Socio-demographic, clinical and treatment related factors of multidrug-resistant tuberculosis in Malaysia: log-linear analysis on count data

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Abstract

The emergence and increasing number of multidrug resistant tuberculosis (MDR-TB) worldwide has pose new threats to public health locally and globally. Studies that reported on the factors associated with MDR-TB are limited and mostly conducted at state level. This study aimed to determine the patterns of association in the characteristics of MDR-TB patients in Malaysia. Analysis of secondary data was from a cross-sectional design study on Tuberculosis Information System (TbIS) from 2012 to 2016. Log-linear regression was used to identify the patterns of association. There were 395 cases of MDR-TB reported across Malaysia from 2012 to 2016. Among immigrants with MDR-TB, they mostly were young age compared to old age (OR = 0.23, 95% CI: 0.11, 0.43). Among male patients, they mostly were old age and HIV positive status compared to young age (OR = 2.37, 95% CI: 1.45, 3.95) and HIV negative status, respectively (OR = 5.22, 95% CI: 1.48, 33.12). Most male patients had the history of previous TB treatment compared to female patients (OR = 1.78, 95% CI: 1.13, 2.82). Moreover, most patients with the history of previous TB treatment had negative sputum status compared to positive sputum status at the end of 2-month treatment (OR = 0.48, 95% CI: 0.30, 0.78). Log-linear analysis revealed association between age and immigrant status, age and gender, gender and HIV status, gender and history of previous TB treatment, and history of previous TB treatment and sputum status.

Factors associated with severity of hypertension among Malaysian adults

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Abstract

High blood pressure is the world's classic problem and remains a major global health burden. Either singly or combined with other metabolic diseases, high blood pressure increases the risk of cardiovascular diseases. This study aimed to determine the prevalence and factor associated with hypertension severity among adult population in Malaysia. This study utilized data from The National Health and Morbidity Survey 2015. It was a nationwide cross sectional study employing a two-stage stratified cluster sample design. Average blood pressure reading was categorized to four groups according to JNC7 criteria (normal, pre-hypertension, stage 1 hypertension and stage 2 hypertension). Complex Sample Ordinal Logistic Regression (OR) was used for analysis with odd ratios and 95% Confidence Interval (CI). A total of 15,738 adults was included in the study. The prevalence of pre-hypertension, stage 1 hypertension and stage 2 hypertension were 45.8%, 15.1% and 5.9%, respectively. In multivariable analysis, higher likely hood of having more severe hypertension was observed among those in higher age group, rural residents (OR = 1.15, 95% CI: 1.02, 1.28), male (OR = 2.15, 95% CI: 1.95, 2.38), the Malays (OR = 1.23, 95% CI: 1.07, 1.41), had primary education (OR = 1.41, 95% CI: 1.21, 1.64), had low income (OR = 1.31, 95% CI: 1.12, 1.53), being married (OR=0.86, 95% CI: 0.77, 0.98), had diabetes mellitus (OR = 1.24, 95% CI: 1.10, 1.39), being overweight (OR = 2.06, 95% CI: 1.88, 2.26) and being obese (OR = 4.58, 95% CI: 4.03, 5.21). Multiple ordinal regression analysis revealed that age, locality, gender, ethnic, socio-economic status, marital status, diabetes mellitus and body mass index (BMI) were likely to be associated in having more severe hypertension.

Distribution of molecular subtypes and its prognostic value on the risk of disease-free survival in women with breast cancer at Hospital Universiti Sains Malaysia

