



*Official Journal of the  
Malaysian Medical Association*

# *The Medical Journal of Malaysia*

**4th Asia Pacific Conference on Public Health**

**7 - 9 September 2015  
Kuantan, Malaysia**

**Volume: 70**

**Supplement 1**

**September 2015**



# MJM

*Official Journal of the  
Malaysian Medical Association*

Volume 70 Supplement 1 September 2015

## EDITORIAL BOARD

*Editor-in-Chief*  
**Lekhraj Rampal**

Ex-officio  
**Ravindran R Naidu**

*Members*  
**Sivalingam A/L Nalliah**

*Members*  
**Anand Sachithanandan**

*Members*  
**Tan Geok Chin**

**Victor Hoe Chee Wai**

**Vasu Pillai A/L Letchumanan**

**Lim Thiam Aun**

MMA Secretariat  
**Rafikah Nordin**

PP 2121/01/2013 (031329)

MCI (P) 124/1/91

ISSN 0300-5283

The Medical Journal of Malaysia is published six times a year  
i.e. February, April, June, August, October and December.  
**All articles which are published, including editorials, letters and book reviews  
represent the opinion of the authors and are not necessarily those of the  
Malaysian Medical Association unless otherwise expressed.**

*Copyright reserved © 2015*  
Malaysian Medical Association

**Advertisement Rates:**

Enquiries to be directed to the Secretariat.

**Subscription Rates:**

Price per copy is RM70.00 or RM300.00 per annum, for all subscribers.

**Secretariat Address:**

Malaysian Medical Association  
4th Floor, MMA House, 124, Jalan Pahang, 53000 Kuala Lumpur.  
P.O. Box S-20, 51700 Kuala Lumpur.  
Tel: (03) 4042 0617, 4041 8972, 4041 1375 Fax: (03) 4041 8187  
E-mail: [info@mma.org.my](mailto:info@mma.org.my) / [mjm@mma.org.my](mailto:mjm@mma.org.my)  
Website: [www.mma.org.my](http://www.mma.org.my)

Printed by: New Voyager Corporation Sdn. Bhd. (514424 U)  
37 Jalan Gangsa SD 5/3D, Bandar Sri Damansara, 52200 Kuala Lumpur. Tel: 03-6273 2900 Fax: 03-6272 2380  
Email: [nvcomms@yahoo.com](mailto:nvcomms@yahoo.com)

# MJM

## NOTICE TO CONTRIBUTORS

The *Medical Journal of Malaysia (MJM)* welcomes articles of interest on all aspects of medicine, especially if it relates to Malaysia, in the form of original papers, continuing medical education (CME) articles, case reports, short communications, correspondence and reviews articles. Articles are accepted for publication on condition that they are contributed solely to the *MJM*. 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 online through MJM Editorial Manager, at the following URL: <http://www.editorialmanager.com/mjm>

Instructions for registration and submission are found on the webpage, they include a notice that **authors who are not members of the Malaysian Medical Association will be required to pay a fee**. 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.

All submissions must be accompanied by a completed Copyright Assignment Form, duly signed by all authors.

Manuscript text should be submitted using Microsoft Word for Windows. Images should be submitted as JPEG files.

### Reviewers:

Authors are encouraged to submit the names of two possible reviewers whom they feel are qualified and suitable to review their paper. This may hasten the process of peer review. Reviewers must not be involved in the work presented and should be from another institution. Authors need not obtain permission from possible reviewers as it is the prerogative of the *MJM* to approach them.

### 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. The articles should not exceed 4000 words. Manuscript describing original research should conform to the IMRAD format, more details are given below.

#### 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. 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 1,000 words and shall consist of a Summary and the Main Text. The number of figures and tables should be limited to three and the number of references to ten.

#### 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. 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.

### Case Reports:

Papers on case reports (one to five cases) must follow these rules: Maximum of 1,000 words; only one table is allowed; maximum of two photographs; only up to five references quoted. 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.

### Commentaries:

Commentaries solicited 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 1,200 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 the Editor:

Letters to Editors are responses to items published in MJM. Letters that include statements of statistics, facts, research, or theories should include only up to three references. Letters that are personal attacks on an author will not be considered for publication. Such correspondence must not exceed 450 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

The **title page** should state the title of the paper, initials and name(s) of the author(s), degrees (limited to one degree or diploma) and address(es). The full names with affiliations/addresses of all authors should be provided. Please indicate the corresponding author.

Do provide preferred abbreviated author names for indexing purpose, e.g. KL Goh (for Goh Khean Lee), MZ Azhar (for Azhar bin Mohd Zain), K Suresh (for Suresh Kumarasamy) or S Harwant (for Harwant Singh). Authors who have previously published should try as much as possible to keep the abbreviation of their name consistent.

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.

Papers may be submitted in Bahasa Malaysia but must be accompanied by a short summary in English. Scientific names, foreign words and Greek symbols should be clearly indicated and underlined.

### Abstract and Keywords:

An abstract of not more than 250 words should be provided immediately after the title page. Structured abstracts are encouraged. Below the abstract provide and identify 3 to 10 key words or short phrases that will assist indexers in cross-indexing your article. Use terms from the medical subject headings list from *Index Medicus* where possible.

### 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.

**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.

**Acknowledgments:**

Acknowledge grants awarded in aid of the study (state the number of the grant, name and location of the institution or organisation), as well as persons who have contributed significantly to the study. Authors are responsible for obtaining written permission from everyone acknowledged by name, as readers may infer their endorsement of the data.

**References:**

Authors are responsible for the accuracy of cited references and these should be checked before the manuscript is submitted.

Number references consecutively in the order in which they are first mentioned in the text. Identify references in text, tables and legends by Arabic numerals (superscripts). References cited only in tables or legends to figures should be numbered in accordance with a sequence established by the first identification in the text of the particular table or illustration.

Use the form of references adopted by the US National Library of Medicine and used in the *Index Medicus*. Use the style of the examples cited at the end of this section, which have been approved by the National Library of Medicine.

The titles of journals should be abbreviated according to the style used in the *Index Medicus*.

Try to avoid using abstracts as references; "unpublished observations" and "personal communications" may not be used as references, although references to written, not verbal, communication may be inserted (in parenthesis) in the text. Include among the references manuscripts accepted but not yet published; designate the journal followed by "in press" (in parenthesis). Information from manuscripts should be cited in the text as "unpublished observations" (in parenthesis).

The references must be verified by the author(s) against the original documents. List all authors when three or less; when four or more list only three and add *et al*. Examples of correct forms of references are given below:

**Example references**

**Journals**

1. Standard Journal Article  
Chua SK, Kilung A, Ong TK, *et al*. Carotid intima media thickness and high sensitivity C-reactive protein as markers of cardiovascular risk in a Malaysian population. *Med J Malaysia* 2014;69(4):166-74.
2. Corporate Author  
The Committee on Enzymes of the Scandinavian Society of Clinical Chemistry and Clinical Physiology. Recommended method for the determination of gamma-glutamyltransferase in blood. *Scand J Clin Lab Invest* 1976; 36(2): 119-25.

**Books and Other Monographs**

3. Personal Author(s)  
Osler AG. Complement: mechanisms and functions. Englewood Cliffs: Prentice-Hall, 1976.

4. Corporate Author  
American Medical Association Department of Drugs. AMA drug evaluation (3rd ed). Littleton: Publishing Sciences Group, 1977.
5. Editor, Compiler, Chairman as Author  
Rhodes, AJ, Van Rooyen CE (comps). Textbook of virology: For students and practitioners of medicine and the other health sciences (5th ed). Baltimore: Williams & Wilkins, 1968.
6. Chapter in Book  
Weinstein L, Swartz MN. Pathogenic properties of invading microorganisms. In: Sodeman WA Jr, Sodeman WA (eds). Pathogenic physiology: mechanisms of disease. Philadelphia: WB Saunders, 1974: 457-72.
7. Agency Publication  
National Care for Health Statistics. Acute conditions: incidence and associated disability, United States, July 1968 - June 1969. Rockville, Me: National Centre for Health Statistics, 1972. (Vital and health statistics). Series 10 : data from the National Health Survey, No 69). (DHEW Publication No [HSM] 72-1036).

**Online articles**

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

Ministry of Health Malaysia. Press Release: Status of Preparedness and Response by the Ministry of Health in an Event of an Outbreak of Ebola in Malaysia. 2014 [accessed Dec 2014]. Available from: [http://www.moh.gov.my/english.php/database\\_stores/store\\_view\\_page/21/437](http://www.moh.gov.my/english.php/database_stores/store_view_page/21/437).

WHO. WHO grants approval for safe, effective meningitis A vaccine for infants. 2015 [accessed Jan 2015]. Available from: [http://www.who.int/immunization/newsroom/press/9\\_01\\_2015\\_meningitis\\_vaccine\\_who\\_approval/en/](http://www.who.int/immunization/newsroom/press/9_01_2015_meningitis_vaccine_who_approval/en/)

**Other Articles**

9. Newspaper Article  
Shaffer RA. Advances in chemistry are starting to unlock mysteries of the brain : discoveries could help cure alcoholism and insomnia, explain mental illness. However, the messengers work. Wall Street Journal 1977; Aug 12: 1 (col 1), 10 (col 1).
10. Magazine Article  
Rouche B. Annals of Medicine: the santa claus culture. *The New Yorker* 1971; Sep 4: 66-81.

**Tables and Illustrations:**

Roman numerals should be used for numbering tables. Arabic numerals should be used when numbering illustrations and diagrams. Illustrations and tables should be kept to a minimum.

All tables, illustrations and diagrams should be fully labelled so that each is comprehensible without reference to the text. All measurements should be reported using the metric system.

Each table should be typed on a separate sheet of paper, double-spaced and numbered consecutively. Omit the internal horizontal and vertical rules. The contents of all tables should be carefully checked to ensure that all totals and subtotals tally.

**Photographs of Patients:**

Proof of permission and/or consent from the patient must be submitted with the manuscript. A statement on this must be included as a foot note 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. 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 text, unless it is a standard unit of measurement.

**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.



# **4<sup>th</sup> Asia Pacific Conference on Public Health**

**7-9 September 2015**

**Kuantan, Malaysia**

## **SCIENTIFIC COMMITTEE**

Lekhraj Rampal (Chairman)

Jayakumar Gurusamy

Tahir Aris

Sha'ari Ngadiman

Awang Bulgiba Awang Mahmud

Sanjay Rampal

Victor Hoe Chee Wai

Stephen Ambu

Mohamed Rusli Abdullah

Rizal Abdul Manaf

Ismuni Bohari

Ahmad Faudzi Yusoff

Amal Nasir Mustaffa

Feisul Idzwan Mustafa

Kamaliah Mohamad Noh

Nik Jasmin Nik Mahir

Sahrol Azmi Termizi

| <b>CONTENTS</b>   | <b>PAGE</b> |
|---|-------------|
| <b>PLENARY</b>  |             |
| • Communicable Disease - Current and Future Challenges  | 1           |
| <b>SYMPOSIUM</b>  |             |
| • Ebola Virus Disease (EVD): Investment during peaceful time is the wise solution                 | 2           |
| • Moving Forward to Eliminating Viral Hepatitis   | 2           |
| • Highlights in Communicable Disease Prevention in the Workplace.                                 | 3           |
| • The Burden of Young-onset Diabetes in the Joint Asia Diabetes Evaluation Program (JADE)         | 3           |
| • The application of social marketing principles in community health risk reduction interventions | 4           |
| • Molecular Epidemiology of Diabetes Mellitus   | 4           |
| • Fatty liver: more than just ectopic fat   | 5           |
| • Best practice principles for community wide obesity prevention                                  | 5           |
| • Workplace Health Promotion - An Organisational Viewpoint  | 6           |
| • Role of Health Professionals in Tobacco Control - Malaysian experience 1982-2015                | 6           |
| • Using AEM for Strategic Plan of Ending AIDS   | 7           |
| • Ending AIDS Strategy - Experience from the Thailand   | 7           |
| • Ending AIDS in Malaysia - Myth or Reality?  | 8           |
| • Mathematical modelling of disease transmission dynamics: from theories to applications          | 8           |
| • Mathematical modelling and health policy  | 9           |
| • Spatio-temporal bayesian networks for niche modeling of vector-borne disease                    | 9           |
| • Outdoor air pollution and cardiovascular disease: an additional opportunity for intervention    | 10          |
| • Community empowerment to support NCD prevention in a middle-income country                      | 10          |
| • My Body is Fit and Fabulous (MyBFF): Community-based intervention to combat obesity             | 11          |
| • Household food insecurity in Malaysia: findings from Malaysian Adults Nutrition Survey          | 11          |
| • Current nutrient intake among Malaysia Adult: Finding from MANS 2014                            | 12          |
| • The prevalence of meal patterns among Malaysia Adults: Findings from MANS 2014                  | 12          |
| • Malaysia health policy adaptation toward climate change   | 13          |
| • Health Security and Health Diplomacy: New Paradigms for Global Public Health                    | 13          |
| • Current intake of food according to Food Group: Finding from MANS 2014                          | 14          |
| • Prevalence of habits in relation to food consumption  | 14          |
| • Food label reading and understanding among Malaysian adult: findings from MANS 2014             | 15          |

|   |    |
|---|----|
| • Dietary supplement use among adults in Malaysia: finding from Malaysian Adults Nutrition Survey (MANS 2014) | 15 |
| • Food Consumption Patterns: Findings from the Malaysian Adults Nutrition Survey (MANS) 2014                  | 16 |
| • Escalating prevalence of overweight and obesity among Malaysian adults: after a 10 years period             | 16 |
| • Community Breast Cancer Screening: The Role of NGOs   | 17 |
| • Older people improving their mental health by taking up physical exercise                                   | 17 |
| • Using occupational groups for community based NCD Prevention  | 18 |
| • Selection and missingness as threats to causal inference in longitudinal community based NCD research       | 18 |

## ORAL PRESENTATION

|  |    |
|--|----|
| • Determinants of utilisation of maternal health care services: a community based study in Sarawak   | 19 |
| • Predictors of postpartum weight retention among urban Malaysian mothers: a prospective cohort study  | 19 |
| • Antenatal education and postnatal support intervention programme can improve breastfeeding outcomes and maternal breastfeeding self-efficacy: a quasi-experimental study         | 20 |
| • Parents' decision-making and access to measles vaccination in Sarawak: a qualitative study   | 20 |
| • Accessibility, utilisation and perception on quality of healthcare services among rural adults in Sarawak and its factors: a community based study                               | 21 |
| • Quality of life of caregivers of children with disabilities in Sarawak   | 21 |
| • Predictive factors for unmet needs among parents of children with disabilities (CWD) at support institutions in Kelantan   | 22 |
| • Perception on quality of service of health clinic in Sarawak   | 22 |
| • Students' satisfaction towards the school health programme in Sarawak, Malaysia  | 23 |
| • Comparative risk assessment of modifiable risk factors for mortality for cardiovascular diseases of atherosclerotic origin in Malaysia   | 23 |
| • Effectiveness of e-mail based empowerment programme (e-beEp) among Type II diabetes patients on glycaemic control, quality of life and cost-effectiveness: an intervention study | 24 |
| • Predictors for quality of life of chronic kidney disease and end stage renal disease patients in Kelantan  | 24 |
| • Screening for frailty among the elderly to allow targeted health promotion and intervention in Malaysia  | 25 |
| • Subtypes of disability among community dwelling older adults in Malaysia   | 25 |
| • Prevalence of asthma and level of fractional exhaled nitric oxide (FeNO) among school children in Terengganu, Malaysia   | 26 |
| • Evaluation of environmental exposure and leptospirosis in palm oil plantation workers  | 26 |
| • Prevalence of poor sleep quality and its correlates among secondary school teachers in Selangor, Malaysia: a cross-sectional study   | 27 |
| • Determinants of sick leave duration and return to work post-acute coronary syndrome among employees in Kelantan  | 27 |

|   |    |
|---|----|
| • Cross-cultural adaptation and psychometric assessment of the World Health Organization Health and Work Performance Questionnaire among Malay speaking office workers                          | 28 |
| • The reliability and validity of the Knowledge, Attitude and Practice on Child safety questionnaire  | 28 |
| • Efficacy of SMS and telephone call reminders on adherence and treatment outcomes among HIV positive patients on Antiretroviral Therapy (ART) in Malaysia: a Randomised Controlled Trial (RCT) | 29 |
| • Predictors of adherence behaviour among HIV positive patients receiving Antiretroviral Therapy (ART) in Malaysia  | 29 |
| • A case-control study on risk factors for HIV/AIDS among women in Sambas Regency, West Kalimantan, Indonesia   | 30 |
| • HIV-related stigma and discrimination among semi-urban population in Malaysia   | 30 |
| • Sexual behaviours of adult HIV positive patients enrolled in care in Yola, Nigeria  | 31 |
| • Prevalence of poor sleep quality and its correlates among secondary school teachers in Selangor Malaysia: a cross-sectional study   | 31 |
| • Prevalence and predictors of pediculosis capitis among the primary school students in the Hulu Langat District, Selangor  | 32 |
| • Prevalence and predictors of ever water pipe smoking among female school adolescents in Jeddah, Saudi Arabia  | 32 |
| • Prevalence and psychosocial determinants of tobacco use among adolescent female students in Jeddah, Saudi Arabia  | 33 |
| • Prevalence of overweight/obesity and its associated factors among secondary school students in Batang Padang District, Perak  | 33 |
| • Behavioural modification intervention program for CVD risks prevention among secondary school children in Batang Padang District, Perak   | 34 |
| • The effects of sociocultural pressure on disordered eating among adolescents in Malaysia, what public health prevention programmes can do?  | 34 |
| • Prevalence and risk factors of depression among preclinical medical students in a public university in Malaysia   | 35 |
| • Study on blood pressure (BP) status of Pos Raya primary school children using BP percentiles measured by 'BP calculator for Diagnosis of Hypertension in children and adolescents'            | 35 |
| • Iodine nutritional status amongst school children after 5-Years of universal salt iodisation in Sarawak   | 36 |
| • Knowledge, Attitude and Practice towards dengue prevention among medical students in Faculty of Medicine and Health Sciences, Universiti Putra Malaysia                                       | 36 |
| • Predictors of dengue-related mortality in Selangor, Malaysia  | 37 |
| • A meta-analysis on the accuracy of dengue diagnostic tests used for point-of-care testing (POCT) in ASEAN patients  | 37 |
| • Factors of Leptospirosis preventive practices with spatial mapping of Knowledge, Attitude and Practice among residents in Perkampungan Sungai Isap, Kuantan                                   | 38 |

|   |    |
|---|----|
| • Knowledge, Attitudes and Beliefs towards willingness to register as Organ Donor among Management and Science University (MSU) Medical Students        | 38 |
| • Rural Orang Asli in Pahang: A step forward for maternal health betterment   | 39 |
| • Tribal dialects in Orang Asli maternal health promotion - An innovative transformation  | 39 |
| • “Why are we here?” The reasons of healthcare professionals from Peninsular Malaysia to serve in Sabah and Sarawak: Qualitative study                  | 40 |
| • Study on multidose vaccine wastage in School Health Services in Malaysia  | 40 |
| • Electromagnetic radiation from TELCO towers: Is it an emerging health risk?   | 41 |
| • Knowledge and Attitude on noise induced hearing loss among workers of an automotive company in Selangor, 2015   | 41 |
| • An ethnographic mapping of alcohol accessibility in different ethnic communities residing in urban and semi-urban areas within Klang Valley, Malaysia | 42 |
| • Sampling Design of NHMS 2015  | 42 |
| • Is psychological resilience associated with pain catastrophizing in male Malaysian Army recruits? A Longitudinal Study                                | 43 |
| • Nutritional status of Pos Raya Orang Asli primary school children by percentiles of height, weight and BMI compared to WHO standards                  | 43 |
| • Factors associated with beri-beri outbreak among inmates in LG detention camp, Negeri Sembilan, Malaysia, 2014  | 44 |
| • <i>Plectocomiopsis Mira</i> poisoning outbreak among barge workers at Nanga Gaat, Kapit, 2015   | 44 |
| • An outbreak of post arthroscopic melioidosis knee abscess in private hospital – Selangor, Malaysia 2012   | 45 |
| • Evaluation of tuberculosis surveillance and action performance in Sarikei, Sarawak  | 45 |
| • Food poisoning outbreak in an integrated boarding school Jasin, Malaysia, 2014  | 46 |
| • An outbreak of Escherichia Coli at a boarding school in Samarahan, Sarawak during February 2013   | 46 |
| • An outbreak of Escherichia Coli food poisoning at Teluk Keke, Malaysia 2012   | 47 |
| • An outbreak of food poisoning among school hostel students in Penang - Malaysia, 2013   | 47 |
| • Falciparum malaria outbreak in low transmission area at Penampang Sabah, Malaysia 2012  | 48 |
| • An outbreak of Legionellosis at a business centre in Kuala Lumpur, 2013   | 48 |
| • Barriers in accessing measles vaccination service in Sarawak: a qualitative study   | 49 |
| • A measles outbreak at a private welfare centre in Kuala Lumpur, February 2012   | 49 |
| • Measles outbreak in Kudat District Sabah, Malaysia 2014: a new genotype for Sabah identified  | 50 |
| • Influenza A outbreak among national service trainee, Melaka, Malaysia 2013  | 50 |
| • National collaborative approach in investigating influenza outbreak amongst police staff, Malaysia, 2013  | 51 |
| • Malaysia’s Ebola preparedness 2014: enhancing capacity and capability   | 51 |

## POSTER PRESENTATION

|   |    |
|---|----|
| • HIV and AIDS in Malaysia: How big is the burden in 2008?  | 52 |
| • Risk cluster mapping at point level for dengue disease  | 52 |
| • A study of socio-demography and pre-admission clinical profile of dengue death patients in Selangor 2014  | 53 |
| • Spatial density of dengue incidence to improve environmental health risk: a case study of a dengue outbreak in Seksyen 7, Shah Alam                                       | 53 |
| • Dengue Vector Density in Outbreak Localities of Section 7, Shah Alam, Selangor  | 54 |
| • Spatial distribution of dengue vectors in Malaysia  | 54 |
| • Factors associated with mortality among tuberculosis cases in North-East Malaysia   | 55 |
| • Outcome of smear-negative tuberculosis cases and its associated factors of mortality in North-East Malaysia   | 55 |
| • Tuberculosis and Tobacco smoking in Malaysia  | 56 |
| • Changing graphics of pictorial health warnings on cigarette packages: Policy brief  | 56 |
| • Plain packaging for cigarettes - A Policy Brief   | 57 |
| • Smoking among school-going adolescents in selected secondary schools in Peninsular Malaysia - Findings from the Malaysia Adolescents Health Risk Behaviour (MyAHRB) Study | 57 |
| • Pregnancy-related Burden of Disease in Malaysia: A comparison between 2000 and 2008   | 58 |
| • Access of antenatal healthcare among non-citizens at government Maternal and Child Health (MCH) clinics, Federal Territory of Kuala Lumpur in 2013                        | 58 |
| • The impact of late booking among antenatal mothers in Lembah Pantai District  | 59 |
| • Low birth weight babies born among antenatal mothers at MCH clinics in Kepong, Kuala Lumpur   | 59 |
| • Delay in initiating breastfeeding among mothers in a hospital in Putrajaya  | 60 |
| • Knowledge of breast cancer and breast self-examination practise among female undergraduate students in public universities in Klang Valley, Malaysia                      | 60 |
| • Undiagnosed Type 2 Diabetes Mellitus (T2DM) among urban population in Malaysia - findings from the National Health and Morbidity Survey, 2011                             | 61 |
| • Variation in Insulin usage between states among Type 2 Diabetes patients attending government health clinics in Malaysia  | 61 |
| • Physical inactivity among Malaysian adults: Which domain is the worst?  | 62 |
| • Prevalence of obesity and association with the level of physical activities among patients attending health clinics in Kedah  | 62 |
| • Sampling design of the Malaysian Adults Nutrition Survey 2014   | 63 |
| • Change in nutrient intake after a decade: Comparing Malaysian Adult Nutritional Survey, 2003 and 2014   | 63 |
| • Changes in food choices among Malaysian adults: A Comparison between Malaysian Adults Nutrition Survey (MANS) 2003 and MANS 2014  | 64 |

|  |    |
|--|----|
| • ‘Salt, Sugar, Fat: Top 10 Daily Food Favourites’ Findings from the Malaysian Adults Nutrition Survey (MANS) 2014   | 64 |
| • Food eating habits and abdominal obesity among Malaysian adults: Findings from Malaysian Adult Nutrition Survey (MANS) 2014  | 65 |
| • Fruit and Vegetable consumption among Malaysian Adult: Findings from Malaysian Adult Nutrition Survey (MANS) 2014  | 65 |
| • Nutrient intake among Malaysian adults: Do they meet the requirement of the Malaysian recommended nutrient intake?   | 66 |
| • Food intake among Malaysian adults: are we meeting individualised recommendations?   | 66 |
| • Food supplement intake among adults: Findings from the Malaysian Adult Nutrition Survey 2014   | 67 |
| • Change of meal patterns among Malaysian adults: MANS 2003 vs. MANS 2014  | 67 |
| • Nutritional status, knowledge, attitude and practice among orphans living in institutions in Selangor and Melaka   | 68 |
| • Community alcohol programme in Sabah   | 68 |
| • Perception and risk associated to youth alcohol consumption within different ethnic communities residing in urban and semi urban areas within Klang Valley, Malaysia | 69 |
| • Knowledge and acceptance of community health intervention program in Sothern zone in Peninsular Malaysia among District Health Officers and KEMAS District Officers  | 69 |
| • The awareness, knowledge and acceptance among KEMAS personnel towards the KOSPEN programme in Southern Zone, Malaysia  | 70 |
| • Mental Health: The Unseen Burden   | 70 |
| • A study on psychiatric morbidities and its associated factors among elderly post flood victims in Tumpat, Kelantan   | 71 |
| • Morbidity patterns among the elderly in Malaysia: A 15-year trend  | 71 |
| • The Elderly Project: Effective Services Elderly Productive 2014  | 72 |
| • Falls among older adults: Findings from screening at the Ministry of Health Malaysia Primary Care Clinics  | 72 |
| • Stability of emotional and behavioural problems among school going children in Klang Valley in Malaysia  | 73 |
| • Quality of Life associated with the use of non-prescription substances among university students in Malaysia   | 73 |
| • Non-specific health symptoms due to exposure to electromagnetic field radiation  | 74 |
| • Noise induced hearing loss: Is it a problem among Inspectorates workers? A review from Raub Occupational Health Clinic, Nov 2014-Mac 2015                            | 74 |
| • Visual acuity status of military pilots in equator region  | 75 |
| • Laboratory turnaround time for urgent BUSE request   | 75 |
| • Retaining healthcare professionals in east Malaysia: A Qualitative Study   | 76 |
| • Re-engineering work processes in clinics   | 76 |

|  |           |
|--|-----------|
| • Hospital cost of percutaneous coronary intervention in Malaysia  | 77        |
| • Cost of dental examination and diagnosis in Sabah Public Dental Clinics  | 77        |
| • Effective public health intervention for asthma: A literature review   | 78        |
| • Effects of pharmacist managing Warfarin medication therapy adherence clinic in Kemaman Hospital  | 78        |
| • Leptospirosis outbreak in a high school following camping activities in Hulu Langat.   | 79        |
| • Microbial contamination of drinking water from water coolers in Universiti Putra Malaysia residential colleges   | 79        |
| • Radionuclide leachability as a potential pathway of radium contamination in water  | 80        |
| • Adaptation and validation of the Malay version of Osteoarthritis Knee and Hip Quality of Life (OAKHQOL) questionnaire among knee osteoarthritis patients: A Confirmatory Factor Analysis | 80        |
| • Psychometric properties of the Malay version of Knee injury and Osteoarthritis Outcome Score (KOOS) among knee osteoarthritis patients in Malaysia: A confirmatory analysis              | 81        |
| • Psychometric properties of the Malay version Organisational Justice Scale Questionnaire  | 81        |
| <b>LIST OF AUTHORS</b>   | <b>82</b> |

**PLENARY****Communicable Disease - Current and Future Challenges**

Lokman Hakim S, Feisul Idzwan M

Ministry of Health Malaysia

**ABSTRACT**

Economic development has contributed to higher standards of living and urbanisation, especially in high- and middle-income countries. This has led to a demographic transition with reduction in birth rates and increasing life spans. The burden of illness has shifted from acute childhood infections to chronic non-communicable diseases. Nevertheless, the epidemiologic transition is not complete, unfolding at different rates around the globe. Emerging and re-emerging diseases are accompanied by new problems such as bioterrorism threats, increase of hospital-acquired infections, antimicrobial resistance and pandemic outbreaks, all have brought important new challenges to public health globally.

Although higher incomes and educational levels, improvements in nutrition, sanitation and sewage management as well as vaccines and medicines have all accounted for the dramatic decline in mortality during the 20th century, huge inequalities persist, and not everyone has been able to enjoy the fruit of public health successes and societal advances. As a result, some low- and middle-income countries have been left behind. Inequalities can also occur within a country. The poor health status in these sub-populations can be attributed to problems such as poverty, malnutrition, illiteracy, unsafe drinking water, lack of access to health services, social discrimination, and political conflict. Public health is presently being confronted with major challenges, especially in middle- and low-income countries containing longstanding infectious disease foci and where problems are perpetuated by political unrest, war, poverty and lack of adequate health and sanitation infrastructure. Ease of travel also facilitate spread of diseases and increases pandemic potential.

There is good reason for cautious optimism given all the progress that has been made in recent years on account of the tremendous efforts in public health. Political and financial support is needed to maintain and develop the gains achieved in the past century and to transmit the latest knowledge and technology to many parts of the world where preventable deaths measure in the hundreds of thousands. The potential for saving human life is high with current technology. The New Public Health calls for fair distribution of resources and the timely application of existing knowledge and tools; this mainly rests on political will, funding, initiative and training.

**Keywords:** communicable disease, epidemiologic transition, inequalities, public health.

**SYMPOSIUM****Ebola Virus Disease (EVD): Investment during peaceful time is the wise solution**

Thilaka Chinnayah

Johor State Health Department

**ABSTRACT**

Ebola, an old disease discovered in 1976, appeared in a new context that favoured rapid and initially undetected spread resulting in current largest and most complex outbreak in West Africa. Previous EVD outbreaks occurred in remote villages, but this outbreak has involved major urban as well as rural areas with a dense and highly mobile population. The lack of knowledge, experience and capacity hindered early detection of the event and timely initiation of an effective outbreak response. Other trigger factors were weakened health care system in all the three most affected countries (Guinea, Liberia and Sierra Leone) and cultural practices and beliefs, like burial rites, constituted a high-risk for EVD transmission. Getting to zero cases in Ebola affected countries is only possible through rigorous surveillance and thorough case finding, case investigation and management, and extensive contact tracing. Risk communication need to be strengthened and reach all level of communities. In ensuring a better preparedness among the countries facing imported cases of EVD, like in Malaysia, investment in core capacities and health security system strengthening during peaceful time is very essential. This outbreak has revealed that the world needs to be better prepared for a large and sustained disease outbreak and we should remember that infectious diseases are unpredictable and so we must prepare for the unexpected.

**Moving Forward to Eliminating Viral Hepatitis**

Rosmawati Mohamed

Department of Medicine, Faculty of Medicine, University of Malaya and University of Malaya Medical Centre, Kuala Lumpur, Malaysia

**ABSTRACT**

Viral hepatitis is a global health problem, responsible for approximately 1.45 million deaths worldwide annually. The Asian Pacific region bears the major burden of deaths related to viral hepatitis, mainly due to Hepatitis B and C. Chronic viral hepatitis is the leading cause of liver cancer, which is the second most common cause of cancer deaths in this region. Despite the high burden, the level of awareness and political response are insufficient to adequately tackle this public health issue.

Viral hepatitis is preventable, treatable and, in the case of Hepatitis C, curable. This year, the World Health Organization (WHO) included the newest hepatitis treatments in their Model List of Essential Medicines as a signal to governments that they should make them available to those who need them. However, the lesson we learnt from HIV/AIDS is that providing access to drugs is not enough. A significant proportion of people living with viral hepatitis do not know that they are infected. There is an urgent need to scale up on early detection of people at high risk of Hepatitis B and C, strengthen measures to prevent transmission of viral hepatitis and improve the quality of life and survival for those already infected by ensuring that they receive appropriate treatment and care.

Adoption of the second resolution on viral hepatitis by the 67th Session of the World Health Assembly in 2014 (Resolution WHA 67.6) and now that viral Hepatitis is featured in the proposed Post 2015 Health and Development Goal (Goal 3: 3.3 - By 2030, end the epidemics of AIDS, TB, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases, and other communicable diseases) should reaffirm the commitment of countries to reduce the burden of viral hepatitis and start putting into place concrete steps towards the elimination of viral hepatitis. All elements outlined in the WHO Global Hepatitis Framework will be needed to achieve a coordinated approach to combating viral hepatitis. Some of these steps will be small, some big - but all will require commitment by relevant stakeholders, smart allocation of available resources, and a better understanding of the 'silent epidemic' which we talk so little about.

## Highlights in Communicable Disease Prevention in the Workplace.

Rozhan Shariff Mohamed Radzi

Medicine & Occupational Health Dept., ExxonMobil Exploration & Production Malaysia Inc.

### ABSTRACT

The importance of preventing communicable diseases at the workplace cannot be understated. An employer's legal obligation to protect the safety and health of his employees extends to the sphere of public health. This includes the deterrence and mitigation of infectious disease threats to the extent practicable. The case for action stems from the impact in terms of loss of work days, productivity, incurred medical costs and disruption of business, besides placing vital sites and operations in jeopardy. Prevention applies across all work settings ranging from the basic office environment to remote locations, critical or strategic assets and facilities and also travellers. Key elements are identification and stratification of essential personnel for operational continuity, personnel at risk, developing an Infectious Disease Outbreak Management plan, pre-planned response measures and supplies, clarity of roles and responsibilities of those involved. Other points to consider include work flexibility/virtual meetings for social distancing, Business Continuity Planning (including Pandemic Flu), return to work clearance procedures, travel health resources, vaccinations, blood borne pathogen awareness and food safety practices. Success factors include management support and communication, employee education, cross functional collaboration, alignment with other organisations or business partners and advance identification of prospective healthcare partners and providers.

## The Burden of Young-onset Diabetes in the Joint Asia Diabetes Evaluation Program (JADE)

Roseanne O. Yeung, Yuying Zhang, Juliana Chan on behalf of the JADE Study Group

Division of Endocrinology, University of Alberta, Canada

### ABSTRACT

In contrast to Caucasian populations where the majority of younger patients have been diagnosed with autoimmune Type 1 diabetes, Asian countries are facing a rising prevalence of young-onset Type 2 diabetes concordant with the rapid urbanisation and industrialisation. People with young-onset Type 2 diabetes are at high risk of complications given the longer expected duration of disease. Given the shifting demography, little is known about the epidemiology of Type 2 diabetes in this young-onset Asian population.

The JADE program is a technologically enhanced diabetes management program which uses structured data collection and a protocolled work flow to clinically manage people with diabetes since 2007. JADE is now in primary and specialty clinics across 11 countries including Malaysia, China, India, Hong Kong, Philippines, South Korea, Vietnam, Singapore, Thailand, Taiwan, and Indonesia. We found that 1 in 5 patients have been diagnosed with Type 2 diabetes under the age of 40 years. These younger patients were more likely to have worse lifestyle habits including smoking and poor diet, despite being more likely to have received diabetes education. Familiar clustering was seen, with two thirds of young-onset patients having a family history of Type 2 diabetes. These younger patients also had higher rates of obesity and HbA1c than their counterparts diagnosed over the age of 40 years, and were less likely to be appropriately treated with statins, antihypertensive medications, and renin-angiotensin blockade.

Younger patients were less likely to meet guideline-targets for glycaemic, blood pressure, and LDL-cholesterol control, likely due to the silent nature of these risk factors. The individual and public health burdens of diabetes require urgent intervention to counter the impending tide of diabetes-associated complications, including the development and implementation of healthcare systems which provide ongoing risk factor management to those with established disease, and periodic surveillance to those at high risk.

## **The application of social marketing principles in community health risk reduction interventions**

Jananezwary Kanapathy

International Medical University, Malaysia

### **ABSTRACT**

Social marketing is defined as the systematic application of marketing and other concepts and techniques to achieve specific behavioural goals for social and public good. This adaptable approach is increasingly being used to achieve and sustain behaviour goals on a range of social issues. In the case of health-related social marketing, the 'social good' can be articulated in terms of achieving specific, achievable and manageable behaviour goals, relevant to improving health and reducing health inequalities. This presentation provides a broad overview of eight social marketing principals, 1) customer orientation; 2) behaviour and behavioural goals; 3) theory; 4) insight; 5) exchange; 6) competition; 7) intervention mix and 8) audience segmentation. This paper will also explore successful social marketing campaigns which has been implemented to reduce community health risk by designing interventions to tackle childhood obesity, smoking, illicit drug use and cardiovascular disease.

## **Molecular Epidemiology of Diabetes Mellitus**

Chia Kee Seng

Saw Swee Hock School of Public Health, National University of Singapore

### **ABSTRACT**

The prevalence of chronic diseases, in particular diabetes is increasing to alarming levels across all countries. There are 345 million diabetics worldwide and more than half of them reside in Asia. It is estimated that diabetes will become the seventh leading cause of death in the world by 2030. This is to be further exacerbated by rapid population ageing and urbanisation.

Diabetes is a complex disease with a genetic predisposition modified by environmental factors. Globalisation and increasing adoption of sedentary lifestyle and unhealthy dietary habits are contributing to this worldwide pandemic. It poses high human, social and economic costs to all societies being a leading contributor of morbidity and mortality, decreasing productive years of the populations.

With recent advances in DNA genotyping, epigenomic profiling and emergence of linkage and genome wide association studies, it has been possible to highlight the role of genetic factors in the development of diabetes and to explore the gene environment interactions in its pathogenesis. However, such studies currently explain only a small percentage of heritability. It is essential to acknowledge the role of factors, such as obesity and physical inactivity in increasing the risk. Therefore, adopting a holistic approach with greater emphasis on behavioural and lifestyle interventions is required to halt this growing problem. Considering the complex nature of the issue, we should adopt a system's perspective and base our interventions on individual's biology, environment and other traits rather than just emphasising on genetic pathways and biomarkers, which contribute a small percentage to the disease causation.

## Fatty liver: more than just ectopic fat

Seungho Ryu

Occupational and Environmental Medicine, Kangbuk Samsung Hospital, Sungkyunkwan University, Korea

### ABSTRACT

Non-alcoholic fatty liver disease (NAFLD) encompasses a spectrum of pathological conditions, ranging from simple steatosis to non-alcoholic steatohepatitis (NASH) and cirrhosis, in the absence of excessive alcohol consumption. In addition to its potential liver complications, the importance of NAFLD as a cardiovascular risk factor is being increasingly recognised. Concurrent with the increasing prevalence of obesity, NAFLD has become a growing problem. Epidemiologic approaches to identify possible risk factors for NAFLD are necessary to develop preventive strategies for this disease. Kangbuk Samsung Total Healthcare Center is the largest and oldest health check-up centre as well as the largest occupational health check-up centre in Korea, resulting that assessment of fatty liver based on ultrasound is available in almost all participants. Using the already existing infrastructure of health check-up centres, two Kangbuk Samsung cohort studies have been established.

NAFLD is strongly associated with features of the metabolic syndrome, including abdominal obesity, insulin resistance, dysglycemia and atherogenic dyslipidemia, which are all established risk factors for cardiovascular disease (CVD). NAFLD is also associated with other emerging and non-traditional CVD risk factors and this association was observed in our studies. Moreover, studies showed an association of NAFLD with markers of subclinical atherosclerosis as well as with an increased incidence of CVD. Additionally, NAFLD appears to be associated with increased prevalence and incidence of chronic kidney disease (CKD), which is another known risk factor for CVD.

NAFLD has been recently proposed as an independent risk factor for the future development of Type 2 diabetes mellitus. The potential adverse impact of NAFLD on the development of T2DM, kidney disease and CVD will deserve particular attention, especially with respect to the implications for screening and preventive strategies in the increasing number of patients with NAFLD.

## Best practice principles for community wide obesity prevention

Colin Bell, Jill Whelan, Penny Love, Claudia Strugnell, Lynne Millar, Steve Allender.

WHO Collaborating Centre for Obesity Prevention, Deakin University, Geelong, Australia.

### ABSTRACT

Obesity is epidemic and a major contributor to global cardiovascular, diabetes, chronic respiratory and cancer-related deaths. These diseases are overwhelming health systems and slowing economic progress through their impact on the labour supply and productivity, particularly in developing economies.

Prevention is the most attractive and cost effective solution to this complex problem and communities are the ideal level of society to target because they have the means, motive and opportunity to affect change. There is growing evidence that community wide obesity prevention is effective, particularly among children. What is still to be discovered is how to achieve long term change, such that obesity prevalence remains low, and how to scale-up prevention so that healthy weight becomes the norm across communities and countries.

The World Health Organization Collaborating Centre at Deakin University in Geelong, Australia has over ten years of experience supporting and evaluating successful community based interventions nationally and internationally and this presentation will draw this experience into a set of best practice principles. It will also outline our systems thinking and collective impact approaches to obesity prevention that puts our work at the leading edge of prevention science.

## Workplace Health Promotion - An Organisational Viewpoint

David Koh\*, \*\*, Katherine Koh\*\*\*

\*Universiti Brunei Darussalam, \*\*Saw Swee Hock School of Public Health, National University of Singapore, \*\*\*Psychologist and Deputy Head (WHP Services), ST Healthcare, Singapore

### ABSTRACT

It is important to understand the organizational viewpoint and its management styles in order to initiate and sustain workplace health promotion (WHP) programs. Management views and styles may be driven by data, cost consciousness or in some instances there may even be a lack of awareness of WHP. Often a mixture of these factors can exist.

Data driven management require a strong evidence based case on the effects of WHP on productivity and employee wellbeing, as well as potential cost savings of companies in the future. Utilization of low-cost WHPs, subsidized talks and workshops, available grants and sponsorships, free resources and exploration of cost sharing or co-funding may appeal to the cost conscious. Education of the unaware may be in the form of clarification of myths and misconceptions about WHP and outlining its framework and components.

Understanding the organizational viewpoint and utilizing a mixture of approaches to address their individual styles and needs will optimize the chances of introducing and sustaining successful WHP programs in the organization.

## Role of Health Professionals in Tobacco Control - Malaysian experience 1982-2015

Lekhraj Rampal

Faculty of Medicine and Health Science, Universiti Putra Malaysia, Serdang, Selangor

### ABSTRACT

**Introduction:** Tobacco use is the single most preventable cause of death globally. It is deadly in any form or disguise. There is no safe level of exposure to cigarette smoke. There are about 6000 known chemicals in tobacco smoke; hundreds of these are hazardous, and at least 69 are known to cause cancer. Its use leads to more than 6 million deaths worldwide annually. The objectives of this paper presents Role of Health Professionals in Tobacco Control - Malaysian experience 1982-2015. It also highlights the role played by Action on Smoking and Health Committee, Malaysian Medical Association (ASH, MMA) and author's experience in Tobacco Control and its impact with examples.

**Results:** Roles of Health Professionals: Community Leadership, Education, Advocacy, Training and Research and Clinical: A National workshop on 'Smoking or Health' was organised by ASH, Malaysian Medical Association (MMA) in 1983, followed by the 'Superman' Campaign against smoking involving 7000 school children in 1984, a National seminar on Tobacco Control in. On 5 November 1986, the first 'National No Smoking Day' was launched by the ASH, Committee, and MMA. This led to the organisation of National No Smoking Week every year from 1987 to 1993 by MMA. In 1998, 2000, 2002, 2004 and 2006 the International Quit and Win (No Smoking Month) in Malaysia was organised by MMA with the assistance of Ministry of Health and other NGOs. Training was conducted for healthcare workers. Advocacy role played by MMA led to the ban of smoking on Malaysian Airlines flights. These were the first major anti-tobacco efforts in Malaysia. These activities served to create awareness, bring about a change in government policy on tobacco control, promote cessation, prevent initiation, including increasing the unit price of tobacco products and implementing smoking bans through policies, regulations, and laws. Prof. Dr. Lekhraj Rampal and Dr Teoh Soong Kee played a very significant role during this period. The Malaysian Council on Tobacco Control play an important advocacy role. The Ministry of Health through its Tobacco Control Unit and FCTC Secretariat, Health Offices and more 300 quit smoking clinics and 32 hospitals continue to play the lead role in smoking prevention and cessation. All these activities have contributed to decline in the prevalence of smoking. Catalyst Role, Advocacy Role: The Cabinet of Ministers Malaysia in 2002, agreed with the suggestion of MMA to increase tax on tobacco and tobacco products and use the extra funds to establish foundation to provide funding for tobacco control health promotion and cessation activities. The establishment of Malaysian Health Promotion Board was passed by parliament and gazette in 2006.

**Conclusion:** Health Professionals in Malaysia have played a significant role and have taken several steps forward in tobacco control in Malaysia. We All Have A Role to Play. We need to work together locally and globally to achieve "A Tobacco Free World".

## Using AEM for Strategic Plan of Ending AIDS

Wiwat Peerapatanapokin\*, Sha'ari Ngadiman\*\*

\*East-West Center, Hawaii, USA, \*\*HIV/STI Sector, Ministry of Health, Malaysia

### ABSTRACT

**Introduction:** HIV epidemic has been a high burden disease in many countries in Asia. To minimise HIV/AIDS impacts, the country needs to respond to its epidemic effectively. This would need a clear understanding of its epidemic. Policies and programs need to be designed strategically to fit with the epidemic situation. AIDS Epidemic Model (AEM) is a tool that can be used to explore the best policy options. It has been used for an investment case analysis and strategic plan of Ending AIDS in several countries

**Methods:** AIDS Epidemic Model (AEM) has been applied in 14 countries in Asia. The AEM process consists of a series of in-country workshops: 1) data collation, analysis and trend extraction; 2) development of the preliminary baseline model; and 3) development of policy analysis scenarios; and 4) development of advocacy materials to advocate for planning and implementing the best policy options. Recently, some countries such as Thailand, Viet Nam, the Philippines, Nepal, and Malaysia have used AEM to develop an investment case for the Ending AIDS scenario.

