ABSTRACT

Introduction: Hand, foot, and mouth disease (HFMD) is a common disease in East and Southeast Asia, particularly in Malaysia. Primarily affecting children under the age of five, it is generally benign in nature. The Ministry of Health Malaysia reported a notable rise in HFMD cases in 2018, with a nationwide total of 76,446 outbreaks, compared to 29,358 cases in 2017. Similar trends have been observed in Kelantan and Bachok through data surveillance. The objective of this study was to investigate the status of HFMD in Bachok District, including its distribution among different social demographics, clinical and epidemiological patterns, geographical distribution, and trends in incidence. **Material and Methods:** Methods cross sectional study was used with all confirmed cases of HFMD extracted from MOH CDCIS e-notifications system in Bachok during 2018-2022. The extracted data was coded, cleaned & analysed using Microsoft excel. The extracted longitude- latitude were exported to QGIS version 3.3 for analysis. **Results:** Between 2018 and 2022, Bachok's district had a total of 851 HFMD cases, with the Tawang subdistrict having the highest incidence, but no deaths reported, higher occurrence in males (56.1%) than females (43.8%), and children taken care of at home (80.9%) while a smaller percentage (19%) attended playschool or nursery. Majority of cases treated as outpatients (98.8%) due to effective health promotions and SOPs. Cluster cases of HFMD were not alarming, with only three clusters identified over the five-year period, involving a total of eight HFMD cases. The vast majority of cases (99%) were sporadic, indicating that the disease was primarily occurring as individual cases rather than large-scale outbreaks. **Conclusion:** As HFMD situational analysis in Bachok, we should recommend the use of heat maps in every district to have a better view on districts and subdistricts HFMD incidence to focus on health promotions and education to the community. We should act according to the epidemic features of the infectious diseases to formulate a perfect control strategy to prevent the outbreak and prevalence of infectious diseases.

Knowledge, attitude, and practice on human immunodeficiency virus among healthcare workers in Pasir Mas district, Kelantan

Mohd Aizuddin Ab Rahman[1], Mohd Hazwan Baharuddin[2], Ahmad Abir Abd Ghani[3], Wan Muhammad Alif Wan Azman[4], Nur Fatin Hashim[5], Mohd Sukri Ismail[5], Muhammad Safwan B Ab Rahman[6]

[1]Kangkong Health Clinic, Pasir Mas, Kelantan, Malaysia, [2]Kelantan State Health Department, Kelantan, Malaysia, [3]Tendong Health Clinic, Pasir Mas, Kelantan, Malaysia, [4]Sungai Keladi Health Clinic, Pasir Mas, Kelantan, Malaysia, [5]Bandar Pasir Mas Health Clinic, Pasir Mas, Kelantan, Malaysia, [6]Pangkal Kala Health Clinic, Pasir Mas, Kelantan, Malaysia

ABSTRACT

Introduction: The Human Immunodeficiency Virus (HIV) was identified as the causative agent of Acquired Immune Deficiency Syndrome (AIDS) 39 years ago. The adequate HIV knowledge, positive attitude, and good practice about HIV among healthcare worker c(HCW) is crucial in the context of caring for people living with HIV. This study aims to determine the level of knowledge, attitude, and practice about HIV among HCW in the district of Pasir Mas, Kelantan. **Materials and Methods:** A cross sectional study was conducted for five months from January to May 2023 among HCW in the district of Pasir Mas. Primary data was collected by using online Malay translated and validated questionnaires about knowledge, attitude, and practice on HIV. Simple random sampling among HCW was applied to gather the required information based on online listing of all HCW from 17 healthcare facilities. The questionnaires were distributed through the representatives of each healthcare facility. The total sample size required was 410 persons, calculated by using power and sample size calculation software. Descriptive statistics with mean and standard deviation (SD), frequency and percentages were used to measure the level of knowledge, attitude, and practise about HIV among HCW. **Results:** The mean (SD) level of HIV knowledge score among HCW in district of Pasir Mas is 11(2) and majority of them (56.1%) have high HIV knowledge score. The mean (SD) level of attitude score towards HIV among HCW in district of Pasir Mas is 9(2) and majority of them (60%) have neutral attitude towards HIV. The mean (SD) level of practise score about HIV among HCW in district of Pasir Mas is 6(1) and majority of them (62.7%) have fair practise towards HIV. **Conclusion:** The study found a high level of HIV-related knowledge, neutral attitude, and fair practice among HCW towards PLHIV. High level of knowledge regarding HIV indicates the adequate level of training and continuous medical education (CME) previously done among HCW in Pasir Mas. However, recent challenges and concerns about HIV transmission in the community such as the widespread use of pre-exposure prophylaxis for HIV should be updated. Majority of the attitude towards HIV among HCW was neutral due to significant social and cultural barriers towards the recent key population. High sexual risk transmission of HIV by transgender and men who have sex with men (MSM) which are incongruent with Islamic way of life increase stigma and discrimination by HCW, thus significant influence on their attitude towards HIV. The standard principle of precautions for HIV transmission at healthcare facilities should be strengthened to ensure good practise in the future. Therefore, concerted strategic planning focusing on improving attitude and practice among HCW in Pasir Mas District Health Office warrant an urgent implementation to ensure high quality of HIV prevention and care services.