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Abstract

Breast cancer is the most common cancer in Malaysia. According to Malaysian cancer registry, 18,206 new patients was diagnosed with breast cancer during 2007 - 2011. It was estimated that about 2,572 patients died of breast cancer in 2012. We investigated the distribution of four molecular subtype and its prognostic value toward disease-free survival (DFS) in breast cancer (BC). We retrospectively reviewed of 208 patients with non-metastatic, operable BC treated with mastectomy or breast-conserving surgery between 2007 and 2015 at Hospital Universiti Sains Malaysia. We collected patient demographics, tumour's characteristics, histopathological data, receptor status and treatments profiles. Four molecular subtypes of breast cancer were classified based on receptor status: Luminal A: ER+ and/or PR+ and HER2-; Luminal B: ER+ and/or PR+ and HER2+; HER-2 enriched: ER-, PR- and HER2+; Triple negative: ER-, PR- and HER2-. DFS was defined as the date of diagnosis until the development of any locoregional recurrence, distant metastasis or any-cause mortality. Kaplan-Meier survival analysis and Cox regression was conducted. The distribution of molecular subtypes among 208 patients was: Luminal A (35.2%), Luminal B (29.0%), Her2-enriched (18.1%), and Triple negative (17.6%). In univariable analysis, the molecular subtype was not associated with DFS. The present study reported the Luminal A breast cancer was the most common subtype of breast cancer among female patients. However, the molecular subtypes were not associated with patient disease outcome.

Associated factors of depression severity among school-going adolescents in Malaysia from Global School Based Health Survey 2012

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Abstract

Depression has been reported as a common disorder among children less than 18 years old. This study aimed to determine the prevalence and factors associated with depression severity among adolescents in Malaysia. This study utilized data from the Global School Based Health Survey 2012. It was a nationwide cross sectional study employing a multistage stratified cluster sample design. Severity of depression was categorized as normal, mild, moderate and severe. Complex Sample Ordinal Logistic Regression (OR) was used for analysis with odd ratios and 95% Confidence Interval (CI). A total of 21,764 adolescents was included in the study. The prevalence of normal, mild, moderate and severe depression were 66.8%, 16.6%, 12.8% and 3.8%. In multivariable analysis, the higher odds of having more severe depression were observed among females (OR = 1.32, 95% CI : 1.21, 1.43), Indians (OR = 1.73, 95% CI : 1.42, 2.10), those who smoke (OR = 1.30, 95% CI : 1.15, 1.46), drink alcohol (OR = 1.30, 95% CI : 1.14, 1.48), take drug (OR = 1.81, 95% CI: 1.24, 2.65), involve in truancy (OR = 1.31, 95% CI : 1.20, 1.43), who have been bullied (OR = 1.84, 95% CI : 1.68, 2.01), who seriously consider attempting suicide (OR = 3.02, 95% CI: 2.56, 3.55), who parents never or rarely know what they were doing (OR = 1.33, 95% CI: 1.22, 1.45), and among those who parents never or rarely understand their problems and worries (OR = 1.29, 95% CI : 1.19, 1.40). Multiple ordinal regression analysis revealed that female, Indian, substance use risk factor, health behavior risk factor, home and environment risk factor were likely to be associated in having more severe depression.

Prognostic factors of vision loss after vitrectomy surgery among patients with proliferative diabetic retinopathy in Hospital Raja Perempuan Zainab II

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Abstract

Proliferative diabetic retinopathy (PDR) is one of the major cause of blindness throughout the world. Its development is primarily related to progressive retinal ischemia from diabetic retinopathy while its complications could lead to vision loss, tractional retinal detachment, and vitreous hemorrhage. Vitrectomy is the mainstay of treatment when sight threatening complications of PDR develop. The aim of this study was to identify the prognostic factors of vision loss after vitrectomy surgery among PDR patients. A retrospective cohort study involved 164 patients diagnosed with PDR that underwent vitrectomy surgery from 1st January 2012 to 31st December 2016 and were followed up at Ophthalmology Clinic at Hospital Raja Perempuan Zainab II. Visual acuity values were determined based on a Snellen chart. Subjects were considered to have vision loss when the visual acuity post vitrectomy surgery dropped by 0.3 LogMar. Kaplan Meier was used to determine the median time and Cox Proportional Hazard regression was used to identify the prognostic factors of vision loss. Statistical analysis was done using STATA 14. The mean age of patients was 52.68 years (SD = 10.32). The patients were 47.6% male and 52.4% female. The median probability time of vision loss obtained was 14.63 months (95% CI : 11.51, 17.75). Variables ischemic heart disease (IHD) and post-operative tractional retinal detachment (TRD) were found to be significant prognostic factor of vision loss. Patients with IHD (Adjusted HR: 1.71, 95% CI : 1.06, 2.78) and post-operative TRD (Adjusted HR: 1.80, 95% CI : 1.16, 2.79) had a higher risk in having vision loss post vitrectomy. It is essential to get a baseline eye examination earlier, at the time when early signs of disease or changes in vision may occur.