**Results:** Based on a good fit between observed data and the model results, AEM have replicated the past and current HIV epidemic in most countries. Several policy scenarios have been developed and guide decision makers on policy choices. The impacts of Ending AIDS scenarios are very significant in many aspects including new infections averted, deaths averted, and DALYs saved. Ending AIDS scenario is highly cost-effective in most countries.

**Conclusion:** Modelling and investment case analysis might help to identify the best response to HIV epidemic. Investment of Ending AIDS should be explored. The modelling results can be used to advocate for more resources for HIV/AIDS program.

**Keywords:** AEM, AIDS Epidemic Model, Policy analysis, Investment Case, Ending AIDS

## Ending AIDS Strategy - Experience from the Thailand

Sumet Ongwadee

Department of Disease Control (DDC), Minister of Public Health, in Thailand

### ABSTRACT

**Introduction:** Thailand is committed to the targets of the 2011 High Level Meeting (HLM) on AIDS and has a prioritised National Strategy that pledges a two-thirds reduction in incidence in sexual transmission, and through injecting drug use (IDU), by 2016. The Thai epidemic is a very mature; at its peak in the mid-1990's Thailand had around 160,000 new HIV infections per year. However, data consistently show high prevalence among IDU (>20%), and men who have sex with men (MSM, 8-25%) during the last 5 years. Because of the large size of the MSM population, they will contribute around 40% of new infections in the next 5 years.

**Current Response:** The current response characterised by peer-led behaviour change interventions for MSM, sex workers and IDU ("key populations"), and includes a range of prevention and care activities also for labour migrants, young people, and the private sector. Despite this investment, behavioural variables (condom use and needle sharing behaviour) have remained stable over several years and uptake of HIV testing and counselling is limited. At the same time, treatment initiation with ARVs is late. These factors together suggest that with the current response, Thailand will not reach the HLM targets.

**Strategic Options:** Thailand has the potential to be one of the first countries in Asia to 'End AIDS'. The end of AIDS can become a reality if Thailand is able to effectively utilise the preventive effects of antiretroviral treatment. Thailand has already shown this is possible through the virtual elimination of HIV infections from mother to child. Sustaining current positive behaviour change among key populations, making use of alternative service delivery models for HIV testing, early treatment and adherence support, adequate monitoring, quality assurance, and positioning AIDS as a chronic and treatable medical condition, are critical components to end AIDS. This new model of combination prevention needs to be focused on regions and 'hot spots' with the highest number of new infections to ensure better coverage and optimal use of resources. It will avert 20,000 new HIV infections and 22,000 deaths by 2022. Initial marginal cost-benefit analysis suggest that an investment of USD100 million over the next decade into HIV testing, early treatment, and adherence support can translate into potential benefits of more than USD300 million in saved hospitalisation, treatment costs, and productivity gains. The yearly additional marginal costs of around 5% of present expenditures can be further reduced by focusing financial and human resources on globally accepted high impact interventions.

Action now will pay off in the future: Every baht spent now can generate a return of three Baht. The critical action includes: scaling-up behaviour change interventions and HIV counselling and testing focusing on key populations, early treatment for people found to be HIV positive, community adherence support, and a new generation of data management and reporting.

## Ending AIDS in Malaysia - Myth or Reality?

Sha'ari Ngadiman

Ministry of Health Malaysia

### ABSTRACT

Since the first case of HIV detected in 1986, and through vigorous activities in detecting new cases, Malaysia reached its peak of HIV epidemic in 2002 with HIV infection at 22/100,000 population. Between 2003 and 2009, the country observed a significant decline of cases resulting from countrywide implementation of Harm Reduction (HR), Prevention of Sexually Transmitted HIV and Prevention of Mother to Child Transmission (PMTCT). Since end of 2005, HR has been the mainstay of the country's responses that resulted in further decline of new HIV infection in the country. But this decline has since stalled from 2010 onwards.

Several activities and approaches were taken in fighting HIV and AIDS, through the first National Plan of Action on AIDS in 1988, followed by another plan of action in 1998. The National Strategic Plan for HIV and AIDS (NSP) was established for 2006-10, and continued for 2011-2015, in which the country has observed increasing programme coverage for injecting drug users, continuation of impactful programme and scaling up prevention activities among key affected and vulnerable populations. These gave an impact for the country in reaching the aspiration of reducing new HIV cases to 11/100,000 population by 2015. However, the epidemic has not changed much in the last couple of years. Changing the course of the epidemic require not only undivided commitment of all stakeholders, but rather changing the way we do things. To end AIDS, apart from maintaining and sustaining high levels of funding, there must be greater harmonisation, coordination and alignment of prevention programmes; achieve greater programme coverage, effectiveness, and efficiency; and to accelerate treatment coverage to those who need it. In reaching that, country need a new set of strategy, i.e., 'National Strategic Plan on Ending AIDS - NSPEA'.

While the current NSP is well on its mark to achieve the Millennium Development Goals, NSPEA is expected to complement the subsequent Sustainable Development Goal (SDG) further enhancing the national response by guiding the country's new direction of ending AIDS by 2030 in which 90% reduction of new HIV cases compared to new HIV cases in 2010. The NSPEA is aiming clear, prioritised and evidence-based national priorities that will be heavily guided by the AIDS Epidemic Model (AEM) especially on promoting and upscaling HIV test to reach 90% among key populations (KPs) by 2020, accelerating ARV coverage to reach 90% KPs by 2020, using approach of treatment as prevention, shifting target of HR for PWID to coverage of 80% MMT and 15% NSEP, mitigating sexual transmission and others. With these strategies and approaches as in NSPEA, we are confident that Malaysia is able to end AIDS situation earlier than 2030.

## Mathematical modelling of disease transmission dynamics: from theories to applications

Karina Razali

HART Consultancy, Malaysia

### ABSTRACT

There has been a growing interest in the use of mathematical methods in the study of the epidemiology and population dynamics of infectious disease. In the field of mathematical modelling, the early literature were most commonly abstract and theoretical in nature. In recent years, more and more research and application of mathematical models deal with the practical issues which are of major concern to public health professionals.

Mathematical modelling involves the computational simulation of the interplay of the key factors that drives the transmission of an infection within a specified population. The progression of diseases throughout populations can then be simulated and quantified to produce estimates and projections.

This paper will first and foremost clarify what is meant by mathematical modelling of infectious diseases, discuss briefly the evolution of the field of mathematical modelling and the basic principles and concepts that govern disease modelling. The links between theories and practical applications will be discussed through examples such as i) herd immunity and simulating the effects of changing vaccine coverage in a population; ii) the evolution of HIV disease transmission models accounting for differences between populations, different modes of transmission and the effects of treatment and prevention measures; iii) the benefits of a theoretical model in the preparedness for and management of emerging outbreaks; and iv) the use of mathematical models beyond epidemic simulation particularly in monitoring and evaluation of the impact and cost-effectiveness of large-scale intervention programmes.

The application of mathematical models as a tool in understanding epidemics as well as in the strategic planning of intervention measures and the evaluation of existing programmes is important to further strengthen existing public health efforts. A good understanding of what mathematical models are, and what they can (and cannot) do, is essential.

## Mathematical modelling and health policy

Aronrag Meeyai

Department of Epidemiology, Faculty of Public Health, Mahidol University, Thailand

### ABSTRACT

I have been the PI for three projects: 1) Cost-utility analysis of seasonal influenza vaccination among school children in Thailand (funded by WHO HQ); 2) Cost-utility analysis of seasonal influenza vaccination among pregnant women in Thailand (funded by WHO HQ); and 3) modelling of seasonal influenza in Thailand (funded by the National Science and Technology Development Agency (NSTDA), Thailand). The first resulted in a paper in PLoS Medicine (“Seasonal influenza vaccination for children in Thailand: a cost-effectiveness analysis”). The last led to a paper in the American Journal of Epidemiology (“Mortality attributable to seasonal influenza A and B infections in Thailand, 2005-2009: a longitudinal study”). The publication for the second project is in preparation. I was also the PI for the project “An economic evaluation of tetraavalant dengue vaccine in Thailand” (funded by WHO Thailand).

My team developed a framework to evaluate the cost-effectiveness of seasonal influenza vaccination policies in Thailand and used it to consider annual vaccination of both children and pregnant women. We adopted a Bayesian evidence-synthesis framework, expressing uncertainty in parameters through probability distributions derived by fitting the model to prospectively collected laboratory-confirmed influenza data from 2005-2009, by meta-analysis of clinical trial data, and by using prior probability distributions derived from literature review and elicitation of expert opinion. We performed sensitivity analyses using alternative assumptions about prior immunity, contact patterns between age groups, the proportion of infections that are symptomatic, cost per unit vaccine, and vaccine effectiveness. Vaccinating school-aged children and pregnant women are likely to be cost-effective in Thailand in the short term, though the long-term consequences of such a policy cannot be reliably predicted given current knowledge of influenza epidemiology and immunology. Our work provides a coherent framework that can be used for similar analyses in other low- and middle-income countries.

## Spatio-temporal bayesian networks for niche modeling of vector-borne disease

Peter Haddawy

Faculty of ICT, Mahidol University, Thailand

### ABSTRACT

Ecological Niche Modeling has become an increasingly popular approach for modelling of vector-borne disease due to its ability to describe heterogeneous spatial patterns of disease at fine-scale resolution, to estimate transmission rates in areas where little or no data are available, and to evaluate targeted control strategies. But current modelling approaches have not yet realised the full potential of this paradigm due largely to limitations of the modelling languages used. Models have captured spatial and temporal variation, with little work addressing spatial correlation and temporal evolution. While the paradigm has the potential to generate explanations of inferred results, the modelling languages used thus far do not directly support this.

In this talk I will show how spatio-temporal Bayesian networks can be used to model spatial variation, spatial correlation, and temporal evolution of disease transmission as well as the relevant co-variables. The network models have the important property of perspicuity – model structure mirrors the underlying processes and can therefore be used to generate causal explanations. In addition, the use of Bayesian probability allows the quantification of uncertainty in both parameters and process and the inclusion of prior knowledge. I illustrate key concepts with our ongoing work on using spatio-temporal Bayes nets for village-level modelling of malaria transmission. As this malaria model illustrates, a further challenge in niche modelling is the labour intensive nature of model construction. I describe our approach to automating the task of model construction by using libraries of model fragments stored as temporal probability logic sentences which are dynamically assembled into Bayes nets based on GIS data. The approach makes possible the rapid construction of fine-scale resolution models over large geographic regions.

## Outdoor air pollution and cardiovascular disease: an additional opportunity for intervention

Bin Jalaludin

Centre for Air quality and health Research and evaluation (CAR) and School of Public Health and Community Medicine, University of New South Wales

### ABSTRACT

In 2012, outdoor air pollution was responsible for an estimated 3.7 million premature deaths globally, with 70% of these deaths occurring in the Western Pacific and South East Asian regions. Most deaths were due to ischaemic heart disease and stroke. In the European Union, where outdoor air pollution levels are generally low, it is estimated that air pollution has reduced the average life expectancy by about nine months.

The strongest epidemiological evidence for adverse health impacts of air pollution is for effects on the cardiovascular system. Outdoor particulate matter is associated with increased heart rate variability, development of atherosclerosis, myocardial ischaemia, myocardial infarction and premature deaths. The evidence is consistent with a causal relationship between air pollution exposure and cardiovascular morbidity and mortality.

Despite the increasing evidence for the cardiovascular effects of air pollution, it has not, to date, had the same recognition as an important modifiable risk factor for cardiovascular disease morbidity and mortality compared to more traditional modifiable risk factors for cardiovascular disease such as cigarette smoking and hypertension. It is now the right time to re-evaluate the contribution of air pollution to cardiovascular disease and explore opportunities for intervention.

The most effective approaches to reducing exposure to air pollution will continue to be population-based air pollution control strategies that reduce the exposure to air pollution for as many people as possible. However, there is also an important role for the medical profession, both individually and organisationally, to advocate for cleaner air.

## Community empowerment to support NCD prevention in a middle-income country

Dewi FST\*, \*\*, Stenlund H\*\*, \*\*\*, Marlinawati VU\*\*\*\*, Öhman A\*\*, \*\*\*, \*\*\*\*\*, Weinehall L\*\*, \*\*\*, \*\*\*\*\*

\*Public Health Division, Faculty of Medicine Gadjah Mada University, Yogyakarta, Indonesia, \*\*Epidemiology and Global Health, Department of Public Health and Clinical Medicine, Umeå University, Umeå, Sweden, \*\*\*Umeå Center for Global Health Research, Umeå University, Umeå, Sweden, \*\*\*\*Center for Health and Nutrition Research Laboratory, Faculty of Medicine, Gadjah Mada University, Yogyakarta, Indonesia, \*\*\*\*\*Umeå Center for Gender Studies, Umeå University, Umeå, Sweden, \*\*\*\*\*Ageing and Living Conditions, CPS, Umeå University, Umeå, Sweden

### ABSTRACT

**Introduction:** NCD is burdening low- and middle-income countries including Indonesia. Many studies show that NCD is related to unhealthy behaviours, which is related to personal choice. Community empowerment accommodate what people choice could be an opportunity to encourage people to make a healthy behaviour choice. The aim is to report the experience of piloting a community empowerment program to prevent NCD called PRORIVA (Program to Reduce Cardiovascular Disease Risk Factors in Yogyakarta, Indonesia).

**Methods:** A quasi-experimental study, involving four intervention communities, and one control community was applied. A community empowerment program was performed through phases: 1) building trust, 2) raising awareness, 3) program development, 4) community organizing and 5) initiation of maintenance. Every phase was performed through intensive interaction started from the local leaders, cadres, community activist, and lay people. Community capacities were identified and mobilised during the intervention. Smoking habit, physical activity, fruit and vegetable intake, knowledge and attitude toward CVD risk factors were measured before and after the intervention among sample (n=883 in intervention areas, n=114 in control area). The written meeting records, facilitator reports, free-listing and in-depth interviews were analysed to describe people perceived towards PRORIVA.

**Results:** There are more activities and more participation in low SES communities than in high SES communities (40 and 13 activities respectively). Men of high SES communities had their knowledge towards CVD risk factors increased significantly (from 56% to 70%). Citizen from both high and low SES communities perceived PRORIVA as improving the awareness of CVD, encouraged them for more healthy behaviour with a cheerful program.

**Conclusions:** A careful process inviting community participation is important to mobilize the community capacities. Community empowerment is a potential approach to improve community participation, program acceptance, people's knowledge and support the NCD prevention.

## My Body is Fit and Fabulous (MyBFF): Community-based intervention to combat obesity

Tahir Aris

Institute of Public Health, Ministry of Health Malaysia

### ABSTRACT

Malaysia has the highest prevalence of obesity compared to other ASEAN countries. The National Health and Morbidity Survey (NHMS 2011) findings have shown that the prevalence of obesity among female adults was higher than male adults and high among government workers. Prevalence of obesity among adolescent show increasing trend. This paper describes the My Body is Fit and Fabulous (MyBFF) study, which is one of the government initiatives to combat obesity among the Malaysian adults. The aims of the MyBFF were to develop a weight loss intervention package, and to evaluate the effectiveness of this intervention among overweight and obese student (MyBFF@school), housewives (MyBFF@home) and workers (MyBFF@work). The MyBFF involved the development of the intervention package and the evaluation of the intervention itself. The intervention package was developed based on various activities and these included scoping review, construction of items for diet and physical activity, in-depth interviews and pre-test of items. Preliminary findings of the intervention will also be highlighted. The findings will support the health policy and programme to empower the obese population in the community to reduce their weight.

**Keywords:** obesity intervention, MyBFF@home, MyBFF@school, MyBFF@work, Malaysia

## Household food insecurity in Malaysia: findings from Malaysian Adults Nutrition Survey

Rusidah Selamat\*, Hasnan Ahmad\*\*, Chong Zhuo Lin\*\*, Ahmad Ali Zainuddin\*\*, Zalilah Mohd Shariff\*\*\*\*, Wan Azdie Abu Bakar\*\*\*\*\*

\*Nutrition Division, Ministry of Health Malaysia, Putrajaya, \*\*Institute for Public Health, Kuala Lumpur, \*\*\*Department of Nutrition and Dietetics, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Selangor, \*\*\*\*Kulliyah of Allied Health Sciences, International Islamic, University Malaysia, Kuantan, Pahang

### ABSTRACT

**Introduction:** Food security is an essential universal dimension of household well-being. Food security is usually defined as an access by all people at all times to enough food for an active and healthy life. The deprivation of basic need represented by food insecurity is undesirable.

**Objective:** To determine the associations between selected household food security parameters and socio-demographic characteristics.

**Methods:** Data were derived from 3000 respondents participated in the Malaysian Adult Nutrition Survey 2014. Food security parameters were measured based on the modified Short Form of the Household Food Security 6-Item Scale by the USDA. Associations for categorical data were carried using chi-square test for complex sample survey.

**Results:** The prevalence of Malaysian adults that had both reduced the size of meals and skipped main meals because of financial constraints at least one or two months in the past 12 months was 13.4% (95% CI: 11.5%, 15.5%). This prevalence was significantly higher in East Malaysia (20.3%) than in Peninsular Malaysia (11.5%) and in rural areas (18.8%) than in urban areas (11.0%). It was also highest among households with income <RM3000 (19.1%) and no formal education (45.8%) whereas lowest among household income RM 6000 (2.1%) and tertiary education (6.0%). The prevalence of households that both relied on cheap foods and could not afford to feed their children with food variety because of financial constraints was 18.9% (95% CI: 16.7%, 21.3%). It was significantly higher in East Malaysia (34.5%) than in Peninsular Malaysia (14.8%).

**Discussion:** Food insecurity is still presence in large segments of the Malaysian households. Therefore, there is a need to review the current strategy to effectively address food insecurity in the country.

**Keywords:** food quantity, food variety, skip meal, food security, MANS 2014.

## Current nutrient intake among Malaysia Adult: Finding from MANS 2014

Ahmad Ali Zainuddin\*, \*\*

\*Universiti Teknologi MARA, Shah Alam Selangor, \*\*Institut for Public Health, Bangsar, Kuala Lumpur

### ABSTRACT

**Introduction:** Information on dietary intake was collected using 24-hour diet recall, a widely used method to obtain quantitative dietary information of individuals in large epidemiological studies.

**Methods:** This survey was undertaken to determine the population dietary practices and adequacy. A total of 2,973 respondents took part in this survey, of which 1,378 were men and 1,595 were women.

**Results:** The daily median energy intake of Malaysia adults was 1466 kcal/day or 64% of the Recommended Nutrient Intake (RNI). The adults in East Malaysia zones had higher energy intake and RNI achievement (66%) compared to Peninsular counterparts (63%). Urban adults had higher energy intake and RNI achievement (66%) than their rural counterparts (62%). In most of the economic and socio-demographic group, women had lower median energy intake and per cent achievement of RNI than men. The median percentage of total energy contributed by macronutrient was 54% for carbohydrate, 15% protein and 29% fat. Contribution of energy by macronutrients was similar in both men and women. Intakes of selected micronutrients were also analysed. The median sodium intake among Malaysian adults was about 1935 mg/day. The median intake for calcium was 357 mg/day or 43% of the RNI. For all socio-demographic groups, the achievement of recommended level for calcium did not exceed 50%. The median intake of iron was about 9.9 mg/day with men (10.8 mg/day) having higher intake than women (9.0 mg/day). While men achieved more than 100% of RNI for iron, women satisfied only 52% of the recommended level. The median intake of vitamin C was about 39 mg/day or 56% of the recommended level. The median intake of vitamin A was about 480 µg/day or 88% of the recommended intake for vitamin A.

**Conclusion:** The study found that intake of energy among Malaysian adults fall short of the recommended intake. The intakes of major micronutrient studied were less than two thirds of the RNI. Calcium and iron were found to be most inadequate particularly among women. A nearly half of the studied population had under reported their energy intake, cautious interpretations of the current finding are needed.

**Keywords:** Nutrient intake, Malaysian Adult Nutrition Survey

## The prevalence of meal patterns among Malaysia Adults: Findings from MANS 2014

Yeo Pei Sien\*, Mohamad Aznuddin Abd Razak\*,  
Norhafizah Sahril\*, Ahmad Nadzri Jai\*, Nazli Suhardi  
Ibrahim\*\*, Hamid Jan Jan Mohamed\*\*\*

\*Institute for Public Health, Ministry of Health Malaysia, \*\*Department of Nutrition, Ministry of Health Malaysia, \*\*\*Health Science Study Center, Universiti Sains Malaysia

### ABSTRACT

**Introduction:** There is significant change in the meal patterns of Malaysians for the past two decades. Meal patterns can contribute to the energy intakes and related to the nutritional status. This study aimed to determine the prevalence of meal patterns among Malaysian adults.

**Method:** Data were extracted from the Malaysian Adults Nutrition Survey (MANS) 2014, a nationwide study conducted by Ministry of Health Malaysia using multistage stratified cluster sampling involving 2893 participants throughout Malaysia. Structured questionnaires and face-to-face interview were used in data collection activity. Descriptive analysis was conducted using complex survey design.

**Results:** Generally, 93.7% (95% CI: 92.43-94.84) Malaysian adults took breakfast with higher prevalence among female 94.9% (95% CI: 92.99-96.33) and in urban areas 94.5% (95% CI: 92.71-95.83). Overall, 94.5% (95% CI: 93.34-95.44) of adults were reported to take lunch. More adults in East Malaysia took lunch with 97.1% (95% CI: 95.76-98.07) compared to Peninsular Malaysia. The results indicated that 96.4% (95% CI: 95.40-97.11) of participants took their dinners. While 31.9% (95% CI: 29.38-34.54) were reported to take heavy meals after dinner. The prevalence of having heavy meals after dinner among male was significantly higher (39.3%; 95% CI: 36.01-42.75) than female. More than half of adults had their meals at home and majority ate with their family for all main meals.

**Conclusion:** High prevalence of consumption of heavy meal after dinner was reported. The findings of this study showed that there is still a need to promote healthy meal pattern among adults in Malaysia.

**Keywords:** Meal pattern, Malaysian adults, Malaysian Adults Nutrition Survey

## Malaysia health policy adaptation toward climate change

Daud Abdul Rahim

Occupational and Environmental Health Sector, Ministry of Health Malaysia

### ABSTRACT

Climate change is one of the significant and important challenges in the 21st century and inevitably affects the basic requirements for health. Each year globally, about 3.5 million people die from malnutrition, 2.2 million from diarrhoea, 800,000 from causes attributable to urban air pollution, and 60,000 from extreme weather events. Climate change brings out new challenges in controlling few diseases including vector borne disease, food waterborne diseases and other emerging infectious diseases and this inadvertently need extra cost in managing the cases. Dengue fever is among the important diseases that has been proven to have correlation with climate change. There is also a possibility of regression in the progress made by the global public health community against many diseases.

Public health has long history in designing, implementing, monitoring and evaluating strategies, policies and programmes to manage the risks of climate-relevant health outcomes. Adaptation will help populations prepare for changes that could increase the incidence, seasonality or geographic range of climate-relevant health outcomes or that make their control more difficult. Understanding the extent to which current public health and health care policies and programmes are effective, and the reasons for limits to effectiveness, is a first step in understanding what modifications are needed to address the risks of a changing climate. Projections of where, when and how health burdens could be modified in response to changes in the mean and variability of climate.

Malaysia agrees on the importance of health response to climate change. Well-designed adaptation measures may produce major health gains. Malaysia needs additional policy, technical, capacity building and financial support to protect health from climate change. The development of Health - National Adaptation Plan on Climate Change is in due time.

## Health Security and Health Diplomacy: New Paradigms for Global Public Health

Phua Kai Hong

Lee Kuan Yew School of Public Policy, National University of Singapore

### ABSTRACT

The world is undergoing very rapid transitions in socio-economic development along with emerging global health challenges. While public health systems are gradually being reformed, yet there is a lag as reflected in the traditional public health programs of most universities in responding to the changing global health policies throughout Asia. Older public health programmes that are founded and once dominated by medical institutions are increasingly being eclipsed by global health programmes with broader interdisciplinary social, economic and political perspectives, with enlarged clientele coming from other sectors, including the fields of security studies and international relations.

With privatisation and growth of the private health industry, there has been increasing demand for healthcare management training conducted by business schools or schools of management. This is discerned from the shift of many "old public health" administration courses to include newer subjects like healthcare management, health economics and financing, and health services research in the development of public health professional training. Thus the new public administration movement in government has also spilled over to influence the "new public health", such as the trends towards corporatisation and public-private participation in health services. But newer trends of global thinking plus higher policy perspectives are slowly evolving to promote more integrated approaches in public health policy, paying greater emphasis on matters of global health governance, better balance of the public-private-people mix in universal health coverage, and growing health security and diplomacy issues that affect peace and prosperity on a global level.

Regional developments in greater ASEAN integration with the increasing trade and movement of goods and services, will present newer cross-border health challenges such as emerging infectious diseases (SARS, Nipah virus, Avian flu, etc), migrant and workers' health, environmental pollution ("haze") and climate change effects. These will impose more competition or lead to cooperation with greater comparisons of health policies and systems for lessons and best practices. Public health and public policy curricula must continually respond to changing needs and the challenges across rising Asia, if we are to remain useful and relevant in the public interest. Are there synergies in developing more joint and interdisciplinary programs between public health schools, going beyond medical schools to business schools and schools of public policy? What are the ways and means of doing so through innovative reforms in global public health teaching, research and services?

## Current intake of food according to Food Group: Finding from MANS 2014

Nur Shahida Abdul Aziz

Institute of Public Health, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** Eating a wide variety of foods in the right proportions, and consuming the right amount of food and drink are most important to maintain a healthy body weight. The aim of this study was to determine fruits, vegetables and water consumption among adults in Malaysia.

**Methods:** This was a cross-sectional study which involved 3000 respondents comprising of 1388 men and 1612 women. Data were obtained from the Malaysian Adults Nutrition Survey 2014. Vegetables, fruits and water intake among the respondents were used to evaluate the pattern of fruits, vegetables and water consumption among adults in Malaysia.

**Results:** The result showed that the mean frequency of intake for vegetables among adults of 18-years and above in this survey was 5.90 days per week (95% CI: 5.82-5.99). The mean frequency of intake for vegetables in urban areas was 6.00 days per week (95%CI: 5.90-6.11), which was slightly higher compared to intake in rural areas at 5.68 days per week (95% CI: 5.55-5.82), and the difference was statistically significant. The mean serving size for vegetables in urban and rural areas were 1.48 (95%CI: 1.41-1.55) and 1.59 (95% CI: 1.49-1.68) respectively. However for mean frequency of intake for fruits among adults of 18-years and above in this survey was 3.70 days per week (95% CI: 3.58-3.81), which the mean was slightly higher in the urban areas at 3.85 days per week (95% CI: 3.69- 4.00) compared to rural areas at 3.33 days per week (95% CI: 3.19- 3.46). The mean serving size of water among adults of 18-years and above in this survey was 7.01 (95% CI: 6.72-7.29) servings per day.

**Conclusion:** Overall, there were some differences in the intake of fruits, vegetables and water according socio-demography. Therefore, healthy dietary habits should be promoted to prevent diseases and in promoting optimal health.

**Keywords:** Food Intake, food group, MANS 2014.

## Prevalence of habits in relation to food consumption

Fatimah Othman

Institute of Public Health, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** Proper food or drink habit is an important factor to contribute to a good oral health. An eating habit such as water and fruit consumption, as well as food chewing, carbonate beverage intake, straw usage, mouth rinsing and teeth brushing are identified influence factors that contribute to oral hygiene. The aim of this study is to determine the prevalence of such habits in relation to main meal intake.

**Methods:** A cross-sectional, multistage stratified sampling study of Malaysian adult population, aged 18-years and above was conducted. A total of 4044 respondents were sampled and interviewed by trained interviewers using a structured questionnaire. The data were analysed using SPSS version 22.

**Results:** Findings have shown that 99% (95%CI: 98.5-99.3) of Malaysian adult consumed plain water either before, during, or after the main meal. Plain water drinking after the meal was the most practiced by the adult, which comprised of 59.05 (95% CI: 56.6 – 61.4) compared to another mealtime. Fruit consumption was practiced by 89.0% (95%CI: 87.2-90.7) of the respondents and, 72% (95% CI: 69.7-74.1) of them consumed the fruit after a meal compared to other main meal times. About 88.6% (95%CI: 85.2-91.3) reported the awareness of the length of chewing before swallowing, and 73.8% (95% CI: 70.9-76.5) chew the food less than 20 times. There were, 80.8% (95% CI: 78.7-82.7) of the respondents drink carbonated beverages and 51.6% (95% CI: 48.8-54.4) of them did not use a straw to drink. In relation to mouth rinsing, 62.5% (95% CI: 59.8-65) of the respondents did rinse the mouth after taking sugary food, and it always performed by 61.7% (95% CI: 58.6-64.8) of them. In this study, 95.6% (95% CI: 94.4-96.6) of responders brush the teeth before breakfast, but only 52.4% (95% CI: 49.4-55.4) brush the teeth after the main meal.

**Conclusion:** In light of these findings, there is a need to promote healthy food consumption among adults in Malaysia in relation to fruit consumption, chewing of food, use straw while drinking carbonated beverages and tooth brushing after main meals.

## Food label reading and understanding among Malaysian adult: findings from MANS 2014

Rashidah Ambak

Institute for Public Health, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** Food labelling regulation has been implemented to enable consumers to make informed choices before purchasing pre-packaged foods. This study determined the prevalence of reading food labels among Malaysian adults. It also described types of labels read and understanding of the information.

**Methods:** This nation-wide cross-sectional study was conducted from March to May 2014. Respondents aged 18-59 years were interviewed using a pre-tested and validated questionnaire adapted from NHMS 2006. They provided information on their use and understanding of nutrition label every time they bought or received food and types of information read. The prevalence of respondents reading expiry date and precautionary label were also determined. Complex data analysis was done using Stata version 12.0.

**Results:** There were 2,992 respondents who answered the questionnaire (99.7% response). Percentage of respondents who stated they always read label was 23.0%, sometimes read was 22.0% and never read was 55.0%. Respondents who declared they always understand label was 48.7%, sometimes 40.8% and did not read 10.5%. About 92.0% and 66.0% of the respondents stated they always / sometimes read expiry date and precautionary label respectively, every time when buying or receiving food. Among those who always and sometimes read label, the three most popular nutrient information read were carbohydrate (21.6%), fat (20.0%) and total energy (14.5%).

**Conclusion:** Only half of the Malaysian adult stated that they read the food label when buying or receiving food. A high proportion of adult subjectively claimed that they understand the information read. Adults focused to read expiry date and the prevalence of reading information on nutrient was low among the respondents. Findings can be used to implement effective education programmes to instil an awareness to read and use the label information as one of the means in choosing healthy diet.

## Dietary supplement use among adults in Malaysia: finding from Malaysian Adults Nutrition Survey (MANS 2014)

Nor Azian Mohd Zaki, Tee Guat Hiong, Mohd Naim Rasidi, Hasimah Ismail, S Maria Awaluddin, Noor Safiza Mohamad Nor, Rahama Samad, Ahmad Ali Zainuddin

Institute of Public Health, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** Dietary supplements in Malaysian have seen tremendous growth in their varieties and numbers over the last decade. This study aimed to determine the use of dietary supplements among Malaysian adults.

**Methods:** Data from the Malaysian Adults Nutrition Survey (MANS) 2014 were analysed. This cross-sectional study used a two-stage stratified sampling method and was conducted among nationally representative aged 18-59 years. A total of 4000 households were selected in this survey and only one eligible respondent was chosen from each household using Kish selection method. Information on dietary supplement intake; i.e., vitamin/mineral supplements (VMS) and food supplements (FS) was obtained using a validated questionnaire. Descriptive and multiple logistic regressions analyses were performed using SPSS version 20.0.

**Results:** The prevalence of VMS and FS intake among Malaysian adults were 28.05% and 34.02% respectively. VMS supplement users were more likely to be female, living in urban locality with higher education level and higher monthly income. The commonest VMS consumed were vitamin C, multivitamin and calcium. Meanwhile fish oil, royal jelly and spirulina were the most taken FS taken. Three main reasons for taking dietary supplements were for health reasons, to increase energy level and prescribed by doctors.

**Conclusion:** The result from MANS 2014 found that about one third of Malaysian adults used dietary supplements. Thus, information based on scientific evidences of health benefits for each type of dietary supplements is needed for consumers to make informed choices on the intake of dietary supplements.

**Keywords:** Dietary supplement, Vitamin and mineral supplement, Food supplements, Malaysian Adults Nutrition Survey (MANS)

## Food Consumption Patterns: Findings from the Malaysian Adults Nutrition Survey (MANS) 2014

Mohamad Hasnan Ahmad

Institute for Public Health, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** Food consumption data provides estimation on the quantity of each prepared food consumed by individuals. It varies considerably from country to country and even within a country due to factors such as differences in ethnicity, geographical areas, age and sex. This study will report the food consumption patterns among adults in Malaysia for the year 2014.

**Methods:** Malaysian Adults Nutrition Survey was a cross-sectional study conducted between March and June 2014 to evaluate the food consumption patterns among Malaysian adults. A nationwide total of 3,000 adults aged 18-59 years old were interviewed using a semi-quantitative food frequency questionnaire (FFQ) which consisted of 165 food items.

**Results:** Cooked rice was the top food consumed daily by adults in Malaysia (89.8%), with an average of 2½ plates per day. Other top five food items consumed daily were sugar (55.9%), followed by leafy green vegetables (43.2%), marine fish (29.4%) and chillies (24.2%). Adults from rural areas consumed significantly more cooked rice daily while those from urban areas consumed significantly more sugar and marine fish daily. Men significantly consumed higher amounts of cooked rice and sugar daily as compared to women. About 98.2% adults were consumed plain water (PW) daily with an average 8 glasses per day, whereas 98.6% of them were reported to consume sugar sweetened beverages (SSB) of mean intakes of 2 glasses daily. The top five SSB consumed was tea (70.3%), followed by malted drink (59.1%), coffee (53.2%), soy milk (51.4%) and carbonated drink (45.6%). Male adults had higher consumption of PW and SSB compared to their female counterparts (9.2 vs. 7.8 glasses per day of PW, and 2.7 vs. 1.9 glasses per day of SSB, respectively).

**Conclusion:** On the whole, there were several differences in food consumption patterns between genders and geographical regions of Malaysian adults. Certain changes in food habits are recommended such as promoting more nutritious food and reducing sugar intake especially in the urban areas.

**Keywords:** food consumption pattern, food frequency questionnaire, adults, Malaysia

## Escalating prevalence of overweight and obesity among Malaysian adults: after a 10 years period

Azli Baharudin

Institute for Public Health, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** The rising in overweight and obesity prevalence has gained increasing attention in Malaysia. This study focuses on the prevalence of overweight and obesity among adults in Malaysia after 10 years.

**Methods:** A cross-sectional study was carried out among Malaysia population aged 18-59 years old. Data were derived from the Malaysian Adults Nutrition Survey (MANS) conducted in 2003 and 2014. The respondents were interviewed using structured questionnaires.

**Results:** Based on the World Health Organization (1998) classification, the national prevalence of overweight has increased tremendously over 10 years; from 26.7% (95% CI: 25.5-28.0) in MANS 2003 to 32.4% (95% CI: 30.3-34.6) in MANS 2014. The prevalence of obesity had increased substantially from 12.2% (95% CI: 11.3-13.1) in MANS 2003 to 18.5% (95% CI: 16.6-20.5) in MANS 2014. Women reported a significantly higher prevalence of obesity compared to men. The prevalence of overweight and obesity increased from 24.8% and 14.7%, respectively, in 2003 to 31.4 and 22.9%, respectively, in 2014 among women. Among men, the prevalence of overweight 28.6% and obesity 9.7% in 2003 increased to 33.3% and 14.5%, respectively, in 2014.

**Conclusion:** The prevalence of obesity was notably higher among women. There was an increasing trend in prevalence of overweight and obesity between the years 2003 and 2014. Thus, public health intervention programmes should be intensified and prioritised to combat obesity, particularly among women.

**Keywords:** overweight, obesity, Malaysian Adults Nutrition Survey (MANS)

## Community Breast Cancer Screening: The Role of NGOs

Maznah Dahlui

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

### ABSTRACT

Breast Cancer Welfare Association (BCWA) of Malaysia is an NGO that is actively providing breast health education and breast cancer screening to women in the community, and support in various kinds to breast cancer survivors. Since 2011 BCWA had launched a breast health education program complete with training on breast self-examination (BSE) and provision of clinical breast examination (CBE) to women in the community. The uniqueness of this programme which is known as MURNI is that the program is brought to the doorsteps of the community in a pink bus which had been converted to serve as a mobile clinic. Another specialty of MURNI is the delivery of the programme by retired nurses and volunteers among the breast cancer survivors. The purpose of this paper is to evaluate the effectiveness of MURNI program in enhancing the knowledge on breast cancer and its screening methods, and in increasing the uptake of BSE, CBE and mammogram. A quasi-experimental study and a cross-sectional study to compare the usual Opportunistic CBE screenings conducted by Ministry of Health and MURNI programme in detecting breast abnormality were conducted, respectively. The findings on the change in knowledge regarding breast cancer and the uptake of BSE and CBE were significant among the women who were given MURNI interventions. The detection rates for CBE abnormality among those screened through opportunistic CBE screening were shown to be significantly lower than those screened by the outreach CBE screening in the MURNI program. The role of NGO in community screening for breast cancer is important especially among females at rural areas. Collaboration with the NGO could enhance breast health education and make breast cancer screening accessible for women. There is potential for the outreach CBE screening programme in increasing early detection of breast cancer in a developing country.

## Older people improving their mental health by taking up physical exercise

Noran Naqiah Hairi\*, Debbie Ann Loh\*, Choo Wan Yuen\*, Devi Peramalah\*, Norlissa Gani\*, Shathanapriya Kandiben\*, Mohamed Faris Madzlan\*, Mohd Alif Idham Abd Hamid\*, Zohaib Akram\*\*, Chu Ai Sean\*\*\*, Awang Bulgiba AM\*, Robert G Cumming\*\*\*\*, \*\*\*\*\*

\*Julius Centre University of Malaya, Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Malaysia, \*\*Department of Oral Pathology, Oral Medicine and Periodontology, Faculty of Dentistry, University of Malaya, Malaysia, \*\*\*Fitness First Malaysia, Malaysia, \*\*\*\*Centre for Education and Research on Ageing, Concord Hospital, Concord, NSW, Australia, \*\*\*\*\*Sydney School of Public Health, University of Sydney, Sydney, NSW, Australia

### ABSTRACT

The prevalence of depression in older people is high, pharmacological treatment is expensive and inadequate creating a substantial burden. This is public health priority for which exercise has been proposed as a therapeutic strategy. Interventions that either delay the onset of poor mental health or attenuate its severity potentially have cascading benefits to older people, their families and society. This study aims to develop and evaluate the effectiveness of a multicomponent Exercise and theRApeutic lifeStyle (CERgAS) intervention program targeted at improving physical and mental health as well as maintaining independent living as compared to general health education among older people in an urban poor setting in Malaysia. This cluster randomised controlled trial is a 6-week community-based intervention programme for older people aged 60-years and above from urban poor settings. A total of 164 eligible participants were recruited from 8 clusters (low-cost public subsidised flats) and randomised to the intervention (n = 82) and control arm (n = 82). This study was underpinned by the Health Belief Model with an emphasis towards self-efficacy. The intervention comprise of multicomponent group exercise sessions, nutrition education, oral care education and on-going support and counselling. These was complemented with a kit containing practical tips on exercise, nutrition and oral care after each session. Data were collected over four time points; at baseline, immediately post-intervention, 3-months and 6-months follow-up. Findings from this trial will potentially provide valuable evidence to improve physical and mental health among older people from low-resource settings. This will inform health policies and identify locally acceptable strategies to promote healthy aging among older Malaysian adults.

## Using occupational groups for community based NCD Prevention

Hoe Victor CW \*\*, Moy Foong Ming\*\*, Marzuki Isahak\*

\*Centre for Occupational and Environmental Health-University of Malaya (COEHUM), Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, \*\*Julius Centre University of Malaya (JCUM), Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur

### ABSTRACT

**Introduction:** The prevalence of non-communicable diseases (NCD) and its risk factors in Malaysia are on the increase. From the National Health and Morbidity Survey in 1996 and 2011, the prevalence of obesity, Type 2 diabetes and hypertension have increased from 4.4% to 15.1%, 8.3% to 15.1%, and 29.9% to 32.7% respectively. The preliminary results from the Social Security Organization's Health Screening Program for workers  $\geq 40$  year-old found similar results; i.e., obesity, 18%, diabetes, 15% and hypertension, 19%. Prevention of NCD using occupational groups has been recognised internationally as an appropriate setting for health promotion.

**Methods:** This paper describe the UM Wellness programme effort in NCD prevention.

**Results:** The UM Wellness programme was launched in June 2008 by the Deputy Minister for Higher Education, and in its first six months, more than 1,200 staff  $\geq 35$  year-old from University of Malaya (UM) were screened for common diseases, and those with abnormal results were referred to physician and gynaecologist in the University Malaya Medical Centre (UMMC). A website was set-up to disseminate the results and for health promotion. The prevalence of obesity and hypercholesterolemia was 46% and 34% respectively. Every year the UM Wellness organised a road show in UM, together with UMMC and other organisation, like LPPKN and National Kidney Foundation, to promote the programme. Over the years other health promotional programmes were incorporated into the UM Wellness programme; i.e., Employee Assistance Programme (EAP), Stress Management Workshop, Quit Smoking Clinic, Diet Wellness clinic, and weight management programme (GSlim). The programme was successful in reducing the overall total cholesterol, diastolic and systolic blood pressure of the participants.

**Conclusion:** A well planned community based NCD prevention with screening and health promotion programme is effective at reducing the risk for NCD. The future is to replicate the success of UM Wellness among other occupational groups.

**Keywords:** health screening, workplace health promotion, non-communicable disease

## Selection and missingness as threats to causal inference in longitudinal community based NCD research

Sanjay Rampal

Julius Centre University of Malaya, Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya

### ABSTRACT

**Introduction:** Community based NCD prevention strategies commonly derive evidence from longitudinal study designs, which includes cohort and randomized control designs. Common threats to causal inference include selection, confounding, and measurement bias. The aim of this paper is to address the methodological issues arising from selection and missingness that commonly occurs in longitudinal community based NCD research

**Methods:** This is a review identifying bias in causal inference arising from selection and missingness and suggesting methods that can be used to minimize these biases.

**Results:** Selection bias is a common problem. It is a function of study participants selection, response rate, follow-up, and protocol requirements. Selection bias occurs when the observed association between the exposure and outcome in the analytical sample is not the same as the one in the source population. Two types of selection bias is immigrative and emigrative selection bias. Immigrative selection bias is introduced at the stage when participants enter the cohort. Emigrative selection bias occurs when participants are selected out of the cohort due to reasons that are affected directly or indirectly by the exposure and outcome. Though experimental study designs are good at limiting immigrative selection bias but it is still vulnerable to emigrative selection bias because participants are commonly selected out because of dropping-out or being loss to follow up. This talk will elaborate on how inverse probability weighting can address these drop outs using the conditional selection probabilities at the different study visits and reduce the effect of emigrative selection. The other practical problem in longitudinal studies is missing data. This talk will elaborate on missingness in general and specific to longitudinal studies.

**Conclusion:** Selection bias and missingness are two important threats for causal inference. More robust evidence can be produced from longitudinal research through the proper identification and handling of selection and missingness.

## ORAL PRESENTATION

## Determinants of utilisation of maternal health care services: a community based study in Sarawak

Deburra Peak Ngadan\*, Md Mizanur Rahman\*

\*Community Medicine and Public Health Department, Faculty of Medicine and Health Sciences, University Malaysia Sarawak

### ABSTRACT

**Introduction:** The improvement of quality in maternal health care services is an effective strategy for maternal mortality reduction to achieve the Millennium Development Goal 5. Utilisation pattern of the maternal health care services and patient satisfaction indirectly measures the quality of services received. This study aimed to assess and identify the determinants for the utilisation of Maternal and Child Health (MCH) clinics and maternal health care services in Sarawak.

**Methods:** A cross-sectional study was conducted among the reproductive women of age 18 years and above, irrespective of ethnic groups all over Sarawak. All mothers having a child aged 3 years and below were included in this study. A total of 1236 participants were interviewed using a validated interviewer administered questionnaire. Analysis was done by IBM SPSS version 22.0 software programme. A p-value less than 0.05 was considered as statistically significant.

**Results:** A Maternal Care Receptivity Index (MCR) was developed based on the pattern of utilisation of antenatal, delivery and postnatal care. The median MCR index was 19 ranging from 0 to 23. The MCR was further categorised based on quartiles into excellent (39.6%) followed by good (34.1%), poor (14.8%) and lastly very poor receptivity (11.4%). Finally, multinomial logistic regression analysis revealed that the maternal care receptivity was associated by ethnicity, religion, level of education and family size ( $p < 0.001$ ).

**Conclusion:** Overall, the utilisation of maternal health services in Sarawak was high. Socio-demographic factors associated with the utilisation of maternal health services were ethnicity, level of education, religion, family size and satisfaction of delivery care services. Including main dialect used as communication tools, health education methods, considering culturally and religion-bound practices, respecting patients' right for informed decision and consent during management and treatment may improve utilisation of maternal health care services in Sarawak.