A conceptual framework on the impact of psychosocial at work on obese healthcare workers

Muhamad Hanif Mohd Deris, Sahipudin @ Saihpudin Saupin, Aizuddin Hidrus, Ahmad Syukri Radzran

Department of Public Health Medicine, Faculty of Medical and Health Sciences, Universiti Malaysia Sabah, Sabah, Malaysia

ABSTRACT

Introduction: Healthcare workers (HCWs) are expected to serve as role models and actively contribute to community-based obesity prevention efforts. Surprisingly, in Malaysia, the prevalence of obesity among HCWs is higher (ranging from 21% to 29%) compared to the reported prevalence of obesity in the general population (15.1% to 19.7%). Despite the dedicated efforts by the Malaysia Ministry of Health to manage and maintain the health of our HCWs through programs such as Trim and Fit, the prevalence of obesity among them remains persistently high. It is possible that we have yet to address the issue at its root cause. We would like to propose that psychosocial at work may be the root cause of obesity among our healthcare workers. Therefore, this review aims to map and identify evidence of the impact of psychosocial conditions in the workplace on the obese HCWs, considering both direct and indirect pathways. **Materials and Methods:** We have conducted a scoping review on factors that can influence obese HCWs. Thus, this review proposes four constructs namely psychosocial at work, dietary habit, physical activity, and sleep quality as factors that can influence obesity among HCWs. Ten research hypotheses were developed based on our literature review. Four hypotheses were developed to show the impact of psychosocial at work on dietary habits, physical activity, sleep quality and obese HCWs. In addition to that, three hypotheses were developed to explore the impact dietary habit, physical activity, sleep quality on obese HCWs, and three research hypotheses were developed to explore the mediating effect of dietary habit, physical activity, and sleep quality on relationship between psychosocial at work and obese HCWs. Using Analysis of Moment Structures (AMOS) version 26, all variables will be analysed to examine the hypotheses. Various indices for assessing the model's goodness-of-fit to the data will be examined, including the chi-square statistic ($\chi2$), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Relative Fit Index (RFI), and Goodness of Fit Index (GFI). These indices will help us evaluate how well the model fits the observed data. **Results:** Dietary habit, physical activity and sleep quality were chosen as mediating factors between psychosocial at work and obese HCWs. A framework was able to be developed and proposed the impact of psychosocial at work on obese HCWs. **Conclusion:** This conceptual framework shows the possibility of impact of psychosocial at work on obese HCWs. It will be tested empirically using data collected from obese HCWs and can become an alternative to evaluate the impact of psychosocial at work on obesity.

Leptospirosis microscopic agglutination test in Kota Bharu public health laboratory

Suhana Hashim, Aliyaisma Ariffin, Muhammad Mawardi Jaafar, Zubaidah Yusoff, Siti Norsuhada Mua'ainue Deen, Noor Hafizan Mat Salleh

