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Editorial Note

Communicable diseases (Tuberculosis, SARSCoV-2), Stunting and Herbal Medicine

10.6 million people will be diagnosed with tuberculosis (TB) worldwide in 2021. 6.4 million men, 3.4 million women, and 1.2 million kids. Children still under-report TB at a rate of more than 50%, particularly in the 0–4 year age range. Children's TB underreporting occurs mostly in secondary healthcare settings. However, Indonesia has not been as successful in identifying and screening children who are exposed to, at high risk of, or who already have TB and treating them for active disease or with tuberculosis preventive treatment (TPT). Only 9.3% of children under the age of 5 who were household contacts of TB cases with bacteriological confirmation were on TPT in 2019, and 35% of TB cases in children aged 0 to 14 years were not reported to the National Tuberculosis Program (NTP). To reduce preventable child deaths and achieve the END TB 2030 targets, novel approaches to child detection, diagnosis, and treatment are urgently required.

Due to the high demands for patient care, changing work environments, assignment of new tasks, fear for one's own safety, and concerns for the health of one's family, the COVID-19 pandemic created a challenge for the mental health of healthcare workers (HCWs). Due to their increased risk of developing depression during the pandemic, HCWs were among the most vulnerable population groups. Role conflict, role ambiguity, workload (quantitative and qualitative), career development, and responsibility for depression risk are all related.

One of the structural proteins of SARS CoV-2 is the M protein. Compared to other structural proteins, the M protein is more stable and relatively conserved. The immunodominant M protein epitopes have the benefit of being studied in order to comprehend their immunogenicity and antigenicity. Cloning, sequencing, expression in the E. coli BL21(DE3) system, and denature condition purification were all done on the SARS CoV-2 M gene. To create a SARS CoV-2 antibody diagnostic system, the membrane recombinant protein can be used.

In Indonesia, the proportion of under-fives with stunting is still quite high. This is demonstrated by Indonesia's percentage of stunted under-five children, which is still higher than the 20% WHO standard. Because an increase in economic growth will result in an increase in people's income, which will then be able to improve the nutritional status of the community, economic growth is frequently used as a tool to improve public health and nutrition in developing countries. According to UNICEF data, stunting affects 1.6 million or 2.5% of children in developed countries, compared to 37.7 million or 36.2% of children in low-income countries and 114.2 million or 22.7% of children in middle-income countries. This shows that a nation's low income levels have an impact on how well-nourished its children are. Because of the poor quality of human resources and the potential loss of state revenue, the adverse effects of stunting on a person's cognitive development and productivity in adulthood can result in losses to the state. Therefore, there is an urgent need for investment in children's health. By establishing sensible economic policies, one can invest in the health of children.

The most prevalent form of dementia in society is Alzheimer's disease, and it is predicted that there will be an increase in the number of dementia sufferers. Because they have the beneficial effect of enhancing cognitive status or function, several herbal plants have potential as nootropics in Alzheimer's disease, according to the clinical trials and meta-analysis data that are currently available.

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WB 925

Luigi Collins Aribowo, Ferina Angelia, Diana Wijaya, Marina Astrid Rumawas[1]

Efficacy and Safety of Nootropic Herbal Medicines in Increasing Cognitive Function in Alzheimer Patients

Health Science Journal of Indonesia 2023; 14; 1-12

Latar belakang: Latar belakang: Penyakit Alzheimer merupakan jenis demensia yang paling sering ditemukan dalam masyarakat dan diperkirakan angka penderita akan terus meningkat beberapa tahun kedepannya. Salah satu gejala khas dari penyakit Alzheimer adalah gejala menurunnya fungsi kognitif, dan obatan-obatan yang sekarang dipakai untuk melawan gejala tersebut belum memuaskan dan terdapat beberapa efek samping. Berdasarkan hal tersebut dibuat tinjauan untuk menelusuri terapi alternatif yang bersifat herbal dan nootropik.