**Keywords:** Antenatal care, Delivery care, Post-natal care, Maternal Receptivity Index, Sarawak.

## Predictors of postpartum weight retention among urban Malaysian mothers: a prospective cohort study

Fariza Fadzil\*, Khadijah Shamsuddin\*, Sharifa Ezat Wan Puteh\*, Shuhaila Ahmad\*\*, Noor Shaheeran Abdul Hayi\*\*\*, Azah Abdul Samad\*\*\*\*, Nor Izzah Ahmad Shauki\*\*\*\*\*, Ruhaini Ismail\*\*\*\*\*

\*Dept. of Community Health, UKMMC, \*\*Dept. of Obstetrics & Gynaecology, UKMMC, \*\*\*Dept. of Obstetrics & Gynaecology, Kuala Lumpur General Hospital, \*\*\*\*Wilayah Persekutuan Kuala Lumpur & Putrajaya Health Department, \*\*\*\*\*Selangor State Health Department

### ABSTRACT

**Introduction:** Postpartum weight retention increases the risk of overweight and obesity among women. This study aims to determine the mean, prevalence and factors associated with postpartum weight retention among urban Malaysian mothers from delivery until 6 months postpartum.

**Methods:** A prospective cohort study of 420 postpartum mothers who delivered at Kuala Lumpur General Hospital and UKM Medical Centre was conducted from March 2013 to October 2014 through face-to-face interviews at baseline (after delivery), 2 months, 4 months and 6 months at the selected clinics in Wilayah Persekutuan Kuala Lumpur and Selangor. Information on socio-demographic, history of pregnancy and delivery, postpartum lifestyle and practices, height and weight were obtained.

**Results:** A total of 420 postpartum mothers were interviewed at 2, 4 and 6 months postpartum. Their average age was  $29.6 \pm 4.7$  years and average gestational weight gain was  $12.9 \pm 5.2$  kg. Majority were Malays (83.3%), 58.8% had primary/secondary education, 70.0% were employed, 65.2% came from middle income family, 33.8% from primiparity and 66.7% delivered via normal or instrumental. The mean of postpartum weight retention was  $3.1 \pm 4.8$  kg with 33.9% retaining  $\geq 5$  kg. From multivariate linear regression analysis, predictors of postpartum weight retention were being less physically active, had higher energy intake in diet, had gestational weight gain  $\geq 12$  kg, not continuing breastfeeding until 6 months postpartum and had never used hot stone compression, and these factors explained 55.1% of the variation in postpartum weight retention at 6 months.

**Conclusion:** Based on the study results, health care providers should advise mothers to control gestational weight gain, and after delivery to remain active physically, reduce energy intakes, continue breastfeeding at least for 6 months and use hot stone compression to prevent postpartum weight gain.

**Keywords:** Malaysian mothers, obesity, postpartum weight retention, prospective cohort, urban

## Antenatal education and postnatal support intervention programme can improve breastfeeding outcomes and maternal breastfeeding self-efficacy: a quasi-experimental study

Huzaimah Husin\*, Zaleha Md Isa\*, Khalib Abd Latif\*, Rosemawati Ariffin\*\*, Suriyati Abd Rahman\*\*\*

\*Department of Community Health, Faculty of Medicine, UKM Medical Centre, Malaysia, \*\*Public Health Department, Ministry of Health, Malaysia, \*\*\*Negeri Sembilan State Health Office, Malaysia

### ABSTRACT

**Introduction:** The aim of the study is to investigate the combined effects of a new antenatal education and postnatal support programme based on Breastfeeding Self-efficacy Theory on maternal breastfeeding self-efficacy level, breastfeeding duration and exclusivity up to six months postnatal period.

**Methods:** A quasi-experimental study based on pre- and post-tests design was conducted among antenatal Malay mothers (n=203) divided into the intervention (n=100) and control (n=103) groups. Both groups received current standard breastfeeding education and support. Participants in the intervention group received two additional sessions of antenatal education classes followed by two sessions of postnatal proactive short message services (SMS) support. Breastfeeding exclusivity and the duration involved were measured using self-administered questionnaires up to six months postnatal. Maternal breastfeeding self-efficacy was measured in a four-time period; during antenatal, one month, three months and six months postnatal.

**Results:** The intervention group had significantly higher percentages of exclusive breastfeeding at one month (97.9%) when compared to the control group (49.0%). This was similarly seen at two months (80.2% versus 31.6%), three months (69.8% versus 18.4%), four months (59.4% versus 15.3%), five months (52.1% versus 13.3%) and six months (50.0% versus 12.2%) respectively. In addition, respondents in the intervention group were less likely to stop exclusive breastfeeding (Hazard Ratio = 0.28, 95% Confidence Interval: 0.19 – 0.41) and overall breastfeeding (Hazard Ratio = 0.21, 95% Confidence Interval: 0.12 – 0.38) than respondents in the control group. The effect of time ( $\eta^2 = 0.302$ ) was greater than the effect of the intervention itself ( $\eta^2 = 0.067$ ) on maternal breastfeeding self-efficacy across the six months postnatal period.

**Conclusion:** Antenatal education integrated with postnatal support significantly improved breastfeeding exclusivity up to six months postnatal period. However, longer duration of SMS postnatal support is essential to ensure the effectiveness of the programme on maternal breastfeeding self-efficacy up to six months period.

**Keywords:** Antenatal education, postnatal support, quasi-experimental study, breastfeeding outcomes, exclusive breastfeeding.

## Parents' decision-making and access to measles vaccination in Sarawak: a qualitative study

Chai Phing Tze\*, \*\*, Ng Chiu Wan\*, Wong Yut Lin\*

\*Julius Centre University of Malaya, Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia, \*\*Ministry of Health, Malaysia

### ABSTRACT

**Introduction:** Since 2009, Malaysia has maintained a 95% national measles immunisation coverage as recommended by the World Health Organization, and is ready for measles elimination. However, in 2011, Malaysia suffered a nationwide outbreak of measles. 28% of measles sufferers were not vaccinated, denoting gaps in vaccine provision and outreach. This study aimed to explore parents' perception and views on measles vaccination in Sarawak, as well as barriers to accessing vaccination service.

**Methods:** In-depth interviews were conducted in urban public clinics in Sarawak to explore parents' decision-making and barriers in accessing measles vaccination service. Parents of children aged between 1 and 7 years, who defaulted measles vaccine for minimum 3 months were purposively sampled. Interviews were transcribed and coded using TAMSA Analyzer software. Thematic analysis was done to construct a coherent scheme. Ethical approval (NMRR-13-938-16913) and permission was obtained from the Ministry of Health.

**Results:** 12 defaulter parents were interviewed. Majority of parents were uninformed about measles and its consequences in unimmunised children. Decision to vaccinate was the end product of interaction between a parent's personality, demographic characteristics, and previous medical encounters. For parents keen on vaccination, actual access to service was hampered by socio-politico-economic factors like financial and geographical barriers. Vaccine refusal and hesitancy were observed among well-educated parents, who expressed diminished trust in health authorities and increased desire to be respected for their autonomy.

**Conclusion:** Early engagement of hesitant parents in vaccine-related dialogue and addressing concerns about vaccine safety may be beneficial in improving public trust and vaccine uptake. For vulnerable populations, strong political and financial commitment is vital in improving access to vaccination.

**Keywords:** Measles; vaccination; decision-making; barriers.

## Accessibility, utilisation and perception on quality of healthcare services among rural adults in Sarawak and its factors: a community based study

Eunice Melissa Joseph\*, Md Mizanur Rahman\*, Mohd Raili Suhaili\*\*

\*Faculty of Medicine and Health Sciences, University Malaysia Sarawak,  
\*\*Faculty of Medicine, Segi College Sarawak

### ABSTRACT

**Introduction:** Accessibility, quality and the utilisation of health care services among the rural populations in Sarawak remains a challenge to the Ministry of Health Malaysia. The objective of this study was to assess the perception of accessibility, quality and the usage of health care services and factors affecting them among the rural population in Sarawak.

**Methods:** A quantitative research design and analysis was used for the study. A total of 1400 participants were included for analysis.

**Results:** More than half (54.7%) of the respondents were satisfied with the accessibility of the health care services and binary logistic regression analysis revealed that this was associated with race and current comorbidity. Fifty two point seven per cent (52.7%) were satisfied with the quality of the health care services provided to them and it was influenced by the race and the economic status. More than half (55.9%) of the respondents reported that they had utilised health care facilities in the last one year and this was influenced by age, race, marital status, education level and the current comorbidity.

**Conclusion:** In achieving equity and progressing towards Universal Health Coverage, accessibility, quality and utilisation rate of the health care services are important indicators for the ministry of health to ensure success in health care delivery in the rural population of Sarawak. Access to health care services could be achieved by recruiting the family medicine specialist and creating more post for medical officer in the rural clinics. The utilisation of health care services would be better if services were made known to the public through information dissemination by local language and by the village health promoters. The quality of healthcare services can be improved by better communication skills in health information to the rural population.

**Keywords:** Accessibility, Utilisation, Quality in Health Care Services, Sarawak.

## Quality of life of caregivers of children with disabilities in Sarawak

Mathew GB, Ong PH

Faculty of Medicine and Health Sciences, University Malaysia Sarawak

### ABSTRACT

**Introduction:** The dependency of the children with disabilities on the family due to their functional deficiency adds to the existing burden to the caregivers that could be detrimental to their own health and livelihood and would affect their ability to care for their children and affect their rehabilitation progress. This study aimed to assess the quality of life of the caregivers of children with disabilities in Sarawak, identify their unmet needs and evaluate the effectiveness of rehabilitation services in Sarawak.

**Methods:** Participants were chosen randomly among the caregivers of children with disabilities attending rehabilitation services in Community Based Rehabilitation (PDK), Government Clinic Based Rehabilitation (CliBR) and Non-Governmental Organisation (NGO) centres in six divisions in Sarawak. The participants were interviewed face to face using WHOQOL-BREF questionnaire.

**Results:** A total of 359 caregivers from 14 PDKs, 17 CliBRs and four NGO rehabilitation centres, participated in this study. This study revealed that the quality of life of caregivers of children with disabilities undergoing rehabilitation in Sarawak was good. Among the predicting factors of quality of life found in this study were: household income per month; followed by marital status; existence of medical illness; number of people taking care of child; presence of other family members with disability in the household; and gender of child. Other associated factors were: 1) Caregivers' age, gender, ethnicity, occupation and education level; 2) Child's age, position among siblings, type of disability; 3) Rehabilitation profiles: type of centre, total duration of rehabilitation and duration of rehabilitation at the centre.

**Conclusion:** The outcome of this study could be used to serve as a guide for future program development and refinement by tailoring to each caregivers and children's individual needs, environment and preferences.

**Keywords:** quality of life, caregivers of children with disabilities, rehabilitation

## Predictive factors for unmet needs among parents of children with disabilities (CWD) at support institutions in Kelantan

Raishan SB\*, Azriani AR\*, Surianti S\*, Azizah O\*, Azizah Y\*\*, Normastura AR\*\*, Mohd Ismail I\*

\*School of Medical Sciences, Universiti Sains Malaysia, Health Campus,

\*\*School of Dental Sciences, Universiti Sains Malaysia, Health Campus

### ABSTRACT

**Introduction:** The aim of this study is to determine the predictive factors and barriers for unmet needs among parents of children with disabilities (CWD) in Kelantan.

**Methods:** This mixed method study involved a combination of quantitative and qualitative methods. The quantitative design involved 226 parents of CWD who were registered to support institutions in five randomly selected districts in Kelantan. Biological parents with children age 18 and less was included in the study. A validated Malay version Family Health Survey questionnaire and a set of Performa were used to identify the unmet need and its predictive factors. The qualitative design involved 12 parents who gone through a series of in-depth interview to identify the barrier to unmet need. General linear regression was applied to determine the significant predictive factors and thematic analysis was used to identify the barrier.

**Results:** Type of institutions, marital status, socioeconomic status and educational status were identified as significant predictive factors for unmet needs. These factors were supported by the findings from qualitative part. Other predictive factors were age of the child, age of the child during diagnosis, type of disability and present of medical illness in the child.

**Conclusion:** The significant predictive factors for unmet needs were different based on type of needs. The results of this study can help agencies provide better service to meet the needs of parents of children with disabilities and help other researchers to develop more effective intervention programs.

**Keywords:** predictive factors, barrier, unmet needs, parents of children with disabilities, Kelantan

## Perception on quality of service of health clinic in Sarawak

Nor Zam Azihan, Razitasham Safii, Md Mizanur Rahman

Faculty of Medicine and Health Sciences, University Malaysia Sarawak

### ABSTRACT

**Introduction:** The health state of a nation depends on the quality of their primary care. This study was designed to assess the quality of health clinics in Sarawak from the patients and providers perspectives.

**Methods:** This cross-sectional study was conducted among patients and health clinic providers from 33 health clinics in Sarawak using modified Primary Care Assessment Tools (PCAT) and Primary Care Assessment Tool-Short Version Provider Survey (PCAT-PS). Multistage purposive sampling method was used.

**Results:** A total of 1520 patients and 507 staff participated in this study. Type 3 health clinic was found to have low quality score compared to type 4 and 5 health clinic ( $p < 0.05$ ). From Multiple Linear Regression, factors associated with patient quality score were self-rated health status, regular site of care, physical or mental health problem, duration of care and other non-modifiable factors, i.e. age, gender and occupation ( $p < 0.05$ ). Whereas, factors influencing provider quality score were number of patient visit ( $p < 0.001$ ) and in-service training ( $p < 0.05$ ) and some non-modifiable factors such as age ( $p < 0.05$ ), designation ( $p < 0.01$ ), ethnicity ( $p < 0.001$ ), and gender ( $p < 0.001$ ). Comparison between patient and provider score was found to be statistically significantly ( $p < 0.05$ ), with provider gave higher score compared to the patient.

**Conclusion:** Health clinic in Sarawak were rated good by both patients and staff except for type 3 health clinics. However, there is still room for improvement especially in first contact, ongoing and community oriented components, which received a low score from patient. These findings may be useful for policy making in planning for future expansion of health clinics especially in Sarawak by focusing more on first contact, ongoing care and community oriented component with the aims to increase the health status of patient.

**Keywords:** Health Clinic, Health Care, Primary Care, Quality

## Students' satisfaction towards the school health programme in Sarawak, Malaysia

Haseanti Hussein, Mohd Taha Arif, Zabidah Putit, Md Mizanur Rahman, Razitasham Safii

Faculty of Medicine and Health Sciences, University Malaysia Sarawak

### ABSTRACT

**Introduction:** To assess the satisfaction of the students towards the School Health Programme in Sarawak, Malaysia.

**Methods:** A cross-sectional study was done among 1498 primary and secondary government school students in Sarawak, Malaysia. Multistage sampling was done to select divisions, districts, schools and classes. Data was collected via self-administered questionnaires after acquiring informed consent from their parents or guardians. Data was analysed using SPSS Version 21. Chi square test and binary logistic regression were used to analyse the data. Based on the median satisfaction score, satisfaction was divided into high satisfaction and low satisfaction.

**Results:** Out of 1384 respondents, 51.2% has low satisfaction while 48.8% has high satisfaction with the School Health Programme. Factors associated with the satisfaction were division, location of school, ethnic group, and receiving notifications prior to the School Health Team visits.

**Conclusion:** The students' satisfaction towards the School Health Programme is associated with division, location of school, ethnic group, and received notifications prior to the School Health Team visits, which are non-modifiable factors. The author recommends the restructuring and reinforcement of the School Health Programme and modifying its implementation approach in order to suit the current needs of the students.

**Keywords:** School Health Programme, Sarawak

## Comparative risk assessment of modifiable risk factors for mortality for cardiovascular diseases of atherosclerotic origin in Malaysia

Shahdattul Dewi Nur Khairitza Taib\*, Khadijah Shamsuddin\*\*, Azmi Mohd Tamil\*\*, Mohd Azahadi Omar\*\*\*

\*Kuantan District Health Office, Pahang \*\*UKM Medical Faculty, Kuala Lumpur, \*\*\*Institute of Public Health Malaysia, Kuala Lumpur

### ABSTRACT

**Introduction:** Cardiovascular disease (CVD) of atherosclerotic origin is the leading cause of deaths in Malaysia. Comparative Risk Assessment (CRA) estimates number of mortality that would be prevented if current distributions of risk factor exposures were changed to hypothetical optimal distributions. The aim of this research was to estimate the 5-years CVD mortality effects of hypothetical changes in seven modifiable risk factors in Malaysia.

**Methods:** Using the WHO CRA formula, we estimated the 5-years CVD mortality effects of hypothetical changes using data from the NHMS 2006 and the mortality statistics focusing on Ischaemic Heart Disease (IHD) and stroke. The etiological effects of risk factors were obtained from recent published systematic reviews and meta-analysis.

**Results:** High SBP and physical inactivity were responsible for an estimated of 43,600 (95% CI 43,200-43,900) and 42,400 (95% CI 42,100-42,800) 5-years CVDs mortality respectively. Each lead to one in four CVDs deaths. Hypercholesterolaemia (21,500; 95%CI 21,300-21,800) and smoking (21,400; 95% CI 21,100-21,600) were each responsible for one in seven CVDs deaths while high FBS (8,600; 95% CI 8,400-8,800) lead to one in 17 CVDs deaths, high BMI (5,100; 95% CI 5000-5300) lead to one in 30 CVDs deaths and alcohol intake (3200; 95% CI 3100-3300) lead to one in 50 CVDs deaths. Analysis by gender, ethnicity, stratum and states showed high SBP and physical inactivity were the most important. However, among those aged 30-59 years old, smoking was at the top ranking while for the older group physical inactivity was the leading risk factor.

**Conclusion:** High SBP and physical inactivity were responsible for the largest number of CVD-mortality in Malaysia. However, among those aged 30-59 years old, smoking was the upmost risk factor for CVD deaths. Interventions to curb CVDs mortality should target the most dominant modifiable risk factors for each group at risk.

**Keywords:** Comparative Risk Assessment, Ischaemic Heart Disease, stroke, mortality attributable risk factor.

## Effectiveness of e-mail based empowerment programme (e-beEp) among Type II diabetes patients on glycaemic control, quality of life and cost-effectiveness: an intervention study

Mohd Rizal AM\*, Khalib AL\*, Ahmad Taufik J\*, NorAzmi K\*\*, Zanariah\*\*\*, Hamimah S\*\*\*\*, Norizzati B\*\*\*\*\*, Sabrizan O\*

\*Department of Community Health, UKM Medical Centre, Malaysia, \*\*Department of Medicine, UKM Medical Centre, Malaysia, \*\*\*Department of Medicine, Hospital Putrajaya, Malaysia, \*\*\*\*Putrajaya Health Clinic, Putrajaya, Malaysia, \*\*\*\*\*Bandar Baru Bangi Health Clinic, Bangi, Malaysia

### ABSTRACT

**Introduction:** The internet is a potential effective medium for information exchange and delivery of effective behaviour change interventions to large numbers of participants. This study aimed to evaluate the effectiveness of e-mail based empowerment programme (e-beEp) on glycaemic control, quality of life and cost-effectiveness among Type II Diabetes Mellitus patients as compared to the standard care in primary care settings.

**Methods:** The e-beEp was designed to deliver health education for 12 weeks duration for intervention group with five different modules. A total of 142 patients were recruited for intervention and control groups in two health clinics with response rate was 98.6% for both clinics. Patients' HbA1c, quality of life score and empowerment level were taken before, three and six months after the intervention.

**Results:** Repeated measurement analysis shows significant differences in the mean of quality of life score for psychological domain ( $F=3.194$ ,  $p=0.009$ ), quality of life score for environmental domain ( $F=7.723$ ,  $p=0.006$ ) and overall empowerment score ( $F=17.312$ ,  $p<0.001$ ) between the intervention and control groups. Empowerment score ( $F=5.909$ ,  $p=0.015$ ) and quality of life score for psychological domain ( $F=5.416$ ,  $p=0.007$ ), social domain ( $F=5.378$ ,  $p=0.021$ ), environmental domain ( $F=6.072$ ,  $p=0.003$ ) increase significantly in the intervention group as compared to the control group over the time. However, there were no significant time effects of HbA1c level, quality of life score and empowerment score for both groups. Cost-effectiveness analysis showed e-beEp intervention required only minimal cost (RM5906.65) to reduce HbA1c reading by 1% and above after six months of intervention as compared to the control group (RM6733.32).

**Conclusion:** This study showed that combination of e-beEp and standard care is more effective compared to the standard diabetes care alone in terms of quality of life, patient's empowerment and cost-effectiveness. However, longer duration of implementation of e-beEp is required to ensure the effectiveness on glycaemic control.

**Keywords:** Effectiveness, e-mail, empowerment, glycaemic control, quality of life, cost-effectiveness

## Predictors for quality of life of chronic kidney disease and end stage renal disease patients in Kelantan

Farzaana Adam\*, Ab Aziz Al-Safi Ismail\*, Syed Hatim Noor\*\*, Azreen Syazril Adnan\*\*\*

\*Department of Community Medicine, School of Medical Sciences, Universiti Sains Malaysia, \*\*Unit of Biostatistic and Research Methodology, School of Medical Sciences, Universiti Sains Malaysia, \*\*\*Chronic Kidney Disease Research Centre, School of Medical Sciences, Universiti Sains Malaysia

### ABSTRACT

**Introduction:** Optimising the Quality of life of Chronic kidney diseases (CKD) patients are vital as they required lifelong follow up and to prevent deterioration to end stage renal disease (ESRD). The objective of this study is to determine the predictors of the Overall Health Scale of CKD stage 3, pre-dialysis, and ESRD patients.

**Methods:** Cross-sectional study at four hospitals in Kelantan. Non dialysis cases at the Nephrology Clinic recruited through simple random sampling, whereas, all cases on dialysis which fulfilled the inclusion criteria were included. A translated Malay version of Kidney Disease Quality of Life Questionnaire Short Form (KDQOL-SF) questionnaire were used in the interviews.

**Results:** There were 55 CKD stage 3, 100 pre-dialysis and 152 ESRD cases. Presence of cardiovascular disease predicted the Overall Health Scale in CKD stage 3 patients (adjusted  $\beta$ : -20.00; 95%CI: -33.47, -6.53). Predictors in pre-dialysis patients were presence of dyslipidaemia (adjusted  $\beta$ : 12.10; 95%CI: 3.96, 20.24), body mass index (adjusted  $\beta$ : -0.09; 95%CI: -1.74, -0.14) and glomerular filtration rate (adjusted  $\beta$ : 0.56; 95%CI: 0.18, 0.95); whereas the predictors in ESRD patients were employment status (adjusted  $\beta$ : -8.79; 95%CI: -13.96, -3.63), presence of diabetes (adjusted  $\beta$ : -5.58; 95% CI: -10.83, -0.34), age (adjusted  $\beta$ : -0.22; 95%CI: -0.42, -0.03), haemoglobin level (adjusted  $\beta$ : 2.38; 95%CI: 0.95, 3.80) and albumin level (adjusted  $\beta$ : 0.51; 95%CI: 0.07, 0.95).

**Conclusion:** Identified modifiable predictors of quality of life in chronic kidney disease and ESRD patients may enable future planning of interventions to improve quality of life.

**Keywords:** chronic kidney disease, quality of life, KDQOL-SF

## Screening for frailty among the elderly to allow targeted health promotion and intervention in Malaysia

Jeyanthini Sathasivam\*, Shahrul Bahiyah Kamaruzzaman\*\*, Farizah Mohd Hairi\*, Ng Chiu Wan\*, Shaharom Nor Azian Che Mat Din\*\*\*\*, Karuthan Chinna\*

\*Julius Centre University Malaya, Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia, \*\*Department of Geriatrics, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia, \*\*\*District Health Office Johor Bahru, Johor, Malaysia, \*\*\*\*Public Health Laboratory Johor Bahru, Johor, Malaysia

### ABSTRACT

**Introduction:** By 2035, Malaysia will share the definition of an ageing nation by current demographic projections. In middle income developing countries like Malaysia, public investments are still being channelled to the Sustainable Development Goals reducing available resources for the aged. Hence, this study was to stratify the population based on their frailty status and identify the influence of cognitive status, self-rated health, frailty markers and falls on frailty to allow targeted services to be planned for them.

**Methods:** This is a cross-sectional study involving 789 urban community dwelling elderly in Malaysia to assess the geriatric syndrome of frailty. A multidimensional frailty assessment tool incorporating 40 items that represented assets and deficits in an elderly was used to obtain a final frailty score. Cognition was assessed using the Mini Mental State Examination (MMSE). Apart from socio-demographic profiles, history of falls and self-rated health were also determined. Grip strength and walking speed was obtained as markers of physical frailty.

**Results:** The response rate for the study was 75.8% from the 1040 elderly. The weighted prevalence estimate for pre-frail was 67.7 per cent and 5.7 per cent for frail elders. The remaining 26.6 per cent were considered non-frail. Ordinal regression analysis of cognitive status, self-rated health, frailty markers such as grip strength and walking speed and a history of fall showed positive associations to increasing frailty levels with only grip strength losing that association in the multivariate analysis.

**Conclusion:** This study highlights that cognitive status, how the elders perceive their own health and upper and lower body strength are important correlates of frailty. This multidimensional frailty screening tool is easily administered at a primary care level and allows the health practitioner to stratify their elders to the available care.

**Keywords:** frailty, elderly, frailty screening tool, ageing

## Subtypes of disability among community dwelling older adults in Malaysia

Norliana Ismail\*, \*\*, Farizah Hairi\*, Choo Wan Yuen\*, Noran Naqiah Hairi\*, Sajaratulnisah Othman\*, Tan Maw Pin\*, Devi Peramalah\*, Awang Bulgiba AM\*, Zainudin Mohd Ali\*\*\*, Suriyati Abd Aziz\*\*\*, Rohaya Ramli\*\*\*, Zaiton Lal Mohamad\*\*\*, Sharifah Nor Ahmad\*\*\*\*, Inayah Abd Razak\*\*\*\*

\*Julius Centre University of Malaya, Department of Social and Preventive Medicine, University of Malaya, Kuala Lumpur, Malaysia, \*\*Ministry of Health, Malaysia, \*\*\*Negeri Sembilan State Health Office, Negeri Sembilan, \*\*\*\*Kuala Pilah District Health Office, Negeri Sembilan

### ABSTRACT

**Introduction:** Disability is a dynamic process and individual's progression from impairments to disability is bidirectional and can change at different stages. This study aims to characterize the subtypes of disability and to determine whether the incidence of these disability subtypes differ according to age, sex, or health related variables.

**Methods:** Prospective cohort study of 875 community dwelling older adults in Kuala Pilah, Negeri Sembilan, who were 60 years and above and initially non-disabled in 6 essential activities of daily living (ADL). Disability was assessed using Katz's ADL scale. Face to face interview at baseline and 12 months follow-up was conducted and during the interval, disability was assessed via three monthly telephone interviews.

**Results:** During the 12-month interval, incident of disability was 14.1%. The most common subtypes were transient disability (4.5%); defined as a single disability episode lasting only 1 month, followed by short term (4.4%); defined as single disability episode lasting 2 to 5 months, and long-term (4.2%); defined as one or more disability episodes, with at least one lasting 6 or more months. There were no sex differences in the incidence rates for any of the subtypes. The significant differences of the disability subtypes incidence were observed in older adults with advanced age ( $p < 0.001$ ), cognitive impairment ( $p = 0.022$ ), low physical activity ( $p = 0.003$ ) and low social support ( $p = 0.002$ ).

**Conclusion:** By identifying modifiable risk factors such as low social support and low physical activity, the current study provides important findings for the healthcare providers in order to recognise older adults at risk of disability, so that preventive interventions can be suitably targeted.

**Keywords:** disability subtypes, community dwelling older adults, incidence, risk factors, Malaysia

## Prevalence of asthma and level of fractional exhaled nitric oxide (FeNO) among school children in Terengganu, Malaysia

Aminnuddin Ma'pol\*, Jamal Hisham Hashim\*\*, Dan Norbäck\*\*\*, Gunilla Weislander\*\*\*, Zailina Hashim\*\*\*\*, Zaleha Md Isa\*

\*Jabatan Kesihatan Masyarakat, Pusat Perubatan Universiti Kebangsaan Malaysia, Kuala Lumpur, \*\*United Nations University International Institute for Global Health (UNU-IIGH), Kuala Lumpur, \*\*\*Uppsala University, Uppsala, Sweden, \*\*\*\*Universiti Putra Malaysia, Serdang, Selangor

### ABSTRACT

**Introduction:** Classrooms remain one of the commonest places where air pollution exposure can occur. The use of fractional exhaled nitric oxide (FeNO) measurements has been increasingly accepted in clinical practice based on a number of theoretical and practical factors. It is not only a user friendly, portable and non-invasive biomarker, but is also able to detect early inflammatory airway changes. The aim of this study is to measure the level of FeNO across gender, pollutant exposure and asthma status among 14 years old children in Terengganu, Malaysia.

**Methods:** The study population was randomly selected from secondary schools. A questionnaire with standardised questions was used to obtain knowledge on their living conditions, school environment, asthmatic symptoms and allergy status. FeNO measurements and skin prick tests were conducted.

**Results:** From 487 students, only 365 students had consent from their parents for medical examinations. Majority (99%) was Malays, female (62%) and non-smoker (97%). The prevalence of asthma was 11.1%, of which 31.5% were on medication. Male student (median 18ppb, IQR 19) had substantially higher FeNO levels than female (median 14ppb, IQR 13). Allergic to Dermatophagoides Pteronysinus (OR=1.37, 95% CI: 1.22-1.54), allergic to Alternaria alternate (OR= 2.76, 95% CI: 1.18-6.46) and exposure to higher dust weight (OR= 1.65, 95% CI: 1.03-2.62) was associated with higher levels of FeNO among the school children.

**Conclusion:** The problem of multiple confounding factors and overlap between healthy and asthmatic populations preclude obtaining the FeNO reference values for clinical practice. However, it opens further research interests for better assessment of asthma among Malaysian children.

**Keywords:** FENO, Asthma, school children, Terengganu, Malay.

## Evaluation of environmental exposure and leptospirosis in palm oil plantation workers

Mohd Ridzuan J\*, Aziah BD\*, Zahiruddin WM\*, Azwany YN\*, Mod Nazri S\*, Nabilah I\*\*

\*Department of Community Medicine, School of Medical Sciences, Universiti Sains Malaysia, \*\*Department of Medical Microbiology and Parasitology, School of Medical Sciences, Universiti Sains Malaysia

### ABSTRACT

**Introduction:** Leptospirosis is a potentially fatal zoonotic spirochetal disease, recognised as a re-emerging public health issue that occurs worldwide but is most common in tropical and subtropical areas with high rainfall. In Malaysia, over the past decade, there has been an increased number of reported cases and outbreaks of the disease, with a significant number of deaths. The main occupational groups at risk include farm and agricultural workers. Palm oil industry is a major economic sector in Malaysia that involves a large number of agricultural workers. This study aims to determine the seroprevalence and workplace environmental exposure risk factors of leptospirosis among oil palm plantation workers in Malaysia.

**Methods:** Cross-sectional study of 350 palm oil plantation workers in southern Malaysia using an interviewer guided questionnaire. Blood samples were sent to Institute of Medical Research (IMR) for serological test using microscopic agglutination test (MAT). The cut-off titre for seropositive was  $\geq 1:100$ .

**Results.** Of the 374 sampled workers, 350 participated in this study resulting in a response rate of 93.6%. The respondents were relatively young with the mean age of 31.4 (SD 9.68) years, and 50.0% had worked for more than two years in the oil palm plantation. The overall seroprevalence was 28.6%. The significant environmental risk factors found to be associated with seropositive leptospirosis were 'presence of cows in plantation' (adjusted Odds Ratio (aOR) 2.27; 95% CI: 1.20, 4.30), and 'presence of landfill in plantation' (aOR 2.04; 95% CI: 1.13, 3.70).

**Conclusion.** The high seroprevalence of leptospirosis show that oil palm plantation workers are at high risk for leptospirosis infection, thus increasing awareness towards the risk of this disease is vital for all stakeholders involved. Workplace environment risk factors should be considered in prevention of leptospirosis among oil palm plantation workers in future.

**Keywords:** Leptospirosis, oil palm plantation workers, workplace environment

## Prevalence of poor sleep quality and its correlates among secondary school teachers in Selangor, Malaysia: a cross-sectional study

Nor Asma Musa\*, Moy Foong Ming\*, Wong Li Ping\*

\*Julius Centre University of Malaya, Department of Social and Preventive Medicine, University of Malaya, Malaysia

### ABSTRACT

**Introduction:** Sleep is an important physiological process and becoming a world-wide health concern. Teachers are among the highest profession that often report poor sleep quality due to high workload and increasing students' academic demands. Few studies have examined the sleep quality of those employed in the education field. The purpose of this study was to estimate the prevalence and identified correlated factors of poor sleep quality among secondary school teachers in Selangor, Malaysia.

**Methods:** A cross-sectional survey was conducted in ten education district in Selangor Malaysia. Multistage random-sampling procedures were used to enrol 1871 secondary school teachers into the study. A self-administered structured questionnaire including the Pittsburgh Sleep Quality Index (PSQI) to measure sleep quality, the Depression Anxiety Stress Scale-21 (DASS 21) to screen for mental health, teaching characteristics, physical health and other relevant characteristics to sleep were collected.

**Results:** Mean 95% CI of the PSQI global score was 5.45 (95% CI: 3.80, 7.09) points. The prevalence of poor sleep quality (total PSQI score  $\geq 5$ ) was 61% (1134). In the univariate analysis, total (hours) of teaching with extra class a day (odds ratio (OR) 1.063; 95% CI: 1.019-1.110), depression score (OR 1.090; 95% CI: 1.035-1.148), anxiety score (OR 1.090; 95% CI: 1.075-1.106) and stress score (OR 1.080; 95% CI: 1.063-1.097) had statistically significant higher odds of poor sleep quality. Multivariate analysis showed that stress was the only significant correlate of poor sleep quality score among the participants.

**Conclusion:** Our study demonstrates that slightly over half of the secondary school teacher has poor sleep and PSQI global score was associated with stress. Little attention has been given to the sleep concerns of school personnel, and there is a need for further research. Comprehensive counter measures against poor sleep quality is strongly recommended.

**Keywords:** Pittsburgh Sleep Quality Index, depression, Anxiety, Stress, Teachers, Malaysia.

## Determinants of sick leave duration and return to work post-acute coronary syndrome among employees in Kelantan

Sahrol Nizam Abu Bakar\*, Mohd Nazri Shafei\*, Norsa'adah Bachok\*\*, Zurkurnai Yusof\*\*\*, Mansor Yahya\*\*\*\*

\*Department of Community Medicine, Universiti Sains Malaysia, \*\*Unit of Biostatistics and Research Methodology, Universiti Sains Malaysia, \*\*\*Department of Medicine, Universiti Sains Malaysia, \*\*\*\*Department of Medicine, Hospital Raja Perempuan Zainab II, Kelantan

### ABSTRACT

**Introduction:** Acute Coronary Syndrome (ACS) is the number one cause of death in the world and the third cause of death in Malaysia. Information on sick leave duration and return to work among employees diagnosed with first episode of ACS was limited. The aims of the study was to determine the predictive factors for sick leave duration, and factors associated with return to work three months post ACS among employees diagnosed with first episode of ACS in Kelantan.

**Methods:** Prospective cohort study design was used. The study populations was employees who were working in Kelantan and admitted into cardiology centre in two public hospitals in Kelantan that fulfilled the study criteria. The duration of study was 15 months. Proforma was used for data collection. The respondents was follow up for three months. Multiple linear regression analysis was used to determine the predictive factors for sick leave duration and multiple logistic regression analysis was used to determine the factors associated with return to work three months post ACS.

**Results:** A total of 78 respondents participated in this study. The predictive factors for sick leave duration were smoking (adjusted  $\beta=20.13$ , 95%CI: 10.36, 39.24 and p value= 0.001), not attending cardiac rehabilitation after discharge (adjusted  $\beta=19.94$  days, 95%CI: 6.86, 33.61 and p value= 0.005) and complication during admission (adjusted  $\beta=28.57$ , 95%CI: 15.11, 42.03 and p value <0.001). The sick leave duration was associated with return to work (adjusted OR=0.96, 95%CI: 0.92, 1.00 and p value= 0.033).

**Conclusion:** Being a smoker, had complication during hospital admission and not attending cardiac rehabilitation after discharged from hospital had increased the sick leave duration. Furthermore, sick leave duration had delayed employees with first episode of ACS return to work three months post ACS.

**Keywords:** Acute Coronary Syndrome, Sick Leave duration, Return to Work, Employees

## Cross-cultural adaptation and psychometric assessment of the World Health Organization Health and Work Performance Questionnaire among Malay speaking office workers

Muhamad Hasani MH<sup>\*,\*\*</sup>, Hoe Victor CW<sup>\*\*\*</sup>, Karuthan Chinna<sup>\*</sup>

<sup>\*</sup>Julius Centre University of Malaya, Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Malaysia, <sup>\*\*</sup>Ministry of Health, Malaysia, <sup>\*\*\*</sup>Centre for Occupational and Environmental Health-UM, Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Malaysia

### ABSTRACT

**Introduction:** The World Health Organization Health and Work Performance Questionnaire (WHO-HPQ) is an instrument commonly used to estimate workplace costs of any health problems among workers arise from lower job performance, sick absenteeism, and accidents and injuries at workplace. This paper report on the translation, adaptation, and validation the Malay-speaking version of the WHO-HPQ.

**Methods:** The implementation of cross-cultural adaptations was completed according to standard guidelines. Forward and backward translation from English-Malay-English was completed by independent bilingual translators. The translated WHO-HPQ was pre-tested on 20 office workers followed by face-to-face interviews to assess their understanding of the instrument. The face and content validity were verified by consensus obtained from the expert panel on the understanding and relevance of the translated instrument. The psychometric assessment was conducted on 300 office workers through self-administered questionnaire.

**Results:** Participants were a mix of male (25.3%) and female (74.7%), ranging in age from 20 to 58 years old with a mean age of 33 years old. Based on the psychometric properties assessment, the internal consistency of the Malay version HPQ were adequate (Cronbach's alpha = 0.78 and mean inter-item correlation = 0.53). Exploratory factor analysis and confirmatory factor analysis suggested that a modification of the Malay version of HPQ provided best fit estimates to the sample data.

**Conclusion:** The Malay version of HPQ was shown to have adequate reliability and validity as an instrument in the study sample.

**Keywords:** Cross-cultural adaptation, psychometric assessment, World Health Organization Health and Work Performance Questionnaire, Malaysia

## The reliability and validity of the Knowledge, Attitude and Practice on Child safety questionnaire

Shazlin Umar<sup>\*</sup>, Ahmad Filza Ismail<sup>1\*</sup>, Tengku Alina Tengku Ismail<sup>\*</sup>, Sarimah Abdullah<sup>\*\*</sup>

<sup>\*</sup>Department of Community Medicine, School of Medical Sciences, Universiti Sains Malaysia, <sup>\*\*</sup>Unit of Biostatistic and Research Methodology, School of Medical Sciences, Universiti Sains Malaysia

### ABSTRACT

**Introduction:** Child injury is a leading cause of mortality and morbidity worldwide. Preschool teachers have the ability to prevent childhood injury and ensuring a safer environment. The aim of this study is to determine the reliability and validity of the Knowledge, Attitude and Practice on Child Safety Questionnaire for preschool teachers in Melaka.

**Methods:** A cross-sectional study was conducted from November 2013 to March 2014 on preschool teachers at 10 Jabatan Agama Islam Melaka (JAIM) preschools in Melaka. The development of the questionnaire took six months after extensive literature reviews as well as further discussion in an expert panel meeting. To verify the content validity of the questionnaire, a series of meetings and discussions was carried out with the members of panel made up of three experts from Universiti Sains Malaysia (USM), preschool teachers and representatives from Melaka Education Department. The face validity session was conducted among twelve preschool teachers in Kubang Kerian, Kelantan. Exploratory factor analysis was used to determine construct validity of the questionnaire. Cronbach's alpha and ICC (test-retest) was used to determine internal consistency and reliability.

**Results:** Reliability and validity of the questionnaire was obtained through a pilot study involving 80 preschools teachers from selected (JAIM) preschools in Melaka. The 13 items in attitude domain were categorised into two subdomains: cognitive and behavioural with factor loading range 0.385-0.807. While the 12 items in practice domain were categorised into two subdomains: reaction and prevention with factor loading range 0.419-0.868. The internal consistency was acceptable for the domains of knowledge (0.828), attitude (0.934) and practice (0.908). All items were reproducible with test-retest scores ranged from 0.706-0.876.

**Conclusion:** The new Malay-language version of questionnaire on child safety is reliable and valid to assess the child injury knowledge, attitude and practice among preschool JAIM teachers in Melaka.

**Keywords:** Reliability, validity, knowledge, attitude and practice on child safety and preschool teachers

## **Efficacy of SMS and telephone call reminders on adherence and treatment outcomes among HIV positive patients on Antiretroviral Therapy (ART) in Malaysia: a Randomised Controlled Trial (RCT)**

Surajudeen Abiola Abdulrahman\*, Lekhraj Rampal\*, Anuradha P. Radhakrishnan\*\*, Faisal Ibrahim\*\*, Norlijah Othman\*\*\*, Hayati Kadir\*

\*Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Malaysia, \*\*Hospital Sungai Buloh, Malaysia, \*\*\*Department of Paediatrics, Faculty of Medicine and Health Sciences, UPM, Universiti Putra Malaysia, Serdang, Malaysia

### **ABSTRACT**

**Introduction:** Adherence to treatment remains the cornerstone of successful treatment outcomes among patients receiving ART. The objective of this study was to determine the effectiveness of mobile phone technology (SMS and telephone call reminders) in improving adherence and treatment outcomes among HIV positive patients on ART in Malaysia.

**Methods:** This single-blind, parallel group RCT was conducted in Hospital Sungai Buloh among 242 HIV positive patients who initiated ART. They were followed up for 6 months, between January and December 2014. Eligible patients that met inclusion criteria were randomised to treatment and control arms (1:1) with allocation concealment. Data on socio-demographic factors, clinical symptoms, and adherence behaviour, assessed using the modified and validated Adult AIDS Clinic Trials Group adherence questionnaires, were collected. CD4 count, viral load, weight, and full blood counts were also recorded. Intervention included a "Reminder module" delivered continuously for 6 months in addition to standard care. Multivariate regression models were used to evaluate efficacy of the intervention, using SPSS version 21 and R software.

**Results:** Majority (93%) completed 6-month follow up. Mean age was 33.4 (standard deviation (SD) 9.2) years. Majority (88.8%) were males. There was no statistically significant difference in gender, income and employment distributions between the intervention and control group. Mean adherence increased from 80.1% (SD 19.8) and 85.1% (SD 15.8) to 95.7% (SD 1.6) and 87.5% (SD 9.9) in the intervention and control groups respectively at the end of 6 months ( $p=0.035$ ). A higher frequency in missed appointments ( $p=0.001$ ), higher viral load ( $p=0.001$ ), lower rise in CD4 count ( $p=0.017$ ), and higher incidence of tuberculosis ( $p=0.001$ ) at 6 months was observed among the control group.

**Conclusion:** This study provides further evidence to support the WHO recommendation of the use of SMS as a reminder tool and to keep patients engaged, thereby promoting their adherence to ART.

**Keywords:** Adherence, Mobile phone technology, Antiretroviral Therapy (ART), Antiretroviral medications (ARVs), HIV/AIDS, CD4 count, Viral load, treatment outcomes.

## **Predictors of adherence behaviour among HIV positive patients receiving Antiretroviral Therapy (ART) in Malaysia**

Surajudeen Abiola Abdulrahman\*, Lekhraj Rampal\*, Anuradha P. Radhakrishnan\*\*, Faisal Ibrahim\*, Norlijah Othman\*\*\*, Hayati Kadir\*

\*Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Malaysia, \*\*Hospital Sungai Buloh, Malaysia, \*\*\*Department of Paediatrics, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Malaysia

### **ABSTRACT**

**Introduction:** Success of antiretroviral treatment depends on a host of factors, the most important of which is the patient's adherence behaviour. The objective of this study was to determine whether the introduction of mobile phone technology (SMS and telephone call reminders) can significantly improve adherence and treatment outcomes among HIV positive patients on ART. This paper highlights 'context-specific' predictors of adherence behaviour among a cohort of Malaysian patients receiving ART.

**Methods:** A single-blinded RCT was carried out in Hospital Sungai Buloh between January and December 2014 among HIV positive patients on ART. Data on socio-demographic factors, clinical symptoms, and adherence behaviour, assessed using the modified and pre-validated Adult AIDS Clinic Trials Group adherence questionnaires were collected. CD4 count, viral load, weight, full blood count, blood pressure, liver function and renal profile tests were also conducted and recorded. Multivariate regression models were used to examine the relationship between study variables using SPSS version 21 and R software.

**Results:** The overall mean age of 242 respondents was 33.4 (standard deviation (SD) 9.2, range 18-64) years. Majority (88.8%) were males. Overall, 47.9% of respondents were placed on ZDV/3TC/EFV regimen, 47.1% took TDF/FTC/EFV regimen at baseline (ART initiation) while other HAART regimens accounted for only 5% of the distribution altogether. Univariate logistic regression analysis showed that adherence behaviour was significantly associated with ethnicity, monthly income and employment status. After controlling for the effect of age and treatment group, multivariate multinomial logistic regression analysis showed that patient's employment status (adjusted Odds Ratio 4.46; 95% CI: 3.22, 6.18) was a significant predictor of adherence behaviour among HIV positive patients receiving ART in Malaysia.

**Conclusion:** The findings provide additional support to the growing body of evidence on the strong relationship between patient's employment status and their adherence behaviour, particularly in concentrated epidemics and low-to-middle income economies.

## A case-control study on risk factors for HIV/AIDS among women in Sambas Regency, West Kalimantan, Indonesia

Norfazilah A, Nany Hairunisa, Azmawati MN

Department of Community Health, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia

### ABSTRACT

**Background:** The number of women living with Human Immunodeficiency Virus (HIV) infection and Acquired Immunodeficiency Syndrome (AIDS) is increasing in Indonesia. These conditions indicate the feminisation of the HIV epidemic is happening in Indonesia. The objective of this study was to determine the risk factors associated with HIV/AIDS among women in Sambas Regency, West Kalimantan, Indonesia.