Psychometric validation of infant and young child feeding questionnaire for childcare providers: The IYCF-CCPQ

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Abstract

Adequate nutrition is critical to child health. To ensure sustainability of healthy environment, there is a need to identify the knowledge, attitude and practice on infant young child feeding among childcare providers. However, there is no validated tool in Malaysia. The study aimed to validate a new version infant young child feeding questionnaire for childcare providers (IYCF-CCPQ) to measure the level of knowledge, attitude and practice on infant and young child feeding among childcare providers. Psychometric analysis was tested among 200 childcare providers that involved in handling children less than two years old in childcare centers outside Kota Bharu, Kelantan. A new version questionnaire (IYCF-CCPQ) was self-administered. The IYCF-CCPQ consists of 3 major domains: Knowledge (104 items), attitude (90 items) and practice (42 items). The dichotomous scale items of knowledge section were analysed using 2-parameter logistic model of Item Response Theory. The polytomous scale items and hypothetical concept of items in attitude sections were assessed using Exploratory Factor Analysis (EFA). Internal consistency reliability was conducted for all three domains: knowledge, attitude and practice. The remaining items in knowledge section had good marginal fit and adequate Root Mean Square Error of Approximation of 0.06 to 0.07. The EFA had factor loading of 0.30 to 0.71 and satisfactory internal consistency of 0.89 to 0.90. Internal consistency reliability of practise component was 0.86. As conclusion, the IYCF-CCPQ is reliable and valid to be used to assess knowledge, attitude and practice among Malaysian childcare providers towards infant young child feeding.

Effectiveness of mobile app for health education and promotion of colorectal cancer: A quasi experimental study

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Abstract

Colorectal cancer is highly treatable if detected early. However, 65% of colorectal cancer were detected at late stage. Many studies showed low public knowledge and poor attitude toward colorectal cancer leading to low screening participation. Nowadays, health education materials have been given in printed materials i.e. pamphlets or flyers. With the technology advancement, reading a pamphlet has become less popular. People have shifted their information search via web page or mobile app. However, little is known about the mobile app implementation in health promotion and education particularly in Malaysia. Therefore, this study was conducted to assess the effectiveness of mobile app in improving the user's knowledge and attitude on colorectal cancer. A quasi experimental study was conducted in February and March 2018 involving 100 participants from Kota Setar (intervention district) and Kuala Muda (control district) Kedah. Participants were required to use a mobile app prototype on colorectal cancer and answered the validated pre and post intervention questionnaire. RM ANCOVA was applied to compare the mean percentage score difference of knowledge and attitude between intervention and control group while controlling for age. There was no difference in term of age, sex, education level, and occupation between groups. There was a significant difference in mean percentage score knowledge between intervention and control groups with regard to time [Wilk's lambda, $F(1, 97) = 12.531$, $p = 0.001$], but no significant difference was found in mean percentage score attitude ($p = 0.922$). In conclusion, mobile app can be a useful tool to improve the knowledge on colorectal cancer in Malaysia.