Kota Bharu Public Health Laboratory, Kota Bharu, Kelantan, Malaysia

ABSTRACT

Introduction: Leptospirosis is an infectious zoonotic disease caused by *Leptospira spp.* Microscopic agglutination test (MAT) is one of the gold standard confirmation tests and the only tool available to identify the possible serogroups/serovars that caused the disease. MAT has the potential to generate fine-particulate aerosols especially while using a shaker and during frequent transferring of the suspension from the well onto the slide. Objective(s): Firstly, we want to describe the serovar pattern of pathogenic leptospira circulating in Kelantan and Terengganu states. Second, we aim to measure the effect of the MAT antibody titer post-inactivation process. **Materials and Methods:** A descriptive study was conducted from March 2022 to March 2023 to analyze the circulating serovar of pathogenic leptospira from samples received in Kota Bharu Public Health Laboratory. Serum samples from suspected cases of Leptospirosis will be screened using Lepto Rapid IgM or ELISA IgM. Those with positive or inconclusive results will be tested against twenty serovars of Leptospira by MAT. For the second objective, 20 known positive samples were tested using two different procedures. The samples used are archived samples from August 2022 that have been kept in the chiller. These samples were labelled following the previous ID given. Each sample had been separated in equal volume into two tubes. The sample in Tube 1 will undergo an inactivation process. The serum will be heated at 56 °C for 30 minutes, using a water bath. The sample in Tube 2 will skip the inactivation process (non-inactivated sera). Otherwise, the other steps were the same, following standard procedure for Leptospirosis MAT. The MAT titer will be measured and compared between inactivated sera and non-inactivated sera. **Results:** A total of 1575 samples were tested by MAT with a positive rate of 31.6%. 53% and 15.4% of samples gave equivocal and negative results respectively. Majority of samples were from Kelantan (82.9%) and male (66.4%) were predominant compared to females (33.6%). Among 497 positive samples, 474 were labelled as the first sample with the remaining being regarded as the second sample. Fever durations were in between one to twenty-one days with mode of one day and median of 4.39 days. One positive sample can react with more than one serovar. Thus, the five most prevalent serovars were Patoc (253), followed by Pamona (238), Bataviae (219), Hardjobovis (111) and Lai (97). Among 20 serovars used, the least serovars identified were Canicola (9), Icterohaemorrhage (9) and Javanica (7). The MAT titer from inactivated sera and non-inactivated sera were similar with 100% concordance. The antibody titer of all selected positive samples was not affected by the inactivation process. **Conclusion:** Limitations in detecting all Leptospira serovars make the diagnosis becomes more difficult and challenging. Thus, it is crucial to expand the relevant serovars tested accordingly. The inactivation process is an important step to be implemented in COVID-19 positive samples to prevent aerosol-generating procedures and subsequently eliminate laboratory-acquired infection.

The effectiveness of research methodology course to health service researchers in Kota Bharu district, Kelantan

Hairul Nisa' Azmi¹, Sharina Dir¹, Siti Aisyah Zakaria¹, Ahmad Zulfahmi Mohd Kamaruzaman¹, Mohd Hafiz Harun²

¹Kota Bharu District Health Office, Kota Bharu, Kelantan, Malaysia

ABSTRACT

Introduction: Research Methodology is a systematic approach in conducting scientific investigations. It encompasses the design, implementation, and analysis of research data to generate reliable and valid results. The Health Service Research (HSR) program was introduced in 2022 as part of the Quality Program. The HSR program introduced the Research Methodology Course for healthcare workers at the Kota Bharu District Health Office. The content of the Research Methodology Course included introduction to medical research, literature review, questionnaire development, sample size determination, sampling method, study design, data collection method, statistical analysis, ethical issues, and referencing. The aim of this study was to determine the effectiveness of the Research Methodology Course by comparing the pre- and post- research knowledge scores of the participants and establishing the linear relationship between those variables. **Materials and Methods:** Prior to attending the Research Methodology Course, participants were asked to take a pre-test containing 25 questions on research methodology. The same 25 questions were provided at the end of the course as a post-test to assess the effectiveness of the teaching as well as the receptive power of participants. Paired t-test was used to compare the means of two and Pearson's product-moment correlation and a simple scatter plot were used to determine if there was a linear relationship between pre- and post-test scores. **Results:** Twenty-five participants were selected from government clinics in Kota Bharu to attend a two-day course organized by the Quality Unit, Kota Bharu District Health Office. The mean (SD) age was 33 (3.6) years, with a minimum 28 years and a maximum 41 years old. The mean (SD) pre-test score was 13.64 (3.8), with minimum 7 score and maximum 22 score. The mean (SD) post-test score was 17.72 (3.2), with minimum 11 score and maximum 24 score. The maximum possible total score was 25. A significant increase from pre-test to post-test scores was observed, $t(24) = -7.955$, $p<0.001$. A strong positive correlation was found, $r(25) = 0.742$, $p<0.001$, indicating a significant linear relationship between the two variables whereby better pre-test scores were correlated with higher post-test scores. **Conclusion:** There was a significant increase in the research knowledge among HSR participants in Kota Bharu after attending the Research Methodology course, indicating a good start for HSR activities.