**Methods:** An unmatched case-control study was conducted among 90 women tested positive for HIV/AIDS (cases) and 90 women tested negative for HIV/AIDS (controls). Data was collected using medical records and questionnaires from June to August 2012, at community health centres in Sambas Regency, West Kalimantan, Indonesia. Descriptive and multiple logistic regression analysis were used to examine the associated factors for HIV/AIDS.

**Results:** The mean age of the cases and control were 32.22 (standard deviation (SD) 8.12) and 33.72 (SD 9.38) years respectively. As compared to single women, being married (adjusted Odds Ratio (aOR) 5.09, 95% CI: 1.18, 21.95) or divorce/widowed (aOR 21.57, 95%CI: 4.53, 102.67) put these women at higher odds for HIV/AIDS. Being a housewife (aOR 4.18, 95%CI: 1.25, 13.94) and having poor knowledge about HIV/AIDS (aOR 7.38, 95%CI: 2.94, 18.55) also found to have higher odds for HIV/AIDS. Level of education, income, having more than one sexual partner and being a migrant did not show any association.

**Conclusions:** HIV/AIDS intervention programmes should increasingly be expanded beyond improving the knowledge on HIV/AIDS, which include skill-building programs for young women and housewives.

**Keywords:** HIV/AIDS, case-control, risk factors, West Kalimantan, Indonesia

## HIV-related stigma and discrimination among semi-urban population in Malaysia

Halyna Lugova, Aye Aye Mon, Aqil Mohammad Daher, Mala Manickam, Adlina Suleiman

National Defence University of Malaysia, Sungai Besi Prime Camp, Kuala Lumpur

### ABSTRACT

**Background.** Stigmatisation towards people living with HIV/AIDS deters the effectiveness of HIV prevention, testing and treatment, and has a negative impact on family and social networks. There is a lack of understanding about HIV-related stigma and discrimination among people living beyond large cities. This cross-sectional study is aimed to explore the level of HIV-related stigma and compare it between people with different socio-demographic characteristics among semi-urban population in Malaysia.

**Method.** A sample of 106 respondents was generated by convenience sampling during the screening campaign in Alor Gajah, Malaysia. Data collection was carried out based on a pre-tested questionnaire via face-to-face interview.

**Results.** More than half of the respondents (62.3%) thought that the HIV-positive teacher should not be allowed to continue teaching at school; 81.1% were unsure or disagreed to care for their family member with AIDS at home; 81.2% thought children with HIV/AIDS should not continue to be raised in families; and 77.3% thought they would keep it a secret if their family member got HIV/AIDS. This study did not reveal any significant relationship between sociodemographic profiles and the HIV-related stigma and discrimination.

**Conclusion.** We found relatively high HIV-related stigma concerning responsibility of people living with HIV/AIDS for immoral behaviour, family and direct interaction stigma, which may hinder HIV/AIDS prevention, treatment and social support efforts. Priority should be given to evidence-based interventions to reduce HIV-related stigma. Further research with bigger sample size is needed to investigate the underlying causes of stigmatisation.

**Key words:** HIV/AIDS, HIV-related, stigma, discrimination, Malaysia.

## Sexual behaviours of adult HIV positive patients enrolled in care in Yola, Nigeria

Olutayo Folashade Martins\*, Lekhraj Rampal\*, Lye Munn-Sann\*, Sherina Mohd Sidik\*\*, Norlijah Othman\*\*\*, Zubairu Iliyasu\*\*\*\*, Fatai Kunle Salawu\*\*\*\*\*

\*Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Selangor, \*\*Department of Psychiatry, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Selangor, \*\*\*Department of Pediatrics, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Selangor, \*\*\*\*Department of Community Medicine, Aminu Kano Teaching Hospital, Kano, Kano state, Nigeria, \*\*\*\*\*Department of Medicine, Federal Medical Center Yola, Adamawa state, Nigeria

### ABSTRACT

**Introduction:** The objective of this study was to determine the effectiveness of a newly developed Clinician Client Centered Counselling Module on improving knowledge, attitudes and sexual behaviours of adult HIV positive patients in Yola, Nigeria. The objective of this paper is to present the baseline sexual behaviours of adult HIV positive patients enrolled into care at all four comprehensive Anti-Retroviral Therapy (ART) sites in Yola.

**Methodology:** Baseline reports on the sexual behaviours of adult HIV positive patients were obtained from a 3-arm randomised single blind clinical trial involving 386 randomly selected and allocated adult HIV patients who were enrolled into care at all four comprehensive ART sites in Yola. The intervention was 10 to 15 minutes clinic based Clinician Client Centered Counselling. The three groups were; intervention group 1, intervention group 2 and the control group. An interviewer administered structured questionnaire was used for data collection. Outcome measures included; frequency of condom use in sexual activity, number of sexual partners, sex with an unsteady partner and number of spouses/sexual partners, HIV status had been disclosed to in preceding 30 days. Data was analysed using SPSS version 22. Test of significance was at  $\alpha$  level 0.05.

**Results:** One hundred and one (62.4%) respondents were inconsistent condom users, 7.5% had more than one sexual partner/spouse, 5.2% had sex with an unsteady partner while 11.3% were yet to disclose their HIV status to their sex partners/spouses.

**Conclusion:** Inconsistent condom use, non-status disclosure and sex with an unsteady partner were the most common high risk sexual behaviours. Behavioural intervention as a positive preventive strategy is thus needed to reduce HIV spread among this group of people.

**Keywords:** adult HIV positive patients

## Prevalence of poor sleep quality and its correlates among secondary school teachers in Selangor Malaysia: a cross-sectional study

Nor Asma Musa\*, Moy Foong Ming\*\*\*, Wong Li Ping\*\*

\*Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, \*\*Julius Centre University of Malaya, Faculty of Medicine, University of Malaya, Kuala Lumpur

### ABSTRACT

**Background:** Sleep is an important physiological process and becoming a world-wide health concern. Teachers are among the highest profession that often report poor sleep quality due to high workload and increasing students' academic demands. The purpose of this study was to estimate the prevalence and identified correlated factors of poor sleep quality among secondary school teachers in Selangor, Malaysia.

**Method:** A cross-sectional survey was conducted in ten education district in Selangor, Malaysia. Multistage random-sampling procedures were used to enrol 1871 secondary school teachers. A self-administered structured questionnaire including the Pittsburgh Sleep Quality Index (PSQI) to measure sleep quality, the Depression Anxiety Stress Scale-21 (DASS 21) to screen for mental health, International Physical Activity Questionnaires (I-PAQ) to obtain data on health-related physical activity, teaching characteristics, physical health and other relevant characteristics to sleep were collected. Multiple logistic regression model were used to examine the association predictors with poor sleep quality.

**Results:** The mean PSQI global score was 5.45 (95% CI: 3.80-7.09). The prevalence of poor sleep quality (total PSQI score  $\geq 5$ ) was 61% (1134). In the univariate analysis, total (hours) of teaching with extra class a day (odds ratio (OR) 1.063; 95% CI: 1.019, 1.110), depression (OR 1.090; 95% CI: 1.035, 1.148), anxiety (OR 1.090; 95% CI: 1.075, 1.106) and stress (OR 1.080; 95% CI: 1.063, 1.097) had higher odds for poor sleep quality. Multivariate analysis showed that stress was statistically significant predictors of poor sleep quality among the participants.

**Conclusions:** Our study demonstrates that poor sleep quality is very common among secondary school teachers. It is significantly associated with stress. Little attention has been given to the sleep concerns of school teachers, and there is a need for further higher level of research. Comprehensive counter measures against poor sleep quality is strongly recommended.

**Keywords:** Pittsburgh Sleep Quality Index, depression, Anxiety, Stress, Teachers, Malaysia

## Prevalence and predictors of pediculosis capitis among the primary school students in the Hulu Langat District, Selangor

Nor Faiza Mohd Tohit, Lekhraj Rampal, Lye Mann-Sann

Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang

### ABSTRACT

**Background:** Pediculosis infestation is endemic both in developing and developed countries leading to various physical, economical and psychological consequences. The objective of this study is to determine the prevalence and predictors of pediculosis capitis among primary school children, Hulu Langat District, Malaysia.

**Material and Methods:** An analytic cross-sectional study using cluster random sampling method was carried out in Hulu Langat District, Malaysia. A self-administered pretested questionnaire was used to collect the data among children aged 7 - 12 years old. Hair and scalp examination was also carried out. Multivariate logistic regression was used to control for potential confounding.

**Results:** The overall mean age of the 1, 336 respondents was 9.3 years. Majority of the respondents were males (52.8%) and Malays (79.5%), and 81.3% of the fathers and 77.3% for the mothers had at least a secondary education. The overall prevalence of pediculosis capitis was 15.3%. The prevalence of pediculosis was significantly higher among females (28.4%) compared to males (3.7%,  $p=0.001$ ). Multivariate logistic regression analysis showed that age 10 years or more (odds ratio (OR) 2.34, 95% CI: 1.67-3.27), female gender (OR 10.26, 95% CI: 6.62-15.90), history of contact with an infested person (OR 2.11, 95% CI= 1.51-2.96), being Indian (OR 3.55, 95% CI: 1.28-9.86), and Malay (OR 2.59, 95% CI: 0.99-6.77) had higher odds of pediculosis capitis infection.

**Conclusions:** Prevalence of pediculosis capitis among children aged 7 - 12 years in Hulu Langat District was high. There is a need for screening and treatment of pediculosis capitis in primary schools.

**Keywords:** Prevalence, Pediculosis, Primary School Children

## Prevalence and predictors of ever water pipe smoking among female school adolescents in Jeddah, Saudi Arabia

Amani Awwadh Al-Otaibi\*, Faisal Ibrahim\*, Lekhraj Rampal\*, Siti Aishah Hassan\*\*, Normala Ibrahim\*\*\*

\*Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Selangor, \*\*Department of Counselor Education & Counseling Psychology, Faculty of Educational Studies, Universiti Putra Malaysia, \*\*\*Department of Psychiatry, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

### ABSTRACT

**Introduction:** Water pipe smoking (WPS) presents a challenge and threat to an international public health as it is not covered by tobacco control legislations in most countries. There are more than 100 million current water pipe smokers around the world. The objective of this study was to determine the prevalence and predictors of WPS among Saudi female school-going adolescents in Jeddah.

**Methodology:** A cross-sectional study using probability proportionate sampling was carried out in 40 female schools in Jeddah, Saudi Arabia between October 2012 and May 2013. Sample size ( $n= 5150$ ) was calculated using the formula for hypothesis testing of two population proportions. A validated self-administered questionnaire was used to obtain student's socio-demographic characteristics, beliefs and WPS behaviours. Data was analysed using SPSS version 22. Pearson's chi-square test was used to determine the differences in the prevalence of WPS and socio-demographic variables. Multivariate logistic regression analysis was used for determining predictors of WPS behaviour

**Results:** The response rate was 98%. The mean age of the 5073 respondents was 15.5 (ranged, 12-19) years. The overall prevalence of ever and current WPS was 36.2% and 15.8% respectively. Ever water pipe users included ever exclusive water pipe or ever water pipe users who in addition used other forms of tobacco product. Among the 5073 respondents, 674 (13.3%) were exclusive WPS. The multivariate analysis showed that age, school type, mother's educational level, student's monthly allowance, family structure and perceived harmful of WPS were significant predictors of ever WPS behaviour. While age, mother's educational level and perceived harmful of WPS were significant predictors of exclusive WPS behaviour.

**Conclusion:** Ever WPS is highly prevalent among Saudi female adolescents in Jeddah. The findings confirm the need for WPS prevention programmes targeting all adolescent female students in Jeddah with more focus on those attending private schools.

**Keywords:** Ever water pipe smoking, factors associated, female school adolescents

## Prevalence and psychosocial determinants of tobacco use among adolescent female students in Jeddah, Saudi Arabia

Amani Awwadh Al-Otaibi\*, Faisal Ibrahim\*, Lekhraj Rampal\*, Siti Aishah Hassan\*\*, Normala Ibrahim\*\*\*

\*Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Selangor, \*\*Department of Counselor Education & Counseling Psychology, Faculty of Educational Studies, Universiti Putra Malaysia, \*\*\*Department of Psychiatry, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

### ABSTRACT

**Introduction:** Tobacco use has been identified as one of the top ten avoidable risk factors that significantly contribute to disease, disability and mortality. The prevalence of tobacco use is increasing among youth, particularly in developing countries. The objective of this study was to determine psychosocial factors associated with tobacco use among 12-19 year-old Saudi female school students in Jeddah.

**Methodology:** A cross-sectional study using probability proportionate sampling was carried out in 40 female schools in Jeddah, Saudi Arabia between October 2012 and May 2013. Sample size (n= 5150) was calculated using the formula for hypothesis testing of two population proportions. Validated self-administered questionnaire was used to obtain the data. Analyses were conducted using SPSS version 22. Pearson's chi-square test was used to determine the differences in the prevalence of tobacco use and psychosocial factors. Independent t-test was used to compare two mean scores. Multivariate logistic regression was used for determining predictors of tobacco use.

**Results:** The response rate was 98%. The overall mean age of the 5073 students was 15.5 years. The overall prevalence of ever tobacco use and current tobacco user was 44.3% and 18.3% respectively. Water pipe smoking was the main type of tobacco used by the respondents followed by cigarette smoking. The multivariate analysis showed that age, mother's educational level, student's monthly allowance, exposure to second hand smoking, stress, anxiety and self-esteem were significant predictors of ever and current tobacco use behaviours among the students.

**Conclusion:** The prevalence of tobacco use among 12-19 year-old Saudi female school students in Jeddah is high. There is an urgent need for tobacco use intervention programmes targeting female adolescents in Jeddah.

**Keywords:** Female adolescents, tobacco use, psychosocial, predictors.

## Prevalence of overweight/obesity and its associated factors among secondary school students in Batang Padang District, Perak

Mahaletchumy Alagappan\*, Lekhraj Rampal\*, Zalilah Mohd Sharif\*\*, Kalaiselvam Thevandran\*\*\*

\*Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, \*\*Department of Nutrition and Dietetics, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, \*\*\*Department of Medicine, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

### ABSTRACT

**Introduction:** Overweight and obese adolescents are at increased risk of significant health problems such as hypertension, diabetes, heart disease, stroke and cancer. The objective of this study is to determine the prevalence and predictors of overweight and obesity among secondary school students.

**Materials and Methods:** A cross-sectional study was conducted in 10 selected secondary schools in Batang Padang district, Perak, Malaysia. A validated self-administered questionnaire was used to obtain information on sociodemographic, lifestyle and psychosocial factors. General physical activity (Physical activity questionnaire for adolescents (PAQ-A)), self-esteem (Rosenberg self-esteem Scale), body image (body parts satisfaction and body size perception scale) were also assessed. Height and weight were measured, and body mass index (BMI, kg/m<sup>2</sup>) were calculated. Univariate logistic regression was used to determine the crude odd ratio. Variables with p value < 0.25 were entered into the multivariable logistic regression to determine the adjusted odd ratio.

**Results:** The overall response rate was 86%. Majority of the 6515 respondents were females (52.1%), Malays (55.6%) and Muslims (56.2%). The mean age was 15.02 ± 1.42 years. The overall prevalence of overweight and obesity was 15.0% and 12.3% respectively. Majority (79.8%) of the respondents have low physical activity level. Multiple logistic regression showed that the significant predictors of overweight/obesity were gender (male adjusted Odds Ratio (aOR) 1.48, 95%CI: 1.31-1.67), ethnicity compared to Indians (Malays aOR 1.15, 95%CI: 0.96-1.38; Chinese aOR 0.77, 95%CI: 0.63-0.94, Others aOR 0.60, 95% CI: 0.43-0.82), compared to high physical activity (low physical activity aOR 1.28, 95%CI: 1.10-1.50), satisfied with body parts (dissatisfied aOR 1.92, 95%CI: 1.68-2.20), satisfied with body perception (dissatisfied aOR 4.53, 95%CI: 3.83-5.34).

**Conclusions:** The overall prevalence of overweight and obesity was high. The findings from this study can be used by policy makers to plan an integrated intervention program to tackle the increasing prevalence of obesity.

**Key Words:** Adolescents, Obesity, Prevalence, Predictors

## Behavioural modification intervention program for CVD risks prevention among secondary school children in Batang Padang District, Perak

Mohd Arshil, Lekhraj Rampal, Norlijah Othman

Department of Community Medicine, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Selangor

### ABSTRACT

**Introduction:** The problems of cardiovascular vascular diseases (CVD) among adults has reached an epidemic proportions. CVD is the leading cause of death over last 40 years in Malaysia. This paper aims to report on the baseline data of behaviour modification intervention program to reduce CVD risk factors among secondary school children in Batang Padang District.

**Methods:** Randomised Cluster Controlled Study involving ten schools is being conducted in Batang Padang District. Self-administered questionnaire was used for data collection on socio-demographic, dietary habit, smoking, self-esteem and CVD knowledge. Weight, height and blood pressure was measured at baseline and 6 months post intervention. Baseline data analysis was carried out using SPSS version 22. Independent sample t-test was used for comparison of means between the groups. One way ANOVA test was used to compare more than two means. Confidence interval was set at 95% for the estimation of mean. Level of significance was set at p less than 0.05.

**Results:** The overall prevalence of overweight and obesity of the 3630 participants was 10.9% and 5.5% respectively. Overall, 5.6% of the participants were pre-hypertensive, 4.1% with grade 1 hypertension while 0.9% with grade 2 hypertension while Diastolic BP classification showed 4.8% is in pre-hypertensive group, 4.3% grade 1 hypertension and 0.8% grade 2 hypertension. Only 57.6% reported having moderate to high level of physical activity. Majority (89.5%) stated that they had never smoked. Out of the 10.5% respondents who ever smoke, 4.6% gave up smoking while 5.9% continue to smoke. There was no significant difference in the mean age, proportion distribution of participants by gender, ethnicity, family income, and father's education, family history of obesity, hypertension or CVD at baseline.

**Conclusion:** The baseline data shows the prevalence of several CVD risk factors among adolescents. An effective intervention program targeting to reduce multiple risk factors among adolescent is needed.

**KEYWORDS:** CVD risk factors, adolescents, schools

## The effects of sociocultural pressure on disordered eating among adolescents in Malaysia, what public health prevention programmes can do?

Sandanasamy Karen Sharminia\*, Karuthan Chinna\*, \*\*, Said Mas Ayu\* · \*\* · \*\*\*

\*Department of Social and Preventive Medicine, Faculty of Medicine, University Malaya, Kuala Lumpur, \*\*Julius Centre University of Malaya, Faculty of Medicine, University of Malaya, Kuala Lumpur, \*\*\*University of Malaya Centre for Addiction Sciences, Faculty of Medicine, University of Malaya, Kuala Lumpur

### ABSTRACT

**Background:** Disordered eating would be debilitating if it reaches the clinical diagnostic criteria of an eating disorder. Sociocultural pressure portrayed in various forms is known to have a main effect on disordered eating. Perceived pressure to be thin along with weight teasing from family, friends, peers and media depictions have demonstrated disturbed eating habits. The present study aim to assess the prevalence of disordered eating in a school-based population in Selangor and to assess the sociocultural influence.

**Methods:** In this cross-sectional study, data were collected from 601 students, aged between 13 and 16 years old from national secondary schools in Selangor. Participants completed the EAT-26 (Eating Attitude Test) and the Perceived Sociocultural Pressure Scale (PSPS). Logistic regression analysis was used to determine the effect of PSPS domains on disordered eating among.

**Results:** The prevalence of disordered eating was 19.8% (95% CI: 16.5-23.5). More females 20.8% (95% CI: 16.6-25.8) and adolescents who were overweight 26.5% (95% CI: 18.3-36.7) had disordered eating. The common types of disordered eating practices were binge eating, 4.10% (95% CI: 2.70-6.00), and excessive exercising, 6.50% (95% CI: 4.70-9.00). Perceived sociocultural pressure from family and friends (odds ratio (OR) 1.60; 95% CI: 1.16-2.21), media (OR 1.53; 95% CI: 1.20-1.94) and weight teasing (OR 1.39; 95% CI: 1.01-1.90) were found to be associated with disordered eating.

**Conclusion:** Pressures to be thin exerted through family and social environment have shown to influence the risk in developing disordered eating. Public health professionals along with teachers and parents can play a pivotal role to help adolescents with disordered eating to develop acceptance about their weight, appearance and the importance of social comparison. Policy makers must review the portrayal of thin images and its effect of media on adolescents and the media should advocate more positive and self-esteem building messages among adolescents.

**Keywords:** Disordered Eating, Sociocultural Pressure, Public Health Prevention Programs

## Prevalence and risk factors of depression among preclinical medical students in a public university in Malaysia

Maher D Fuad Fuad\*, Lye Munn-Sann\*, Normala Ibrahim\*\*, Siti Irma Fadhillah Ismail\*\*, Phang Cheng Kar\*\*

\*Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, \*\*Department of Psychiatry, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

### ABSTRACT

**Aims:** To determine the prevalence and associated factors of depression among preclinical medical students in Universiti Putra Malaysia.

**Methods and Material:** A cross-sectional study design was used. A questionnaire was distributed to the students which included questions on the demographic factors of the students, the PHQ-9 questionnaire which is used to measure depression scores and the MSSQ-20 questionnaire which was used to determine the risk factors that affect the students. Descriptive statistics was used to determine the prevalence of depression. Logistic regression was used to determine the associated factors.

**Results:** A total of 237 students were recruited in the study. There were 108 (45.6%) from year 1 and 129 (54.4%) from year 2. Females represented 70% of the sample and Malay race made 67% of the sample. Mean age of the respondents was 19.87 years with a standard deviation of 0.88 years ranging between 17 to 22 years. Majority of the sample lived in urban area (75%). Ninety five percent stayed at the hostel. Most of the respondents lived with friends (93%). Eighty three percent had a financial support (either full or partial) and 22 % of them reported that they were in love relationship. Prevalence of depression was 65.2%. Multiple logistic regression shows that academic related stressors was the main risk factor for depression in preclinical medical students of Universiti Putra Malaysia [adjusted OR 2.90, 95% C.I. = (1.95, 4.32), p value < 0.001]

**Conclusions:** Academic related stressors were found to be the main factor of depression in preclinical medical students in Universiti Putra Malaysia.

**Keywords:** Prevalence, Risk factors, Depression, Malaysia, Medical Students, PHQ

## Study on blood pressure (BP) status of Pos Raya primary school children using BP percentiles measured by 'BP calculator for Diagnosis of Hypertension in children and adolescents'

Soe Naung, Abdul Rahman, Peela Jagannadha, Yupa Min, Nelapalli Nagaraja, Murugesan Karthikeyan

Faculty of Medicine, Quest International University Perak, Ipoh, Perak

### ABSTRACT

**Introduction:** Hypertension is a major public health problem with high prevalence among over 18 years of age in Malaysia. Now a day, globally, public health personnel also give attention to hypertension among children who are potential adult hypertensive. The study in Putrajaya secondary school highlighted the hypertension as a problem among adolescents. But no study was found regarding assessing blood pressure status among younger children. The objective of this study is to explore the BP status of the children of primary school in rural ethnic community.

**Methods:** This is a cross-sectional study of school children of the Sekola Pos Raya Primary School. Participants consist of 323 school children aged between 7 and 12 years from the *Orang Asli* ethnic village communities around the school. Data on gender, age, height, systolic and diastolic blood pressure (BP) measurements of children were recorded and fed into the "BP calculator for Diagnosis of Hypertension among Children and Adolescents", to calculate the BP status with their respective percentiles. Classification of BP status is based upon the percentiles. For both systolic and diastolic BP, below 90th percentile is considered as 'Normal BP', from 90th percentile to below 95th percentile is considered as 'pre-hypertension' and 95th percentile and above is considered as 'hypertension'. SPSS version 20 was used to analyse the overall BP status of children

**Results:** Overall BP statuses of primary school children were found to be normal or slightly low in few cases (62.5%), 14.3% as pre-hypertension and 23.2% as hypertension.

**Conclusion:** Although one point of time measurements and cross-sectional study design cannot make generalizable conclusions, it highlights the situation of hypertension among rural children of *Orang Asli* ethnic groups. The results can be used as a reference for future studies on BP status of children in both rural and urban communities of Malaysia.

## Iodine nutritional status amongst school children after 5-Years of universal salt iodisation in Sarawak

Jeffery Stephen, Jambai Endu, Andrew Kiyu, Zulkifli Jantan

Sarawak State Health Department, Kuching, Sarawak

### ABSTRACT

**Introduction:** Iodine deficiency is a public health problem worldwide. Deficiency in iodine causes neurological disorders and physical development and children are susceptible group. Iodine deficiency disorders (IDD) is prevalent in Sarawak. Many intervention programmes have been conducted to eliminate the IDD including universal salt iodisation (USI) programme. The objective of the study is to determine the iodine nutritional status amongst school-aged children in Sarawak after 5-years of USI programme.

**Methods:** Sarawak State IDD Survey Database from 2014 was used and findings from National IDD Survey from 2008, which has been published, as a comparison. Urinary iodine concentration (UIC) was used as impact indicator. Cut-off point for classifying iodine nutrition into different degrees of public health significance and criteria for monitoring progress towards eliminating IDD as a public health problem were based on WHO/ICCIDD/UNICEF (2001).

**Results:** The median UIC in 2014 was sustained optimally at 114.9 µg/L. Overall, the percentages of children with iodine deficiency status significantly lower in 2014 (41.2%) compared to 2008 (49.3%). The median UIC in rural significantly improved from 91.9 µg/L (mild iodine deficiency) in 2008 to 113.6 µg/L (no iodine deficiency) in 2014. The Bumiputera's median UIC also improved from 95 µg/L in 2008 to 123 µg/L in 2014. The prevalence of iodine deficiency was still observed in Miri, Kapit and Limbang divisions. No differences noted in median UIC between children from urban and rural schools in 2014.

**Discussion:** After 5-years of USI implementation, the nutritional iodine status of the school-aged children in the rural areas of Sarawak has improved. Strengthening monitoring and evaluation of the programme should be conducted regularly and public health education on the important of using iodised salt should be continuously carried out.

**Keyword:** iodine deficiency disorders, iodine nutritional status, universal salt iodisation, Sarawak

## Knowledge, Attitude and Practice towards dengue prevention among medical students in Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

Alfa Idris Jay, Ibrahim Faisal, Lekhraj Rampal

Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Selangor

### ABSTRACT

**Introduction:** A 30-fold increase in incidence and increasing geographic expansion to new countries during the last 50 years has wide health security implications worldwide. In Malaysia, by November 2014, there were 91,000 cases and 250 deaths due to dengue. The objective of this study is to determine the knowledge, attitude and practice related to dengue prevention among medical students of Universiti Putra Malaysia (UPM).

**Methods:** A cross-section study was conducted using systematic random sampling technique among UPM medical students. Data was collected using a validated self-administered questionnaire. The respondents' knowledge and practice were assessed using 10-item (Yes/No) scale. The respondents' attitude was assessed using a 10-item Likert scale. Data analysis was done using the SPSS version 22. Chi-square ( $\chi^2$ ) test was used to determine the relationships between categorical variables. Independent t-test was used to compare two mean scores and ANOVA ( $F$ -test) was done to compare the means of  $\geq 2$  groups. The level of significance ( $\alpha$ ) was set at 0.05.

**Results:** The overall mean age of the 309 respondents was 22.2 years (95% CI = 22.04, 22.39) and ranged from 19 to 27 years. Majority (99.4%) had previous information about dengue. Majority of respondents (94.8%) had good knowledge (scores 8 and above) and 5.25% had a satisfactory level of knowledge (scores 5.00-7.99). Majority (68%) had satisfactory attitude and 32.0% had positive attitude. Majority demonstrated satisfactory (56.3%) to good practice (26.5%) related to dengue prevention. There was no statistically significant relationship between knowledge, attitude and practice towards dengue prevention and age, gender or residence; knowledge and attitude; knowledge and practice; and attitude and practice.

**Conclusion:** Level of knowledge of dengue prevention was good among medical students of UPM. The level of attitude and practice of medical students towards the disease were satisfactory to good.

**Keywords:** KAP, Dengue Prevention, Medical Students

## Predictors of dengue-related mortality in Selangor, Malaysia

Ho Bee Kiau\*, Ruziaton Hasim\*\*, Vickneswari Ayadurai\*\*\*, Shreema Rasiah\*\*\*\*, Norliza Ismail\*\*\*\*, Che Azlan Shah Shahari\*\*\*\*\*

\*Bandar Botanic Health Clinic, Klang, Selangor, \*\*Pandamaran Health Clinic, Klang, Selangor, \*\*\*Taman Medan Health Clinic, Petaling, Selangor, \*\*\*\*Vector unit, Selangor Health Department, Selangor, \*\*\*\*\*Klang Health Department, Klang, Selangor

### ABSTRACT

**Introduction:** Dengue infection is the most common and serious arthropod borne viral disease and its clinical course can be unpredictable. The objective of this study was to determine the predictors of dengue-related mortality in a cohort of dengue patients registered in the e-dengue database in Selangor, Malaysia in 2014.

**Methods:** This was a retrospective cohort study on all dengue patients registered in 2014 in e-dengue database in Selangor, Malaysia. Dengue-related mortality was used as an outcome measure. Sociodemographic characteristics and clinical data were described using proportions. Associations between variables and outcome were analysed by using multivariate analysis.

**Results:** In 2014, a total of 54,078 dengue cases were registered into the database with 77 dengue-related mortalities, giving a dengue case fatality rate of 0.14%. The mean age of the dengue patients was 27.9 (standard deviation (SD) 15.1) years, and with more male patients (57.5%). Predictors of dengue-related mortality were older age group, i.e., 60 years and above (adjusted Odds Ratios (aOR) 5.72; 95% CI: 1.63, 20.08), female gender (aOR 2.03; 95% CI: 1.13, 3.67), Indian ethnicity (aOR 2.33; 95% CI: 1.14, 4.79) and symptoms of bleeding (aOR 10.16; 95% CI: 1.33, 77.58) at notification.

**Conclusion:** Dengue infection has a wide spectrum of clinical presentations and its clinical course is usually unpredictable. Hence, identification of those patients at high risk of mortality is very important to ensure appropriate monitoring, supportive treatment and referral to be delivered in the earlier stage of the disease. Predictors of dengue-related mortality were older persons, those of female gender, Indian ethnicity and those with symptoms of bleeding. These high-risk groups should be monitored closely so that early referral for hospitalisation can be made if clinically indicated.

**Keywords:** predictors, dengue, mortality, Selangor, Malaysia

## A meta-analysis on the accuracy of dengue diagnostic tests used for point-of-care testing (POCT) in ASEAN patients

Tin Myo Han\*, Swe Swe Latt\*\*, Iskandar Firzada Osman\*\*\*, Thuraiappah DM\*\*\*\*, Aung Gyi\*\*\*\*\*, Mohd Aznan Md Aris\*\*\*\*\*, Fa'iza Abdullah\*\*\*\*\*, Tin Tin Aye\*\*\*\*\*

\*Medical Statistics Unit, Kulliyah of Dentistry, International Islamic University Malaysia, \*\*Community Medicine Department, Kulliyah of Medicine, International Islamic University Malaysia (IIUM), \*\*\*Klinik Kesihatan Jaya Gading, Kuantan, \*\*\*\*Primary Care Department, Faculty of Medicine, MAHSA University, Kuala Lumpur, \*\*\*\*\*Pathology and Laboratory Medicine Department, Kulliyah of Medicine, International Islamic University Malaysia, \*\*\*\*\*Family Medicine Department, Kulliyah of Medicine, International Islamic University Malaysia, \*\*\*\*\*Department of Community & Family Medicine, Faculty of Medicine and Health, University Malaysia Sabah

### ABSTRACT

**Introduction:** ASEAN countries are included in the 30 most highly dengue endemic countries in the World. Evaluation of the accuracy of dengue diagnostic tests is essential for clinical management, surveillance, control activities and vaccine development. Aim of this study is to review the accuracy of diagnosis tests used for POCT for dengue infection.

**Methods:** The accuracy results of 31 dengue diagnosis tests in 5308 ASEAN patients except Brunei were extracted from 14 articles published between 2007 and 2014. Rapid diagnosis tests (RDT) and WHO-Clinical criteria were considered for POCT. ELISA tests with/without WHO-Clinical criteria were included in meta-analysis. Pooled sensitivity (SN) and specificity (SP) were computed. Egger-bias was analysed for publication bias.

**Results:** Pooled (range) SN of NS1(RDT), IgM/IgG(RDT), NS1+IgM/IgG (RDT) and WHO-Clinical criteria were 65% (44-79), 14% (3-50), 80% (69-86) and 93% (80-97) while SP (range) of those tests were 99% (96-100), 97% (93-99), 96% (84-98) and 34% (20-57) respectively. Pooled (range) of SN and SP of NS1 (ELISA) were 64% (45-82) and 99% (93-100). SN/SP (95% CI) of IgM/IgG (ELISA) were 50% (40-60) / 100% (96-100) and those of NS1+IgM/IgG (ELISA) were 94% (89-97)/92% (81-97) and those of NS1+IgM/IgG (ELISA) with WHO-Clinical criteria were 91% (86-95)/ 94% (84-98) respectively. Egger-bias was significant ( $p < 0.0001$ ).

**Discussion and conclusion:** Both RDT and ELISA tests have high SP to rule in dengue diagnosis. Wide range of SN value (WHO-Clinical Criteria vs IgM/IgG RDT) highlighted to improve SN of the tests for ruling out. Added value of dengue epidemic information in the accuracy of the tests should be verified. A multi-centre study with a standardised protocol should be conducted for diagnostic test accuracy variation for POCT among ASEAN patients.

**Key words:** Meta-analysis, accuracy, dengue diagnostic tests, ASEAN countries, POCT

## Factors of Leptospirosis preventive practices with spatial mapping of Knowledge, Attitude and Practice among residents in Perkampungan Sungai Isap, Kuantan

Edre Mohammad Aidid

### ABSTRACT

**Background:** Leptospirosis is a preventable zoonotic disease of public health importance. Due to seasonal floods affecting Kuantan community, a study was conducted to determine the factors associated with leptospirosis preventive practices with spatial mapping of knowledge, attitude and practice using Geographical Information System (GIS).

**Methodology:** A cross-sectional study was carried out in Perkampungan Sungai Isap, Kuantan, Pahang, which obtained 568 respondents by stratified proportionate random sampling technique. Data was collected using a validated guided questionnaire, comprising of sociodemographic status, knowledge, attitude and preventive practice towards leptospirosis. Geographical coordinates were obtained using Garmin. Data analyses were done using SPSS version 22.0 and ArcGIS version 9.

**Results:** The response rate was 83.4%. The respondent's median age was 29 years old (IQR: 25). The median income for earners was RM1500 per month (IQR: 1500), Majority of the respondents were female (52.6%), Malay (98.8%), attended up to secondary school level (57.2%), worked in a low-risk occupational group (96.0%) and reside in moderate risk stratum (55.6%). The spatial distributions of knowledge, attitude and practice were successfully plotted. Overall, majority (68%) of the respondents had good knowledge. However, only 38% of the respondents had satisfactory attitude and 18% had satisfactory practice. There was significant association between stratum and leptospirosis preventive practices ( $p=0.003$ ), age group and leptospirosis preventive practices ( $p<0.05$ ) and personal income and leptospirosis preventive practices ( $p<0.05$ ). Knowledge significantly associated with attitude towards the disease (Odds Ratio 3.18, 95% CI: 2.11-4.78). Multivariate logistic regression showed the predictors of satisfactory leptospirosis preventive practices were high risk stratum, good knowledge and age group 30 to 39.

**Conclusion:** Leptospirosis can be prevented by having adequate health promotion campaigns as well as controlling external factors such as improving drainage system and access to healthcare facility with the help of GIS.

**Keywords:** Leptospirosis, preventive practices, factors, floods, Kuantan, GIS

## Knowledge, Attitudes and Beliefs towards willingness to register as Organ Donor among Management and Science University (MSU) Medical Students

Kamarul Huda Kamaruddin\*, Normawati Ahmad\*\*, Hanis Mastura Yahya\*\*\*

\*Gombak Health District Office, Bandar Baru Selayang, Selangor, \*\*Institute for Health Behavioural Research, Ministry of Health, Kuala Lumpur, \*\*\*Universiti Kebangsaan Malaysia, Kuala Lumpur

### ABSTRACT

**Introduction:** Organ transplantation is a firmly established in medicine as a procedure that can saves or prolongs the lives of people with organ failure. Healthcare providers play a critical role in educating and motivating the public to pledge their organs for donation. The aim of this study was to evaluate the level of knowledge, attitudes and beliefs of MSU medical students towards their willingness to register as organ donor.

**Methodology:** A cross-sectional study was conducted involving 40 medical students from MSU. Self-administered questionnaires were employed to collect demographic characteristics, basic knowledge, attitudes and beliefs about organ donation from subjects. Data were analysed using SPSS Windows version 21.0.

**Results:** Overall, respondents were knowledgeable about organ donation, but only a small proportion (15.0%) had signed the organ donation card. Both attitudes ( $p<0.05$ ) and beliefs ( $p<0.05$ ) were positively associated with willingness. However, there was no statistically significant difference between knowledge and willingness to register as organ donor. Only 58.8% per cent were willing to donate their organs in the future. Other respondents identified several reasons, which may influence their decisions to donate organs.

**Discussion:** The medical curriculum should highlight the organ shortage problem. The donor registration system should be made more convenient and public education is recommended to correct misconceptions.

**Keywords:** organ donation, medicine, students, knowledge, attitudes, beliefs

## Rural Orang Asli in Pahang: A step forward for maternal health betterment

Nik Nur Eliza M\*, M Idris O\*, Noriah B\*, N Izzah S\*, Nursyahda M\*, Rahimi H\*\*, Asiah L\*\*

\*Institute for Health Management, Kuala Lumpur, \*\*Kuala Lipis District Health Office, Pahang

### ABSTRACT

**Introduction:** Knowledge and practice of maternal health-seeking behaviour play an important role in the marginalised *Orang Asli* (OA) female population. Among the OA women in Negeri Sembilan (2009), the maternal mortality rate was 35.7/100,000 live births, 30% higher than the national rate. The objective of this study is to determine the knowledge and practice of maternal health-seeking behaviour among the Pahang rural OA women.

**Methodology:** 250 OA women (reproductive age group 15-49) from rural settlements in Pahang (Pos Sinderut and Pos Lenjang) were interviewed in this cross-sectional study using validated questionnaire. Rural settlement categorisation was based on the Jabatan Kemajuan Orang Asli guidelines.

**Results:** 68.8% of the respondents were knowledgeable about first antenatal check-up and were aware about the first trimester antenatal booking. 59.3% of rural respondents knew appropriate antenatal check-up frequency. 33.6% of respondents were not aware of any pregnancy-related diseases. Unsafe delivery rate was 23.4%. 81.7% of the respondents had knowledge on protein-based food like meat/chicken. However, the actual daily practice of taking meat/chicken was lower (35.7%). Only a mere 4% of the respondents consumed seafood regularly.

**Conclusion:** The pregnancy-related diseases awareness was poor. Expectant mothers should be educated on pregnancy-related diseases during the maternal health education sessions. Unsafe delivery rate was high. However, the causes of unsafe delivery practice were multi-factorial. Poverty contributes to lower iron-rich food consumption i.e. red meat and seafood as these items are costly in the interior/remote setting. Phase 1 study findings lead to the OA female volunteer program intervention in the phase 2. OA female volunteers' involvement may help to create awareness on the importance of safe delivery, balanced diet and antenatal/postnatal care for the expectant mothers. This could be an effective way in introducing and enhancing long-term, sustainable community empowerment among the OA community.

**Keywords:** Maternal health, community empowerment, *Orang Asli* (native tribe)

## Tribal dialects in Orang Asli maternal health promotion - An innovative transformation

Eliza M\*, M Idris O\*, Noriah B\*, N Izzah S\*, Nursyahda M\*, Rahimi H\*\*, Asiah L\*\*, Asmah N\*\*\*, Hakimin MK\*\*\*, Asyraf A\*\*\*

\*Institute for Health Management, Kuala Lumpur, \*\*Kuala Lipis District Health Office, Pahang, \*\*\*Hulu Perak District Health Office, Perak

### ABSTRACT

**Introduction:** *Orang Asli* (OA) maternal mortality is a major health issues. According to the Confidential Enquiry of Maternal Death 2006-2008, the OA maternal mortality rate was 85.21/100,000 live births, which was approximately three times higher than the general population. Maternal education is crucial in ensuring expectant mothers receive appropriate advices during/post-pregnancy period. Findings from the phase 1 study showed that the unsafe delivery rate was high (17.2%). The level of knowledge on pregnancy-related diseases among the OA community is poor. To tackle these issues, we recruited local OA female volunteers as our liaison officers and utilised the special health education tools in our intervention program.

**Methodology:** The interventions were developed based on the findings from the phase 1 study. Due to the high illiteracy rate among the female OA in Kuala Lipis district, we used the specially developed health education video using the Temiar dialect. The video was narrated by the local OA health personnel and was used as a health education tool for pregnant mothers. In addition, OA user-friendly health education leaflets on the subjects of anaemia, diabetes and hypertension in pregnancy were translated into local OA dialects (Temiar, Semai and Temuan). The suitable leaflets will be distributed to the OA respondents based on the local dialects used at each relevant OA settlement study site. For both Hulu Perak and Kuala Lipis OA communities, we trained local OA female volunteers as the liaison officers in educating the local OA females on safe delivery, balanced diet and antenatal/postnatal care. The liaison officers were among those with experience in maternal health and influential individuals within the OA community.

**Conclusion:** Evaluation on the intervention will be done six-months post-intervention. Ideally, the interventions for the study should be evaluated at least 1-year post intervention to determine the efficacy of the intervention program.

**Keywords:** *Orang Asli* (native tribe), health innovation, local dialects

## “Why are we here?” The reasons of healthcare professionals from Peninsular Malaysia to serve in Sabah and Sarawak: Qualitative study

Pangie B, Noriah B, N Izzah S,

Institute for Health Management, Kuala Lumpur

### ABSTRACT

**Introduction:** In Malaysia, maldistribution of health workers especially healthcare professionals (HCPs) is an on-going problem. Due to huge land size and vastly scattered population, maldistribution of health workers is more prevalent in Sabah and Sarawak (S&S). The shortage of HCP in Sabah and Sarawak influences the medical services to the S&S population. However, there are still HCPs from Peninsular Malaysia (PM) who are dedicated to continue serving in S&S. Thus, this study was conducted to determine the pull factors that influence HCP from PM to continue their services in S&S.

**Methodology:** Purposive sampling was employed to recruit HCP from PM who is serving in S&S for this focus group discussion (FGD). They were four sessions of FGD conducted in S&S consisted of 13 doctors, seven dentists and five pharmacists from different grades, workplaces and backgrounds until data saturation was achieved. The FGDs were conducted using semi-structured guide. They were recorded, transcribed as verbatim and analysed using thematic approach.

**Results:** The pull factors were divided into themes of personal reasons, community related reasons, family-/friends-related reasons, environment or living related reasons, working condition and career related reasons. For personal reasons: they were married to locals and passionate with their work regardless of the workplace. They preferred to stay if their family, spouse and friends were working in same area and city. The unique nature in S&S also attracts them to stay longer. Based on working condition, the support from superiors, colleagues and supportive staffs were good. They gained more working experience and had better chances for their promotion and career development.

**Conclusion:** The understanding of these pull factors is crucial for stakeholders in decision making for placement of HCPs from PM. These factors can be utilised to promote S&S as an attractive place to work and further assist the plan for retention.

**Keywords:** Healthcare Professionals, Pull Factors, Service in Sabah and Sarawak, Peninsular Malaysia

## Study on multidose vaccine wastage in School Health Services in Malaysia

Tan PS, S Abdul Shukor Mohd Shahrirel, Saidatul Norbaya B, Noorhaire N

Family Health Development Division, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** The study on multidose vaccine wastage by the School Health Services was conducted to describe the wastage of multidose vaccine in Malaysia and to determine the percentage of vaccines wastage by the School Health Team.

**Methods:** The study was divided into two parts. The first part was to describe the overall wastage in Malaysia was conducted from January 2013 to December 2014. The second part was to determine the vaccine wastage in particular districts was conducted from August to September 2012 and May 2013. The study area was conducted in the School Health Sector using National Informatic Centre database and in Putrajaya, Puchong and Pokok Sena district health office. Two primary schools and one secondary school that provided Diphtheria and Tetanus (DT), Oral Polio, Measles and Anti Tetanus Toxoid (ATT) immunisations were selected from the districts.

**Results:** Observations of the work process of immunisation were done on 50 primary schools and 32 secondary school students. Overall acceptable vaccine wastage for Polio, DT, Measles and ATT were 11.9%, 9.5%, 17.5% and 10.2% respectively in 2013 for Malaysia. Results from the selected districts found that acceptable vaccine wastage for Polio, DT, Measles and ATT ranged between 24-40%, 10%, 24-40% and 17.5% respectively for 2012 and 2013.

**Conclusion:** Findings from the above study showed various percentage of vaccine wastage as compared to the World Health Organization recommendation which was 25%.

## Electromagnetic radiation from TELCO towers: Is it an emerging health risk?

Adlina Suleiman\*, Thor TG\*\*, Lugova H\*, Aqil MD\*,  
Mohammad Wisman AH\*, Mala M\*, Azimah A\*

\*National Defence University Malaysia, \*\*Klinik Public, Penang

### ABSTRACT

**Introduction:** Does electromagnetic field radiation (EMR) from telecommunication (TELCO) towers pose a health threat to people living within its vicinity? This question has emerged among residents exposed to EMR from TELCO towers erected in housing areas, school compounds, rooftops of multi-storey buildings and mosques. On 31<sup>st</sup> May 2011, the International Agency for Research on Cancer designated cell phones as "possible human carcinogen" [Class 2B] which was revised to Class 1 on October 16 2013.