Prenatal stress modulated nociceptive responses in the thalamus of adult rat offspring

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Abstract

Exposure to prenatal stress has been linked to development of chronic pain in the adult offspring. The aim of this study was to investigate the effects of prenatal stress on nociceptive behaviour, morphological changes, and oxidative stress parameters in the thalamus of prenatally stressed male rat offspring. Sixteen Sprague Dawley pregnant rats were randomised into control and stress groups. Restraint stress was applied to the stress group from day 11 of pregnancy until delivery. Adult male rat offspring were subjected for formalin test (n = 8 per group) and they were sacrificed two hours post formalin injection. Their brains were removed to assess morphological changes and oxidative stress parameters in the thalamus. All data were analysed by using SPSS, version 22. Nociceptive behaviour score was analysed by using repeated measures analysis of variance (ANOVA) and the remaining data were analysed by using one-way ANOVA. The study demonstrated a significant increase in nociceptive behaviour score ($p < 0.05$) and malondialdehyde level ($p < 0.05$) in the stress group. In addition, there was a significant reduction of catalase level ($p < 0.001$) and a decrease of Nissl-positive neurons ($p < 0.05$) in the thalamus of the stress group compared to control. From this study, it can be concluded that prenatal stress was associated with alteration in nociceptive behaviour, morphology and oxidative stress parameters in the thalamus of adult rat offspring. The present study provides new insight regarding the role of thalamus in modulating the nociceptive responses in the thalamus of prenatally stressed male rat offspring.

Islamic commitments and mental health outcomes among substance dependants undergoing a psycho-spiritual therapy

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Abstract

With religion as its strong component, the Inabah programme has been designed to provide Islamic psycho-spiritual approaches in treating substance dependants. This study was conducted to examine religious and mental health outcomes among substance abusers undergoing this therapy. All included participants had to be $\geq$ 18 years, newly-registered participants at three Inabah centres in Kedah, Terengganu and Kelantan and were also cognitively capable of completing this pre- and post-intervention study. Participants with mental disorder and unacceptable behaviours were excluded. Religiousness and life purpose outcomes were measured using the Psychological Measure of Islamic Religiousness (PMIR), which consisted of Islamic faith, obligation and implementation (higher scores = better religiosity profiles) and purpose in life (higher scores = better sense of meaning in life). Mental health was measured via The Hospital Anxiety and Depression Scale (higher score = greater psychological problem). Descriptive and non-parametric tests were applied (SPSS 23.0). A total of 77 Muslims male participants was recruited (age of starting addiction = 19.5 $\pm$ 5.70; poly-drug users = 51.9%; intervention period > 2 months = 32.0%). Only 60 participants managed to complete the post-intervention phase. Significant improvement in anxiety was discovered ($p < 0.05$). But there were no significant changes in depression, religiousness and life purpose ($p > 0.05$) before and after undergoing Inabah. Nonetheless, small effect size were demonstrated by anxiety ($d = 0.28$) and purpose in life ($d = 0.24$). Inabah programme had positively reduced the anxiety level among the participants, indicating its effectiveness in treating this mental health problem. A more comprehensive and rigorous study with larger sample size and sufficient duration of intervention could likely yield clearer religiousness and life purpose outcomes in future.

Antimicrobial activities against multidrug resistant and foodborne organisms and acute toxicity study of *Peperomia pellucida* (ketumpang air) aerial part extracts

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Abstract

The scarcity of scientific information on antibacterial potential and safety concern of *Peperomia pellucida* have enhanced the urgency of conducting this study. This study aimed to evaluate the *in vitro* antibacterial activities of methanol and aqueous extracts of *Peperomia pellucida* aerial part (PPAP) against four multi-drug resistant organisms; methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant *Enterococcus,* extended-spectrum beta-lactamase and carbapenem-resistant *Enterobacteriaceae* and four foodborne pathogens: *Staphylococcus aureus*, *Bacillus cereus*, *Escherichia coli* and *Salmonella typhimurium*. The antibacterial potential of this plant extracts was evaluated at 250 mg/ml and 500 mg/ml using Kirby-Bauer's disc diffusion assay. Only susceptible bacteria was further determined for minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC). Further, the best extract of a single dose of 5000 mg/kg PPAP methanol extract was acutely tested on female rats by adopting the OECD guidelines No 425. Findings obtained indicated that only PPAP methanol extract was found to be a potent inhibitor towards *Bacillus cereus* with the MIC and MBC values at 3.91 mg/ml and 7.81 mg/ml respectively. Toxicity study revealed that there was neither mortality nor morbidity and absent of abnormalities on all rats examined. In conclusion, this study suggests that only PPAP methanol extract would be a promising source to inhibit *B. cereus* growth in foods. *In vivo*, the approximate acute median lethal dose (LD_{50}) of PPAP methanol extract was estimated to be higher than 5000 mg/kg.