A comparison of oral hygiene status between two methods of instruction in orthodontic patients

Mohd Fariq Usoff[1], Yatimah Othman[2]

[1]Orthodontic Specialist Unit, Penambang Dental Health Clinic, Kota Bharu, Kelantan, Malaysia, [2]Orthodontic Specialist Unit, Putrajaya Dental Health Clinic, Wilayah Persekutuan Putrajaya, Malaysia

ABSTRACT

Introduction: The use of orthodontic fixed appliances increases the risk of plaque accumulation, primarily because it is challenging to maintain adequate teeth cleanliness between the brackets and the gingival margin. Consequently, there is a critical need to identify and implement effective methods for oral hygiene instruction tailored to the new generation of orthodontic patients. The study objective is to compare the oral hygiene status of patients with orthodontic fixed appliances in Pasir Puteh, Kelantan, by evaluating the effectiveness of video-based oral hygiene instructions (OHI) as compared to verbal instructions. **Materials and Methods:** This is an interventional study conducted at the Orthodontic Specialized Unit, Pasir Puteh Dental Health Clinic. Patients who met the specified inclusion and exclusion criteria were randomly assigned to one of two groups using a simple randomization technique. The first group received verbal instructions along with a model demonstration, while the second group received video instructions. The bonding of upper and lower fixed appliances using conventional metal brackets was performed by the same clinician, followed by the respective oral hygiene instruction (verbal or video) delivered by a trained dental therapist. Plaque index (PI) and gingival index (GI) measurements were recorded at three different time points: before the bond-up procedure (T0), after 4 to 6 weeks (T1), and at 6 months (T2). The comparison of PI and GI status between the two groups was analysed using Fisher's Exact test with IBM SPSS Software Version 24.0. **Results:** A total of 30 patients were recruited, with each group consisting of 15 patients. Fisher's Exact test indicated no significant difference in plaque index (PI) and gingival index (GI) between the video and verbal instruction groups at T1 and T2 ($p>0.05$). Furthermore, both groups demonstrated no significant difference in PI and GI changes after receiving oral hygiene instructions ($p>0.05$). These results suggest that either method yields comparable outcomes over time. **Conclusion:** Our findings demonstrate that both verbal and video-based OHI approaches were equally effective in the clinic setting. These results have important implications for dental practitioners, emphasizing the need to implement appropriate OHI techniques to ensure optimal oral health outcomes in this patient population.

Sampling, identification, and screening of chiggers as the vector of scrub typhus in Tumpat district, Kelantan from 2019 - 2023

Syarifah Nadwah Md Yunus¹, Hasneezah Hassan¹, Junaidi Djoharnis¹, Fadilah Hussin², Nur Nadia Mohd Azmi³, Nur Akmarina Mohd Nordin⁴, Norjaiza Muhammad Jaafar⁴, Ernieenor Faraliana Che Lah⁵

¹Tumpat District Health Office, Tumpat, Kelantan, Malaysia, ²Kuala Krai District Health Office, Kuala Krai, Kelantan, Malaysia, ³Tanah Merah District Health Office, Tanah Merah, Kelantan, Malaysia, ⁴Entomology Unit, Kelantan State Health Department, Kelantan, Malaysia, ⁵Acarology Unit, Institute for Medical Research, Kuala Lumpur, Malaysia