**Methodology:** This paper summarises published and unpublished studies regarding EMR effects on non-specific health symptoms (NSHS) that was conducted using multistage sampling at Petaling Jaya, Taiping, Penang and Johor Bahru since 2008 by the authors, beginning as epidemiological studies using questionnaires progressing to complex blood studies.

**Results:** NSHS increased disproportionately to the distance for headaches, difficulty concentrating, feeling discomfort, depressive tendency, sleeping disorder, loss of appetite and nausea. The odds ratio (OR) for the development of the NSHS scored > 1 for all the 14 symptoms for residents exposed to EMR: reduced reaction time (OR 16.57), diarrhoea (OR 7.95), mental slowness (OR 5.46), vomiting (OR 5.35 corrected), mood swing (OR 3.3), insomnia (OR 3.22), giddiness (OR 3.07), loss of memory (OR 2.92), depression (OR 2.61), headache (OR 2.58), palpitation (OR 2.4), feverish (OR 2.37), fatigue (OR 2.31) and somnolence (OR 1.17). Odds ratio for exposed to non-exposed for levels of erythrocyte sedimentation rate (ESR) above 20mm/hr is 3.094.

**Conclusion:** The intention of this paper is to create awareness on the possible health effects of EMR and to suggest a change in policy that would convince operators to reduce transmitted power from 20W/carrier to max. 1 -2 W in dense urban area or to observe a minimal distance of people from cellular phone base stations that is 300 m.

## Knowledge and Attitude on noise induced hearing loss among workers of an automotive company in Selangor, 2015

Mohammad Farhan Rusli

### ABSTRACT

**Introduction:** Excessive exposure to noise can cause a serious irreversible disease known as noise induced hearing loss (NIHL). In all workplaces there is always risk of exposure to occupational noise but some industries are more susceptible to a higher exposure of workplace noise in comparison to others. The objective of this study is to determine the knowledge, attitude on NIHL among automotive workers in the operational divisions of an automotive company in Selangor.

**Methodology:** A cross-sectional study was conducted between January and May 2015. 457 respondents were selected based on simple random sampling method. A validated and reliable self-administered questionnaire was used for data collection. Dependent variables were knowledge and attitude on NIHL and independent variables were age, gender, ethnicity, level of education, perceived noise exposure, years of service and training on safety. Data was analysed using SPSS Version 22.

**Results:** The response rate was 83.1%. Median age was 40 years old (IQR ±25.75; 31.47). Majority (98.2%) were Malays, 89.9% had secondary education, 71.8% worked more than 11 years and 67.2% had training on safety. The predictors for satisfactory knowledge on noise induced hearing loss were perceived noise exposure as harmful noise, years in service for more than 10 years (adjusted Odds Ratios (aOR) 2.787, 95% CI: 1.708-4.550) and had received training on safety (aOR 1.938, 95% CI: 1.119-3.355). For satisfactory attitude the predictors were perceived noise exposure as harmful noise (aOR 3.793, 95% CI: 2.358-6.101), years in service for more than 10 years (aOR 0.550, 95% CI: 0.367-0.823) and tertiary level education (aOR 3.605, 95% CI: 1.666-7.802).

**Conclusion:** Applying appropriate measures and identifying workers who are at risk of developing noise induced hearing loss in this automotive company.

## **An ethnographic mapping of alcohol accessibility in different ethnic communities residing in urban and semi-urban areas within Klang Valley, Malaysia**

Sangeeta Kaur Singh, Alexander Tan Zhi Sheng, Liew Min, Lee Jia Mei, Anne Jamaludin

Perdana University-Royal College of Surgeons in Ireland School of Medicine

### **ABSTRACT**

**Introduction:** Evidence indicates affordability and availability of alcohol play a central role in shaping levels of consumption; locally, there is limited information on alcohol consumption-we only know that risky alcohol consumption patterns are evident-thus is there a problem? The objective of the study is to carry out ethnography mapping that map out geographical relationships of alcohol accessibility within community settings.

**Method:** An ethnography mapping activity was conducted over 4 months in urban and semi-urban areas within Klang Valley Malaysia from 2013-2014 to assess availability and frequency in which alcohol is consumed. Setapak (Malay), Cheras (Malay, Chinese), Petaling Jaya (Chinese), Batu (Indian), and Ampang (Indian) sites were chosen as they represent the highest density of the three different ethnicities.

**Results:** 171 service providers and outlets that sold alcohol at their premises was mapped out at respective metropolitan areas in the five sites (within 500m radius). More alcohol service providers were noted in Chinese populated area (9-109), compared to Indians (6-20) and Malays (0-42). Average operating hours is within 15 hours a day. Chinese consumers were mostly consuming alcohol in stalls and restaurants, while Indians were noted gulping down alcohol in bottles directly after purchase, while Malay drinkers were observed purchasing drinks that are consumed at the back of the shops/home to avoid being sighted.

**Conclusion:** Findings from this study concluded that the stigma and discrimination associated towards alcohol consumption within community settings, promotes risky drinking patterns (e.g., binge drinking, drink driving) – which is evident amongst the Indians and Muslims. Evidence indicates that 8 or more alcohol outlets within 1 km radius increased the rate of diseases and harmful behaviours. Thus, the mapping exercise from this study has certainly revealed the need for policy and service provider's guidelines to ensure that a harm minimisation approach is adapted on managing alcohol accessibility within local context.

## **Sampling Design of NHMS 2015**

Fadhli Y\*, Norazizah IW\*, Balkish MN\*, Riyanti S\*\*, Yusmizan H\*\*, Tahir Aris\*

\*Institute for Public Health, Ministry of Health Malaysia, \*\*Department of Statistics Malaysia

### **ABSTRACT**

**Introduction:** The National Health and Morbidity Survey 2015 (NHMS 2015) was a nationally representative household survey of non-institutionalised Malaysian population who were residing in Malaysia for at least 2 weeks prior to data collection.

**Objective:** The aim of the survey was to provide health related community-based data to support Ministry of Health, Malaysia in reviewing health priorities, programme strategies and activities, and planning for allocation of resources.

**Methods:** There were sixteen research scopes included in the survey. The sample size was calculated based on the requirement for each scope. A multi-stage stratified sampling was adopted in the survey. The stratification was by states and urban/rural localities. The Primary Sampling Unit (PSU) is Enumeration Block (EBs) based on the information from 2010 Census. A total of 869 EBs were selected from the total EBs in Malaysia, where 535 and 334 EBs were selected from urban and rural areas respectively. The Secondary Sampling Unit (SSU) is Living Quarters (LQs) within the selected EBs. Twelve LQs were randomly selected from each selected EBs. All households within the selected LQs were included in the study. All eligible members in the households were also included in the study.

**Conclusion:** Implementation of a nation-wide survey using a robust method ensures reliable findings for policy makers.

**Keywords:** National Health and Morbidity Survey, NHMS, population based survey, survey methodology, sampling method

## Is psychological resilience associated with pain catastrophizing in male Malaysian Army recruits? A Longitudinal Study

Mohd Din FH\*, \*\*, Sanjay Rampal \*\*\*, Muslan MA\*, Hoe Victor CW\*\*

\*Malaysian Armed Forces Health Services, Malaysian Armed Forces, \*\*Centre for Occupational and Environmental Health-UM, Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, \*\*\*Julius Centre University of Malaya, Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur

### ABSTRACT

**Introduction:** Training-related injuries are important public health problem. Psychological resilience and pain catastrophizing are possible factors in injury causality mechanism; however, their relationship is poorly understood. This study examines the association between psychological resilience and pain catastrophizing before and during training in Malaysian Army male recruits undergoing basic military training.

**Methods:** A sample of 611 Malaysian Army male recruits was followed up for six months. They completed Resilience Scale (RS) and Pain Catastrophizing Scale (PCS) instruments at baseline, 3-month and 6-month. Multivariable linear regression models were used to assess RS and PCS association at baseline, while population average fixed effect regression models were used to assess the longitudinal association.

**Results:** Psychological resilience was negatively associated with pain catastrophizing before training starts (adjusted  $\beta = -0.10$ ; 95% Confidence Interval [CI]: -0.18, -0.02). During training, each one standard deviation increased of RS scores was longitudinally associated with lower PCS scores (adjusted  $\beta = -0.16$ ; 95% CI: -0.29, -0.03). However, training time did not modify the association ( $p = 0.36$ ), and pain catastrophizing during training was not longitudinally associated with psychological resilience ( $p = 0.71$ ).

**Conclusions:** These findings gives further evidence of the relationship between psychological resilience and pain catastrophizing in military recruits undergoing training, and highlight the importance of improving individuals' coping ability against training stresses in reducing excessive preception on painful experiences.

**Keywords:** psychological resilience, pain catastrophizing, military, longitudinal study

## Nutritional status of Pos Raya Orang Asli primary school children by percentiles of height, weight and BMI compared to WHO standards

Kelvin Su Sieng Bing, Chung Ming Hong, Jonathan Chin Ching Ming, Soe Naung, Abdul Rahman, Peela Jagannadha, Yupa Min, Nelapalli Nagaraja, Murugesan Karthikeyan, Siti Hajar Mohamad Tahir

Faculty of Medicine, Qest International University Perak, Ipoh, Perak Darul Ridzuan, Malaysia

### ABSTRACT

**Introduction:** Malnutrition is global health problem and prevalence of overweight and obesity become a public a disease burden especially for high and middle-income countries. In Malaysia, overweight and obesity prevalence is high and trend is increasing in nature. It is common for both over 18 years of age and below 18 year of age children and adolescents. But, the rural children especially of ethnic minority groups may have different patterns.

**Methods:** A cross-sectional study was conducted to determine the nutritional status of primary school children of Pos Raya Orang Asli community. Data collection was done by recording age and measuring anthropometric measurements namely, height (in centimetres), and weight (in kilograms) of each child and entered into the WHO Anthro Plus format of 'Nutritional Survey' and nutritional status of individual along with percentile curves (weight-for-age, height-for-age and BMI-for age) were obtained. After data on whole class of children were entered, the curves for weight-for-age, height-for-age and BMI-for-age representing the class along with the WHO standard curve were obtained.

**Results:** Over 10 years of age (class five and six) weight-for-age curve is not available. In all classes, all nutritional status curves of children were shifted to the left compared to WHO standard curves. Marked under nutrition is observed especially in height-for-age curve showing stunted growth. Regarding BMI-for-age, the curves are as near as WHO standard curves. Weight-for-age curves also show marked under-nutrition.

**Conclusion:** It will be concluded that nutritional status of Orang Asli children of Pos Raya Primary School showed under-nutrition when compared to WHO standard. For individuals, majority falls under yellow and red zones of under-nutrition in all classes (except class 5 and 6 where no calculation is available for weight-for-age) regarding weight-for-age and height-for-age. For BMI-for-age, majority are in green zone and some under-nutrition and few children with over-nutrition.

## Factors associated with beri-beri outbreak among inmates in LG detention camp, Negeri Sembilan, Malaysia, 2014

Noor Aizam Mohd Said, Hazlina Y, Mohd Paid Y, Bina Rai S

Malaysia EIP, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** A beri-beri outbreak occurred in the LG Detention Camp, Negeri Sembilan in March 2014. The purpose of this study was to determine the factors influencing thiamine deficiency among the inmates, identify risk factors and prevent future outbreak.

**Methods:** A case was defined as inmates with at least one of the following symptoms: leg swelling, difficulty breathing, fatigue, poor appetite, vomiting, abdominal discomfort or paraesthesia. Face to face interviews were conducted using a standard questionnaire, followed by physical examination. We observed the process of food preparation and serving and reviewed menu to calculate the total calorie and thiamine content. The associated risk factors were determined by a case-control study.

**Results:** Of 1001 inmates, 19 (1.9%) cases identified. All were male and the median age was 29 years. The median duration of stay in the camp was 157 days. All cases had bilateral leg oedema with symptoms of paraesthesia (52.6%), fatigue (36.8%), difficulty breathing (36.8%), poor appetite (21.1%), and abdominal pain (33.3%). The only risk factor with beri-beri was alcohol intake ( $p=0.04$ ). The mean calorie intake 1661kcal. The calorie and thiamine content in food was insufficient for the age group. Age, nationality, duration of stay in the camp, and body mass index were not significantly factors for beri-beri.

**Conclusion:** This beri-beri outbreak is likely due to diet low in Thiamine. The only associated risk factor is alcohol intake. Thiamine supplementation was given to cases and rest given Vitamin B Complex. Diet modification according to Recommended Nutrient Intake, Malaysia was initiated. No more cases detected on our regular monthly follow-up.

**Keywords:** inmates, Beri-beri, thiamine deficiency

## *Plectocomiopsis Mira* poisoning outbreak among barge workers at Nanga Gaat, Kapit, 2015

Winnie Johnny, Hasrina Hassan, Philip Ngalambong, Johan Sidu

Kapit Divisional Health Office, Kapit, Sarawak

### ABSTRACT

**Introduction:** A food poisoning outbreak was reported on 24 March 2015 by Kapit Hospital involving 3 barge workers at Nanga Gaat Kapit. One death was reported. The cases were reported as suspected *Umbut Matar* poisoning. *Umbut matar* or *Plectocomiopsis mira* contains *alkaloid*, which affects human nervous system causing incoordination, fits, abdominal pain, vomiting and death. It has similar physical appearance with *Umbut laleh*, an edible local delicacy. Investigation was carried out to identify causes and recommend preventive measures.

**Methods:** Cases were interviewed for their symptoms and their one-day food history. Epidemiological investigation was carried out to determine incubation period and attack rate.

**Results:** The most common clinical symptoms were arthralgia (100%,  $n=3$ ), followed by chest pain (33.3%,  $n=1$ ), unsteadiness (33.3%,  $n=1$ ) and vomiting (33.3%,  $n=1$ ). The incubation periods of the cases were 15-60 minutes. *Umbut Matar* had the highest attack rate (100%).

**Conclusion:** Consumption of *Umbut Matar* has been found to cause death. Based on the symptoms, short incubation period plus previous occurrence of *Umbut matar* outbreak poisoning with similar presentations in Kapit (2013) suggest that *Umbut matar* is the most likely cause of this food poisoning. Recommendations are made to create awareness to public to differentiate *Umbut Matar* from other types of edible *Umbut*.

## An outbreak of post arthroscopic melioidosis knee abscess in private hospital – Selangor, Malaysia 2012

Harishah T\*, Rosemawati A\*\*, Fadzilah K\*\*, Rohani I\*\*\*

\*Selangor State Health Department, Malaysia, \*\*Epidemic Intelligence Program, Ministry of Health Malaysia, \*\*\*Kuala Lumpur Federal Territory Health Department, Malaysia

### ABSTRACT

**Introduction:** Melioidosis is an infectious disease caused by gram-negative bacterium *Burkholderia pseudomallei* (Bp). It is a free living saprophyte in the soil and can directly enter into the bloodstream via minor wounds or skin abrasions. On 13th July HL District Health Office received notification from 'A' Hospital regarding three cases of melioidosis among persons who had undergone similar arthroscopic procedures. The aim of this study was to describe the outbreak epidemiologically and recommend future preventive measures.

**Methods:** Case control study was performed to determine the risk factors for post arthroscopic melioidosis knee abscess. Face to face interview using standard format questionnaire was carried out among all patients who underwent knee arthroscopic operations since June 2012 in Hospital "A". Cases were defined as patients who underwent an arthroscopy operation from Hospital 'A' since June 2012 and develops post-operative complication that tested positive for Bp. Odds ratio (OR) was calculated with 95% confident interval (95% CI).

**Results:** Out of 34 exposed patients, 22 were confirmed (64.5%) with one death (CFR 4.5%). Majority were male (68%), Malays (91%) and mean incubation period was three (SD2.5) days. Higher incidence rate was seen among teenager (54%) and above 50 years old (50%). There was no risk associated with concurrent infection. Risk assessment showed substandard method of sterilisation performed by the nurses and the instrument was used repeatedly for difference patients without time lag. Environmental sampling was negative for Bp but instrument's swab were positive for Bp. Genetic study of Bp showed 100% similarity between cases.

**Conclusion:** Post arthroscopic melioidosis knee abscess is associated with substandard method of sterilisation technique and sharing of contaminated instrument during operation. Training on proper practice of equipment's decontamination was conducted. Following this incident supervisors are closely monitoring their staff to prevent similar problem in the future.

**Keywords:** Melioidosis, arthroscopy, sterilisation

## Evaluation of tuberculosis surveillance and action performance in Sarikei, Sarawak

Hasrina H\*, Kiyu A\*\*

\*Sarikei Divisional Health Office, Sarawak, Malaysia, \*\*Sarawak State Health Department, Malaysia

### ABSTRACT

**Introduction:** Monitoring and evaluation of the tuberculosis (TB) surveillance system are necessary to ensure effective and efficient prevention of tuberculosis. In view of the increasing trend of TB cases and deaths in Sarikei, we evaluated the TB surveillance system and action performance.

**Methods:** A cross-sectional study was carried out to identify all TB cases in 2011 in hospitals, clinics, and laboratories in Sarikei that tested or diagnosed TB. Eighteen of 74 (24%) notification forms were randomly selected and examined for data quality and timeliness. Eighteen key informants completed a questionnaire assessing the attributes of the notification system. Health inspector and laboratory records were examined for performance in detection and confirmation.

**Results:** All TB cases (N=124) were reported and 88.7% (110 cases) were notified within seven days upon diagnosis. Data quality was poor where only 66.7% (12 notification forms) were complete. All (N=18) key informants reported it as simple and 83.3% (N=15) were satisfied with the system. Only 2.4% (79 of 3343) of sputum samples screened were detected positive for TB. Case to contact ratio was on average 1:5. Screening of contacts detected only 0.3% (2 of 769) positive for TB. At the divisional level, data was minimally used for planning prevention and control of tuberculosis.

**Conclusion:** Notification and its timeliness were good. Nevertheless, data quality needs to be improved for it to be useful for case investigation and screening of contacts. New strategies are needed to improve the yield from sputum screening and screening of contacts. Data collected need to be analysed for strategic planning of tuberculosis management. This can enhance the effectiveness of tuberculosis prevention and control measures in Sarikei.

**Keywords:** tuberculosis, surveillance system, action performance, Malaysia

## Food poisoning outbreak in an integrated boarding school Jasin, Malaysia, 2014

Noor Aizam Mohd Said, Noorhaida U, Intan Azura MD, Rosmawati A, Bina Rai S

Malaysia EIP, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** Food poisoning occurs frequently in school. School children are a vulnerable group and outbreaks impact health and affect school performances. On 9th September 2014, Jasin Health Office was notified of students presenting with food poisoning. After verification by Rapid Assessment Team, a study was performed to describe the outbreak, identify risk factors, and implement control measures.

**Methods:** Case control study design was used. Cases were defined as staff or student presenting with either abdominal pain, nausea, vomiting or diarrhoea from 6th to 8th September 2014. Active case detection was conducted. Students were interviewed, stool from patients and food handlers were analysed. Environmental investigations included premise rating and surface sampling of used utensils. Hazard analysis of food preparation and sanitation inspection and multiple logistic regressions was used to identify the food implicated.

**Results:** Forty-five cases were identified with an attack rate of 7.9%. Cases were mostly female (51.1%). Main symptoms are abdominal pain (88.9%), nausea (75.6%) vomiting (68.9%) and diarrhoea (55.6%), and premises rating (79.3%). Hazard analysis showed inadequate defrosting of chicken, long holding time and insufficient cooking time. The exposure was most likely food consumed on evening of 5th September 2014. Implicated food chicken soup with rice. Multivariate logistic regression identified that chicken soup (OR=4.5, 95% CI: 1.6-12.4) was the likely food that caused the outbreak. Coliforms were detected in the chilly mixer and hands of food handler.

**Conclusion:** The food poisoning outbreak was most likely due to chicken soup with rice. Cross contamination is likely due to unsanitary food handling and poor personnel hygiene. Action taken included closure of premises and health education to food handlers. Practice concepts of 'see, smell and taste' may help prevent future outbreak and this is being strengthened.

**Keywords:** food poisoning, boarding school

## An outbreak of Escherichia Coli at a boarding school in Samarahan, Sarawak during February 2013

Julaidah S, Natazcza AR, Sfariyad S

Samarahan District Health Office, Sarawak, Malaysia

### ABSTRACT

**Introduction:** Samarahan District Health Office was notified of a food poisoning outbreak at a boarding school at 12.30pm on 7 February 2013. After verification, an outbreak investigation was carried out to determine the causative agents and the contributing factors so that appropriate control and preventive measures can be implemented.

**Methods:** A case control study was done and odds ratio (OR) calculated. A case was defined as a person presenting with symptoms of either diarrhoea, abdominal pain, vomiting, or nausea. Cases and controls were interviewed using the standard form (FWBD/KRM/BG/001). Environmental samples taken included tap water, swabs from food handlers and kitchen utensils. The premise was inspected for adequate food storage facilities, appropriate food preparation areas, and sanitation practices.

**Results:** There were total of 30 cases (attack rate 5.8%) and a majority presented with abdominal pain, headache and diarrhoea. The epidemic curve suggested a common source of infection and the most probable incriminating food was consumed during dinner on 6 February, 2013. Statistical analysis showed that honey dew (OR 34.45, 95%CI 12.86 - 92.32) and chicken "rendang" (OR 7.79, 95%CI 2.95 - 20.63) were the most probable cause of infection. The pipeline to the kitchen was placed in the drain. The water outlet in the kitchen had zero residual chlorine and was positive for Escherichia coli and coliforms. There was no clinical sample tested from the cases as symptoms had subsided during the investigation.

**Conclusion:** The factors that cause this food poisoning outbreak were water contamination aggravated by improper food preparation and long holding times. Close monitoring by school authority and adherence to food safety are important to prevent similar outbreak in the future.

**Keywords:** Outbreak, Escherichia Coli, case control study

## An outbreak of Escherichia Coli food poisoning at Teluk Keke, Malaysia 2012

Liza A Latip\*, Balkis AK \*\*, Mohd J\*\*\*, Anwa A\*\*\*

\* Hulu Terengganu District Health Office, Terengganu, Malaysia, \*\* Kuala Terengganu District Health Office, Terengganu, Malaysia, \*\*\* Terengganu State Health Department, Malaysia

### ABSTRACT

**Introduction:** E. coli is a significant cause of bacterial diarrhoeal illness worldwide and transmitted by food or water contaminated with animal or human faeces. On October 14th, 2012, twenty participants of Athlete Retreat in Perhentian Island presented with vomiting, diarrhoea, abdominal pain, nausea and fever. An investigation commenced immediately to determine the causal agent, mode of transmission and risk factors as well as to recommend control and prevention measures to avoid subsequent similar outbreak.

**Methods:** A case was defined as any athlete with vomiting, diarrhoea, abdominal pain, nausea and fever started on October 12th, 2012. A structured questionnaire was used to carry out face-to-face interview. A case-control study was carried out. Three days food history was obtained from cases and controls. Hazard analysis and critical control points (HACCP) was done. Samples from environment and water supply were taken for laboratory testing to identify causal agent. Data analysis was done using SPSS version 15.

**Results:** Twenty cases and 60 controls were interviewed. Six out of 9 food items consumed during dinner on October 13th showed significant risk. The highest risk was shrimp curry (Odds Ratio 16.6; 95% CI: 2.1-132.3). Source of water showed contaminated by coliform >181cfu/100ml. HACCP also indicated a problem with the water source. Septic tanks were located approximately 10 meters higher than water source.

**Conclusion:** This food poisoning outbreak is probably due to the enterotoxigenic E. coli (ETEC) caused by ingestion of the contaminated untreated water. Immediate action measures taken included chlorinating the water source (a well). This well is to be chlorinated 3 monthly until the premise has been supplied with treated water. In the meantime, the visitors were advised to drink only boiled or bottled water.

**Keywords:** disease outbreak, well water, E.coli

## An outbreak of food poisoning among school hostel students in Penang - Malaysia, 2013

Sunita AR\*, Rafidah MN\*\*, Saraswathy BR\*\*\*, Fadzilah K\*\*\*\*

\*Penang Port Health Office, Penang State Health Department, \*\*Seberang Perai Tengah District Health Office, Penang, \*\*\*Penang State Health Department, Penang, \*\*\*\*Epidemic Intelligence Program, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** Food poisoning in school is a common occurrence in Malaysia. In Penang State, 50%-80% of food poisoning occurs in schools hostel. On 22nd January 2013, district health authority received notification from hospital on fourteen students presenting with diarrhoea and vomiting. All were treated as outpatient. The response teams were immediately mobilised to verify the outbreak, identify the source and implement control measures

**Methods:** Case definition of diarrhoea, vomiting with/out headache was used in active case finding. Retrospective cohort study was conducted to identify risk factors. Students were interviewed using standard questionnaire. Stools and rectal swabs taken from cases and food caterers were sent to laboratory for identification of causative agent. Food caterers were checked for vaccination status. Food caterer's house, food handlers' hygiene, storage and preparation observed and inspected. Swabs were taken from kitchen utensils. Data was analysed using statistical software to measure the risk of food consumption.

**Results:** Attack rate was 33.3% (33/99) and majority of cases was girls. Mean age of cases was 13 years old (SD 2.47). The main symptoms were diarrhoea (100%) and vomiting (82%). Stool sample of one food caterer was positive for *Salmonella Typhi* 33% (1/3). He was not immunised against typhoid. The food was prepared in food caterers' house and hygiene was inappropriate. Cooking utensil swab was negative. We found that consumption of fish curry served at lunch had higher risk of food poisoning (Relative risk 2.58; 95% CI: 1.00-6.68).

**Conclusion:** This food poisoning outbreak among school hostel students was associated with consumption of contaminated fish curry. Food handler was referred for treatment and the school authority ordered to have proper kitchen to ensure food safety and quality.

**Keywords:** Food poisoning in school, food handler, Penang, Malaysia

## **Falciparum malaria outbreak in low transmission area at Penampang Sabah, Malaysia 2012**

Saffree JM\*, Omar M\*\*

\*Penampang District Health Office, Sabah, \*\*Disease Control Division, Ministry of Health Malaysia

### **ABSTRACT**

**Introduction:** Malaria incidence in Penampang is 0.05 per 1000 population and is lowest among districts in Sabah. On June 26th 2012, the primary health clinic was notified of two malaria cases from village K. The aim of this study was to identify the risk factor associated with the outbreak and to institute control measures.

**Methods:** We visited all 79 houses in the village to search for cases. A case control study with a ratio of 1:4 was conducted. Participants were interviewed using self-administered questionnaire. Cases were defined as any person in K village with malaria parasites present in blood smear with or without malaria symptoms whereas control is negative results. The microscopic examination and entomology sampling was carried out by trained technicians.

**Results:** Eleven of 470 persons met the case definition. Nine cases were detected from active case finding and one died due to cerebral malaria. The incidence was higher among 11-20 years old, males, and rubber tappers. The outbreak started on 28 May 2012 and peaked a month later. Odds of cases who live nearby stagnant water is 7.3 times (Odds Ratio 7.3, 95% CI: 1.2-43.5). All cases were positive for Plasmodium Falciparum with a gametocyte rate of 55%. Anopheles Balabacensis sp mosquitoes was detected. Mosquito larvae were found in stagnant water and buffalo's footprints. Rubber cultivation activity had created influx of foreign workers for land clearing.

**Conclusion:** This Plasmodium Falciparum outbreak was due to imported parasite from foreign workers and introduced to community via Anopheles Balabacensis. Passing near stagnant water bodies was the risk factor. Integrated vector management, screening, social mobilisation and campaign have been instituted to control the outbreak. Cooperation needed from agriculture authority and landowner to prevent future outbreak.

**Keywords:** Plasmodium Falciparum, Anopheles Balabacensis, foreign workers.

## **An outbreak of Legionellosis at a business centre in Kuala Lumpur, 2013**

Rohani I\*, Normah S\*, Nurul Hafizah MY\*, Norhaida U\*\*, Ummi Kalthum S\*, Balachandran S\*

\*Kuala Lumpur Federal Territory State Health Department, \*\*Muar District Health Office, Johor

### **ABSTRACT**

**Introduction:** Legionnaires' disease was first described by Fraser et al. following an outbreak of pneumonia among the participants of the American Legion Convention in Philadelphia in 1976. It is caused by Legionella pneumophila, which is commonly found in aquatic environments. On 12th April 2013, Federal Territory State Health Department received notification of two cases working in the same office that were admitted into private hospital with similar respiratory symptoms. Investigation started immediately to identify the causative agents, source of outbreak and to recommend preventive and control measures.

**Methods:** A cohort study was conducted to identify the risk factors. Active case detection was carried out. All workers of the business centre were interviewed regarding the respiratory symptoms. Clinical samples were taken from workers with respiratory symptoms.

**Results:** A total of 1,365 workers were examined and 382 were defined as cases (attack rate 27.9%). Blood samples revealed 70 out of 188 (37.2%) samples were positive for IgM Legionella. The business centre was located in the middle of four high storey blocks. The cooling tower used a cross flow system and located at the rooftop of the block. Water samples from the cooling tower and fountain pool was positive for Legionella pneumophila Serogroup 1 and 2.

**Conclusion:** This Legionella outbreak was due to contaminated cooling tower system and fountain pool. The cooling tower was manually cleaned and tested negative post cleaning. The business centre authority was advised to clean the cooling tower and fountain pool regularly.

**Keyword:** Legionellosis, cooling tower, fountain

## Barriers in accessing measles vaccination service in Sarawak: a qualitative study

Chai Phing Tze

Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur

### ABSTRACT

**Background:** Since 2009, Malaysia has maintained 95% coverage of national measles immunisation coverage as recommended by the World Health Organization, and moving towards measles elimination. However, in 2011, Malaysia suffered a nationwide outbreak of measles. Twenty eight per cent of the measles sufferers were not vaccinated, denoting gaps in vaccine provision and outreach. This study aimed to explore parents' perception and views on measles vaccination in Sarawak. Scope of study included parental decision-making process regarding measles vaccine and barriers in accessing vaccination services.

**Methods:** This was an in-depth interview to explore parents' experience, needs and barriers in accessing measles vaccination service. Parents of children aged between 1 and 7 years, who had history of defaulting measles-mumps-rubella vaccine for minimum 3 months were recruited.

**Results:** 12 defaulter parents from Sarawak were interviewed. Majority parents were uninformed about measles, its infectivity and consequences in unimmunised children. Decision on immunisation was frequently the end product of interaction between a parent's personality, demographic characteristics, previous encounter with medical professionals, while actual access to vaccination service could be hampered by various socio-politico-economic factors. Vaccine refusal and hesitancy was observed among well-educated parents.

**Conclusion:** A more aggressive childhood vaccination promotive approach, by early engagement of parents in vaccine-related dialogue and addressing concerns about vaccine safety may be beneficial in improving public trust and vaccine uptake. On the other hand, strong political and financial commitment in order to improve access for parents from lower socioeconomic classes.

**Keyword:** Measles; vaccination; parent; decision; barriers.

## A measles outbreak at a private welfare centre in Kuala Lumpur, February 2012

Rohani I\*, Norhaida U\*\*

\*Kuala Lumpur Federal Territory State Health Department, \*\*Muar District Health Office, Johor

### ABSTRACT

**Introduction:** Measles incidence in Kuala Lumpur (KL) increased steadily between 2006 and 2011 from 0-10.1 per 100,000 population. The immunisation coverage was 86.7% compared to standard > 95%. Early February 2012, the State Health Department (JKWPKL) received notifications regarding few measles cases detected among residents of a welfare centre. Investigation was conducted immediately to verify the outbreak and identify the source for preventive and control measures.

**Methodology:** Cohort study was carried out. Cases defined as individuals staying at the welfare centre with history of fever and rash with conjunctivitis, coryza or cough, from February 2012 with confirmed Measles and epidemiological linked. All residents were interviewed using standard questionnaire. Blood samples were taken for serology confirmation and viral isolation. The environment of the centre was assessed.

**Results:** A total of 33 at risk residents were identified and 17 of them fulfilled case definition (attack rate 51.5%). Age of cases ranged from 6 months to 14 years old with median 6 years old. The index case contracted measles two weeks before the outbreak. Five out of 8 samples (62.5%) were IgM Measles positive. Contributing factors were non-immunised status (100%,  $p < 0.05$ ) and non-isolation of cases.

**Conclusion:** Non-immunised residents and low immunisation coverage in the operational area caused low "herd immunity" resulting in measles outbreak in the centre. Fifteen residents aged 6 months to 15 years were given measles vaccination. Isolation room was set up to isolate the infected children. Defaulter tracing and mopping of eligible children for immunisation were done to improve the immunisation coverage.

**Keywords:** measles outbreak, non-immunised status, low immunisation coverage

## Measles outbreak in Kudat District Sabah, Malaysia 2014: a new genotype for Sabah identified

Muhammad J\*, Rosemawati A\*, Tuan R\*, Fadhilah K\*, Rujenie Y\*

\*Malaysia EIP, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** Many measles cases are reported annually despite the good immunisation coverage. On the 5th of June 2014, Kudat Health Office was notified of four suspected measles cases from a local General Practitioner. Investigations were carried out immediately with the objectives to identify the source of the infection and to halt the outbreak as soon as possible.

**Methods:** All houses in the area were visited and the households interviewed using standard investigation form. Blood samples for IgM serology was collected from all suspected cases. Nasal swabs were also taken and sent to State Public Health Laboratory for virus isolation and test for genotype identification. Routine immunisation reports were reviewed.

**Results:** All four suspected cases were siblings from a non-Malaysian nomadic family with their age ranging between one to 12 years old. Active case detection revealed two additional cases. All six suspected cases were positive for Measles IgM and had no history of being vaccinated. They had history of contact with sick relatives two weeks prior to onset of first case. Review of immunisation reports reveal that there were pockets of unimmunised population involving three localities. Genotyping analysis of isolated measles virus belonged to genotype B3 that never been in Sabah before.

**Conclusion:** This measles outbreak among children living in close setting and nomadic family in Sabah, Malaysia making measles elimination a challenge. The presence of new B3 genotype suggested that infection might have been imported into Sabah. SIA have been implemented among children under 15 years in the identified areas especially areas populated with illegal immigrants that immunisation status not known.

**Keywords:** Measles, genotype, supplementary immunisation activities

## Influenza A outbreak among national service trainee, Melaka, Malaysia 2013

Intan Azura MD\*, Noorhaida U\*\*, Shazelin AP\*, Fadzilah K\*\*\*

\*Melaka State Health Department, Malaysia, \*\*Muar District Health Office, Johor, Malaysia, \*\*\*Epidemic Intelligence Program, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** Influenza Like Illness outbreak (ILI) is known to be a health problem in institutions. In Malacca, our data shows that for the past three years ILI outbreak in National Service Training Centre (NSTC) accounted for 20% of all outbreaks in Malacca. On 24th Feb 2013, Putra Puteri NSTC reported that large numbers of trainees had symptoms of ILI. Immediate investigation was carried out to verify and describe the outbreak, identify risk factors and recommend control measures.

**Methods:** Active case finding and case control study were conducted. Case was defined as all trainees of Putra Putri NSTC who presented with high grade fever (axilla >38 C or oral >38.5 C) within 48 hours and with any of the following symptoms: dry cough, nasal congestion/blockage, sore throat/irritation and myalgia from 9th February 2013. Controls was selected among asymptomatic trainees. Environmental assessment included inspection of dormitories and classrooms.

**Results:** Thirty-nine (39) cases fulfilled the case definition. The attack rate was 8.2% (39/475). Influenza A virus was detected in 8 of the 10 collected throat swabs. Never hearing information about influenza for the past 1 year was a significant risk factor (OR 2.74; CI 1.21-6.22). Contact with ill family members during holidays and history of vaccination was not significant. On observation, beds in the dormitory were placed too close.

**Conclusion:** The ILI outbreak among the NSTC trainees was caused by Influenza A. The source of infection could be exposure during holidays. Good knowledge is important to enable individuals to have better attitudes and practices in influenza risk reduction. Education to trainees on cough etiquette, hand hygiene and influenza prevention is essential.

**Keywords:** Influenza A, Outbreak, National Service Training Center.

## National collaborative approach in investigating influenza outbreak amongst police staff, Malaysia, 2013

Noor Aizam Mohd Said, Noorhaida U, Intan Azura MD, Rosmawati A, Bina Rai S

Malaysia EIP, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** Influenza A has been under surveillance in Malaysia since influenza A (H1N1) pandemic in 2009. On 5th December 2013, we were notified of a police staff that died from H1N1 after attending a National Assembly for police staff at Hotel MH Melaka. The rapid assessment team verified the death and learnt that about 400 police staff from all over the country had attended the event, some with similar symptoms, but all had returned. This study aims to describe the outbreak, determine extent and whether all patients were adequately managed.

**Methods:** Case finding was conducted through screening of all contacts who attended the assembly. The list of participants was obtained from the assembly's secretariat and sent to the epidemiology officers of all states with structured questionnaire. A case control study using multivariate logistic regression analysis was conducted. Cases were defined as those with influenza-like-illness symptoms. Controls were those with similar exposure without symptoms (1:2). Throat swabs from patients were sent for culture. We reviewed the movements of the index case in the bus, hotel and assembly hall.

**Results:** A total of 154 cases were identified. Influenza A (H1N1) was identified in 19 cases (31%). Main symptoms were cough (31.2%), sore throat (21.1%) and fever (13.5%). All had fixed seats in assembly hall. Proximity to index cases in both assembly hall and room level in hotel as well as state origin was significantly associated with Influenza A.

**Conclusion:** This Influenza A (H1N1) outbreak amongst police staff spread through close proximity from the index case probably through poor cough etiquette. All symptomatic cases were monitored and treated at respective states. Education on cough etiquette and personal hygiene were given. Cough etiquette important to contain spread of influenza and should be strengthened.

**Keywords:** H1N1 outbreak, police

## Malaysia's Ebola preparedness 2014: enhancing capacity and capability

Saraswathi Bina Rai

Ministry of Health Malaysia

### ABSTRACT

**Introduction:** Preparedness is the key to prevention and is imperative for response planning. Since advent of Ebola in 2014 beyond its usual boundaries, many countries have devised plans to contain the disease. Our objective was to focus on human resources at local and national level and work on existing capacity and capability, to develop a comprehensive work plan to contain Ebola should it be imported into the country.

**Methods:** We built on generic capabilities: we reviewed current national capacity looking at human resource, available funds, existing guidelines for new and emerging diseases, and used that to identify minimum preparedness requirements as recommended by the World Health Organisation and strengthened that.

**Results:** Response plan for both clinical and public health developed using standard case definition, investigation and management protocols available and used for training. National focal point is in line with the International Health Regulations: coordination and incident command already in place. Public health surveillance and notification mechanism was well developed: monitoring of situation in West Africa done daily and communicated to all states. We ascertained laboratories to diagnose and specific hospitals to treat. Awareness and training on infection control to all health care workers including private implemented in stages. Stockpiles for personal protective equipment were updated. Simulation exercises carried out at most states testing various aspects of the plan including the mode of referral and management of the deceased. We then modified protocols on shortfalls detected.

**Conclusion:** Malaysia's preparedness plan is comprehensive. With international travel Ebola may be imported here but we are confident of quick and effective response in detecting and containing the disease. Recommend a detailed generic risk assessment be conducted for the country.

**Keywords:** Ebola, Preparedness

## POSTER PRESENTATION

### HIV and AIDS in Malaysia: How big is the burden in 2008?

Azahadi O, Khoo YY, Shubash S, Fuad A, Siti Fatimah MH, Chandrika J

Institute for Public Health, Ministry of Health, Malaysia

#### ABSTRACT

**Introduction:** Globally, over the past decade, the HIV/AIDS epidemic has emerged as one of the major challenges for the world and is one of the leading causes of mortality and disease burden. In 2010, HIV/AIDS contributed to 2.8% of global death and 3.3% of total global burden of disease. In Malaysia, the disease also showed an increasing trend. This paper examines the burden of HIV/AIDS to Malaysian population in 2008.

**Method:** The calculation of Burden of Disease in term of Disability Adjusted Life Years (DALY) was done using the methodology used in the Global Burden of Disease Study. The population and mortality data was provided by the Department of Statistics, Malaysia and the incidence cases were based on the Notifiable Disease database, Ministry of Health, Malaysia.

**Results:** The total DALYs for HIV/AIDS for 2008 was 45,532 and it contributed to 1.6% of the total burden of disease in Malaysia. Almost 75% of the burden was due to YLL (mortality components). Males contributed 88% of the HIV/AIDS burden. The highest burden were among the age group of 30-44 (63.3%), followed by age group of 45-59 (16.6%). The burden of HIV/AIDS in 2008 was higher compared to 2000.

**Conclusion:** There was an increase by 50% in the burden of HIV/AIDS in 2008 compared to 2000 and the increase was also found to be according to gender and age group. Majority of the burden was due to associated mortality. Multi-sectorial collaboration and efforts should be intensified to reduce the number of incidence cases as well as reduce the mortality due to HIV/AIDS.

**Keywords:** HIV/AIDS, burden of disease, DALYs, Malaysia

### Risk cluster mapping at point level for dengue disease

Cheong Yoon Ling

Medical Research Resource Centre, Institute for Medical Research, Jalan Pahang, 50588 Kuala Lumpur

#### ABSTRACT

**Introduction:** Dengue disease is a global disease burden and particular endemic in Malaysia. As vaccine is still under-developed, the current interventions focus on vector control. To efficiently plan vector control, one of the fundamental task is to identify and validate the high risk disease clustering area. To date, there is still lack of studies on the disease cluster mapping at point level. The objective of this study was to compare and validate the risk cluster mapping at point level, in particular for infectious disease such as dengue.

**Method:** The study area was Selangor and Kuala Lumpur that reported high number of dengue cases in Malaysia. Dengue cases of the year 2010 were obtained from Disease Control Division of Ministry of Health Malaysia. The dengue cases were geocoded according to the residency address using R software. Two cluster detection approaches, Software for the spatial and space-time scan statistics (SaTScan) and Kernel Density were used to compare the disease clustering mapping results.

**Results:** The validation results showed that SaTScan was sensitive at showing more clusters than Kernel Density. However, Kernel Density exhibited better smoothing function than SaTScan. Clusters of dengue cases were mainly concentrated at the central part of the study area.

**Conclusion:** Crime hot-spot analysis and disease hot-spot analysis based on case-control were well-established. However, particularly in infectious disease, cluster analysis at point level was still lacking. For frequentist approach, SaTScan performed better than Kernel Density in term of space and time. The high-risk clusters implied that vector control effort should be focused on the hot-spot area. The identification of high-risk disease cluster area assists better dengue control interventions. SaTScan is recommended to be adopted in the current surveillance system.

**Keywords:** hot-spot, dengue, cluster analysis, point level

## A study of socio-demography and pre-admission clinical profile of dengue death patients in Selangor 2014

Ruziaton H\*, Ho Bee Kiau\*\*, Vickneswari A\*\*\*, Shreema R\*\*\*\*

\*Klinik Kesihatan Pandamaran, \*\*Klinik Kesihatan Bandar Botanic, \*\*\*Klinik Kesihatan Taman Medan, \*\*\*\*Vector Unit, Selangor Health Department

### ABSTRACT

**Introduction:** Dengue has a wide spectrum of clinical presentations, often with unpredictable clinical evolution and outcome. When treated, severe dengue has a mortality rate of 2-5%, but when left untreated, the mortality rate is as high as 50%. Dengue in Malaysia has claimed more lives in a double and triple manner and Selangor has remained the top state to record the highest number of fatalities. The objective of this study was to describe the socio-demographic, co-morbidities and pre-admission clinical features of patients who died of dengue in the state of Selangor for the year 2014.

**Method:** This was a retrospective cohort study on all dengue death patients registered in 2014 in e-dengue database in Selangor state Malaysia. Dengue mortality reports and case presentations used during dengue death review by the state of Selangor were studied and data were entered and analysed using SPSS version 16.0

**Results:** There were a total of 77 dengue deaths in Selangor for the year 2014. Many of the deaths occurred in the 15-59 years of age group, the youngest being five months old while the oldest 79 years old. There were more females (57.1%) than males (42.9%) and more non-working individuals compared to the working ones. In term of ethnicity the majority that died were the Malays (50.6%), followed by the Indians (19.5%) and the Chinese (16.9%). More than three-quarter of them have at least one co-morbidities. Fever is the main presenting features (98%) and nearly 60% seek treatment at GP clinics at the onset of their illness.

**Conclusion:** All first line providers must keep a high index of suspicion for dengue in patients presenting with acute fever and be on extra vigilant for those with comorbidities.

**Keywords:** dengue deaths, epidemiology, Selangor, Malaysia

## Spatial density of dengue incidence to improve environmental health risk: a case study of a dengue outbreak in Seksyen 7, Shah Alam

Hazrin H, Nadzri J, Tee GH, Norzawati Y, Faizah P, Sayan P, Jemsee O

### ABSTRACT

**Introduction:** Dengue is a major vector-borne disease caused by any one of four closely related dengue viruses. The viruses are transmitted to humans by the bite of an infected mosquito (*Aedes aegypti* or *Aedes albopictus*). Seksyen 7, Shah Alam is one the locality with high incidence of dengue fever. This study aimed to establish spatial density of dengue incidence in Seksyen 7, Shah Alam using Geographical Information System (GIS) and spatial statistical tools.

**Method:** We analysed 23 ovitrap index and 2389 dengue cases from 2013 to 2014. Data were collected from Petaling District Health Office and Shah Alam City Council. Spatial statistical tools were used to show spatial correlation of dengue cases and kernel density was implemented to identify dengue hotspot localities.

**Results:** The results showed that dengue cases were spatially clustered ( $p < 0.001$ ) by using spatial autocorrelation analysis. Average Nearest Neighbour analysis showed that dengue cases were highly clustered and occurred at an average distance of 219.2 meters. Location especially residential areas had been identified as hotspot by using kernel density estimation analysis.

**Conclusion:** Our results showed that GIS and spatial statistical tools could be an effective mean to establish spatial density of dengue. Mapping of dengue cases would serve as a guidance for stakeholders to identify source of outbreaks. It will generate more hypotheses and further investigations. Understanding the spatial of Aedes index and its impact on human health, particularly outbreaks of dengue is important in controlling the transmissions of the disease.