Promoter hypomethylation of *LARP2* gene in Hb E/β-thalassemia and β-thalassemia major

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Abstract

LARP2 gene plays an important role in transcription factor mediating RNA polymerase III for β-globin gene transcription. DNA methylation is known to be one of the epigenetic events in contributing to the pathogenesis of inherited diseases; however it has not been fully explored in Hb E/β-thalassemia and β-thalassemia patients. This study aimed to compare DNA methylation pattern of *LARP2* gene promoter in nucleated red blood cells (NRBCs) from peripheral blood (PB) of Hb E/β-thalassemia and β-thalassemia major patients. PB samples were collected from 21 Hb E/β-thalassemia and 12 β-thalassemia major patients at Hospital Universiti Sains Malaysia and Hospital Raja Perempuan Zainab. DNA was extracted from NRBCs isolated from patients' PB using CD71 magnetic beads and subjected to bisulfite treatment prior to bisulfite sequencing PCR (BSP). The PCR products were purified, sequenced and 18 CpG sites located at 5'UTR were analyzed for DNA methylation using Finch TV software Version 1.4.0 (Geospiza, Inc.,USA). None of the CpGs was fully methylated. About 57% of Hb E/β-thalassemia patients were un-methylated in all CpGs and 24% were un-methylated in more than 80% CpGs, compared to 83% and 8% in β-thalassemia major patients. Out of 18 CpGs, CpGs 3 and 5 were mostly semi-methylated, 36% of Hb E/β-thalassemia compared to 17% in β-thalassemia major. No statistically significant association between types of thalassemia and *LARP2* methylation status ($p > 0.005$). In conclusion, NRBCs of PB may be useful in providing better understanding of epigenetic in β-thalassemia. Both types of β-thalassemia showed hypomethylating state of *LARP2* gene that may lead to abnormal expression of *LARP2* gene suggesting the possible epigenetic role in the pathogenesis of this disease.

Apoptotic induction in CCRF-CEM and HL-60 human leukemic cell lines by 5-azacytidine and trichostatin A

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Abstract

DNA methylation and histone modification suppress gene expression that may result in cancer development including leukemia. These epigenetic modifications are reversible by DNA methylation inhibitor; 5-azacitidine (5-Aza), and histone deacetylase inhibitor; trichostatin A (TSA). This study aimed to investigate the anti-apoptotic effects of 5-Aza and TSA in acute lymphoid leukemia (CCRF-CEM) and acute promylocytic leukemia (HL-60) cell lines. The 50% inhibition concentrations (IC_{50}) of 5-Aza and TSA were measured using trypan blue exclusion assay. Annexin-V-stained cells were analyzed using flow cytometry to evaluate the apoptotic induction. The IC_{50} values of CCRF-CEM were 2.01 ± 0.1 μM and 2.65 ± 0.3 μM for 5-Aza- and TSA-treated groups, respectively. Whereas, the IC_{50} values of HL-60 were 1.98 ± 0.2 μM and 2.35 ± 0.2 μM for 5-Aza- and TSA-treated groups. To further substantiate, the time-dependent exposure of both drugs was studied. CCRF-CEM cells were reduced by $49.4\% \pm 5.0$, $49.4\% \pm 2.5$ and $41.5\% \pm 5.6$ by 5-Aza; $56.5\% \pm 7.0$, $45.3\% \pm 4.2$ and $40.2\% \pm 4.2$ by TSA treatment at first, third and sixth day. HL-60 cells were reduced to $72.0\% \pm 4.5$, $51.0\% \pm 1.5$ and $40.6\% \pm 2.6$ by 5-Aza at first, third and sixth day. In TSA, HL-60 cells reduced to $55.6\% \pm 4.5$, $45.2\% \pm 4.0$ and $36.3\% \pm 2.9$ at first, second and fourth day. Both cell lines were significantly inhibited by the inhibitors compared to the untreated ($p < 0.05$). Furthermore, flow cytometry demonstrated that both drugs significantly increased the cells population positive for apoptosis in a dose- and time-dependent manner in with $51.7\% \pm 9.7$ and $49.4\% \pm 6.0$ for 5-Aza- and TSA-treated CCRF-CEM; $51.0\% \pm 3.9$ and $49.7\% \pm 9.6$ for 5-Aza- and TSA-treated in HL-60. 5-Aza and TSA have anti-apoptotic effects, hence may provide a new insight in strategy in developing the epigenetic therapy.