ABSTRACT

Introduction: Scrub typhus is an acute febrile illness caused by the bacterium *Orientia tsutsugamushi* that is transmitted to humans through the bite of infected larval chiggers. The symptoms of scrub typhus typically appear 5–14 days after being bitten by chiggers, with manifestations of infection such as fever, rash, myalgia, lymphadenopathy, nausea, vomiting, eschar, abdominal pain, and non-specific flu-like symptoms. Two positive cases of scrub typhus were recorded between 2019 to 2023 in Kampung Alor Durian and Kampung Jal Kechik, Tumpat, Kelantan. The study aims to identify and determine the presence of *Orientia tsutsugamushi* in on-host chiggers collected from positive scrub typhus localities in Tumpat, Kelantan. **Materials and Methods:** Sampling was conducted by placing 30 wire-traps in the patient settlement and working area for five consecutive days in Kampung Alor Durian and Kampung Jal Kechik. Small mammals caught in the traps were removed, anaesthetists using diethyl-ether and processed immediately in the field lab. The mammals were then identified morphologically, prior to collecting on-host chiggers from the ears using sterile fine forceps and applicator sticks under the stereomicroscope. The collected chiggers were placed in a universal bottle containing 70% ethanol and labelled individually according to a specific number assigned to each mammal. The labelled bottles were then sent to the Acarology Unit, Institute for Medical Research for morphological identification of chiggers and screening for the bacteria *Orientia tsutsugamushi* using nested PCR. **Results:** A total of 20 (Alor Durian n=10; Jal Kechik n=10) small mammals were captured from both localities comprising five *Tupaia spp*, four *Rattus rattus*, and two *Suncus murinus*, six *Rattus tiomanicus*, two *Rattus exulan*, and one *Rattus argentiventer*. Of these, 16 (80%) mammals were infested with chiggers, mainly in both ears. A total of 780 chiggers (Alor Durian n=401; Jal Kechik n=379) were collected, and two species were identified as *Leptotrombidium deliense* and *Ascoshoengastia spp* in Alor Durian, while six species belonging to *Leptotrombidium deliense*, *Leptotrombidium spp*, *Garhlepia walchia*, *Schoengastia spp*, *Ascoshoengastia spp* and *Blankartia spp* were identified from Jal Kechik. Out of eight pools, two pools of *Leptotrombidium deliense* (25%) recovered from Tupaia spp collected from the orchard of the patient in Alor Durian were positive with *Orientia tsutsugamushi*. All samples tested for PCR in Jal Kechik were negative. **Conclusion:** *Leptotrombidium deliense*, a vector for scrub typhus with positive *Orientia tsutsugamushi* was found in close proximity to human settlements and surrounding habitat such as paddy fields and orchards. These baseline data highlight the risk of contracting scrub typhus infections in Kelantan, particularly among rural residents.

Overview of COVID-19 clusters in Kelantan state from 2020 - 2023

Mohd Faiz Md Ariffin, Suhaiza Sulaiman, Tan Kean Teong, Muhammad Fikri Idris, Mohd Aidinniza Mohd Adib, Mohd Pazli Zainol, Nursuhailee Che Zake, Raja Hafendi Raja Abdullah

Surveillance Unit, Disease Control Branch, Kelantan State Health Department, Kelantan, Malaysia

ABSTRACT

Introduction: The COVID-19 pandemic continues to pose significant challenges worldwide, with clusters of infections emerging in various regions. Kelantan, one of the states in Malaysia, experienced a notable surge in COVID-19 cases and clusters during the period of pandemic. This study aims to provide an analysis of the cluster of COVID-19 in Kelantan, Malaysia, highlighting an overview of the key characteristics of the COVID-19 cluster, including its size, duration, and geographic distribution. **Materials and Methods:** A descriptive study was conducted by reviewing the Kelantan COVID-19 Cluster Registry, and reports on COVID-19 clusters in Kelantan from Epidemiology Week 40/2020 until 24/2023. The cluster was primarily identified by the investigation team at the district level and was notified to the State CPRC with a specific format following verification by the District Epidemiology or Health Officer. A cluster was defined as five or more cases with epidemiological links. Clusters were categorized by districts involved, type of clusters and the magnitude of the clusters in terms of size, extension, and duration. Data were entered and analysed using SPSS version 23. **Results:** A total of 870 clusters were reported in Kelantan, in which 848(97.5%) clusters we declared in Kelantan and 22 (2.5%) were declared from the other states. These clusters involved 29921 cases which is 11.4% of total registered cases in Kelantan within the same period. Majority of the clusters reported in 2021 (755 clusters; 86.8%), occurred in Kota Bharu District (336 clusters; 38.6%), involved only one district (587 clusters; 67.5%) and less than 30 cases/cluster (606 clusters; 69.7%). The major types of clusters were the community cluster (498; 57.2%), work-related cluster (190; 21.8%) and education-related clusters (130; 14.9%). The mean cluster size and duration were determined to be 34.2(SD 56.87) cases and 35.7(SD 11.41) days, respectively. Out of the total number of clusters, 89 (8.7%) were associated with mortality events. **Conclusion:** This study sheds light on the cluster of COVID-19 in Kelantan, Malaysia, providing valuable insights into its patterns and characteristics. Further study on risk factors should be done to have a better understanding of disease transmission in the cluster.