**Keywords:** dengue, outbreak, GIS

## Dengue Vector Density in Outbreak Localities of Section 7, Shah Alam, Selangor

Ahmad Nadzri J\*, Mohd Hazrin H\*, Norzawati Y\*, Faizah P\*, Jamsee O\*, Sayan P\*, Khadijah K\*\*, Ahmad J\*\*, Tee Guat Hiong\*

\*Institute for Public Health, Ministry of Health Malaysia, \*\*Petaling District Health Office, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** Dengue fever infection will only happen when these three components which are virus (flavivirus), vector (aedes mosquitoes) and host (human) occur in a same place at the same time. The infection cannot occur if one of the components such as vector is not present. Therefore vector surveillance can be used as a tool for determining the risk for dengue infection to occur. The objective of the study was to determine the presence of the dengue's vector and predicting its impact on the localities.

**Methods:** Section 7 Shah Alam Selangor was chosen for the study because of the high number of dengue cases registered in 2014 (1450 cases) with 21 outbreak localities. Vector surveillance was carried out by installing ovitrap after the episode ended in all the outbreak localities. Information about the outbreak localities such as number of dengue cases, number of epidemic localities, number of episodes of the epidemic and the duration of an epidemic episode were obtained from the 'eDengue'. 'eDengue' is the dengue surveillance system used by the Disease Control Program, Ministry of Health Malaysia.

**Results:** All 21 outbreak localities showed positive ovitrap index. Five localities had ovitrap index of more than 30%, fifteen localities showed between 10%-30% and one locality had 8%. Four localities showed the presence of both Aedes species, Aedes aegypti and Aedes albopictus outdoor. One locality showed the presence both Aedes species, Aedes aegypti and Aedes albopictus outdoor plus Aedes albopictus indoor. The remaining 16 localities indicate only Aedes albopictus out door.

**Conclusion:** Dengue vector could still be found especially in outdoor area after the outbreaks had ended. As such, all epidemic localities in section 7 Shah Alam is at risk of becoming an epidemic again. Therefore, destroying the breeding places of mosquito outside the premises should be emphasised.

**Keywords:** dengue, vector surveillance, ovitrap, outbreak, Seksyen 7 Shah Alam

## Spatial distribution of dengue vectors in Malaysia

Norzawati Y\*, Mohd. Maher I\*\*, Chong JH\*\*\*, Husna Mahirah S\*\*\*\*, Nur Adawiyah A\*\*\*\*\*, Ang BY\*\*\*\*\*

\*Institute for Public Health, Ministry of Health Malaysia, \*\*Lipis District Health Office, Pahang Darul Makmur, \*\*\*\*Sarawak State Health Department, Sarawak, \*\*\*\*Penampang Division Health Office, Sabah, \*\*\*\*\*Kedah State Health Department, Kedah Darul Aman, \*\*\*\*\*Vector Borne Disease Sector, Ministry of Health, Malaysia

### ABSTRACT

**Introduction:** Geographic Information System (GIS) has been widely used in mapping the incidence of infectious diseases and also vectors. The map produced can be used in planning for surveillance and control activities. Dengue has been one of the major public health problems in Malaysia. The cases increased dramatically and the case fatality rate was also very high. The information on the distribution of the vectors is crucial in targeting the culprit for dengue. This paper examines the distribution of dengue vectors in Malaysia for the year 2014.

**Method:** The data regarding the species found in the locality and the spatial information were compiled from eDengue database and from surveillance activities that were done by Entomology Unit in the states. The data were then cleaned and verified. Analysis and mapping were done using ArcGIS software.

**Results:** A total of 7025 localities were identified with complete spatial and vector species information. More than half of the localities (69.5%) were positive with *Aedes albopictus*. Both species (*Ae. Albopictus* and *Ae. aegypti*) were found in 16.9% of the localities. Kuala Lumpur, Perak and Selangor have the highest number of localities with mixed species. Majority of the localities in Kelantan were positive with *Ae.aegypti* whereas in Terengganu, majority of the localities were positive with *Ae. albopictus*.

**Conclusion:** The distribution map may be used as a tool to plan the most suitable methods in surveillance and control of the vectors for each state as different species have different behaviour.

**Keywords:** dengue, vector distribution, GIS, spatial, Malaysia

## Factors associated with mortality among tuberculosis cases in North-East Malaysia

Zainurulazma MN\*, Sarimah A\*, Sharina D\*\*, Arham MAB\*\*\*, Nyi Naing N\*

\*Unit of Biostatistics & Research Methodology, School of Medical Sciences, USM, \*\*Kelantan State Health Department, \*\*\*Universiti Malaysia Kelantan

### ABSTRACT

**Introduction:** Tuberculosis (TB) is a common communicable disease in Malaysia and is one of the public health burdens to the Ministry of Health. This study was to determine the factors associated with the mortality among tuberculosis cases in North-East Malaysia

**Method:** A cross-sectional study was conducted in North-East of Malaysia by reviewing TB records at the all hospitals and health clinics from 2010 to 2014. All socio-demographic, clinical characteristics and outcome of the cases were recorded. A Multiple Logistic Regression was used to analyse the factors associated with the mortality outcome.

**Results:** A total of 4720 were reviewed. Approximately 15% of patients died during treatment. Majority of TB cases were male (66.8%). About 94% of them were Malay, 25.6% were diabetic patients, 41.0% smokers, 78.3% were having BCG scar and 91.9% were diagnosed as pulmonary tuberculosis. About 56.0% patients were sputum smear positive and 14.8% were HIV positive. Significant factors associated with mortality among TB cases were age (Odds Ratio (OR) 1.041, 95%CI: 1.029-1.056), absence of BCG scar (OR1.67, 95% CI: 1.067-2.615), sputum smear positive (OR 0.48, 95% CI 0.328-0.697), sputum culture positive (OR 2.15, 95% CI: 1.469-3.133), HIV Status (OR 13.36, 95% CI: 8.222-21.711). X-ray finding was also significant factor associated with mortality of Tuberculosis patients.

**Conclusion:** Increasing age, absence of BCG scar, sputum negative, culture positive, HIV positive and positive X-ray findings were the associated factors for mortality among tuberculosis cases. All these factors have to be taken into consideration in order to reduce the mortality among the tuberculosis cases.

**Keywords:** Tuberculosis, mortality, sputum smear, multiple logistic regression

## Outcome of smear-negative tuberculosis cases and its associated factors of mortality in North-East Malaysia

Sarimah A\*, Zainurulazma MN\*, Sharina D\*\*, Arham Muchtar AB\*\*\*, Nyi Naing N\*

\*Unit of Biostatistics & Research Methodology, School of Medical Sciences, USM, \*\*Kelantan State Health Department, \*\*\*Universiti Malaysia Kelantan

### ABSTRACT

**Introduction:** Smear-negative tuberculosis is a symptomatic illness in a patient with at least two smear examinations negative for AFB on different occasions which has contribute to the burden for public health as well as sputum-positive tuberculosis. This study aimed to determine the associated factors of mortality among tuberculosis cases with sputum smear-negative in Northeast Malaysia.

**Method:** A 5-year review of tuberculosis medical records from year 2010 to 2014 was conducted. The registered cases of tuberculosis records in government hospitals and health clinics in Northeast Malaysia were retrieved and reviewed for socio-demographic, clinical characteristics and outcome of the cases. A Multiple Logistic Regression was used to analyse the factors associated with the mortality outcome.

**Results:** A total of sputum smear-negative tuberculosis cases were 1697 cases. Only 17.5% died during treatment. All of TB cases with sputum smear-negative involved in this study were male (65.4%) and 94.6% were Malay, Almost 19% were having diabetic, 38.4% were smokers, 78.0% had BCG scar, 91.3% were Pulmonary TB. Majority of them (82.1%) had lesion in the X-ray findings and 18.0% were positive HIV. The significant factors associated with mortality among sputum negative tuberculosis were age ( $\beta=0.038$ , 95%CI (1.020, 1.057),  $p$ -value <0.001) and HIV status (Odds Ratio 6.88, 95%CI (3.627, 13.061). X-ray findings were also significant factor for mortality among sputum-negative tuberculosis cases.

**Conclusion:** Increasing of age, positive HIV status and having lesion on chest X-ray findings were the significant associated factors for mortality among sputum-negative tuberculosis cases. Those who have these factors should be given more attention in order to reduce the mortality among sputum-negative tuberculosis.

**Keyword:** mortality, sputum-negative tuberculosis, X-ray findings

## Tuberculosis and Tobacco smoking in Malaysia

Tee Guat Hiong\*, Mohd Hatta Abdul Mutalip\*\*, Jiloris F Dony\*\*\*, Sobashini Kanniah\*\*\*\*, Norzawati Yeop\*, Faezah Pawai\*, Mohd Hazrin Hasim\*, Ahmad Nadzri Jai\*, Sayan Pan\*, Jamsee Ongi\*

\*Institute for Public Health, National Institutes of Health, Ministry of Health Malaysia, \*\*Lembah Pantai Health District Office, Ministry of Health Malaysia, \*\*\*TB/Leprosy Sector, Disease Control Division, Ministry of Health Malaysia, \*\*\*\*Seberang Prai Tengah Health Office, Penang

### ABSTRACT

**Introduction:** Tobacco smoking has been shown to be an important risk factor in the development of tuberculosis (TB). This study aimed to examine the factors associated between TB infection and tobacco smoking.

**Methodology:** Data were obtained from National Tuberculosis Information System (TBIS) collected in the year 2012. All confirmed cases diagnosed for TB were analysed. Descriptive and logistic regression analyses were performed by using SPSS version 19.

**Results:** A total of 21,224 TB cases were reported in 2012. More than a third (34.6%) of TB patients smoked. TB patients who smoked were significantly higher among males (50.8%), 40-49 years old (43.2%), Malays (38.1%), Malaysians (35.2%), those with pulmonary TB (35.8%), re-treated cases (41.5%) and among defaulters (56.3%). The estimated odds of smoking among TB patients was higher among males (adjusted Odds Ratio (aOR) 23.38, 95% CI: 20.50, 26.67) and patients with pulmonary TB (aOR 1.29, 95% CI: 1.13, 1.47). Age was a significant predictor for smoking among TB patients where it was found to be higher especially among those aged 30 to 49 years old. Ethnicity was not a significant predictor for smoking among TB patients. On treatment outcomes; those who defaulted treatment had higher odds for smoking (aOR 3.73, 95% CI: 1.69, 8.22), followed by patients who died (aOR 2.40, 95% CI: 1.10, 5.23) and slightly lower for those who were cured (aOR 2.22, 95% CI: 1.02, 4.81).

**Conclusion:** The prevalence of tobacco smoking among TB patients was high. Tuberculosis has been shown to be related to tobacco smoking and has negative effect on the treatment outcome of tuberculosis. Thus, TB patients need to be educated on the dangers of tobacco smoking and given advice to quit smoking in order to improve the treatment outcome.

## Changing graphics of pictorial health warnings on cigarette packages: Policy brief

Lim Kuang Kuay\*, Tee Guat Hiong\*, Teh Chien Huey\*\*, Gurpreet Kaur\*\*\*, Lim Kuang Hock\*, Nur Azna Mahmud\*, Chan Ying Ying\*

\*Institute for Public Health, Ministry of Health, Malaysia, \*\*Institute for Medical Research, Ministry of Health, Malaysia, \*\*\*National Institute of Health, Ministry of Health, Malaysia

### ABSTRACT

**Introduction:** The aim of this study was to examine the effectiveness of changing the graphics of the PHW on cigarette packages and its impact on reducing uptake and motivation to quit.

**Method:** The literature review undertaken was limited to all English papers published in the last 10 years. The search was performed in six major electronic databases (PubMed, Cochrane Library, EMBASE, ProQuest Hospital Collection, MEDLINE and OVID) using the key words “health warnings”, “smoking”, “smoking cessation”, “tobacco”, “health warning labels”, “graphic warnings”, “health warning messages”, “packaging” and “labelling”. Two systematic reviews, 27 primary studies and one weekly report were selected.

**Results:** A systematic review revealed insufficient evidence to quantify the direct impact of having bigger size PHWs on smoking initiation, cessation and prevalence. However, a study in Canada reported that increasing the text size was associated with a quit rate of 11%. The study was supported by many other studies, which reported that PHW typically evoked more of an emotional response, increased memory and awareness of health risks, and reinforced motivations to quit smoking. A weekly report revealed that PHW is a powerful tool in tobacco control.

**Conclusion:** Many studies supported larger graphic health warning messages as the most effective method in communicating health risks. The results also indicated that colour and product descriptors were associated with false beliefs about risks. Future research should focus on finding the best content, design, and rotation strategies of PHW to maximise and sustain the influence of this cost-effective intervention.

**Key words:** pictorial health warnings, cigarette packaging, graphic, smoking

## Plain packaging for cigarettes - A Policy Brief

Tee Guat Hiong\*, Lim Kuang Kuay\*, Noran Naqiah Hairi\*\*, Lim Kuang Hock\*, Mohd Hazrin Hasim\*, Faizah Paiwai\*, Ahmad Nadzri Jai\*, Norzawati Yeop\*, Sayan Pan\*, Jamsee Ongi\*

\*Institute for Public Health, National Institutes of Health, Ministry of Health Malaysia, \*\*Julius Centre University of Malaya, Department of Social and Preventive Medicine, University of Malaya

### ABSTRACT

**Introduction:** The global growing burden of smoking has prompted the introduction of plain packaging as an effective way to address the impact of colour and brand imagery on cigarette packages. Plain packaging will help to reduce initiation of smoking for non-smokers and increase cessation of cigarette smoking among smokers. The objective of this study was to determine the impact of plain packaging by decreasing the attractiveness of the cigarette packages.

**Method:** An online database searched was conducted for systematic reviews and reviews using PubMed, Cochrane Library, EMBASE, ProQuest Hospital Collection, MEDLINE and the OVID databases. The electronic search terms were 'health warnings', 'individual cigarette sticks', 'smoking', 'health warning labels', 'graphic warnings', health warning messages', 'packaging', 'labelling' and 'effective policy'. The search was limited to all English papers published or made available in the last decade.

**Results:** Three systematic reviews and three primary studies met our selection criteria. These studies consistently substantiated the three core beneficial effects of plain cigarette packaging: 1) enhancing the salience of health warnings on plain cigarette packages by decreasing the attractiveness of the cigarette packages, 2) reducing misperceptions about the false health benefits and harmfulness of tobacco and 3) reducing the brand appeal to combat the marketing strategies such as media advertisement.

**Conclusion:** Evidence has shown that plain packaging will enhance the effectiveness of pictorial health warnings on cigarette packages. This strategy will further reduce the smoking prevalence and initiation as well as increase smoking cessation amongst smokers, particularly amongst the susceptible youth and young adults.

**Keywords:** plain packaging, cigarette, smoking, pictorial health warning

## Smoking among school-going adolescents in selected secondary schools in Peninsular Malaysia - Findings from the Malaysia Adolescents Health Risk Behaviour (MyAHRB) Study

Lim KH\*, Teh CH\*\*, Lim HL\*\*\*, Ling MY\*, Kee CC\*\*, Sumarni MG\*\*, Chan YY\*\*, Tee EO\*\*\*\*, Shubash Shander G\*, Lim KK\*, Wan Shakira RH\*, M Fadhli Y\*

\*Institute for Public Health, Kuala Lumpur, \*\*Institute for Medical Research, Kuala Lumpur, \*\*\*Melaka Manipal Medical College, Melaka, \*\*\*\*Allied Health College, Sungai Buloh, Selangor

### ABSTRACT

**Introduction:** A multitude of studies have revealed that smoking is a learned behaviour during adolescence and reducing the incidence of smoking has been identified as a long-term measure to curb the smoking menace in the Malaysian. The objective of this study was to assess the prevalence and the intra- and inter-personal factors associated with smoking among upper secondary school students in selected schools in Peninsular Malaysia.

**Methods:** Thirty secondary schools were randomly selected using two-stage proportionate to sampling and upper secondary school students from each selected school were invited to participate in the study. Prevalence and associated factors were assessed using a validated standardised questionnaire.

**Results:** This study revealed that the prevalence of smoking was 14.6%, significantly higher among males compared to females (27.9% vs 3.4%,  $p < 0.001$ ). The majority of smokers initiated smoking during the early adolescent years (60%) and almost half of the respondents bought the cigarettes themselves. Multivariable analysis revealed that the following factors increased the likelihood of being a current smoker: being male (adjusted odds ratio (aOR) 21.51; 95% CI 13.10-35.10); perceived poorer academic achievement (aOR 3.42, 95% CI 1.50-7.37), had one or both parents who smoked (aOR 1.80, 95% CI 1.32-2.45; aOR 6.50, 95% CI 1.65-25.65), and always feeling lonely (aOR 2.23, 95% CI 1.21-4.43). On the other hand, respondents with a higher religiosity (aOR 0.51, 95% CI 0.15-0.92) and protection (aOR 0.71, 95% CI 0.55-0.92) scores were less likely to smoke.

**Conclusion:** This study showed that the prevalence of smoking among adolescents is still high, despite implementation of several anti-smoking measures. More robust measures integrating the factors identified in this study are strongly recommended to curb the smoking menace among adolescents in Malaysia.

**Keywords:** Adolescence smoking, intrapersonal, interpersonal, school-going adolescents, Peninsular Malaysia

## Pregnancy-related Burden of Disease in Malaysia: A comparison between 2000 and 2008

M Fuad MAM, Azahadi O, Khoo YY, Shubash S, Siti Fatimah MH, Chandrika J

Centre for Burden of Disease Research, Institute for Public Health, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** It was estimated that approximately 529,000 women died from pregnancy-related complications every year and majority of these deaths were from developing countries. Pregnancy-related issues were one of the components included in the Malaysian Burden of Disease Study, which was conducted for the years 2000 and 2008. This study focused on the comparison between pregnancy-related burdens in terms of premature mortality, morbidity and overall disability adjusted in both years.

**Method:** Methods developed by the World Health Organization (WHO) for the Global Burden of Disease Study were applied to calculate the burden of disease in terms of Years of Life Lost (YLL) due to premature mortality, Years Lived with Disability (YLD) and overall Disability Adjusted Life Years (DALYs). Population and mortality data provided by the Statistics Department and data from hospital admissions were used for the morbidity data.

**Results:** There was almost 50% increase in the overall burden of pregnancy-related diseases in 2008 as compared to 2000. This increasing trend was largely contributed by abortion compared to other causes. Only obstructed labour showed a decreasing trend. Maternal haemorrhage was the primary cause of premature mortality (YLL) for both years whereas the leading cause of morbidity (YLD) was abortion.

**Conclusion:** Although maternal mortality rate had decreased from 2000 to 2008, the disability burden resulting from pregnancy-related diseases was on the rise especially abortion. Morbidities from abortions have now been thrust into spotlight. Recommendations include disseminating information to women and their families on the importance of prenatal care, signs of pregnancy-related complications, and post-delivery

## Access of antenatal healthcare among non-citizens at government Maternal and Child Health (MCH) clinics, Federal Territory of Kuala Lumpur in 2013

Chia SY, Shanthi V, Zaini A, Bibi Suriati, Normala H

State Health Department of Federal Territory of Kuala Lumpur & Putrajaya

### ABSTRACT

**Introduction:** Routine antenatal care service is provided for all mothers including non-citizens seeking this service at government clinics. In Klang Valley there are about five clinics having more than 15% of non-citizens seeking antenatal care. This study was carried out to assess usage of antenatal services by non-citizens and to identify the common risk factors.

**Method:** Retrospective data was collected from antenatal card KIK/1(b)/96 of non-citizens registered in 2013 from government MCH clinics in Kuala Lumpur. Relevant data to this study on gestational week, maternal age and number of visits was analysed using SPSS version 16. All non-citizens comprising of individuals seeking employment opportunities, further education, accompanying their spouse and UNHCR refugees were included in this study.

**Results:** 2616 non-citizens were seen at 21 MCH clinics in Kuala Lumpur in 2013. Among the non-citizens visiting the clinics, 59.2% were Myanmar nationals. 56.4% mothers were coded with green tag, 17.1% with yellow tag and 1.7% with red tag. Late booking was seen among 10% of mothers. 6.8% came with unsure of dates. Average visit was 2.9 visits with 99.4% seen by registered nurses and 94.3% seen by the medical officer. Common risk factors seen were anaemia, gestational diabetes mellitus, pregnancy induced hypertension and unsure of dates.

**Conclusion:** Improving the maternal care of non-citizens is challenging as their nomadic movements with 'pay out of pocket' for healthcare services are the main reasons for not seeking early antenatal care.

**Keywords:** Antenatal care, Maternal and child health, refugee, foreigner, immigrant

## The impact of late booking among antenatal mothers in Lembah Pantai District

Nor Zarina M, Nor Zainida AG, Fauziah M, Norazrina A, Moni A, Salwa I, Azlina S, Nor Shazatul Shakila MAB

Lembah Pantai District, State Health Department, Wilayah Persekutuan Kuala Lumpur & Putrajaya

### ABSTRACT

**Introduction:** In Kuala Lumpur total mothers who came for early booking was 64% in 2012 and 67.7% in 2013. There is still much to improve to reach the target of more than 70% decided by the Ministry of Health Malaysia. The study was carried out to assess the impact of late antenatal booking.

**Method:** Retrospective data was collected randomly from antenatal card KIK/1(b)/96 of antenatal mothers who registered late (>12/52 period of gestation) from January to December 2013 from six Maternal Child Health Clinics in Lembah Pantai District, Kuala Lumpur. Relevant data for this study like period of gestation, risk factors and demographic data were analysed using SPSS version 20. Unbooked mothers, non-citizen and mothers out of operational areas were excluded from this study.

**Results:** A total of 180 mothers were detected late in the booking. Among them, 60.6% were Malays, 16.7% Chinese, Indian were 7.8% and others 14.9%. Young mothers below 26 years old were the highest, 31.1% among other age groups were late for booking. 91% were married. Homemakers were the highest late booking cases accounting for 47.2% compared to working mothers from private sector amounting to 45% and from government sector 7%. Anaemia with haemoglobin 10.9-8 gm% was the highest complication of late bookings for POA 13-25 weeks with total of 40.5% followed by Gestational Diabetes Mellitus 10% and pregnancy induced hypertension 2.3%.

**Conclusion:** Malay housewives were the highest group of pregnant mothers who failed in early initiation of antenatal care. Risk factors like anaemia and gestational diabetes were the major issues. Further study should be carried out to identify the contributing factors and barriers for late booking.

**Keywords:** health impact, late booking, maternal child health

## Low birth weight babies born among antenatal mothers at MCH clinics in Kepong, Kuala Lumpur

Noorzila I, Zarah D, Nurrul Laila, Ruby Natrah, Norizan B, Vijaya M, Roslini AA, Umi Kalsom I

Kepong District, State Health Department of Wilayah Persekutuan Kuala Lumpur & Putrajaya

### ABSTRACT

**Introduction:** Low birth weight (LBW) new-borns are at higher risk for perinatal and infant mortality. The objective of this study was to identify the cause of LBW babies born among mothers registered at the Maternal Child Health (MCH) clinics.

**Method:** Babies born at 22 weeks and above, with birth weights from 500 gm to less than 2500gm were included in this study. Retrospective data was collected from government delivery records titled KIB 103 and antenatal cards titled KIK/1(b)/96 which were registered in 2013 from seven MCH clinics in Kepong Health District. The variables for this study were on booking visits, gestational age, risk factors and contributing factors. They were analysed using SPSS version 19. Unbooked mothers and mothers out of operational areas were excluded from this study.

**Result:** 384 registered mothers had delivered LBW babies. 85% of mothers were aged between 20 to 35 years with 50% of LBW babies born at 22 -37 weeks of gestational age while the remaining 50% delivered above 37 weeks. In spite of various health promotion programs conducted at the clinic level, 60% of mothers came above 12 weeks for their antenatal booking. At the time of first antenatal visit 87% were tagged as green, yellow and red tagging. The risk factors that were observed during the antenatal booking were anaemia (37%), diabetes (13%), hypertensive (10%), obesity (7%) and bad obstetric history (7%).

**Conclusion:** Anaemia is still a pressing issue with poor dietary intake and improper spacing between childbirths as the commoner reasons. A continuous supervision, monitoring and re-education for the patients and caregivers are a much needed requirement to correct the deficits in the anaemia national program at a minimal cost.

**Key words:** Low birth weight, infant mortality, perinatal mortality, antenatal care

## Delay in initiating breastfeeding among mothers in a hospital in Putrajaya

Mahanum AM\*, Leong Joyce WS\*\*, Anita AR\*\*\*

\*Hospital Putrajaya, Ministry of Health, Malaysia, \*\*Department of Medicine, Faculty of Medicine & Health Sciences, UPM, \*\*\*Department of Community Health, Faculty of Medicine & Health Sciences, Universti Putra Malaysia

### ABSTRACT

**Introduction:** It is evident that breast milk is far more superior to formula milk, in terms of its nutritional values and its psychological effect on both, mother and her baby. This cross-sectional study was to determine the causes of delay in initiating breastfeeding among mothers in a hospital in Putrajaya.

**Method:** All mothers who delivered during the period of the study and whose baby can be breastfed were recruited in the study after approval was obtained from the appropriate authorities. Mothers who consented to the study were asked to complete an assisted self-administered questionnaire, which had been adapted with permission from Radzniwan et al. and Reassessment Tool for Breastfeeding Hospital Initiative. SPSS Version 17.0 was used to analyse all data which were collected whereby descriptive statistics to describe the sample and Chi-Square Test to determine the relationship between the independent and dependent variables. A p value  $\leq 0.05$  was considered statistically significant.

**Results:** The prevalence of delay in initiating breastfeeding was 55.7%. Ethnicity, educational level, age and mothers who had Caesarean section delivery were the variables found to be the causes of delay in initiating breastfeeding among mothers in the hospital selected for this study.

**Conclusion:** Therefore, health education, physical support as well as psychological support should be targeted towards these groups of mothers, which had been identified in this hospital during the antenatal, intra-natal and postnatal stages.

## Knowledge of breast cancer and breast self-examination practise among female undergraduate students in public universities in Klang Valley, Malaysia

Latiffah A Latiff\*, Mehrnoosh Akhtari-Zavare\*, Muhamad Hanafiah Juni\*\*, Salmiah Md Said\*\*

\*Cancer Resource & Education Center, Universiti Putra Malaysia, Selangor, \*\*Department of Community Health, Faculty of Medicine & Health Science, Universiti Putra Malaysia, Selangor

### ABSTRACT

**Introduction:** Breast cancer is the most common cancer and the second principal cause of cancer deaths among women worldwide, including Malaysia. Even though breast self-examination (BSE) is not seen as a relevant cancer-screening tool anymore, it still plays an important role in the breast health awareness programme.

**Method:** A cross-sectional study was carried out to determine knowledge on breast cancer and breast self-examination (BSE) practices of 792 female undergraduate students in selected public universities in Klang Valley, Malaysia. A multi-stage sampling method was adopted and data were collected via a validated questionnaire, which was developed for this study.

**Results:** The mean age of respondents was  $21.7 \pm 1.2$  years. Most of them were single (96.8%), Malay (91.9%) and 150 (19.6%) claimed they had practiced BSE. This study showed low level of knowledge on risk factors of breast cancer 394 (49.7%), symptoms of breast cancer 496 (62.6%) and breast self-examination 397 (50.1%) among participants. Knowledge of breast cancer was significantly associated with BSE practice ( $p < 0.01$ ). Also, there were significant association between performing BSE with age, marital status and trained by doctor for doing BSE ( $p < 0.05$ ). Logistic regression analysis indicated that women who had trained by doctor 1.96 (95% CI: 1.32-2.91) and women who had knowledge of breast cancer 1.15 (95% CI: 1.06-1.25) were more likely to practice BSE.

**Conclusions:** Overall our findings indicate that Malaysian young female's knowledge regarding breast cancer and the practice of BSE is inadequate. A public health education program is essential to improve breast cancer prevention among young Malaysian female.

**Keywords:** Breast cancer, Breast self-examination, knowledge, Malaysia

## Undiagnosed Type 2 Diabetes Mellitus (T2DM) among urban population in Malaysia - findings from the National Health and Morbidity Survey, 2011

Hasimah I, Mohd Azahadi O, Tahir Aris, Muhammad Fadhli MY, GH Tee, Abdul Aiman AG, Nor Azian MZ, Lim KK, Mohd Yusof S

Institute for Public Health, Jalan Bangsar, Kuala Lumpur

### ABSTRACT

**Introduction:** The prevalence of Type 2 Diabetes Mellitus (T2DM) is increasing around the world. Undiagnosed T2DM may have a major impact on public health problem because these individuals are untreated and at risks of long-term complications. The purpose of the study is to determine the national prevalence of undiagnosed T2DM and to identify the associated risk factors among urban population in Malaysia.

**Method:** A nationwide cross-sectional study was conducted involving 17,783 respondents. Two stage stratified sampling design was used to select a representative sample of the Malaysian adult population. Structured validated questionnaires with face-to-face interviews were used to obtain data from the respondents. Respondents who claimed that they were not having diabetes were asked to perform a finger-prick test.

**Results:** The prevalence of undiagnosed T2DM among urban respondents was 8.7% (n=903). The highest percentage of undiagnosed T2DM among urban respondents was found to be females (10.2%), 55-59 years old (13.5%), Indians (10.5%), with no formal educational attainment (11.4%), not working (9.1%), married (10.2%) and smokers (9.9%). Multivariable analyses revealed that gender, age group, ethnic group, obesity and hypertensive were more likely to have undiagnosed T2DM.

**Conclusion:** This study showed a high prevalence of undiagnosed T2DM in Malaysia. This study also found the fact that established risk factors like obesity, age, gender hypertensive status were associated with undiagnosed diabetes mellitus. Therefore, awareness programs on diabetes must be improved and early diabetic screening is crucial especially among adults aged 30 years and above to prevent more serious complications of this disease.

**Keywords:** undiagnosed, type 2 DM, prevalence of diabetes, risks factor, Malaysia

## Variation in Insulin usage between states among Type 2 Diabetes patients attending government health clinics in Malaysia

Nurhaliza Zakariah

### ABSTRACT

**Introduction:** In 2014, the global prevalence of diabetes was estimated to be 9% among adults aged 18 years and above. In Malaysia, the prevalence of diabetes is estimated to be 15.2% (NHMS 2011). The initial treatment in most individuals with Type 2 Diabetes is an oral hypoglycemic agent (OHA). However, progression to insulin is common (28–39% incidence among older men). According to US Centers for Disease Control and Prevention, from 1997 to 2011, the number of known case diabetes for adults aged 18 years or older that take insulin, pills, or both is increased. For those taking insulin only, trends showed little or no change until 2007 and increased afterwards. The objective of the study is to describe the variation in insulin usage between states in Type 2 Diabetes patients attending government health clinics in Malaysia.

**Method:** This is a cross-sectional study using data from the annual National Diabetes Clinical Audit from year 2009-2014 involving all states in Malaysia. The audit is conducted by random sampling method using National Diabetes Registry (NDR) system.

**Results:** Generally, there was a steady growth in percentage of patients receiving insulin treatment in all states from 2009-2014. In 2014, the top 5 states with the highest percentage of T2DM patients receiving insulin were Wilayah Persekutuan Kuala Lumpur (30.87%), followed by Kelantan (30.73%), Selangor (30.4%), Negeri Sembilan (29.89%) and Terengganu (29.77%). Meanwhile WP Labuan (10.31%) and Sarawak (17.79%) had the lowest percentage of use.

**Conclusion:** There is a large variation in insulin usage between states in Malaysia. A further study is required to determine the factors influencing the large variation.

## Physical inactivity among Malaysian adults: Which domain is the worst?

Azahadi O\*, Lim KK\*, Hazizi AS\*\*, Khoo YY\*, Siti Fatimah MH\*, Joanita S\*\*\*

\*Institute for Public Health, Ministry of Health, Malaysia, \*\*Universiti Putra Malaysia, \*\*\*Hospital Tengku Ampuan Rahimah, Klang

### ABSTRACT

**Introduction:** Physical inactivity has been identified as one of the major risk factors for the cardiovascular diseases. Factors contributing factors to the escalating level of physical inactivity include insufficient participation in physical activity during leisure time, rise in sedentary behaviour during occupational and domestic activities and increase in the use of "passive" modes of transport. This study described the physical inactivity level in each of the three domains (working, travelling, leisure time) among Malaysian adults.

**Methodology:** Physical activity is one of the module in the Malaysian Adult Nutrition Survey (MANS) 2014 which was a population-based survey conducted among adult aged 18 to 59 years old. One respondent was selected from each household using a multi-stage stratified random sampling design. Physical activity levels were assessed using the Global Physical Activity Questionnaire (GPAQ) via face-to-face interview. GPAQ assessed the overall physical activity and level of physical in the above mentioned three domains.

**Results:** Overall, 36.9% of Malaysian adults were physically inactive. The level of inactivity was higher in females compared to males (50.0% vs 24.7%). There was no significant difference in inactivity levels between urban and rural respondents. The percentages of physical inactivity for working, leisure time and travelling domains were 55.0%, 70.0% and 84.8% respectively. Only 3.2% of Malaysian adults were active in all three domains, with another 16.4% active in two domains and 34.4% active in only one domain.

**Conclusion:** Although the overall physical inactivity level was relatively low, inactivity by domain was still high especially in the travelling domain. Programme and campaign to reduce physical inactivity should be intensified in all domains especially when less than 5% of Malaysian adults were active in all three domains.

**Keywords:** Physical inactivity, GPAQ, MANS, Malaysia

## Prevalence of obesity and association with the level of physical activities among patients attending health clinics in Kedah

Mohd Sa'ad Natrah\*, Sivabalan Thava Viknaraj\*\*, Law Kar Wai\*\*, Abu Hassan Rafidah\*\*\*

\*Pejabat Kesihatan Bandar Baharu, Kedah, \*\*Klinik Kesihatan Serdang, Bandar Baharu, \*\*\*Klinik Kesihatan Lubuk Buntar, Bandar Baharu, \*\*Ganesan Renuggha, Klinik Kesihatan Serdang, Bandar Baharu

### ABSTRACT

**Introduction:** As Malaysia progress rapidly towards a developed economic status, non-communicable diseases become increasingly prevalent among the population. A country moving at this pace reduces the opportunity of physical activity which is a risk factor related to increase in obesity. The objective of the study is to determine the prevalence and factors associated with obesity and its relationship with level of physical activity.

**Method:** A cross-sectional study involving a total of 323 respondents age >18 years old who were selected by systematic random sampling from all 3 government clinics in the district of Bandar Baharu, Kedah, were given a self-administered questionnaire on basic demographics and the validated Malay version of the International Physical Activity Questionnaire (IPAQ) between April to June 2015. Data collected were analysed using SPSS version 19.0.

**Results:** Using the World Health Organization (WHO) classification of Body Mass Index (BMI), 38.4% of respondents are overweight and 28.5% are obese. There is a significant association between BMI categories and age, gender, family history and hypertensive respondents. Female, younger respondents as well as hypertensive respondents are significantly overweight and obese ( $p < 0.05$ ). Those with family history of obesity are also more in overweight and obese BMI category. More than half (51.1%) of the respondents are active and 44.6% of respondents were minimally active. There is a significant negative correlation between Body Mass Index (BMI) and physical activity.

**Conclusion:** Targeted group interventions should be implemented in order to reduce the prevalence of overweight and obesity in the population of Bandar Baharu. As physical activity remains as an indicator for reducing obesity, the focus of it should be well established.

## Sampling design of the Malaysian Adults Nutrition Survey 2014

Balkish MN\*, Fadhli MY\*, Noor Ani A\*, Riyanti Saari\*\*, Ahmad Ali Zainuddin\*, Azahadi O\*, Azizah IW\*, Tahir Aris\*

\*Institute for Public Health, National Institutes of Health, Malaysia,

\*\*Department of Statistics, Malaysia

### ABSTRACT

**Introduction:** The Malaysian Adults Nutrition Survey (MANS) 2014 (MANS) was a nationally representative survey of non-institutional adults aged 18-59 years, residing in Malaysia for more than 30 days and inhabiting the selected living quarters for at least 2 weeks prior to data collection.

**Objective:** The objective of the survey was to describe meal pattern, habitual food intake, dietary intake, vitamin, mineral and food supplement intake, food security, nutritional status and physical activity pattern among Malaysian adults aged 18-59 years old.

**Methods:** There were eleven research scopes included in the survey. A multistage stratified cluster was adopted here. The stratification was by zone and urban/rural localities. The Primary Sampling Unit (PSU) was Enumeration Block (EB) based on information from the 2010 Census. A total of 337 EBs were selected from the total EBs in Malaysia (187 urban EBs, 150 rural EBs). The Secondary Sampling Unit (SSU) consisted of Living Quarters (LQs) within the selected EBs. Twelve LQs were randomly selected from each selected EB. The Final Sampling Unit (FSU) comprised of eligible individuals from the selected LQs. Where there was more than one eligible adult between the age of 18 and 59 years living in the same LQ, only one person was selected at random to take part in the survey using a modified Kish table.

**Results:** The overall household response rate was 95.3% from a total of 4044 sampled households in this study. The household response rate was higher in Peninsular Malaysia and in rural areas. Of the 3574 completed household interviews, there were 3000 individuals who completed the individual interview (calculated person-level response rate was 84.4%). The overall response rate was 80% for the whole country.

**Conclusion:** In conclusion, a robust methodology was utilised to ensure the production of quality data for MANS 2014.

## Change in nutrient intake after a decade: Comparing Malaysian Adult Nutritional Survey, 2003 and 2014

Wan Shakira RH, Hasnan A, Ahamad Ali, Nur Liana AM, Shubash S

Institute for Public Health, Bangsar, Kuala Lumpur

### ABSTRACT

**Introduction:** Unhealthy diet and sedentary behaviours have been identified as the primary cause attributable to obesity. Evaluating the trends of dietary intake is an important step in understanding the diet factor that contributes to the increase in obesity.

**Objective:** This study was carried out to determine the trend of energy and macronutrient intake from year 2003 to 2014 among Malaysian adults.

**Method:** The nationally representative data was taken from Malaysian Adult Nutritional Survey (MANS) 2003 and 2014, which are cross-sectional population surveys conducted nationwide. A multistage random sampling with proportional allocation was used for this survey. A total 6886 (MANS 2003) and 2981 (MANS 2014) Malaysian adults aged between 18 to 59 years participated in these surveys. Information on dietary intake was collected based on 24 hours diet recall interview and Nutritionist Pro was used for energy and nutrient analysis. The trend of energy and macronutrient intake was carried out based on gender using descriptive analysis.

**Results:** The median Malaysian energy intake has reduced from 1540 kcal ( $\pm 771$  kcal) in 2003 to 1465 kcal ( $\pm 776$  kcal) in year 2014. For macronutrient intake, the carbohydrate consumed also decreased from 220.76 kcal to 195.04 kcal. However, both protein and fat intake show increasing trends from 55.3 kcal to 56.67 kcal and 45.53 kcal to 46.43 kcal respectively. The male energy intake has dropped from 1722 kcal to 1464 kcal after one decade. This is in contrary with females, where the energy intake shows an upward trend from 1400 kcal to 1437 kcal.

**Conclusion:** After a decade, the overall Malaysian energy intake has decreased despite a marginal increase among the female population.

**Keywords:** Energy intake, Nutrient Intake, Malaysian Adult Nutritional Survey

## Changes in food choices among Malaysian adults: A Comparison between Malaysian Adults Nutrition Survey (MANS) 2003 and MANS 2014

Noraida Mohamad Kasim, Mohamad Hasnan Ahmad, Balkish Mahadir Naidu, Azli Baharudin

Institute for Public Health, National Institutes of Health, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** Food choices are known to be associated with general health. This study was conducted to determine the changes in food choices among Malaysian adults from year 2003 to year 2014 using secondary data from MANS 2003 and MANS 2014.

**Method:** A total of 6,742 and 3000 adults aged 18 to 59 years were recruited in MANS 2003 and MANS 2014 respectively. Both studies used a semi-quantitative food frequency questionnaire (FFQ) to evaluate habitual food intake among adults in Malaysia and data was analysed using SPSS and Stata.

**Results:** MANS 2003 reported that cooked rice was consumed by 97% of the population twice daily, whereas MANS 2014 showed only 89.9%. Other common food items consumed daily by Malaysian adults were marine fish (40.8%), green leafy vegetables (39.9%) and sweetened condensed milk (35.6%). This was different with MANS 2014 whereby sugar (white, brown, Melaka) (55.9%), was commonly consumed, followed by leafy green vegetables (43.2%) and marine fish (29.4%). MANS 2003 and 2014 both reported mean frequencies for daily intake of white rice, sugar, leafy green vegetables and marine fish to be significantly higher among males compared to females. Both studies showed that men consumed chicken and eggs more frequently. Malaysian adults demonstrated a good habit of drinking plain water daily with 99% in MANS 2003 and 98.2% in MANS 2014. Common consumed beverages in MANS 2003 were tea (47%), coffee (28%) and chocolate-based drinks (23%), whereas in MANS 2014 were tea 70.3%, malted drink 59.1% and coffee 53.2%.

**Conclusion:** In conclusion, there was a reduction in the prevalence of staple food consumption among adults whilst sugar consumption rose to second place over a 10 years period.

**Keywords:** food consumption, food choices, food pattern, food intake, Malaysian Adults Nutrition Survey

## 'Salt, Sugar, Fat: Top 10 Daily Food Favourites' Findings from the Malaysian Adults Nutrition Survey (MANS) 2014

Khoo Yi Yi\*, Mohamad Hasnan\*, Yussof Sabtu\*, Foo Leng Huat\*\*

\*Institute for Public Health, Ministry of Health, Malaysia, \*\*Programme of Nutrition, School of Health Sciences, Universiti Sains Malaysia

### ABSTRACT

**Introduction:** The prevalence of non-communicable diseases including cardiovascular disease, cancer, and diabetes has escalated over several decades. An important contributor to this rising trend includes urbanization of lifestyle practices involving unhealthy diets. This paper identifies the top ten daily food favourites among Malaysian adults containing elevated amounts of salt, sugar and fat.

**Methodology:** Malaysian Adults Nutrition Survey (MANS) 2014 was a nationwide cross-sectional study conducted between March and June 2014 among 3,000 adults aged 18 to 59 years old using a multi-stage stratified random sampling method. A semi-quantitative food frequency questionnaire (FFQ) comprising 165 food items was used to identify the habitual food intake of Malaysian adults.

**Results:** Local *kuih* was the top favourite food high in salt content, consumed by 79.0% of adults, averaging 0.75 pieces/day, followed by bread [76.9% (0.84 slices, 24.00g)], *mihun/kuehteow/laksa/laksam/lohshifun* [76.0% (0.20 cups, 27.72g)], soy sauce [75.6% (0.68 teaspoon, 5.86g)] and noodles [75.2% (0.22 cups, 38.08g)]. Regarding consumption of sugary foods, local *kuih* was still a fast favourite topping the list, then soy sauce, table sugar [74.3% (2.16 teaspoon, 15.15g)], condensed milk (creamer) [50.7% (0.77 tablespoon, 14.59g)] and ice-cream [38% (0.05 slices, 3.28g)]. Cream cracker [64.9% (1.15 slices, 8.07g)] was the preferred food of the population with the highest fat content, followed by condiment [55.7% (0.52 teaspoon, 4.67g)], fried chicken [50.1% (0.78 pieces, 7.75g)], cake [38% (0.05 slices, 5.36g)] and ice-cream.

**Conclusion:** Generally, Malaysian adults make discretionary food choices unnecessary for a healthy diet and are high in added salt, extra sugar and saturated fat. These optional foods may add variety and enjoyment to eating but are 'nutrient-poor' foods. Balance and moderation are keys to a healthy diet.

## Food eating habits and abdominal obesity among Malaysian adults: Findings from Malaysian Adult Nutrition Survey (MANS) 2014

Mohamad Fuad Mohamad Anuar\*, Fatimah Othman\*, Hamizatul Akmal Abd Hamid\*, Siew Lian Yaw\*\*, Nurul Ashikin Abdullah\*\*, Khairiyah Abdul Muttalib\*\*, Azli Baharuddin\*, Chan Ying Ying\*, Abdul Aiman Abd Ghani\*, Muslimah Yusof\*

\*Institute for Public Health, Ministry of Health, \*\*Oral Health Division, Ministry of Health

### ABSTRACT:

**Introduction:** Abdominal obesity is a strong predictor of development of many chronic diseases such as Type 2 diabetes. Persistent inappropriate food eating habits can lead to obesity, including abdominal obesity. The aim of this study is to investigate the waist circumference (WC) mean difference across various food eating habits among Malaysian adults.

**Method:** MANS 2014 utilised a cross-sectional study design with a multistage stratified sampling technique, targeting a total of 4,044 adults aged 18 and above. 2,878 respondents consisting of 1346 adult males and 1532 adult females were agreeable and responded to the questionnaire administered via face-to-face interview. The questionnaire touched on habits such as drinking water and eating fruits, with chewing times during meals. Data analysis was done using SPSS version 20.0. Age and ethnicity of the respondents were adjusted for by ANCOVA analysis.

**Results:** The tests showed that food consumption habits were associated with a WC increase in females compared to males. There was significant increase of WC with fruits consumption for males (p value <0.05; WC: 85.65 ± 11.97) while in females, there was a significant increase of WC for drinking (p value <0.05; 83.24 ± 11.88), fruit consumption (p value < 0.05; 82.73 ± 12.44) and chewing habits (p value < 0.05; 81.89 ± 12.28). After age and ethnicity were adjusted for, WC was still significantly increased in female respondents for all criteria (p value < 0.05).

**Conclusion:** WC increases from normal to abnormal for female adults who practice unhealthy food eating habits during meals. With females having an increased WC due to unhealthy consumption habits, the relevant authorities are urged to promote awareness and educate Malaysian women on better and healthier lifestyles.