Lysholm score at pre-operation and serum alkaline phosphatase concentrations at three-week post anterior cruciate ligament reconstruction

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Abstract

Anterior cruciate ligament (ACL) tear is one of the common injuries among athletes and non-athletes. ACL tear that fails to respond to conservative management requires surgical treatment. It has been estimated that 8-10% of ACL reconstructions result in recurrent instability and graft failure. One of the factors affecting the surgical outcome of ACL reconstruction is the rate of graft healing, which is related to bone metabolism. This present study investigated knee function at pre-operation and the trend of changes in blood bone formation marker (alkaline phosphatase; ALP) concentration at three-week post ACL reconstruction in five cases. Five male participants, age ranged from 20 to 45 years old, who have undergone ACL reconstruction were recruited from the Orthopaedic Clinic, Hospital Universiti Sains Malaysia (Hospital USM). The participants were required to answer Lysholm score questionnaires for assessing knee function at T_0, i.e. one day before the operation. Blood samples were taken at T_0 and T_1, i.e. three weeks after ACL reconstruction for determining ALP levels. Before operation, the Lysholm scores for each case (from case 1 to case 5) were 64, 61, 85, 45 and 55 respectively. The mean Lysholm score of all 5 cases was 62, which was classified as 'poor' or 'severely abnormal' knee function. Serum ALP concentration increased 3 weeks after operation in all 5 cases. The increment compared to baseline for each case was 16, 4, 14, 7 and 11 μ/L, respectively. The mean serum ALP concentration of all 5 cases was 10.4 μ/L. These findings imply that at pre operation, ACL injury caused poor knee function, which could negatively affect daily living activities. Meanwhile, bone formation increased three weeks after operation.

A validity study of a Malay-translated modified version of Family Needs Survey (FNS)

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Abstract

The Family Needs Survey (FNS) developed by Bailey and Simeonsson and modified versions of it have been widely used to measure family needs in cross sectional studies. But the instrument is limited in providing practical implications of which the level of need was difficult to measure. The objective of this study was to present the modification and psychometric properties of the FNS into a Family Needs Scale instrument that can potentially assess the level of needs of caregivers of children with disabilities (CWD) aged 0 - 18 years in Kelantan, Malaysia. Modification of an existing instrument, FNS was made based on the input from experts and was pretested in a pilot study that was conducted in December 2016 among caregivers of CWD aged between two months to eighteen years old attending Health Camp for CWD in Tumpat, Kelantan, Malaysia. The response choices were modified into Likert scale of 0 to 4 where 0 = Not applicable, 1 = Needs not fulfilled, 2 = Needs barely fulfilled, 3 = Needs partially fulfilled, 4 = Needs completely fulfilled. An exploratory factor analysis (EFA) and reliability were examined. There were a total of 93 CWD caregivers involved in this study. Majority were females. EFA revealed 14 items of caregiver needs under 4 domains; Information, Social Support, Explaining to Others and Financial Help. Cronbach's alpha coefficients of the subscales ranged from 0.833 to 0.866. In conclusion, the Malay version of the FNS showed satisfactory psychometric properties but further examination is warranted to confirm its validity.