A study of epidemiological link on measles outbreaks in the districts of Kelantan state

Farah Shahana Ramli¹, Nik Mohd Hafiz Mohd Fuzi¹, Nur Raihan Ismail², Noorhidayu Monyati Mohamed Noor³

¹Communicable Disease Control Unit, Disease Control Branch, Kelantan State Health Department, Kota Bharu, Kelantan, Malaysia, ²Gua Musang District Health Office, Gua Musang, Kelantan, Malaysia, ³Pasir Puteh District Health Office, Gua Musang, Kelantan, Malaysia

ABSTRACT

Introduction: Measles is a highly contagious disease that can have severe consequences, especially for vulnerable populations such as infants, young children, pregnant women, immunocompromised and unvaccinated individuals. Malaysia had a high measles vaccination coverage; however, pockets of unvaccinated individuals still pose a threat. By identifying and understanding the epidemiological link, effective targeted interventions to control and prevent the spread of the disease can be implemented. This study aims to describe the epidemiological characteristics, identify the source and the epidemiological link of measles outbreaks in Kelantan. **Materials and Methods:** A cross-sectional study using secondary data was conducted. The measles outbreak data reported in District A and B from April to May 2023 were extracted from the *Sistem Maklumat Siasatan* Measles (SM2), eMeasles. Data was analysed using Microsoft Excel. **Results:** A total of 27 measles cases were recorded with 56% (15) of them being male and the median age was 8 years old ranging from 8 months to 23 years old. All cases were either unvaccinated or not yet eligible, except for one case whose vaccination status was unknown. The symptoms were fever (100%), maculopapular rash (100%), cough (88%), coryza (69%), and conjunctivitis (23%). The first outbreak was declared on 5th of May 2023 in District A involving 23 cases (10 laboratory confirmed and 13 epidemiology linked to confirmed cases) and the second outbreak was declared in District B on 13th of May 2023 involving 3 laboratory confirmed cases. Apart from that, there was one confirmed case in District A with an epidemiology linked to confirmed cases detected on 8th of May 2023. All cases had an epidemiological link to the measles outbreak starting from a gathering in a national-level Quran memorization competition in Selangor and later propagated to Kelantan during the '*Aidilfitri*' gathering. The epidemic curve showed a propagated pattern with the exposure period overlapping with the infectivity period of the previous cases from Selangor. Results for viral culture from three samples sent to the National Public Health Laboratory also showed the D8 strain which was similar to Selangor's strain. **Conclusion:** The presence of unvaccinated individuals poses a significant risk, as not only do they have a higher susceptibility to infections, but they also act as potential sources of transmission to other vulnerable groups. Identifying an epidemiological link is important as it allows for early detection of cases, enables rapid response and targeted interventions to interrupt transmission chains. Failure to identify an epidemiological link poses significant threats as it can result in spreading and prolonged transmission, missed opportunities for prevention and ineffective response measures. Efforts to rapidly identify and understand these links are crucial for effectively controlling outbreaks and safeguarding public health.

Hepatitis C treatment among patients at the Seberang Perai prison

Muhammad Afiq Mohd Zuki, Janizah Abd Ghani

HIV/STI/Hep C Unit, Pulau Pinang State Health Department, Pulau Pinang, Malaysia

ABSTRACT

Introduction: Hepatitis C remains a worldwide public health problem and places a significant burden on the healthcare system. Imprisonment provides unrivalled opportunity for screening and treating hepatitis C who may not have access to mainstream health service in the community. Hepatitis C infection has a higher prevalence among the prisoners driven by injecting drug use among prisoners. However, in Penang Correctional Institutions, prisoners are not routinely screened for Hepatitis C or treated inside the prison. Advancement of DAA medication for hepatitis with a short duration of treatment and high efficacy, provide an excellent platform to study initiation opportunities to start hepatitis C treatment inside the prison. The aims of this study are to determine 1) the prevalence of hepatitis C and risk factor among prisoners in Seberang Perai Prison and 2) the proportion of hepatitis C treatment started inside the prison. **Materials and Methods:** A cross sectional study was conducted from January to September 2022. In conjunction with World Hepatitis C Day 2022, a mass screening program was done in the Seberang Perai prison in collaboration with the Seberang Perai Health District Office, Hospital Pulau Pinang and Hospital Sungai Bakap. All prisoners who were sentenced for more than one year with risk factors such as intravenous drug use or had tattoos were selected for this program. Prisoners with reactive HCV antibody blood tests were asked to complete a questionnaire and their blood samples were sent for HCV RNA PCR test to be confirmed as positive. Data was analysed descriptively using Microsoft Excel. **Results:** A total of 218 (185 males and 33 females) prisoners were screened in this program. A total of 25 prisoners were found to be reactive and 19 confirmed to be positive with Hepatitis C prevalence of 8.7% (95% CI 5.3%-13.3%). 63% (12/19) positive Hepatitis C prisoners had history of drug injection. 14 prisoners with the proportion of 73.7%% (95% CI 48.8%-90.9%) started treatment inside the Seberang Perai Prison itself, 5 prisoners with positive HCV RNA refused for Hepatitis C treatment. **Conclusion:** A high prevalence of Hepatitis C infection in a correctional institution signifies a community health issue. Prisons may serve as reservoirs that would amplify transmission of Hepatitis C in the general population after inmates were released from prisons. Restrictive nature of prison provides a good opportunity for Hepatitis C treatment which has a short duration of treatment. The hepatitis C treatment in prison has good efficacy and is a cost-effective strategy. Despite various challenges, the implementation of hepatitis C treatment in prison is expanding globally and is already underway in Pulau Pinang.