Metode: Dilakukan penelusuran artikel publikasi Randomized Controlled Trial (RCT) dan meta-analisis mengenai khasiat dan keamanan tanaman obat untuk meningkatkan fungsi kognitif pada pasien Alzheimer dalam database PubMed dan Google Scholar dengan menerapkan beberapa kriteria inklusi dan kriteria eksklusi.

Hasil: Terdapat 14 artikel berupa 3 RCT dan 11 meta-analisis yang dianalisa lebih lanjut. Beberapa intervensi yang ditelusuri adalah Ginkgo biloba, Curcuma longa, Crocus sativus, Huperzine A, Panax ginseng, dan Obat herbal Cina. Masing-masing intervensi memiliki khasiat untuk meningkatkan fungsi kognitif, tingkat keamanan, dan rentang harga yang berbeda.

Kesimpulan: Dari semua intervensi yang dianalisa, Crocus sativus dapat menjadi terapi alternatif untuk pasien Alzheimer dikarenakan intervensi ini dapat meningkatkan fungsi kognitif, memiliki tingkat keamanan yang setara dengan terapi standar dengan harga terjangkau, namun perlu adanya sediaan ekstrak terstandard yang dapat dijangkau masyarakat Indonesia.

Kata kunci: pengobatan herbal, zat nootropik, fungsi kognitif, penyakit Alzheimer

WM 171.5

Herqutanto, Dewi Riana, Nuri Purwito Adi, Dewi S Soemarko, Retno Asti W

The Risk of Depression Among Health Workers During the Covid-19 Pandemic: A Study at Type B Hospitals in Indonesia Using PHQ-9

Health Science Journal of Indonesia 2023; 14; 13-20

Latar belakang: Pekerja di rumah sakit rentan dalam perang melawan COVID-19 dan mungkin mengalami gangguan emosional dan mental yang signifikan. Depresi merupakan salah satu gangguan emosional dan mental yang dapat memengaruhi pelayanan kesehatan yang diberikan oleh pekerja di rumah sakit. Penelitian ini bertujuan untuk mengetahui hubungan antara faktor pekerjaan dan faktor lain dengan risiko depresi pada masa pandemi Covid-19 pada pekerja di Rumah Sakit tipe B.

Metode: Penelitian ini merupakan penelitian analisis potong lintang dengan menggunakan data sekunder meliputi 669 pekerja di rumah sakit tipe B. Variabel demografi dan variabel terkait pekerjaan dikumpulkan dari Unit Sumber Daya Manusia (SDM) dan Unit Komite Keselamatan dan Kesehatan Kerja (K3RS) Rumah Sakit tipe B. Risiko depresi diukur dengan menggunakan Kuesioner Kesehatan Pasien (PHQ-9) dan stres kerja yang dinilai dengan Survey Diagnostic Stress (SDS). Analisis data menggunakan SPSS Statistics versi 27.

Hasil: Prevalensi risiko depresi pada pekerja di RS tipe B adalah 15,1%. Analisis regresi logistik multivariat menunjukkan bahwa stresor konflik peran (OR 3,68, 95% CI = 1,69 – 8,01) merupakan faktor risiko yang paling dominan terkait risiko depresi

daripada stresor beban kerja kuantitatif dan stresor pengembangan karir.

Kesimpulan: Prevalensi depresi yang tinggi ditemukan pada pekerja di rumah sakit tipe B selama wabah COVID-19. Memperhatikan konflik peran pekerjaan di tempat kerja akan berguna untuk mengurangi risiko depresi. Pemeriksaan dan penyuluhan kesehatan jiwa secara berkala harus dilakukan bersamaan dengan pemeriksaan kesehatan berkala.

Kata kunci: depresi, pekerja, rumah sakit, Covid-19, faktor pekerjaan, Indonesia

WS 104

Reni Eka Septiani, Tri Mulyaningsih, Mulyanto

The Effect of Macroeconomics and Access to Health Service on Stunting in Indonesia

Health Science Journal of Indonesia 2023; 14; 21-32

Latar Belakang: Prevalensi stunting di Indonesia masih di atas standar yang ditetapkan World Health Organization (WHO). Tujuan penelitian ini adalah menganalisis pengaruh pertumbuhan ekonomi, ketimpangan pendapatan, Indeks Pembangunan Manusia (IPM), kemiskinan, pengeluaran pemerintah sektor kesehatan, dan akses pelayanan kesehatan terhadap prevalensi stunting di Indonesia.