## Fruit and Vegetable consumption among Malaysian Adult: Findings from Malaysian Adult Nutrition Survey (MANS) 2014

Nur Shahida AA, Norzawati Yeop, Faizah Paiwai

Institute of Public Health, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** Fruits and vegetables with essential nutrients such as vitamins, minerals, fibres and antioxidant are important food for health. The aim of this study was to determine fruit and vegetable consumption among adults in Malaysia.

**Method:** This was a cross-sectional study, which involved 3000 respondents comprising of 1388 men and 1612 women. Data were obtained from the Malaysian Adults Nutrition Survey 2014. Vegetables and fruits intake among the respondents were used to evaluate the pattern of fruit and vegetables consumption among adults in Malaysia.

**Results:** Results showed that vegetable intake among adults aged 18-59 years was 5.9% (CI 5.82-5.99) and no significant difference between women (6.09%; 95% CI: 5.98-6.19) and men (5.73%; 95% CI: 5.61-5.86). Mean serving of vegetable intake was 1.61 serving per day for men and 1.59 serving per day for women. Results by strata showed that adults from urban areas (6.00%; 95% CI: 5.99-6.11) consumed more vegetables as compared to adults in rural areas (5.68%; 95% CI: 5.55-5.82). Only 3.7% (95% CI: 3.58-3.81) of adults in Malaysia consumed fruits daily, women (3.88%; 95% CI: 3.74 - 4.03) consumed slightly more fruits daily than men (3.51%; 95% CI: 3.35-3.68). Adults from urban areas (3.85%; 95% CI: 3.69-4.00) consumed more fruits than adults in rural areas (3.33%; 95% CI: 3.19-3.46). Mean serving for fruits intake for men and women were 1.52 and 1.40 servings per day respectively. Comparison by ethnicity indicated that Chinese consumed more fruits (4.21%; 95% CI: 3.95-4.48) and vegetables (6.33%; 95% CI: 6.15-6.51) as compared with other ethnic groups.

**Conclusion:** Overall, there were some differences in the intake of fruits and vegetables between gender and ethnicity. However, intake of fruits and vegetables per day still were inadequate if compared with Malaysian Dietary Guidelines among adults in Malaysia. Healthy dietary habits should be promoted to prevent diseases and in promoting optimal health.

**Keywords:** fruit, vegetable consumption, Malaysian adult

## Nutrient intake among Malaysian adults: Do they meet the requirement of the Malaysian recommended nutrient intake?

Nur Azna Mahmud, Noraida Mohd Kassim, Mohd Hasnan Ahmad, Ahmad Ali Zainuddin, Wan Shakira Rodzlan Hasani

Institute for Public Health, 50590 Kuala Lumpur

### ABSTRACT

**Introduction:** Good nutrient intake will ensure optimum work performance and delay the onset of generative diseases. The aim of this study is to determine the prevalence of nutrient intake among Malaysian adults in compliance with the Recommended Nutrient Intake (RNI).

**Method:** The interactive 24-hour dietary recall was conducted to assess all foods and drinks consumed by 3000 respondents in the Malaysian Adult Nutrition Survey (MANS) 2014. Food album and standard local household utensils were used to assist nutritionist during the interview sessions. Respondent selection was based on complex, stratified, multistage probability sampling among adults aged 18 to 59 years old nationwide.

**Results:** The overall prevalence of Malaysian adults that met the RNI of the macronutrients were 23% (95% CI: 20.9-25.2) for calorie, 40.2% (95% CI: 37.8-42.7) for carbohydrate, 40.4% (95% CI: 37.9-43.0) for protein and 3.4% (95% CI: 2.7-4.4) for fat. By gender, the prevalence of adults who met RNI among females and males were 26.1% (95% CI: 23.5-28.9) vs. 20.1% (95% CI: 17.3-23.3) for calorie, 41.5% (95% CI: 38.3-44.7) vs. 39.1% (95% CI: 35.6-42.7) for carbohydrate, 41.5% (95% CI: 38.3-44.8) vs. 39.4% (95% CI: 35.9-43.0) for protein and 3.7% (95% CI: 2.7-5.1) vs. 3.1% (95% CI: 2.2-4.5) for fat. About 10.6%, 6.3%, 50.7% and 94.9% of Malaysian adults were found to be over the RNI, whilst 66.5%, 53.5%, 8.8%, 1.7, % were found to have below the RNI for calorie, carbohydrate, protein and fat respectively.

**Conclusion:** Nutrient intake among Malaysian adults is a concern as less than 50% of Malaysian adults achieved the RNI for all macronutrients. Prompt action must be taken holistically especially in order to improve nutritional well-being and health status of Malaysian adults.

**Keywords:** Malaysian adult, nutrient intake, recommended nutrient intake

## Food intake among Malaysian adults: are we meeting individualised recommendations?

Mohamad Hasnan A\*, Khoo YY\*, Yusuf S\*, Foo LH\*\*

\*Institute for Public Health, Ministry of Health Malaysia, \*\*Program of Nutrition, School of Health Sciences, Universiti Sains Malaysia

### ABSTRACT

**Introduction:** The Malaysian Food Pyramid is a simple guide for individuals to vary their food intake according to total daily food serving recommendations. This paper aimed to evaluate the extent to which Malaysian adults meet this recommendation.

**Methods:** Malaysian Adults Nutrition Survey (MANS) was a cross-sectional study conducted from March to June 2014. A nationwide total of 3,000 adults aged 18 to 59 years old were interviewed using a semi-quantitative food frequency questionnaire (FFQ) which consisted of 165 food items. At analysis, the food item was grouped into 7 categories and compared to their recommendation as in Malaysian Food Pyramid.

**Results:** As many as 66.8% of Malaysian adults met the recommended serving per day for 'meat, poultry and egg' followed by 41.3% for 'cereal and cereal product', 31.3% for 'fish and fish product', 24.4% for 'milk and dairy product', 17.1% for 'legumes and nut', 14.9% for 'fruits' and finally 7.9% for 'vegetables'. This study found 'Legumes and nut' (81.9%) to be the top food group consumed below the recommended serving per day followed by 'vegetables' (81.1%) and 'milk and dairy products' (73.6%). On the other hand, 'fish' (38.6%), 'fruits' (26.0%) and 'meat, poultry and egg' (13.1%) were the top three food groups consumed over the recommended serving per day. Generally, urban adults managed to meet recommended servings better than the rural population especially for 'legumes and nut',  $\chi^2(1) = 8.070$ ,  $p < 0.05$ .

**Conclusion:** Over 50% of Malaysian adults failed to meet the recommended serving size for all food groups with the exception of 'meat, poultry and egg' group. Furthermore, less than 25% of Malaysian adults met the recommended intake for 'vegetables', 'fruits', 'legumes and nut' and 'milk and dairy product'. Therefore, tremendous action must be taken holistically to increase the awareness of the Malaysian population to practice healthy eating in their daily living.

**Keywords:** food serving intake, food frequency questionnaire, adults, recommendation, Malaysian Food Pyramid

## Food supplement intake among adults: Findings from the Malaysian Adult Nutrition Survey 2014

Nor Azian Mohd Zaki, Mohamad Naim Mohamad Rasidi, Tee Guat Hiong, Hasimah Ismail, S Maria Awaluddin, Noor Safiza Mohamad Nor, Rahama Samad, Ahmad Ali Zainuddin

Institute for Public Health, Jalan Bangsar, Kuala Lumpur

### ABSTRACT

**Introduction:** The use and variety of dietary supplements has increased over time in Malaysia. This presentation aimed to describe the use of food supplements among Malaysian adults.

**Method:** Data from the Malaysian Adults Nutrition Survey (MANS) 2014, a nationally representative survey were analysed. This cross-sectional survey using a two-stage stratified sampling method was conducted among adults aged 18-59 years old who were living in Malaysia. By using Kish selection method, only one eligible adult was selected from each household to participate in this survey. A set of validated questionnaire on food supplement intake was used and descriptive statistics were applied to obtain information on frequency and type of food supplement.

**Results:** A total of 3000 respondents participated in the study with a response rate of 99.7%. About 34.0% (95%CI: 31.37-36.77) of adults reported taking a food supplement in the past 12 month. Higher prevalence of women adults took food supplements than men. The most common food supplement taken was fish oil (26.24%; 95% CI: 31.37-36.77), followed by royal jelly (18.07%; 95% CI: 31.37-36.77) and spirulina (9.99%; 95%CI: 31.37-36.77). Most of the food supplements were taken daily. Among those reported ever taking food supplement, 68.0% of them took one supplement and 31.54% (95% CI: 31.37-36.77) took more than one food supplements. Three main reasons for taking food supplement were for health, boosting energy and for beauty.

**Conclusion:** This study indicated that food supplement use was prevalent in Malaysia especially among women. The increasing trend of food supplement use in Malaysia needs further research to provide scientific evidence of each type of supplements, as well as to evaluate their risks and benefits.

**Keywords:** food supplements, supplements, Malaysian Adults Nutrition Study (MANS)

## Change of meal patterns among Malaysian adults: MANS 2003 vs. MANS 2014

Mohamad Aznuddin Abd Razak\*, Norhafizah Sahril\*, Yeo Pei Sien\*\*, Ahmad Nadzri Jai\*, Nazli Suhardi Ibrahim\*\*\*, Hamid Jan Jan Mohamed\*\*\*\*

\*Institute for Public Health, Ministry of Health Malaysia, \*\*Department of Social and Preventive Medicine, University of Malaysia, \*\*\*Department of Nutrition, Ministry of Health Malaysia, \*\*\*\*Health Science Study Center, Universiti Sains Malaysia

### ABSTRACT

**Introduction:** The rapid change in meal patterns can lead to nutrition-related diseases such as obesity. This study aims to determine the changes of meal patterns among Malaysian adults between year 2003 and year 2014.

**Method:** The data from two consecutive studies of Malaysian Adults Nutrition Survey (MANS) in year 2003 and year 2014 were used to examine the changes in meal patterns reported by Malaysian adults. Both surveys used multistage stratified cluster sampling methods. Two different sets of structured questionnaires and face-to-face interview were used in data collection activity. The data were analysed using complex sampling descriptive analysis.

**Results:** MANS 2014 reported that the prevalence of three main meals consumption [breakfast, 93.7% (95% CI: 92.43-94.84), lunch, 94.5% (95% CI: 93.34-95.44), and dinner, 96.4% (95% CI: 95.40-97.11) respectively] in year 2014 were increased as compared to MANS 2003. Upturned meal patterns for all three main meals were significant among urban adults, which range from 4.3-7.4%. There was significantly higher proportion of Malay adults (%) who reported taking all main meals in 2014 compared to the previous study. Both males and females had increased consumption of three main meals within these ten years (2003-2014) with the increment range of 4.0-6.4% for males and 4.4-5.4% for females.

**Conclusion:** The finding of the studies showed that there was increased of meal consumption among Malaysian adults within the past 10 years. This could be due to Malaysian adults being more concerned on the health benefits of regular meal consumption.

**Keywords:** Meal patterns, Malaysian adults, cross-sectional studies, Malaysian Adults Nutrition Survey

## Nutritional status, knowledge, attitude and practice among orphans living in institutions in Selangor and Melaka

Mohd Dzulkhairi MR, Syimir Shaziman, Zairina AR, Wan Noraini WS, Khairun Nain Noraripin, Nazefah Abdul H

Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia

### ABSTRACT

**Introduction:** Nutritional problems are significantly more common in young children and are strongly associated with social deprivation. This study aims to determine nutritional status, knowledge, attitude and practice of nutrition among children and adolescents' living in orphanage institutions in Selangor and Melaka.

**Method:** A cross-sectional study was conducted using face-to-face interview among 128 randomly selected children and adolescents in five orphanage institutions using standardised and self-validated questionnaires. Their height and weight were measured. The result were analysed using IBM Statistics version 20.

**Results:** Majority of them (62.0%) have normal body mass index (BMI), 18.8% were overweight, 13.3% were obese and 6.2% were underweight. Half of the children (12 years old and below) and half of the adolescents (13 until 18 years old) (53.6% and 52.3% respectively) have high nutritional knowledge. Majority of them has good attitude (85.9%) and good practice of nutrition (76.6%). The mean knowledge showed statistical significant with association with increase in age of the respondents (p-value 0.020) whereas others showed no statistical significance.

**Discussion:** The percentage of overweight and obese in this study is higher compared to other study among school children in Malaysia (Kashmini et al., 1997 and Zaini et al., 2005). An Australian study on nutritional knowledge also found that older respondents had significantly higher knowledge level (Hendrie et al., 2008). A study in Ireland also reported that those with positive attitude were more obedient to dietary guideline (Hearty et al., 2007). Half of our respondents (50.8%) eat vegetables and fruits at least three time a day which is better than a study in the United States (Baxter & Thompson, 2002) that reported half (49%) of their respondents did not take vegetables at all.

**Keywords:** orphanage, obesity, undernourished, nutritional problems

## Community alcohol programme in Sabah

Nirmal K, Jinik B, Bibi A, Norsiah A

NCD Unit, Public Health, Sabah State Health Department

### ABSTRACT

**Introduction:** Alcohol abuse in Malaysia is mainly heavy intake in the form of drinks, underage drinking and driving under the influence of alcohol. This is due to the ready availability of alcohol and cheap price, which is affordable by many. In the state of Sarawak and Sabah on Borneo, the community traditionally drink a homemade rice wine called tuak or tapai in conjunction with harvest celebration and during social or communal gathering. The objective of this study was to identify the pattern of drinking and the level of alcohol consumption in the community.

**Method:** Alcohol screening programme was conducted at Kampung Bundu Tuhan Kundasang in January 2015. Screening tool used is AUDIT (Alcohol Use Disorder Identification Test) questionnaire, which is a valid screening instrument for detecting hazardous and harmful drinking by the World Health Organization.

**Results:** A total of 35 respondents agreed to undergo alcohol screening in the community. The respondents group comprised of 77% male and 23% female respectively. 100% of the respondents still consumed alcohol. Hazards of alcohol consumption were directly related to the amount of alcohol consumed. Alcohol consumers were divided into low risk drinking, hazardous drinking, harmful drinking based on AUDIT SCORE. In this screening, 32% of the respondents were low risk drinkers, 54% hazardous drinkers and 14% harmful drinkers.

**Conclusion:** By conducting screening, we can identify the magnitude of drinking problems in the community. Therefore health education and health promotions on alcohol hazards should be more aggressive in the community.

## Perception and risk associated to youth alcohol consumption within different ethnic communities residing in urban and semi urban areas within Klang Valley, Malaysia

Sangeeta KS, Alexander TZS, Liew Min, Lee JM, Anne J

Perdana University-Royal College of Surgeons of Ireland, Selangor

### ABSTRACT

**Introduction:** In May 2013, a study conducted by the Ministry of Health Malaysia reported that approximately 7% Malaysian aged 15-19 were known to consume alcohol within the last 12 months. The objective of the study is to understand communities prospective of the harm associated to youth alcohol drinking within the Malaysian context.

**Method:** A geo mapping activity in urban and semi-urban areas within Klang Valley was conducted from December 2014 to March 2015, to identify main ethnicity sites such as Setapak (Malay), Cheras (Malay, Chinese), Petaling Jaya (Chinese), Batu (Indian), and Ampang (Indian). The target groups were approached at public places and consent was obtained to explore their perception, knowledge and attitude towards alcohol use within Malaysian youth.

**Results:** 207 (73 Malays, 79 Chinese, and 55 Indians) youths from a total of 5 sites, completed a self-administered questionnaire. 49% (n=101) participants believed that there are insufficient enforcement on alcohol misuse in Malaysia. 58% participants claimed that Malaysia drinking problem is one of many problems. Whereby 68% (n=140) participants strongly agreed that youth today is consuming alcohol. 72% (n=148) agreed that alcohol consumption leads to risky behaviour (e.g. binge drinking, drink driving, unsafe sex). 21% (n=102) believed that it is acceptable to drink at home. Majority of the respondents (55%, n=113) thinks that safe drinking limit for men is within the range of 1-2 glass of alcohol. 28% (n=57) thinks that 2-4 glass of alcohol a day is safe for men.

**Conclusion:** The preferred intervention selected by participants is to increase restriction and prohibition. Targeted harm reduction approach (such as stop ignoring the fact that there is an issue of alcohol misuse, go beyond prohibition and promote evidence around the management, prevention and treatment of alcohol misuse) needs to be integrated as public health interventions.

## Knowledge and acceptance of community health intervention program in Sothern zone in Peninsular Malaysia among District Health Officers and KEMAS District Officers

Ling MY\*, Wan Shakira RH\*, Rosnah Ramly\*\*, NadatulIma Z\*\*, Cheong SM\*, Lim KK\*, Lim KH\*, M Fadhli MY\*

\*Institute of Public Health, 50590, Kuala Lumpur, \*\*Disease Control Division, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** “Komuniti Sihat, Perkasa Negara” (KOSPEN) is a non-communicable disease (NCD) intervention program aimed at reducing the level of behavioural and biological NCD risk factors. The aim of this study was to evaluate the knowledge and acceptance among District Health Officers (DHO) and KEMAS District Officers (KDO) who are the major implementer in the district toward KOSPEN.

**Method:** The cross-sectional study was conducted from October to December 2014. All DHO and KDO from all districts in Johor, Malacca and Negeri Sembilan were recruited. Data was collected using pre-tested validated questionnaires.

**Results:** 17 DHO and 17 KDO participated in this study. Knowledge wise, all DHO respondents (100%) knew that health screening, no smoking zone and physical activities were the core KOSPEN activities. Among the KDO respondents, majority of them had good knowledge about the core activities of KOSPEN, such as conducting health screenings (100%, n=17), creating no smoking zones (88.2%, n=15) and performing regular exercise (70.6%, n=12). Acceptance wise, majority of DHO rated KOSPEN activities as very good (52.9%, n=9) and good (41.2%, n=7), while 70.6% agreed that KOSPEN was effective in overcoming chronic diseases in the community. Apart from that, KDO had rather positive thoughts and views on the KOSPEN program, in which 41.2% (n=7) had rated it as very good and 23.5% (n=4) as good respectively. In addition, more than 80% of them agreed that KOSPEN was effective in overcoming chronic diseases in Malaysia.

**Conclusion:** This study revealed that DHO and majority of KDO have high level of knowledge and acceptance toward KOSPEN. Therefore, the KOSPEN program should be enhanced for nationwide implementation.

## The awareness, knowledge and acceptance among KEMAS personnel towards the KOSPEN programme in Southern Zone, Malaysia

Mohd Yussof Sabtu, Lim Kuang Kuay, Hasimah Ismail, Nor Azian Mohd Zaki, Lim Kuang Hock

Institute for Public Health, Ministry of Health, Kuala Lumpur

### ABSTRACT

**Introduction:** The Ministry of Health had initiated a national programme known as “KOSPEN” to study the prevalence of Non Communicable Diseases (NCDs) and its risk factors among the population. The aim of this study is to assess the awareness, knowledge and acceptance of KOSPEN programme among Community Development Department (KEMAS) personnel in Southern Zone, Malaysia.

**Methods:** The cross-sectional study was conducted between October and mid December 2014. The study used validated self-administered questionnaires to collect data from the 2375 KEMAS staff from the state of Johor, Malacca and Negeri Sembilan. SPSS version 20 was used for data analysis.

**Results:** The results revealed that only 25.5% of respondents were aware that they were on the KOSPEN committee and 65.7% said that they knew the functions of KEMAS in KOSPEN. 90.8% were aware that their responsibilities included identifying localities for KOSPEN, identifying volunteers (85.7%) and attending KOSPEN training (75.3%). In terms of knowledge, most of them knew the objectives of KOSPEN, such as “KEMAS will add on the value of the programmes and its activities” (84.3%) and “to establish trained health volunteers in the community” (85.9%). They also knew that healthy eating habits (94.7%), active lifestyle (93.4%), body weight management (87.0%), no smoking (86.8%) and health screening (92.2%) were the components of KOSPEN. Majority of the respondents perceived that the components for intervention in the community were good. The highest accepted component was health screening (83.5%), follow by healthy eating habits (82.0%), active lifestyle (80.4%), no smoking habit (76.9%) and body weight management (76.1%).

**Conclusion:** the awareness, knowledge and acceptance of KOSPEN programme by KEMAS personnel are good. Several measures are currently being carried out to improve and strengthen the implementation of KOSPEN programme such as funding, screening equipment and health education materials.

## Mental Health: The Unseen Burden

Shubash Shander, Azahadi Omar; Khoo Yi Yi; Fuad Mohamad Anuar; Chandrika Jeevananthan; Siti Fatimah Mat Husin

Centre for Burden of Disease Research, Institute for Public Health, Ministry of Health Malaysia

### ABSTRACT

**Introduction:** In 2010, mental and behavioural disorders, such as depression, bipolar, schizophrenia, alcohol use and drug use, were the leading cause of Years Lived with Disability (YLDs) worldwide. Mental and substance use disorders accounted for 8.6 million Years of Life Lost due to premature mortality (YLLs) and 175.3 million YLDs, accounting for 183.9 million Disability-adjusted Life Years (DALYs) or 7.4% of all DALYs worldwide.

**Methodology:** Methods developed by the World Health Organization (WHO) for the Global Burden of Disease (GBD) Study were applied to calculate the burden of disease in terms of YLL, YLD and overall DALYs in Malaysia for 2008. Population and mortality data were provided by the Department of Statistics, Malaysia and estimates from local and international sources were used to for the morbidity component.

**Results:** Mental health and behavioural disorder was only second to Cardiovascular and Circulatory Disease in overall DALYs for Malaysia in 2008. The DALYs for mental health and behavioural disorder was largely due to YLD (99.6%). Unipolar depressive disorder accounted for 44.4% of the DALYs in the group and was by far the largest contributor among the disorders in mental health and behavioural disorders. Males made up 55.5% of the 265,755 DALYs for mental health and behavioural disorder. Those within 15 – 29 years of age were the largest contributor in both sexes.

**Conclusion:** The trends of YLD, depressive disorder and younger age group predominance are all similar with other international findings. The population and medical practitioners in Malaysia need to be educated on the disease, the signs and symptoms, treatment and prevention to arrest the growing burden on mental health and behavioural disorder in Malaysia.

**Keyword:** mental health, DALYs, burden of disease

## A study on psychiatric morbidities and its associated factors among elderly post flood victims in Tumpat, Kelantan

Tan Zi Ti\*, Thaqief Mohamad Azaini\*, Aini Sofiah Shahrniza\*, Jabraan Jamil\*, Yu Jie Si\*, Mayple Tan Leou Jun\*, Nazhan Keeshan, Nahdan Rengganathan\*, Shaiful Bahari Ismail\*\*, Asrenee Abdul Razak\*\*\*, Mohd. Hashim Mohd. Hassan\*\*\*, Azidah Abdul Kadir\*\*

\*Medical Students, School Of Medical Sciences, Universiti Sains Malaysia, \*\*Family Medicine Department, School Of Medical Sciences, Universiti Sains Malaysia, \*\*\*Department of Psychiatry, School Of Medical Sciences, Universiti Sains Malaysia

### ABSTRACT

**Introduction:** Elderly population is regarded as a vulnerable group in the face of flood impact. The aim of the study is to assess depression and post-traumatic disorder and its associated factors among the elderly in Tumpat, Kelantan who were affected by the flood.

**Method:** A cross-sectional study to determine the prevalence of depression and traumatic stress, the correlation between depression and traumatic stress and associated factors for depression among elderly post-flood victims in Tumpat, Kelantan was conducted in February 2015 in three villages in Tumpat, Kelantan. Face to face interview were conducted using socio-demographic performa, Malay version Geriatric Depression Scale 14 (M-GDS 14), Malay version Trauma Screening Questionnaire (TSQ), Malay version Barthel Index and flood related questionnaires.

**Results:** One hundreds elderly completed the study. The prevalence of depression and traumatic stress were 15% and 17.8% respectively. Female (Odds Ratio (OR) 5, CI: 1.27, 19.99), family history of mental illness (OR 39.5 CI: 1.41, 1063.08) and elderly with traumatic stress (OR 5.38 CI: 1.53, 18.9) were significantly associated with depression. There was significant correlation between depression and traumatic stress ( $r=0.36$ ,  $p<0.001$ ).

**Conclusion:** In conclusion, female population, those with a family history of mental illness as well as those who have post-traumatic stress are more prone to develop depression. It is suggested to expand this research to a bigger population as well as other flood affected states in Malaysia.

## Morbidity patterns among the elderly in Malaysia: A 15-year trend

Noor Ani Ahmad, S Maria Awaluddin, Balkish Mahadir Naidu, Rajini Sooryanarayana, Noraida Mohd Kasim, Rahama Samad, Muslimah Yusof, Chan Ying Ying, Norhafizah Sahril, Mohammad Aznuddin Abd Razak

### ABSTRACT

**Introduction:** An increasing elderly population is associated with higher morbidity and more demands on health care services. This paper describes the trends in morbidities and health service utilisation among elderly aged 60 years and older in a 15-year span.

**Method:** Data from three cross-sectional nation-wide community-based surveys, the National Health and Morbidity Survey, which were conducted in 1996, 2006 and 2011, were analysed. The surveys used multi-stage stratified sampling design involving all residents, irrespective of age. For the purpose of this paper, respondents aged 60 years and older were selected for further analysis. Analysis was done using complex sample analysis to ensure sample weight and design effect were accounted for.

**Results:** Overall, the prevalence of diabetes among the elderly increased from 1996 to 2006 and 2011 (14.8%, 23.6% and 34.4%, respectively). For hypertension, the prevalence increased from 1996 to 2006, then lowered slightly in 2011, while hypercholesterolemia had reduced slightly in 2006 as compared to 1996; then increased from 2006 to 2011. Obesity in elderly increased from 1996 to 2011. Current smokers decreased from 1996 to 2006 and 2011 (27.1%, 18.7% and 15.2%, respectively), while alcohol consumption did not show an obvious difference from 2006 to 2011. There was also no obvious difference in health service utilisation; outpatient attendance or hospital admission, from 1996 to 2011.

**Conclusion:** The prevalence of diabetes, hypertension, hypercholesterolemia and obesity among elderly showed an increasing trend from 1996 to 2011. However, no obvious trend with utilisation of health services was noted. In line with aging population in Malaysia, it is vital for policy makers to plan for adequate resources in order to provide comprehensive and holistic health services for elderly in Malaysia.

**Keywords:** elderly, trends, morbidities, survey

## The Elderly Project: Effective Services Elderly Productive 2014

Azizah I, Inthirani S, Nurhakimin N, Nurizyan N, Norhaidah M

Jinjang Health Clinics, Federal Territory of Kuala Lumpur

### ABSTRACT

**Introduction:** Statistics show that 12% of the population in Malaysia are elderly. This elderly group is in need of comprehensive care so that they can enjoy their perfect life. Based on data from outpatient department in 2013, 45% of them were from senior citizens. Therefore, allied health from Jinjang Clinics has initiated a holistic and comprehensive health care to them. The objective is to increase healthy lifestyles among elderly. At the end of program they shall achieve optimal blood pressure, control blood sugar, reduce pain, body weight and also healthy minds set.

**Method:** Participants were randomly selected from among outpatients aged over 60 years. A total of 80 elderly were successfully selected and agreed to participate into this project. Health screening conducted on all participants used BSSK form. Activities were measure independently Body Mass Index, self-examination of vital signs, self-monitoring of blood glucose levels, health education, cooking demonstration, exercise and fitness activities. Monthly data was collected on the progression of the health and mental status. Data was analysed by the using SPSS 20. All 80 participants successfully completed the project without drop out. The project period was 12 months from January to December 2014.

**Results:** Of the 80 participants, 43.75% successfully reduced weight while 25% able to controlled blood sugar between normal limits. A total of 28.75% managed to control blood pressure, 17.5% improve the health of mind and 93.75% reduced the score for limbs pain.

**Conclusion:** Overall, with a structured intervention program, a commitment from committee of the project and cost-effective can control the risk factors of Non-Communicable Disease (NCD). The project achieved 75% of elderly productive, happy and healthy mind. This project has managed to become an example throughout the Federal Territory of Kuala Lumpur.

**Keywords:** quality of life, elderly, effective services, hypertension, non-communicable disease among elderly.

## Falls among older adults: Findings from screening at the Ministry of Health Malaysia Primary Care Clinics

Norhafizah Sahril, Noor Ani Ahmad, Mohamad Aznuddin Abd Razak, Chan Ying Ying, Rajini Sooryanarayana, S Maria Awaluddin, Noraida Mohd Kassim, Muslimah Yusof, Rahama Samad, Balkish Mahadir Naidu, Norazizah Ibrahim Wong

Institute for Public Health, National Institutes of Health, Ministry of Health, Malaysia, Kuala Lumpur

### ABSTRACT

**Introduction:** Falls is a major health problem and disproportionately affect the lives of older adults. This study aimed to determine the associated factors for risk of falls among Malaysian older adults.

**Method:** This study was cross-sectional in design and using secondary data collected from Elderly Health Screening Form (BSSK/WE/2008/Pind.1/2012). It was a nationwide study involving 328 randomly selected Government Primary Care Clinics. Elderly is defined as a person aged 60 years and above. Descriptive and logistic regression analyses were conducted using SPSS version 19.0.

**Results:** Overall, 19.1% (95% CI: 17.86-20.42) of the elderly reported of experienced falls. The prevalence of falls were higher among females than males (19.5% vs. 18.7%), elderly aged 75 years and older than those who were younger (21.9% vs. 18.4%) and among rural than urban dwellers (21.2% vs. 17.8%). By ethnicity, the highest prevalence of falls was among the Indians, followed by Malays, Chinese and other ethnics (19.8%, 19.4%, 18.9%, 17.3% respectively). Multiple logistic regression revealed that falls were positively associated with taking one or more medicines (adjusted Odds Ratio (aOR) 2.33, 95% CI: 1.39-3.91), consuming alcohol (aOR 1.72, 95% CI: 1.06-2.80) and having heart disease (aOR 1.95, 95% CI: 1.37-2.76). Elderly who were current smokers, having hypertension, diabetes, asthma, kidney failure and epilepsy were not statistically associated with falls.

**Discussion:** Falls are a common problem among older adults, with potentially serious consequences. Our study found that elderly who were on multiple-drug treatment, consumed alcohol and diagnosed with heart disease were at higher risk for falls. A comprehensive and targeted program designed to reduce risk of falls is urgently needed.

**Keywords:** falls, older adults, Elderly Health Screening Form

## Stability of emotional and behavioural problems among school going children in Klang Valley in Malaysia

Idayu Badilla Idris

Department of Community Health, Faculty of Medicine, UKMMC, Kuala Lumpur

### ABSTRACT

**Introduction:** Emotional and behavioural problems (EBD) in children are highly prevalent in Western society and predict later mental health problems, substance abuse, criminal behaviour and relationship problems. There is currently no data available on the prevalence and stability of EBD in Malaysian children. The objective of this longitudinal study is to measure the stability of EBD among school going children in Klang Valley at baseline and after 6 months period.

**Method:** Self-administered Strengths and Difficulties Questionnaires (SDQ) which measures the Total Difficulties Scores, Emotional, Conduct, Peer Problem and Pro-Social Skills were distributed among 495 parents of 7 to 8 and 13 to 14 years of children attending 6 primary and 3 secondary schools in Petaling and Klang District in Malaysia. These questionnaires were given at baseline and again after 6 month's period.

**Results:** The prevalence of EBD at baseline was found to be almost similar to the western country (UK) i.e. 8.5%. There was a high level of continuity of EBD problems across all scores between Time 1 and Time 2 (i.e. at 6 months) ( $p > 0.005$ ). There were also significant relationships between younger age children ( $p = 0.014$ ) and children's Conduct problem at Time 1 ( $p = 0.000$ ) with Parent's Total Difficulties Scores at Time 2.

**Conclusion:** Although the prevalence of EBD among children at baseline in this country was almost similar to other western countries, emotional and behavioural problems among these children show continuity and stability across time. Therefore there is a need to screen these problems during early childhood to facilitate early intervention for these children with such problems. This measures need to be taken in order to prevent long term consequences caused by these problems

## Quality of Life associated with the use of non-prescription substances among university students in Malaysia

Suraya HS\*, Azmawati MN\*\*

\*Pharmaceutical Services Division, Johor State Health Department, Ministry of Health, Malaysia, Johor Bahru, \*\*Department of Community Health, Faculty of Medicine UKM, Kuala Lumpur

### ABSTRACT

**Introduction:** Use of non-prescription substances may affect the quality of life of the users. However, little is known about the impact of use of non-prescription substances on quality of life (QoL). This study aimed to determine quality of life associated with the use of non-prescription substances for weight-loss management among university students.

**Method:** A cross-sectional study was conducted from August until October 2013 among 358 postgraduate students aged 22-45 years in Universiti Kebangsaan Malaysia (UKM). A validated self-administered Malay version of WHOQOL-BREF questionnaire was distributed by multistage sampling to the students. The questionnaire was classified into four domains with 26 items: Physical health domain (seven items), psychological domain (six items), social relationship domain (three items) and environment domain (eight items). Another two questions were asked to assess Health Related Quality of Life (HRQOL).

**Results:** This study indicated that there were significantly higher mean among non-users compared to user of non-prescription substances for physical activity domain ( $p = 0.018$ ), psychological domain ( $p < 0.001$ ) and environment domain ( $p = 0.031$ ).

**Conclusion:** In conclusion, non-users have better quality of life compared to users of non-prescription substances.

**Keywords:** Non-prescription substances, quality of life, WHOQOL-BREF

## Non-specific health symptoms due to exposure to electromagnetic field radiation

Mohammad Wisman Abdul Hamid\*, Adlina Suleiman\*, Thor Teong Gee\*\*, Ong Bee Lay\*\*\*, Halyna Lugova\*, Aqil Mohd Daher\*, Mala Manickam\*, Nurul Saadiah\*

\*Community Medicine Department, National Defence University, Kuala Lumpur, \*\*Klinik Public, Sungai Ara, Penang, \*\*\*EMF Protection Alliance

### ABSTRACT

The development of mobile telecommunication technology has led to substantial growth of the number of mobile phone base station (TELCO) tower worldwide. It has raised public concerns and substantial controversy about the potential health effects of electromagnetic field emissions that is not yet fully understood. Residents living within the vicinity of TELCO towers develop adverse health conditions now known as non-specific health symptoms (NSHS) mainly due to hypersensitivity to the radiation. The manifestation of this hypersensitivity manifest as health complains such as headaches, giddiness, nausea, skin rashes, feeling warm, depression, night sweats, memory loss, reduced reaction time, disturbances in menstruation and insomnia. The health effects of EMR is best explained in a study by Hallberg and Oberfeld estimated that 50% of the public exposed to EMR would be sensitive to the radiation effects by 2017. This paper will discuss several cross-sectional studies on EMR and the health effects conducted in Malaysia from 2008 to 2015 covering Petaling Jaya, Pulau Pinang, Taiping and Johor Bahru. The author will discuss how the studies have evolved from epidemiological studies using questionnaires with initial analysis using qualitative statistical tests, to studies of exposed groups and non-exposed groups calculating the odds ratio, to the more sophisticated blood studies and the reason for the change in methodology with be explained.

**Keywords:** electromagnetic field radiation, EMR, non-specific health symptoms

## Noise induced hearing loss: Is it a problem among Inspectorates workers? A review from Raub Occupational Health Clinic, Nov 2014-Mac 2015

Muhaimin A, Azim RH, Ismar Y

Raub District Health Office, Pahang

### ABSTRACT

**Introduction:** Hearing loss is a major cause of disability in the world. Noise induced hearing loss (NIHL) is a form of hearing loss caused by sustained and repeated exposure to excessive sound levels. Inspectorate workers were exposed to loud noise by dealing with thermal-fog and grass cutting activities. The objective of the study is to identify the prevalence and risk factors contributing to NIHL among inspectorates' workers in Raub District Health Office

**Method:** A cross-sectional study has been carried out. The respondents from the Vector and Bakas unit were assess using secondary data from Occupational Health Clinic patient's folders. The putative risk factors were assessed by history, physical examinations, blood investigations and audiometric test stated in the patient's folders. Data were analysed using SPSS version 20 for descriptive and univariate statistics.

**Results:** A total of 69 respondents recruited for this study. Vector Unit represent 59.4% of total respondents as compared to 40.6% from Bakas Unit. Male (89.9%) and Malay (88.4) were predominant. The mean age (SD) was 38.62 (10.36), where else BMI (SD) 26.52 (4.54). Almost seventy per cent were smokers and only six per cent alcoholic. The duration of hazard exposure (SD) was 11.52 (7.88) years. Sixty eight per cent claimed using PPE at all time during exposure. The prevalence of NIHL was 29.0%. Exposure to loud noise at workplace (p-value = 0.018, 95%CI: 1.21, 11.24), history of diabetes mellitus (p-value = 0.023, 95%CI: 1.25, 115.36) and hypertension (p-value = 0.009, 95%CI: 1.38, 44.62) were significant findings.

**Conclusion:** Significant high prevalence of NIHL with Loud noise exposure in workplace, known hypertension and diabetes as factors that contributing to NIHL among inspectorates' workers in Raub District Health Office. By implementing Noise Conservation Program in Workplace is one of the key point in 'Tackling Double Burden of The Disease'

**Keywords:** Inspectorate workers, Noise induced hearing loss, prevalence, risk factors

## Visual acuity status of military pilots in equator region

Alias MF, Hoe Victor CW, Said Mas Ayu, Jusoh Z, Harun MH

Department of Social and Preventive Medicine, University of Malaya, Kuala Lumpur

### ABSTRACT

**Introduction:** Good vision is among pilot's specific needs. Therefore, visual acuity has been the basic standard assessment to determine pilot's visual function and fitness to fly. With evidences of increasing number of military pilots with refractive errors in the western region, it is therefore important to acquire the information on visual acuity status among military pilots who routinely fly around the equator.

**Method:** Retrospective data of 147 pilots were used to determine the prevalence of visual acuity changes among three categories of RMAF pilot (fighter, transport and helicopter). Magnitudes of visual acuity changes were also recorded.

**Results:** Prevalence of visual acuity changes among RMAF operational pilots is 24.5%. Higher percentages of visual acuity changes are among transport pilots (Rt=31.3%, Lt=24.3%) followed by the helicopter (Rt/Lt=20.5%) and fighter pilots (Rt/Lt=14.7%). However, differences between them were not statistically significant ( $\chi^2 = 3.832$ ,  $p = 0.147$ ). 63.9% of the pilots have visual acuity of 6/9 for right eye and 64.5% for left eye. Highest magnitude of recorded visual acuity status is 6/31. Pilots' awareness level to correct their poor vision is high among fighter (80%) and helicopter pilot (75%) but low among transport pilot (44.4%).

**Conclusion:** Pilots from all categories of military aircraft have risk of developing visual acuity changes. Exposure to ionizing and non-ionizing radiation could be the possible cause that needs further evaluation. Review on current vision protection and vision conservation policy should be undertaken by the organisation to ensure damage to pilots' vision can be minimised and vision readiness is optimised.

**Keyword:** Visual Acuity, military pilot, radiation

## Laboratory turnaround time for urgent BUSE request

Mahaya CM\*, Nik MM\*, Muniamal K\*, Zaiton K\*, Tong WT\*

\*Hospital Raja Perempuan Zainab II, Kelantan, \*\*Institute for Health Systems Research, Ministry of Health Malaysia, Kuala Lumpur

### ABSTRACT

**Introduction:** Lean thinking is not used as a cost-reduction tactic, but a management strategy that is applicable to all organisations to improve the processes. The current average time for producing Blood Urea Serum Electrolytes (BUSE)/Renal Profile results take up to 2 hours at the Laboratory Department of Hospital Raja Perempuan Zainab II, Kota Bharu. According to National Indicator Approach (NIA), the laboratory turnaround time for urgent BUSE/Renal Profile less than 60 minutes in more than 90% of the request. The main aim is to achieve laboratory turnaround time for urgent BUSE/ renal profile within 60 minutes in more than 90% of the request.

**Method:** LEAN was carried out at the Laboratory Department of Hospital Raja Perempuan Zainab II, Kota Bharu for 6 months with the aim to reduce the process time of urgent Blood Urea Serum Electrolytes (BUSE) /Renal Profile. Value stream mapping is a LEAN method where each steps of processing BUSE/ Renal profile was described in detail. The total process time including value added and non- value added are mapped out and calculated. Focus is given to processes with long waiting time and wastes at that area are identified. Improvement opportunities (kaizen burst) are identified in preparation for future state value stream mapping. Unnecessary processes are identified and eliminated. Steps in demography and sorting of samples are combined and simplified by using SPPV 3.1 system which makes the registration and priority identification of samples easier and faster.

**Results:** After 6 months, the laboratory turnaround time for urgent renal profile/ BUSE within 60 minutes improved from 25% to 77.3% and the average total time improved from 78.5 minutes to 50 minutes after LEAN implementation.

**Conclusion:** Utilizing the LEAN approach, the laboratory turnaround time for urgent BUSE/ renal profile has improved.

**Keywords:** Lean healthcare, waiting time, value stream mapping, kaizen burst, renal profile/ BUSE, laboratory turnaround time

## Retaining healthcare professionals in east Malaysia: A Qualitative Study

Sharifah Zawani Syed Ahmad Yunus\*, Pangie B\*\*, Noriah B\*\*

\*NIH Secretariat, Ministry of Health, Malaysia, Kuala Lumpur, \*\*Institute for Health Management, Ministry of Health, Malaysia, Kuala Lumpur

### ABSTRACT

**Introduction:** Inequitable distribution of healthcare professionals is a problem in Malaysia. Therefore, policy-makers are facing problems in achieving health equity and to meet the nation health needs. This concern is significant in Sabah and Sarawak as there are a lot more rural district hospitals and health clinics compared to Peninsular Malaysia. This study aims to suggest recommendations to attract and retain healthcare professionals to serve in Sabah and Sarawak.

**Methods:** Six focused group discussion (FGD) were conducted in Sabah, Sarawak and Kuala Lumpur until saturation reached. The panellists were doctors, dentists, and pharmacists in total of 34 respondents from various grades who originated from Peninsular Malaysia and currently are serving in Sabah or Sarawak and vice versa. A semi-structured interview were done in the FGDs and were audio-recorded. Then, verbatim transcription was done and the data was analysed thematically.

**Results:** The non-favourable factors are namely due to financial reason that involve inadequacy of allowance for living expenses and flight tickets. Career reason due to less opportunity to attend courses and misbelieve to gain better chances to further study. Inadequacy facilities and supplies for working. Suggestions in improving the retention of healthcare professionals in Sabah and Sarawak are to revise the allowance for the officers, the Ministry to provide flight warrant for twice a year and more quarters for the new officers, the Ministry to improve on facilities and the Ministry to help in immigration procedures for the officers as well as the family members.

**Conclusion:** Understanding the push factors and recommendations are important for the policy makers to develop a new policy that will help on having better distribution of healthcare professionals in Sabah and Sarawak specifically in rural district ultimately will bridge the gap in healthcare between Peninsular and East Malaysia.

**Keyword:** East Malaysia, Sabah, Sarawak, drawbacks, push factors, recommendations

## Re-engineering work processes in clinics

Manual Adilius\*, Abdullah Zalilah\*, Ramiah Thaya\*\*, Maruan Khalidah\*\*, Ishak Izan Hairani\*\*, Ahmad Norzaidi\*\*, Ramlan Nor Afida Juliana\*, Abu Bakar Hazlina\*

\*Institute for Health Systems Research, Selangor, \*\*Bukit Kuda Health Clinic, Selangor

### ABSTRACT

**Introduction:** In Malaysia, long waiting time and congestion have become persistent problems in our health care settings. Outpatient utilisation rates had increased with a 4.3% annual increment. We need to look and reorganise our work processes so that they will become more effective and efficient. The aim of this study is to improve waiting time by re-designing work processes in health clinics.

**Method:** Clinic A which is a type 3 clinic was conveniently sampled. The LEAN methodology was introduced to the selected clinic. A waiting time mean difference sample size calculation was done, where 42 patients were systematically selected for data collection from the identified clinic. Data were collected from 7.30am till 5.00pm, during 5 working days.

**Results:** Primary data collection prior to process redesign was done in March, to use as benchmark. From this data we found that, on average patient spend 1hour 58minutes waiting, with lead-time of 2hours 45minutes. After 1 month of process redesign, in May data were recollected. The waiting time was reduced to 1hour 05minutes, with lead-time of 1 hour 48 minutes after process redesign at Clinic A.

**Conclusion:** The area of re-engineering of primary care is a relatively new modality in healthcare. It is also a method which the healthcare providers have little experience and understanding of its implementation in primary care. Long clinic's waiting time can negatively impact both on healthcare personnel and patient. The present study represents a significant step forward in understanding the role of lean in improving primary care waiting time.

**Keywords:** Re-engineering, Lean, Primary care, waiting time, Malaysia

## Hospital cost of percutaneous coronary intervention in Malaysia

Kun Yun Lee<sup>\*</sup>, Maznah Dahlui<sup>\*\*</sup>, Siow Yen Liao<sup>\*</sup>, Syuhadah Hamzah<sup>\*</sup>, Lawrence Anchah<sup>\*</sup>, Ee Vien Low<sup>\*</sup>, Houg Bang Liew<sup>\*</sup>, Tiong Kim Ong<sup>\*</sup>, Rosli Mohd Ali<sup>\*\*\*</sup>, Wan Azman Wan Ahmad<sup>\*\*\*\*</sup>, Omar Ismail<sup>\*</sup>

<sup>\*</sup>Ministry of Health Malaysia, <sup>\*\*</sup>Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, <sup>\*\*\*</sup>Department of Cardiology, National Heart Institute Malaysia, <sup>\*\*\*\*</sup>Department of Medicine, Faculty of Medicine, University of Malaya

### ABSTRACT

**Introduction:** Coronary artery disease (CAD) is a leading morbidity and mortality in Malaysia. Increasing prevalence of CAD has led to wider use of percutaneous coronary intervention (PCI). Understanding its economic burden is critical for service expansion and resource allocation. We aim to describe the clinical and procedural characteristics of PCI patients at a cardiac centre and to calculate the hospital costs of PCI.