Epidemiology patterns of COVID-19 mortality in Kelantan state, Malaysia from 2020-2023

Tan Kean Teong, Suhaiza Sulaiman, Mohd Faiz Md Ariffin, Muhammad Fikri Idris, Mohd Aidinniza Mohd Adib, Mohd Pazli Zainol, Nursuhailee Che Zake, Raja Hafendi Raja Abdullah

Surveillance Unit, Disease Control Branch, Kelantan State Health Department, Kelantan, Malaysia

ABSTRACT

Introduction: The COVID-19 pandemic has had a significant impact on global health, with Malaysia being one of the countries affected. First case of COVID-19 death in Kelantan was recorded on 18 March 2020. On 16 April 2020 COVID-19 deaths in Malaysia were classified as "Death Due To COVID-19" or "Death with COVID-19" to ensure death statistics in Malaysia comply with WHO Guidelines. This study aims to describe the epidemiological patterns of COVID-19 death in Kelantan, a state in Malaysia. **Materials and Methods:** Using retrospective data from the period of March 2020 to June 2023, we examined a total of 1,425 confirmed deaths due to COVID-19 in Kelantan. Data were obtained from Kelantan COVID-19 Death Registry and Lampiran 3 BID forms. Demographic information, comorbidities, and clinical characteristics were collected and analysed. Data were analysed descriptively using Microsoft Excel. **Results:** A total of 1425 deaths Due To COVID-19 were identified during the study period and included in this study. The total deaths by year were 2020 (8,0.6%), 2021(1243,87.2%), 2022(174,12.2%) and no deaths in 2023. The Case Fatality Rate (CFR) by year were 2020 (1.06%), 2021 (0.74%), 2022(0.19%) and 2023(0). Out of total 1425 deaths, 1025 deaths (71.9%) occurred in the hospital and 400 deaths (28.1%) were outside the hospital. Three districts with highest CFR were Pasir Puteh (0.92%), Gua Musang (0.85%) and Kuala Kra i(0.83%). The death rate was almost equal between male (693,48.6%) and female (732,51.4%). Our findings revealed that COVID-19 mortality in Kelantan predominantly affected individuals above the age of 60 with the mean age of COVID-19 deaths was 67.1 years. A total of 604 COVID-19 deaths had at least 1 pre-existing medical illness. The prevalent comorbidities identified were cardiovascular diseases including hypertension & heart problems (474); and Diabetes Mellitus (318). Majority of deaths were among individuals who had not or partially received COVID-19 vaccination (1342). **Conclusion:** Elderly, who were not vaccinated or partially vaccinated with presence of comorbidities were at higher risk for deaths due to COVID-19 in Kelantan. These findings emphasize the importance of targeted interventions for vulnerable populations, particularly the elderly and individuals with comorbidities, to reduce COVID-19 mortality in Kelantan. The study highlights the need for continuous public health efforts to ensure adequate healthcare infrastructure, widespread vaccination coverage, and effective preventive measures to mitigate the impact of future waves and potential variants of the virus.