Metode: Teknik random effect digunakan untuk mengestimasi pengaruh variabel makroekonomi dan akses pada pelayanan kesehatan terhadap stunting di 34 provinsi di Indonesia.

Hasil: Pertumbuhan ekonomi berpengaruh positif terhadap stunting, IPM dan akses pelayanan kesehatan berpengaruh negatif terhadap stunting, ketimpangan pendapatan, kemiskinan, dan pengeluaran pemerintah sektor kesehatan tidak berpengaruh terhadap stunting.

Kesimpulan: Pertumbuhan ekonomi berpengaruh positif terhadap stunting karena pertumbuhan pendapatan tidak merata dan peningkatan pendapatan tidak dibelanjakan untuk gizi. Peningkatan pembangunan ekonomi yang inklusif dan kebijakan yang mengarah pada pengurangan stunting terutama di provinsi dengan angka stunting yang tinggi sangat diperlukan. IPM dan akses pelayanan kesehatan yang lebih baik terbukti menurunkan prevalensi stunting. Beberapa rekomendasi kebijakan adalah meningkatkan akses terhadap layanan kesehatan dan memastikan bahwa layanan tersebut menjangkau seluruh ibu hamil. Optimalisasi pelayanan gizi, konsultasi, dan edukasi ibu hamil melalui puskesmas sangat diperlukan.

Kata kunci: stunting, makroekonomi, akses pelayanan kesehatan

WF 415

Kristina L Tobing, Oster Suriani, Dina Bisara Lolong, Ferry Ahmadi, Asep Hermawan, Siti Isfandari

Under-Reported Tuberculosis Among Children: Subsample Analysis Indonesia Tuberculosis Inventory Study 2016-2017

Health Science Journal of Indonesia 2023; 14; 33-40

Latar Belakang: Infeksi Latar belakang: Indonesia memiliki beban TB tertinggi ketiga setelah India dan China. Penyakit TB pada anak diperkirakan mencapai satu juta di seluruh dunia, dengan 233.000 kematian akibat TB pada tahun 2017. Penelitian ini bertujuan untuk mengetahui gambaran pelaporan TB pada anak <15 tahun.

Metode: Data studi inventarisasi TB di Indonesia digunakan untuk analisis. Studi ini dilakukan di 23 kabupaten di Indonesia pada tahun 2016-2017. Studi perspektif berbasis kabupaten di Indonesia melibatkan seluruh fasilitas kesehatan di daerah terpilih yang telah mendiagnosis dan mengobati TB pada anak dalam tiga bulan terakhir. Semua kasus TB pada anak yang didiagnosis secara klinis dan dikonfirmasi secara bakteriologis dan dikategorikan sebagai kasus baru atau diobati ulang dimasukkan untuk analisis.

Hasil: Total kasus TB 23.320 pada semua kelompok umur yang diperoleh dari fasilitas pelayanan kesehatan pada 23 kabupaten/kota. Kasus TB terbanyak pada kelompok umur ≥ 15 (82%), sedangkan sisanya pada kelompok umur < 15 tahun (18%). Under reporting TB anak kurang dari 15 tahun adalah 54%. Under-reporting TB anak terbanyak pada fasilitas pelayanan kesehatan non primer (71%) seperti rumah sakit, klinik, praktek dokter mandiri, sedangkan sisanya dari pelayanan kesehatan primer (19%).

Kesimpulan: Under-reporting TB pada anak masih di atas 50% terutama pada kelompok umur 0-4 tahun. Kurangnya pelaporan TB pada anak terutama terjadi

di fasilitas kesehatan non primer. Untuk itu peran daerah khususnya dinas kesehatan perlu melakukan pengawasan dan pembinaan terhadap rumah sakit, klinik, dan praktek dokter mandiri terkait pencatatan dan pelaporan TB anak ke dalam sistem informasi TB yang terintegrasi.