**Method:** This is a top down costing from healthcare providers' perspective from January-June 2014 at a specialised cardiac centre. Patients' clinical and procedural characteristics were extracted from the National Cardiovascular Database PCI Registry. Primary cost data was collected for overhead, asset, labour and consumables from the relevant hospital departments. Total cost of PCI is the cost of cardiac ward (CW) admission and the cost of cardiac catheterisation laboratory (CL) utilisation.

**Results:** During the study period, 301 patients were admitted and 333 PCI were conducted. At least half of all the patients had risk factors of CAD, namely male gender, smoking, dyslipidaemia, hypertension and obesity. Majority of patients were in NYHA Class I and had only one lesion requiring intervention. Out the 333 PCI, 77.4% were elective procedure. Single stent was used in 78.4%, and drug-eluting stents were the most commonly used type of stents. Success rate was high and only 3 procedures developed in-lab adverse events. In-hospital mortality was 1.3%, all 4 cases being emergency PCI patients. The average cost of a PCI was RM11,292. Average procedural cost in CL was RM9784, 86.6% of the total cost. Among the cost categories, PCI consumables were the major cost driver, followed by labour cost in the CW and CL.

**Conclusion:** This study provides important information on costs and cost drivers of PCI that can assist policy makers in future planning of PCI service.

## Cost of dental examination and diagnosis in Sabah Public Dental Clinics

Khairiyah AM<sup>\*</sup>, Natifah CS<sup>\*</sup>, Ishak AR<sup>\*\*</sup>, Raja Latifah RJ<sup>\*\*</sup>, Jegarajan P<sup>\*\*\*</sup>, Lawrence MHK<sup>\*\*\*</sup>, Zuhty H<sup>\*\*\*</sup>, Adelina A<sup>\*\*\*</sup>, Zainatunomri O<sup>\*\*\*</sup>, Dianne RW<sup>\*\*\*</sup>, Siew Eng C<sup>\*\*\*</sup>, Norinah M<sup>\*\*\*</sup>

<sup>\*</sup>Oral Health Division, Ministry of Health Malaysia, <sup>\*\*</sup>Faculty of Dentistry, University of Malaya, Kuala Lumpur, <sup>\*\*\*</sup>Oral Health Division, Sabah State Health Department

### ABSTRACT

**Introduction:** Costing on service resource consumption are useful for budgetary and service planning as it provides information on the efficiency of use of human resources, equipment, materials, vehicles and others input. This study would provide the mean cost of dental examination and diagnosis (E&D) procedure in urban and rural public dental clinics in Sabah state.

**Method:** One urban and one rural public dental clinic were conveniently selected. Prospective quota sampling of E&D cases with a minimum of 30 cases per clinic was instituted. Macro-costing involved capital and recurrent expenditures of the clinics in the year 2009. The micro-costing was based on treatment time (in minutes), number of personnel involved and materials used for the E&D procedure.

**Results:** Forty E&D cases in urban (51.3%) and thirty-eight in the rural clinics (48.7%) were included. The mean macro-cost was RM67.09 (Standard Deviation (SD) 26.56), higher in the urban areas (RM 92.82, SD 0) than the rural (RM 40.00 SD 0). The mean micro-cost was RM 17.57 (SD 14.45), higher in urban (RM20.73, SD 18.99) than in rural areas (RM 14.24, SD 5.64). Overall, the mean total cost for E&D was RM84.66 (SD 32.98), higher in the urban areas (RM113.55, SD 18.99) as compared to the rural (RM54.25, SD 5.64).

**Conclusion:** The mean cost for the dental E&D in this study was RM84.66, higher than a study done in Selangor public dental clinics (RM 48.71), which attributed to higher capital and recurrent expenditures cost in Sabah (RM67.09) than in Selangor (RM35.82). The dental E&D procedure is highly subsidised by the government as patients only pay RM1.00 in Sabah public dental clinics.

**Keywords:** Cost, dental examination & diagnosis, Sabah

## Effective public health intervention for asthma: A literature review

Nurmawati Ahmad\*, Aniza Ismail\*, Saperi Sulong\*\*

\*Department of Community Health, Faculty of Medicine, National University of Malaysia, \*\*Department Of Health Information, Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur

### ABSTRACT

**Introduction:** Asthma is a chronic respiratory disease increasingly prevalent worldwide, particularly among children and certain minority groups. This literature review sought to assess and summarize existing systematic reviews of asthma-related interventions that might be carried out or supported by state or community asthma control programs, and to identify gaps in knowledge.

**Method:** Five databases were searched through September 2014, using terms related to four concepts: asthma, review, intervention, and NOT medication. Reviews of the effectiveness of medications, medical procedures, complementary and alternative medicine, psychological interventions, family therapy, and nutrients or nutritional supplements were excluded.

**Results:** Data analysis was conducted from May to September 2014. Of 40 included reviews, 19 assessed the effectiveness of education and/or self-management, nine the reduction of indoor triggers, nine interventions to improve the provision of health care, and five examined other interventions. Several reviews found consistent evidence of effectiveness for self-management education, and one review determined that comprehensive home-based interventions including the reduction of multiple indoor asthma triggers are effective for children. Other reviews found limited or insufficient evidence because of study limitations.

**Conclusion:** Public health asthma control programs should prioritize (1) implementing interventions for which the present review found evidence of effectiveness and (2) evaluating promising interventions that have not yet been adequately assessed

**Keywords:** asthma, review, intervention

## Effects of pharmacist managing Warfarin medication therapy adherence clinic in Kemaman Hospital

Nur Ainina BS, Nur Farhana YS, Siti Nur'ain MS

Pharmacy Department Kemaman Hospital, Terengganu

### ABSTRACT

**Introduction:** Warfarin therapy needs close monitoring throughout frequent fine-tune dosing based on INR level. Thus, pharmacist's involvement in Warfarin Medication Therapy Adherence Clinic (WMTAC) is essential in patient's warfarin therapy care. The objective of the study is to assess the International Normalised Ratio (INR) control and incidence of warfarin's adverse event in patients on WMTAC at Kemaman Hospital, Terengganu.

**Method:** This is a cross-sectional retrospective study where patients under WMTAC were identified since 2010 until recent and selected based on inclusion and exclusion criteria. The one-year INR control in patients on WMTAC was assessed by calculating time-in-therapeutic range (TTR) where higher TTR represent higher percentage days within therapeutic range. The incidence of warfarin's adverse event was assessed based on the number of occurrence. Data was analysed using SPSSv.16 with  $p < 0.05$  was considered statistical significant.

**Results:** From 157 WMTAC patients, 66 patients are included in this study (median age 54.0 years, IqR 23.0) base on inclusion criteria. The TTR for 1-year period shows mean  $\pm$  SD of  $60.6 \pm 19.1\%$ . There is an increment in TTR for the second 6 months compared to the first 6 months period (mean  $\pm$  SD of  $62.8 \pm 26.5\%$  and  $56.1 \pm 22.3\%$  respectively with  $p=0.086$ ). In addition, the higher TTR was associated with the least number of missed dose for the second 6 months period, ( $p < 0.05$ ). For 1-year period, patients without missed dose tend to achieve TTR  $\geq 60\%$  ( $p=0.04$ ). Only 30.3% patients presented with the incidence of warfarin's adverse events (minor, 28.8% and major bleeding, 1.5%).

**Conclusion:** On-going involvement of pharmacist in monitoring WMTAC patients may improve INR control and awareness on incidence of warfarin's adverse events.

**Keywords:** International Normalised Ratio, medication therapy adherence clinic, time-in-therapeutic range, Warfarin.

## Leptospirosis outbreak in a high school following camping activities in Hulu Langat.

Nurul Farhana MA\*, Abdul Halim MT\*\*, Normal S\*\*, Rohani I\*

\*Kuala Lumpur and Putrajaya Federal Territory Health Department,  
\*Lembah Pantai District Health Office

### ABSTRACT

**Introduction:** Leptospirosis is caused by *Leptospirae* interrogans which is subdivided into more than 200 serovars that are naturally carried in the renal tubules of rodents, wild and domestic animals. This paper describe the investigation of a case notified to district health office.

**Methods:** This is a case-control study among 110 teachers and students from a high school who had the camping activities in Hulu Langat from 15 to 17 August 2014, and experienced one of the symptoms of Leptospirosis, i.e., fever, bodyache, headache, respiratory or gastrointestinal symptoms one week after the camping activities. Laboratory investigations includes blood samples from symptomatic respondents, water and soil samples from the camping areas; i.e., water from river bank and water tank, and soil from where crawling activities occurred were collected.

**Results:** Out of 110 respondents, 31 (attack rate 28.2%) were defined as cases. Blood serology IgM for *Leptospirae* and Microscopic Agglutination Test (MAT) were taken from 17 cases and all were positive for both tests (100%). Ten water and soil samples taken showed two positive soils samples for *Leptospirae*. Most common symptom was respiratory symptoms (40%) followed by fever (27.3%), headache (22.7%) and bodyache (21%). All cases were involved with crawling activities and had accidentally drank river water while swimming.

**Conclusion:** In conclusion, there was an outbreak of Leptospirosis among 110 camping participants. The sources of infection were from the soil at the area for crawling activities at the camp site. Letter to Ministry of Education was given informing about the outbreak and reminding them to avoid having any recreational activities nearby the affected area. Risk assessment for Leptospirosis was done with help from Hulu Langat District Health Office and suggestion for improvement was advised to the camp authorities.

## Microbial contamination of drinking water from water coolers in Universiti Putra Malaysia residential colleges

Khairi HY\*, Shaharuddin MS\*, Rukman AH\*

\*Department of Environmental and Occupational Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, \*\*Department of Microbiology and Medical Parasitology, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

### ABSTRACT

**Introduction:** Water coolers are popular in office buildings and commercial stores. This source of drinking water has the potential to cause waterborne outbreaks, especially in sensitive and immunocompromised subjects. The main reason for this research was because the majority of students preferred to consume water from water coolers due to factors such as convenience and accessibility.

**Methodology:** Two water samples from water coolers from all fourteen residential colleges in Universiti Putra Malaysia were collected and analysed using USEPA 8367 filtration membrane method in order to detect the presence of *E. coli* and total coliform.

**Results:** Total coliform were detected in 93.0% of the samples collected. Only samples from one college had *E. coli* (0.14%). The types of filters used in water coolers did not influence the presence of bacteria because total coliform was detected in all samples using either sediment filters or stage filters. Only samples from one college using sediment filter was present with *E. coli*. Total number of respondents was 375. For frequency of consumption and the experience of getting diseases, there were no significant relationship because 74 respondents who drank less than three times a day also contracted diseases related to *E. coli* or total coliform, and there were 99 respondents who did not developed any disease even though they drank more than three times a day. There were no significant relationship between the presence of total coliform and the number of respondents experienced getting diseases.

**Conclusion:** Total coliform were detected in nearly all samples. Residential colleges must ensure the recommended periodic maintenance of water coolers so as to safeguard the health of students using this facility.

**Keywords:** Water cooler, *E. coli*, total coliform, USEPA 8367 filtration membrane method

## Radionuclide leachability as a potential pathway of radium contamination in water

Nur Azna Mahmud\*, Zalina Laili\*\*, Wan Shakira Rodzlan Hasani\*, Sayan Pan\*, Lim Kuang Kuay\*

\*Institute for Public Health, Ministry of Health, \*\*Malaysian Nuclear Agency, Ministry of Science, Technology and Innovation

### ABSTRACT

**Introduction:** This survey was to study the radionuclide leachability behaviour in order to monitor and mitigate the possibility of radionuclide ingestion and uptake due to radium contamination in our water resources.

**Method:** Five different types of bricks; clay, cement, paver, granite and fly ash were sourced from several hardware stores in Selangor. They were used as the samples. These samples were prepared according to two different methods used; toxicity characteristic leaching procedure, TCLP method 1311 to imitate harsh environment and Monolithic leaching test in accordance with BSI EN 1744-3:2002 to study leaching behaviour of the radionuclide under natural condition. Leachates collected from both methods were measured for radioactivity by using Gamma Spectrometer.

**Results:** Leaching behaviour of the radionuclide in the samples through toxicity characteristic leaching procedure, TCLP shows activity concentration of Radium 226 in clay bricks is the highest;  $3.35 \pm 0.59 \text{ BqL}^{-1}$  followed by fly ash bricks ;  $3.25 \pm 0.55 \text{ BqL}^{-1}$ , granite bricks ;  $3.10 \pm 0.57 \text{ BqL}^{-1}$ , cement bricks;  $3.08 \pm 0.55 \text{ BqL}^{-1}$  and the lowest is in paver bricks ;  $2.78 \pm 0.56 \text{ BqL}^{-1}$ . Meanwhile, only two types of bricks possess activity concentration of Radium 228; paver bricks and fly ash bricks;  $1.10 \pm 1.47 \text{ BqL}^{-1}$ ,  $0.66 \pm 1.42 \text{ BqL}^{-1}$  respectively. For monolithic leaching test procedure, result shows that activity concentration of Radium 226, detected throughout 30 days of analysis is from  $5.00 \text{ BqL}^{-1}$  to  $0.64 \text{ BqL}^{-1}$  and from 0.1 to  $7.32 \text{ BqL}^{-1}$  for activity concentration of Radium 228. In clay, granite and paver brick, the activity concentration of Ra-228 can be detected throughout the 30 days while for the other brick, the activity concentration of the Ra-228 can only be detected after seven days of immersion.

**Conclusion:** The study revealed leachability of radium occurring under both conditions; natural and harsh..

**Keywords:** brick, naturally occurring radioactive material, radionuclide leachability and radium

## Adaptation and validation of the Malay version of Osteoarthritis Knee and Hip Quality of Life (OAKHQOL) questionnaire among knee osteoarthritis patients: A Confirmatory Factor Analysis

Azidah Abdul Kadir\*, Mohd Faizal Mohd Arif\*, Azlina Ishak\*, Intan Idiana Hassan\*\*

\*Department of Family Medicine, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, \*\*Department of Nursing, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

### ABSTRACT

**Introduction:** Health-related quality of life (HRQoL) that accurately reflects a patient's experience with respect to specific disease is one of the important outcomes recommended for interventional study. The objective of this study is to evaluate the construct, convergent, criterion validity and reliability of the Malay-Osteoarthritis Knee and Hip Quality Of Life (OAKHQOL)

**Methods:** The English version OAKHQOL was adapted into Malay using forward and backward translation. A pilot study was done for face validity. For the psychometric properties, a cross-sectional study was conducted among 191 knee osteoarthritis patients. Patients completed the Malay-OAKHQOL and validated WOMAC questionnaires. Confirmatory analysis, reliability analysis, known group analysis and Pearson correlation test were performed to assess the psychometric properties of the Malay-OAKHQOL.

**Result:** The results showed that the original five-factor model with 40-items failed to achieve acceptable values of the goodness of fit indices, indicating poor model fit. A new five-factor model of 28 items demonstrated acceptable level of goodness of fit (Comparative Fit Index: 0.915, Tucker Lewis Index: 0.905, Incremental Fit Index: 0.916, Chi-squared/degree of freedom 1.953 and Root Mean Squared Error of approximation 0.071) indices to signify a model fit. The Cronbach's alpha value for the new model ranged from 0.865 to 0.933. The composite reliability values of each construct ranged between 0.819 and 0.921, indicating satisfactory to high level of convergent validity. Pearson correlation coefficient between Malay-OAKHQOL and validated Malay version WOMAC showed adequate convergent validity. Known groups validity showed that there is statistical difference in body mass index, physical activity, mental and pain construct. There was also significant difference in the radiograph grading in the physical activity and pain construct.

**Conclusion:** The five-factor model with 28-item Malay-OAKHQOL demonstrated good degree of goodness of fit and was found to be reliable and valid to assess HRQoL in knee osteoarthritis patients.

## Psychometric properties of the Malay version of Knee injury and Osteoarthritis Outcome Score (KOOS) among knee osteoarthritis patients in Malaysia: A confirmatory analysis

Maryam Mohd Zulkifli\*, Azidah Abdul Kadir\*, Azlina Elias\*\*, Abdul Nawfar Sadagatullah\*\*\*

\*Department of Family Medicine, Universiti Sains Malaysia, Kelantan, \*\*Klinik Kesihatan Cheneh, Kemaman, Terengganu, \*\*\*Department of Orthopaedic, Universiti Sains Malaysia, Kelantan

### ABSTRACT

**Introduction:** The aim of this study is to cross-culturally adapt Malay version of Knee injury and Osteoarthritis Outcome Score (KOOS) and to evaluate its psychometric properties in patients with knee osteoarthritis (OA).

**Methods:** A cross-sectional study was conducted involving 226 knee osteoarthritis patients attending Outpatient and Orthopaedic Clinics, Universiti Sains Malaysia Hospital between September 2013 and March 2014. The English version KOOS was translated into Malay version using forward and backward translation process, followed by face validity and content validity. Construct validity and internal consistency assessment were performed. The data were analysed using SPSS version 20 and Analysis of Moment Structure version 21.0. Confirmatory analysis, and reliability analysis were performed to evaluate the psychometric properties of the KOOS Malay version questionnaire.

**Results:** The results showed that the original five-factor model with 42 items failed to achieve acceptable values of the goodness of fit indices, indicating poor model fit. A new five-factor model of 26 items demonstrated acceptable level of goodness of fit (comparative fit index= 0.929, incremental fit index= 0.930, Tucker Lewis fit index= 0.92, root mean square error of approximation= 0.073 and Chi-squared/degree of freedom= 2.183) indices to signify a model fit. The Cronbach's alpha value for the new model ranged from 0.776 to 0.946. The composite reliability values of each construct ranged between 0.819 and 0.921, indicating satisfactory to high level of convergent validity.

**Conclusion:** The five-factor model with 26 item Malay version of KOOS questionnaire demonstrated a good degree of goodness of fit and was found to be valid, reliable and simple as an assessment tools for symptoms, pain, activity of daily living, sports and recreational activity and quality of life for Malaysian adults suffering from knee osteoarthritis.

## Psychometric properties of the Malay version Organisational Justice Scale Questionnaire

Harish Raj Narandaran, Moy Foong Ming, Marzuki Isahak

Department of Social and Preventive Medicine, University of Malaya, Kuala Lumpur

### ABSTRACT

**Introduction:** Organisational Justice (OJ) describes the role of fairness experienced by workers and their perception of impartiality at their workplace. Perceived impartiality is now acknowledged as an important psychosocial predictor of health. The Organisational Justice Scale Questionnaire (OJSC) has 18 items categorised into three sub-scales namely: Procedural Justice (PJ), Distributive Justice (DJ) and Interactional Justice (IJ). This questionnaire has been translated into the Malay language and used among Malaysian manufacturing workers; however its psychometric properties have not been tested. The objective of the study is to examine the psychometric properties (internal consistency, dimensionality and test-retest reliability) of the Malay version of OJSC among secondary school teachers.

**Method:** This was a cross-sectional study conducted in 11 secondary schools in Kuala Lumpur. All tenured teachers were invited. The questionnaire was self-administered twice at an interval of two weeks. A total of 181 teachers filled in the first questionnaire while 137 teachers returned the second questionnaire. Internal consistency and dimensionality was assessed using Cronbach's alpha and factor analysis respectively. Test-retest reliability was then assessed using Intra-Class Correlation (ICC) coefficient.

**Results:** The internal consistency, Cronbach's alpha values for PJ, DJ and IJ were 0.83, 0.87 and 0.94 respectively. In the correlation matrix, all items had acceptable to good correlation with other items within each sub-scale, ranging from 0.3 to 0.9. The Kaiser-Meyer-Olkin measure (0.86) and Bartlett's test of sphericity (<0.001) indicated identity matrix can be ruled out. In the factor analysis, all items fitted well in each sub-scales with the average variance explained for PJ, DJ and IJ to be 50.7%, 61.6% and 80.5% respectively. The ICC values for each subscale were more than 0.9 indicating excellent reliability.

**Conclusion:** The Malay version of the OJSC demonstrated good psychometric properties.

**Keywords:** Organisational Justice Scale Questionnaire, reliability, factor analysis

**LIST OF AUTHORS**

|                                 |                        |                                 |                |
|---------------------------------|------------------------|---------------------------------|----------------|
| Ab Aziz Al-Safi Ismail .....    | 24                     | Bina Rai S .....                | 44, 46, 51     |
| Abdul Aiman Abd Ghani .....     | 65                     | Chai Ping Tze .....             | 20, 49         |
| Abdul Aiman AG .....            | 61                     | Chan Ying Ying .....            | 56, 65, 71, 72 |
| Abdul Halim MT .....            | 79                     | Chan YY .....                   | 57             |
| Abdul Nawfar Sadagatullah ..... | 81                     | Chandrika J .....               | 52, 58         |
| Abdul Rahman .....              | 35, 43                 | Chandrika Jeevananthan .....    | 70             |
| Abdullah Zalilah .....          | 76                     | Che Azlan Shah Shahari .....    | 37             |
| Abu Bakar Hazlina .....         | 76                     | Cheong SM .....                 | 69             |
| Abu Hassan Rafidah .....        | 62                     | Cheong Yoon Ling .....          | 52             |
| Adelina A .....                 | 77                     | Chia Kee Seng .....             | 4              |
| Adlina Suleiman .....           | 30, 41, 74             | Chia SY .....                   | 58             |
| Ahamad Ali .....                | 63                     | Chong JH .....                  | 54             |
| Ahmad Ali Zainuddin .....       | 11, 12, 15, 63, 66, 67 | Chong Zhuo Lin .....            | 11             |
| Ahmad Filza Ismail .....        | 28                     | Choo Wan Yuen .....             | 17, 25         |
| Ahmad J .....                   | 54                     | Chu Ai Sean .....               | 17             |
| Ahmad Nadzri Jai .....          | 12, 56, 57, 67         | Chung Ming Hong .....           | 43             |
| Ahmad Norzaidi .....            | 76                     | Claudia Strugnell .....         | 5              |
| Ahmad Taufik J .....            | 24                     | Colin Bell .....                | 5              |
| Aini Sofiah Shahriniza .....    | 71                     | Dan Norbäck .....               | 26             |
| Alexander Tan Zhi Sheng .....   | 42                     | Daud Abdul Rahim .....          | 13             |
| Alexander TZS .....             | 69                     | David Koh .....                 | 6              |
| Alfa Idris Jay .....            | 36                     | Debbie Ann Loh .....            | 17             |
| Alias MF .....                  | 75                     | Deburra Peak Ngadan .....       | 19             |
| Amani Awwadh Al-Otaibi .....    | 32, 33                 | Devi Peramalah .....            | 17, 25         |
| Aminnuddin Ma'pol .....         | 26                     | Dewi FST .....                  | 10             |
| Andrew Kiyu .....               | 36                     | Dianne RW .....                 | 77             |
| Ang BY .....                    | 54                     | Edre Mohammad Aidid .....       | 38             |
| Anita AR .....                  | 60                     | Eunice Melissa Joseph .....     | 21             |
| Aniza Ismail .....              | 78                     | Fadhilah K .....                | 50             |
| Anne J .....                    | 69                     | Fadhli MY .....                 | 63, 69         |
| Anne Jamaludin .....            | 42                     | Fadhli Y .....                  | 42             |
| Anuradha P. Radhakrishnan ..... | 29                     | Fadzilah K .....                | 45, 47, 50     |
| Anwa A .....                    | 47                     | Faezah Paiwai .....             | 56             |
| Aqil MD .....                   | 41                     | Faisal Ibrahim .....            | 29, 32, 33     |
| Aqil Mohammad Daher .....       | 30                     | Fa'iza Abdullah .....           | 37             |
| Aqil Mohd Daher .....           | 74                     | Faizah P .....                  | 53, 54         |
| Arham MAB .....                 | 55                     | Faizah Paiwai .....             | 57, 65         |
| Arham Muchtar AB .....          | 55                     | Fariza Fadzil .....             | 19             |
| Aronrag Meeyai .....            | 9                      | Farizah Hairi .....             | 25             |
| Asiah L .....                   | 39                     | Farizah Mohd Hairi .....        | 25             |
| Asmah N .....                   | 39                     | Farzaana Adam .....             | 24             |
| Asrenee Abdul Razak .....       | 71                     | Fatai Kunle Salawu .....        | 31             |
| Asyraf A .....                  | 39                     | Fatimah Othman .....            | 14, 65         |
| Aung Gyi .....                  | 37                     | Fauziah M .....                 | 59             |
| Awang Bulgiba AM .....          | 17, 25                 | Feisul Idzwan M .....           | 1              |
| Aye Aye Mon .....               | 30                     | Foo Leng Huat .....             | 64             |
| Azah Abdul Samad .....          | 19                     | Fuad A .....                    | 52             |
| Azahadi O .....                 | 52, 58, 61, 62, 63     | Fuad Mohamad Anuar .....        | 70             |
| Azahadi Omar .....              | 70                     | GH Tee .....                    | 61             |
| Aziah BD .....                  | 26                     | Gunilla Weislander .....        | 26             |
| Azidah Abdul Kadir .....        | 71, 80, 81             | Gurpreet Kaur .....             | 56             |
| Azim RH .....                   | 74                     | Hakimin MK .....                | 39             |
| Azimah A .....                  | 41                     | Halyna Lugova .....             | 30, 74         |
| Azizah I .....                  | 72                     | Hamid Jan Jan Mohamed .....     | 12, 67         |
| Azizah O .....                  | 22                     | Hamimah S .....                 | 24             |
| Azizah Y .....                  | 22                     | Hamizatul Akmal Abd Hamid ..... | 65             |
| Azli Baharuddin .....           | 65                     | Hanis Mastura Yahya .....       | 38             |
| Azli Baharudin .....            | 16, 64                 | Harish Raj Narandaran .....     | 81             |
| Azlina Elias .....              | 81                     | Harishah T .....                | 45             |
| Azlina Ishak .....              | 80                     | Harun MH .....                  | 75             |
| Azlina S .....                  | 59                     | Haseanti Hussein .....          | 23             |
| Azmawati MN .....               | 73                     | Hasimah I .....                 | 61             |
| Azmi Mohd Tamil .....           | 23                     | Hasimah Ismail .....            | 67, 70         |
| Azreen Syazril Adnan .....      | 24                     | Hasnan A .....                  | 63, 66         |
| Azriani AR .....                | 22                     | Hasnan Ahmad .....              | 11             |
| Azwany YN .....                 | 26                     | Hasrina H .....                 | 45             |
| Balachandran S .....            | 48                     | Hasrina Hassan .....            | 44             |
| Balkis AK .....                 | 47                     | Hayati Kadir .....              | 29             |
| Balkish Mahadir Naidu .....     | 64, 71, 72             | Hazizi AS .....                 | 62             |
| Balkish MN .....                | 42, 63                 | Hazlina Y .....                 | 44             |
| Bibi A .....                    | 68                     | Hazrin H .....                  | 53, 54         |
| Bibi Suriati .....              | 58                     | Ho Bee Kiau .....               | 37, 53         |
| Bin Jalaludin .....             | 10                     | Hoe Victor CW .....             | 18, 28, 43, 75 |

|                                |                           |  |                |
|--------------------------------|---------------------------|--|----------------|
| Husna Mahirah S .....          | 54                        | Maheer D Fuad Fuad .....               | 35             |
| Huzaimah Husin .....           | 20                        | Mala M .....                           | 41             |
| Ibrahim Faisal .....           | 36                        | Mala Manickam .....                    | 30, 74         |
| Idayu Badilla Idris .....      | 73                        | Mansor Yahya .....                     | 27             |
| Inayah Abd Razak .....         | 25                        | Manual Adilius .....                   | 76             |
| Intan Azura MD .....           | 46, 50, 51                | Marlinawati VU .....                   | 10             |
| Intan Idiana Hassan .....      | 80                        | Maruan Khalidah .....                  | 76             |
| Inthirani S .....              | 72                        | Maryam Mohd Zulkifli .....             | 81             |
| Ishak AR .....                 | 77                        | Marzuki Isahak .....                   | 18, 81         |
| Ishak Izan Hairani .....       | 76                        | Mathew GB .....                        | 21             |
| Iskandar Firzada Osman .....   | 37                        | Mayple Tan Leou Jiun .....             | 71             |
| Ismar Y .....                  | 74                        | Maznah Dahlui .....                    | 17             |
| Jabraan Jamil .....            | 71                        | Md Mizanur Rahman .....                | 19, 21, 22, 23 |
| Jamal Hisham Hashim .....      | 26                        | Mehrnoosh Akhtari-Zavare .....         | 60             |
| Jambai Endu .....              | 36                        | Mod Nazri S .....                      | 26             |
| Jamsee O .....                 | 54                        | Mohamad Aznuddin Abd Razak .....       | 12, 67, 72     |
| Jamsee Ongi .....              | 56, 57                    | Mohamad Fuad Mohamad Anuar .....       | 65             |
| Jananezwary Kanapathy .....    | 4                         | Mohamad Hasnan .....                   | 16, 64, 66     |
| Jeffery Stephen .....          | 36                        | Mohamad Hasnan Ahmad .....             | 16, 64         |
| Jegarajan P .....              | 77                        | Mohamad Naim Mohamad Rasidi .....      | 67             |
| Jemsee O .....                 | 53                        | Mohamed Faris Madzlan .....            | 17             |
| Jeyanthini Sathasivam .....    | 25                        | Mohammad Aznuddin Abd Razak .....      | 71             |
| Jill Whelan .....              | 5                         | Mohammad Farhan Rusli .....            | 41             |
| Jiloris F Dony .....           | 56                        | Mohammad Wisman Abdul Hamid .....      | 74             |
| Jimik B .....                  | 68                        | Mohammad Wisman AH .....               | 41             |
| Joanita S .....                | 62                        | Mohd Alif Idham Abd Hamid .....        | 17             |
| Johan Sidu .....               | 44                        | Mohd Arshil .....                      | 34             |
| Jonathan Chin Ching Ming ..... | 43                        | Mohd Azahadi Omar .....                | 23             |
| Julaidah S .....               | 46                        | Mohd Aznan Md Aris .....               | 37             |
| Juliana Chan .....             | 3                         | Mohd Din FH .....                      | 43             |
| Jusoh Z .....                  | 75                        | Mohd Dzulkhairi MR .....               | 68             |
| Kalaiselvam Thevandran .....   | 33                        | Mohd Faizal Mohd Arif .....            | 80             |
| Kamarul Huda Kamaruddin .....  | 38                        | Mohd Hasnan Ahmad .....                | 66             |
| Karina Razali .....            | 8                         | Mohd Hatta Abdul Mutalip .....         | 56             |
| Karuthan Chinna .....          | 25, 28, 34                | Mohd Hazrin Hasim .....                | 56, 57         |
| Katherine Koh .....            | 6                         | Mohd Ismail I .....                    | 22             |
| Kee CC .....                   | 57                        | Mohd J .....                           | 47             |
| Kelvin Su Sieng Bing .....     | 43                        | Mohd Naim Rasidi, Hasimah Ismail ..... | 15             |
| Khadijah K .....               | 54                        | Mohd Nazri Shafei .....                | 27             |
| Khadijah Shamsuddin .....      | 19, 23                    | Mohd Paid Y .....                      | 44             |
| Khairi HY .....                | 79                        | Mohd Raili Suhaili .....               | 21             |
| Khairiyah Abdul Muttalib ..... | 65                        | Mohd Ridzuan J .....                   | 26             |
| Khairiyah AM .....             | 77                        | Mohd Rizal AM .....                    | 24             |
| Khairun Nain Noraripin .....   | 68                        | Mohd Sa'ad Natrah .....                | 62             |
| Khalib Abd Latif .....         | 20                        | Mohd Taha Arif .....                   | 23             |
| Khalib AL .....                | 24                        | Mohd Yusof S .....                     | 61             |
| Khoo Yi Yi .....               | 64, 70                    | Mohd. Hashim Mohd. Hassan .....        | 71             |
| Khoo YY .....                  | 52, 58, 62, 66            | Mohd. Maheer I .....                   | 54             |
| Kiyu A .....                   | 45                        | Moni A .....                           | 59             |
| Latiffah A Latiff .....        | 60                        | Moy Foong Ming .....                   | 18, 27, 31, 81 |
| Law Kar Wai .....              | 62                        | Muhaimin A .....                       | 74             |
| Lawrence MHK .....             | 77                        | Muhamad Hanafiah Juni .....            | 60             |
| Lee Jia Mei .....              | 42                        | Muhamad Hasani MH .....                | 28             |
| Lee JM .....                   | 69                        | Muhammad Fadhli MY .....               | 61             |
| Lekhranj Rampal .....          | 6, 29, 31, 32, 33, 34, 36 | Muhammad J .....                       | 50             |
| Leong Joyce WS .....           | 60                        | Muniamal K .....                       | 75             |
| Liew Min .....                 | 42, 69                    | Murugesan Karthikeyan .....            | 35, 43         |
| Lim HL .....                   | 57                        | Muslan MA .....                        | 43             |
| Lim KH .....                   | 57, 69                    | Muslimah Yusof .....                   | 65, 71, 72     |
| Lim KK .....                   | 57, 61, 62, 69            | N Izzah S .....                        | 39, 40         |
| Lim Kuang Hock .....           | 56, 57, 70                | Nabilah I .....                        | 26             |
| Lim Kuang Kuay .....           | 56, 57, 70, 80            | NadatulIma Z .....                     | 69             |
| Ling MY .....                  | 57, 69                    | Nadzri J .....                         | 53, 54         |
| Liza A Latip .....             | 47                        | Nahdan Rengganathan .....              | 71             |
| Lokman Hakim S .....           | 1                         | Nany Hairunisa, Azmawati MN .....      | 30             |
| Lugova H .....                 | 41                        | Natazcaza AR .....                     | 46             |
| Lye Mann-Sann .....            | 32                        | Natifah CS .....                       | 77             |
| Lye Munn-Sann .....            | 31, 35                    | Nazefah Abdul H .....                  | 68             |
| Lynne Millar .....             | 5                         | Nazhan Keeshan .....                   | 71             |
| M Fadhli Y .....               | 57                        | Nazli Suhardi Ibrahim .....            | 12, 67         |
| M Fuad MAM .....               | 58                        | Nelapalli Nagaraja .....               | 35, 43         |
| M Idris O .....                | 39                        | Ng Chiu Wan .....                      | 20, 25         |
| Mahaletchumy Alagappan .....   | 33                        | Nik MM .....                           | 75             |
| Mahanum AM .....               | 60                        | Nik Nur Eliza M .....                  | 39             |
| Mahaya CM .....                | 75                        | Nirmal K .....                         | 68             |

|                                |                |   |                |
|--------------------------------|----------------|---|----------------|
| Noor Aizam Mohd Said.....      | 44, 46, 51     | Philip Ngalambong.....                  | 44             |
| Noor Ani A.....                | 63             | Phua Kai Hong.....                      | 13             |
| Noor Ani Ahmad.....            | 71, 72         | Rafidah MN.....                         | 47             |
| Noor Safiza Mohamad Nor.....   | 15, 67         | Rahama Samad.....                       | 15, 67, 71, 72 |
| Noor Shaheeran Abdul Hayi..... | 19             | Rahimi H.....                           | 39             |
| Noorhaida U.....               | 46, 50, 51     | Raishan SB.....                         | 22             |
| Noorhaire N.....               | 40             | Raja Latifah RJ.....                    | 77             |
| Noorzila I.....                | 59             | Rajini Sooryanarayana.....              | 71, 72         |
| Nor Asma Musa.....             | 27, 31         | Ramiah Thaya.....                       | 76             |
| Nor Azian Mohd Zaki.....       | 15, 67, 70     | Ramlan Nor Afida Juliana.....           | 76             |
| Nor Azian MZ.....              | 61             | Rashidah Ambak.....                     | 15             |
| Nor Faiza Mohd Tohit.....      | 32             | Razitasham Safii.....                   | 22, 23         |
| Nor Izzah Ahmad Shauki.....    | 19             | Riyanti S.....                          | 42             |
| Nor Shazatul Shakila MAB.....  | 59             | Riyanti Saari.....                      | 63             |
| Nor Zainida AG.....            | 59             | Robert G Cumming.....                   | 17             |
| Nor Zam Azihan.....            | 22             | Rohani I.....                           | 45, 48, 49, 79 |
| Nor Zarina M.....              | 59             | Rohaya Ramli.....                       | 25             |
| Noraida Mohamad Kasim.....     | 64             | Roseanne O. Yeung.....                  | 3              |
| Noraida Mohd Kasim.....        | 71             | Rosemawati A.....                       | 45, 50         |
| Noraida Mohd Kassim.....       | 66, 72         | Rosemawati Ariffin.....                 | 20             |
| Noran Naqiah Hairi.....        | 17, 25, 57     | Roslina AA.....                         | 59             |
| Norazizah Ibrahim Wong.....    | 72             | Rosmawati A.....                        | 46, 51         |
| Norazizah IW.....              | 42             | Rosmawati Mohamed.....                  | 2              |
| NorAzmi K.....                 | 24             | Rosnah Ramly.....                       | 69             |
| Norazrina A.....               | 59             | Rozhan Shariff Mohamed Radzi.....       | 3              |
| Norfazilah A.....              | 30             | Ruby Natrah.....                        | 59             |
| Norhafizah Sahril.....         | 12, 67, 71, 72 | Ruhaini Ismail.....                     | 19             |
| Norhaida U.....                | 48, 49         | Rujenie Y.....                          | 50             |
| Norhaidah M.....               | 72             | Rukman AH.....                          | 79             |
| Noriah B.....                  | 39, 40, 76     | Rusidah Selamat.....                    | 11             |
| Norinah M.....                 | 77             | Ruziaton H.....                         | 53             |
| Norizan B.....                 | 59             | Ruziaton Hasim.....                     | 37             |
| Norzizzati B.....              | 24             | S Abdul Shukor Mohd Shahriel.....       | 40             |
| Norliana Ismail.....           | 25             | S Maria Awaluddin.....                  | 15, 67, 71, 72 |
| Norlijah Othman.....           | 29, 31, 34     | Sabrizan O.....                         | 24             |
| Norlissa Gani.....             | 17             | Saffree JM.....                         | 48             |
| Norliza Ismail.....            | 37             | Sahrol Nizam Abu Bakar.....             | 27             |
| Normah S.....                  | 48             | Said Mas Ayu.....                       | 34, 75         |
| Normal S.....                  | 79             | Saidatul Norbaya B.....                 | 40             |
| Normala H.....                 | 58             | Sajaratulnisah Othman.....              | 25             |
| Normala Ibrahim.....           | 32, 33, 35     | Salmiah Md Said.....                    | 60             |
| Normastura AR.....             | 22             | Salwa I.....                            | 59             |
| Normawati Ahmad.....           | 38             | Sandanasamy Karen Sharminia.....        | 34             |
| Norsa'adah Bachok.....         | 27             | Sangeeta Kaur Singh.....                | 42             |
| Norsiah A.....                 | 68             | Sangeeta KS.....                        | 69             |
| Norzawati Y.....               | 53, 54         | Sanjay Rampal.....                      | 18, 43         |
| Norzawati Yeop.....            | 56, 57, 65     | Saperi Sulong.....                      | 78             |
| Nur Adawiyah A.....            | 54             | Saraswathi Bina Rai.....                | 51             |
| Nur Ainina BS.....             | 78             | Saraswathi BR.....                      | 47             |
| Nur Azna Mahmud.....           | 56, 66, 80     | Sarimah A.....                          | 55             |
| Nur Farhana YS.....            | 78             | Sarimah Abdullah.....                   | 28             |
| Nur Liana AM.....              | 63             | Sayan P.....                            | 53, 54         |
| Nur Shahida AA.....            | 65             | Sayan Pan.....                          | 56, 57, 80     |
| Nur Shahida Abdul Aziz.....    | 14             | Seungho Ryu.....                        | 5              |
| Nurhakimin N.....              | 72             | Sfariyad S.....                         | 46             |
| Nurhaliza Zakariah.....        | 61             | Sha'ari Ngadiman.....                   | 7, 8           |
| Nurizyan N.....                | 72             | Shaharom Nor Azian Che Mat Din.....     | 25             |
| Nurmawati Ahmad.....           | 78             | Shaharuddin MS.....                     | 79             |
| Nurrul Ashikin Abdullah.....   | 65             | Shahdattul Dewi Nur Khairitza Taib..... | 23             |
| Nurrul Laila.....              | 59             | Shahrul Bahiyah Kamaruzzaman.....       | 25             |
| Nursyahda M.....               | 39             | Shaiful Bahari Ismail.....              | 71             |
| Nurul Farhana MA.....          | 79             | Shanthy V.....                          | 58             |
| Nurul Hafizah MY.....          | 48             | Sharifa Ezat Wan Puteh.....             | 19             |
| Nurul Saadiyah.....            | 74             | Sharifah Nor Ahmad.....                 | 25             |
| Nyi Naing N.....               | 55             | Sharifah Zawani Syed Ahmad Yunus.....   | 76             |
| Öhman A.....                   | 10             | Sharina D.....                          | 55             |
| Olutayo Folashade Martins..... | 31             | Shathanapriya Kandiben.....             | 17             |
| Omar M.....                    | 48             | Shazelin AP.....                        | 50             |
| Ong Bee Lay.....               | 74             | Shazlin Umar.....                       | 28             |
| Ong PH.....                    | 21             | Sherina Mohd Sidik.....                 | 31             |
| Pangie B.....                  | 40, 76         | Shreema R.....                          | 53             |
| Peela Jagannadha.....          | 35, 43         | Shreema Rasiyah.....                    | 37             |
| Penny Love.....                | 5              | Shubash S.....                          | 52, 58, 63     |
| Peter Haddawy.....             | 9              | Shubash Shander.....                    | 57, 70         |
| Phang Cheng Kar.....           | 35             | Shubash Shander G.....                  | 57             |

|                                    |                    |                                 |            |
|------------------------------------|--------------------|---------------------------------|------------|
| Shuhaila Ahmad .....               | 19                 | Tuan R.....                     | 50         |
| Siew Eng C.....                    | 77                 | Umi Kalsom I.....               | 59         |
| Siew Lian Yaw .....                | 65                 | Ummi Kalthum S.....             | 48         |
| Siti Aishah Hassan.....            | 32, 33             | Vickneswari A.....              | 53         |
| Siti Fatimah Mat Husin.....        | 70                 | Vickneswari Ayadurai.....       | 37         |
| Siti Fatimah MH.....               | 52, 58, 62         | Vijaya M.....                   | 59         |
| Siti Hajar Mohamad Tahir.....      | 43                 | Wan Azdie Abu Bakar.....        | 11         |
| Siti Irma Fadhillah Ismail.....    | 35                 | Wan Noraini WS.....             | 68         |
| Siti Nur'ain MS.....               | 78                 | Wan Shakira RH.....             | 57, 63, 69 |
| Sivabalan Thava Viknaraj.....      | 62                 | Wan Shakira Rodzlan Hasani..... | 66, 80     |
| Sobashini Kanniah.....             | 56                 | Weinehall L.....                | 10         |
| Soe Naung.....                     | 35, 43             | Winnie Johnny.....              | 44         |
| Stenlund H.....                    | 10                 | Wiwat Peerapatanapokin.....     | 7          |
| Steve Allender.....                | 5                  | Wong Li Ping.....               | 27, 31     |
| Sumarni MG.....                    | 57                 | Wong Yut Lin.....               | 20         |
| Sumet Ongwadee.....                | 7                  | Yeo Pei Sien.....               | 12, 67     |
| Sunita AR.....                     | 47                 | Yu Jie Si.....                  | 71         |
| Surajudeen Abiola Abdulrahman..... | 29                 | Yupa Min.....                   | 35, 43     |
| Suraya HS.....                     | 73                 | Yusmizan H.....                 | 42         |
| Surianti S.....                    | 22                 | Yusuf Sabtu.....                | 64, 70     |
| Suriyati Abd Aziz.....             | 25                 | Yusuf S.....                    | 66         |
| Suriyati Abd Rahman.....           | 20                 | Yuying Zhang.....               | 3          |
| Swe Swe Latt.....                  | 37                 | Zabidah Putit.....              | 23         |
| Syed Hatim Noor.....               | 24                 | Zahiruddin WM.....              | 26         |
| Syimir Shaziman.....               | 68                 | Zailina Hashim.....             | 26         |
| Tahir Aris.....                    | 11, 42, 61, 63     | Zainatunomri O.....             | 77         |
| Tan Maw Pin.....                   | 25                 | Zaini A.....                    | 58         |
| Tan PS.....                        | 40                 | Zainudin Mohd Ali.....          | 25         |
| Tan Zi Ti.....                     | 71                 | Zainurulazma MN.....            | 55         |
| Tee EO.....                        | 57                 | Zairina AR.....                 | 68         |
| Tee GH.....                        | 53                 | Zaiton K.....                   | 75         |
| Tee Guat Hiong.....                | 15, 54, 56, 57, 67 | Zaiton Lal Mohamad.....         | 25         |
| Teh CH.....                        | 57                 | Zaleha Md Isa.....              | 20, 26     |
| Teh Chien Huey.....                | 56                 | Zalilah Mohd Sharif.....        | 33         |
| Tengku Alina Tengku Ismail.....    | 28                 | Zalilah Mohd Shariff.....       | 11         |
| Thaqief Mohamad Azaini.....        | 71                 | Zalina Laili.....               | 80         |
| Thilaka Chinnayah.....             | 2                  | Zanariah.....                   | 24         |
| Thor Teong Gee.....                | 74                 | Zarah D.....                    | 59         |
| Thor TG.....                       | 41                 | Zohaib Akram.....               | 17         |
| Thuraiappah DM.....                | 37                 | Zubairu Iliyasu.....            | 31         |
| Tin Myo Han.....                   | 37                 | Zuhty H.....                    | 77         |
| Tin Tin Aye.....                   | 37                 | Zulkifli Jantan.....            | 36         |
| Tong WT.....                       | 75                 | Zurkurnai Yusof.....            | 27         |