Situational analysis of relapse tuberculosis cases in Kelantan state , Malaysia from 2017-2021

Muhammad Za'im Mohd Samsuri[1], Muhammad Ruhaifi Muhammad Sabri[2], Nur Anis Ilyani Mat Noor[1], Hasniza Abdullah[1], Mohd Rizaleman Mohd Nawi[1]

[1]TB/Leprosy Unit, Kelantan Health State Department, Kelantan, Malaysia, [2]Occupational and Environmental Health Unit, Kelantan Health State Department, Kelantan, Malaysia

ABSTRACT

Introduction: Relapse tuberculosis (TB) remains a critical threat to global public health concerns, posing a particular challenge due to its potential for increased drug resistance and treatment difficulties. This study aims to conduct a situational analysis of relapse tuberculosis in Kelantan, Malaysia, from 2017 to 2021. The objective of this study is to describe the magnitude, characteristics, and contributing factors associated with relapse TB cases in Kelantan, thereby providing insights for targeted interventions and strategies to reduce the burden of relapse TB. **Materials and Methods:** A cross-sectional study was conducted from 2017 to 2021 using secondary data from MyTB online system in Kelantan State, Malaysia. Relapse TB cases were identified and analysed descriptively using SPSS software version 25. **Results:** Between 2017 and 2021, there were 5598 TB cases registered in Kelantan, with 6.25% (95%CI:0.06,0.07) relapse TB cases. The trend of relapse tuberculosis prevalence has demonstrated a consistent decrease over the years. In 2017, the prevalence stood at 6.10%, slightly increasing to 6.33% in 2018. However, the numbers started to decline after that, with a prevalence of 6.87% in 2020 and a significant drop to 5.54% in 2021. Kota Bharu district recorded the highest relapse TB cases, 112(32%), followed by Pasir Mas 59(16.9%) and Tumpat district 40(11.4%). Most of the cases were Malaysians (98.3%), Malays (90.6%), and lived in rural areas (86.5%). Age of relapse TB cases ranged from 12 to 88 years old, with a mean age of 50.7 (SD 16.36). The majority of relapse TB cases were male (68.9%), had attained a secondary level of education (57.4%), were unemployed (59.7%), and prisoners (2.6%). Regarding clinical factors, most relapse TB patients were non-diabetic (69.1%), non-smokers (62.3%), HIV-negative (82.6%), had pulmonary tuberculosis (83.7%), PTB smear-positive (58.6%) and exhibited moderately minimal chest radiographic abnormalities (58.6%). For the treatment and outcome of relapse TB, most cases were receiving directly observed therapy, DOT (91.9%), non-multidrug resistant TB (97.4%), and successful outcome (75.1%). **Conclusion:** The prevalence of relapse tuberculosis (TB) remains high in Kelantan. Therefore, it is imperative to implement effective interventions and strengthen the TB control program to address the underlying factors contributing to relapse TB. These measures should be taken in the near future to reduce the burden associated with relapse TB in Kelantan.

Medication error and intervention at the Machang District Health Office from 2021-2023

Siti Suzilawani Zahari[1], Nur Izzati Abdullah[2]

[1]Pharmacy Unit, Machang Health Clinic, Machang, Kelantan, Malaysia, [2]Pharmacy Unit, Pulai Chondong Health Clinic, Machang, Kelantan, Malaysia

ABSTRACT

Introduction: Medication errors continue to pose a significant challenge in healthcare settings worldwide, compromising patient safety and leading to adverse outcomes. This study provides an overview of medication errors and interventions implemented at the Machang District Health Office during the period of 2021-2023. As a healthcare facility, the need to address medication errors and prioritize the implementation of interventions to enhance patient care is crucial. **Materials and Methods:** A retrospective record review of medication errors and interventions was conducted at Machang District Health Office from January- March for three consecutive years from 2021 to 2023. Data regarding medication errors, causes and associated factors were collected from monthly report statistics. The interventions implemented during the study period were documented, including educational programs, technological solutions and rearranged daily working areas. **Results:** The analysis of medication errors revealed a range of types, including prescribing errors and dispensing errors. Of 99439 prescriptions screened, 21.0% (54/257) reduction in prescribing errors seen from 2021 to 2023. Meanwhile, dispensing error shows 33.3% (6/18) decreasing in errors. Contributing factors identified included knowledge, distractions, and system-related issues. The interventions implemented at Machang District Health Office aimed to address these factors and improve medication safety. Intervention strategies at Machang District Health Office focused on enhancing healthcare professionals' knowledge and skills through education programs and meetings, technological solutions, such as computerized systems at certain facilities which were implemented to minimize errors in medication prescribing. Additionally, counter checking before dispensing stations was introduced in pharmacies contributed to reducing medication errors. **Conclusion:** The interventions implemented at the Machang District Health Office during the period of 2021-2023 resulted in a significant reduction in medication errors and improvement in patient safety. The study highlights the importance of comprehensive strategies that combine education, awareness, and technology. These findings emphasize the need for proactive measures to enhance medication safety and reduce adverse events associated with medication errors in healthcare settings.