Kata kunci: tuberkulosis, underreporting, inventaris

QW 168.5.C8

Silvia Tri Widyaningtyas, Fera Ibrahim, Ekawati Betty Pratiwi, Tanaya Subiantistha

Cloning and Expression of SARS-CoV-2 Membrane Recombinant Protein in Prokaryotic Expression System

Health Science Journal of Indonesia 2023; 14; 41-48

Latar Belakang: Protein M merupakan salah satu protein struktural SARS-CoV-2. Protein M merupakan protein yang relatif lestari dan tidak mudah untuk bermutasi dibandingkan protein struktural lainnya. Hal ini menjadikan protein M memiliki kelebihan untuk dipelajari epitop imunodominannya, dengan tujuan untuk memfasilitasi pemahaman terkait imunogenisitas dan antigenisitasnya. Beberapa penilitian menunjukkan ekspresi protein M telah dilakukan pada beberapa sistem ekspresi, salah satunya pada sistem ekspresi E. coli. Pada penelitian ini dilakukan pengklonaan gen M SARS CoV-2, sekuensing, ekspresi pada E. coli BL21(DE3), dan purifikasi dengan kondisi denatur. Protein rekombinan membran ini kemudian dapat digunakan dalam pengembangan sistem diagnostik antibodi SARS CoV-2.

Metode: gen penyandi protein M SARS-CoV-2 dalam bentuk gBlocks diklona ke dalam vector pengklonaan dan kemudian disubklona ke dalam vector ekspresi prokariot pQE80L. Tiga tahapan verifikasi terhadap plasmid rekombinan, yaitu PCR koloni, restriksi, dan sekuensing dilakukan untuk memastikan bahwa gen target telah berhasil diklona. Plasmid ekspresi pQE80L yang membawa gen M kemudian diekspresikan dan dipurifikasi pada kondisi denatur.

Hasil: Plasmid rekombinan pQE80L dikonfirmasi mengandung protein M menggunakan primer yang secara spesifik mengamplifikasi multiple cloning site (MCS) pQE80L dan menghasilkan amplicon berukuran 595 bp yang menunjukkan keberadaan gen rekombinan. Restriksi plasmid rekombinan menggunakan BamHI dan HindIII menghasilkan pita DNA berukuran 306 bp dan 4709 bp. Sekuen gen M di pQE80L dikonfirmasi dengan sekuensing. Untuk memastikan bahwa gen M dapat diekspresikan di sistem prokariot, plasmid rekombinan ditransformasi ke dalam bakteri BL21. Protein membran SARS-CoV-2 dengan ukuran 11,83 kDa telah berhasil diekspresikan dan dipurifikasi menggunakan teknik purifikasi Ni-NTA agarose pada kondisi denature.

Kesimpulan: gen penyandi protein membrane SARS-CoV-2 telah berhasil diklona dan diekspresikan pada sistem ekspresi prokariot

Kata kunci: SARS-CoV-2, protein membran, pengklonaan

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WB 925

Luigi Collins Aribowo, Ferina Angelia, Diana Wijaya, Marina Astrid Rumawas[1]

Efficacy and Safety of Nootropic Herbal Medicines in Increasing Cognitive Function in Alzheimer Patients

Health Science Journal of Indonesia 2023; 14; 1-12

Background: Alzheimer's disease is the most common type of dementia found in society and it is estimated that the number of dementia sufferers will increase. Declining cognitive function is a hallmark symptom and the treatment that has been used to combat the symptom is still unsatisfactory and has side effects. This review explores other herbal and nootropic alternative treatments.

Methods: Published Randomized Clinical Trials (RCT) and meta-analyses regarding the efficacy and safety of herbal medicine in increasing cognitive function in Alzheimer patients are searched in PubMed and Google Scholar while applying several inclusion and exclusion criteria.

Results: 14 articles are retrieved, which are 3 RCTs and 11 meta-analyses, and are analyzed further. Several interventions are examined, which include Ginkgo biloba, Curcuma longa, Crocus sativus, Huperzine A, Panax ginseng, and Chinese herbal medicine. Each of these interventions exert different levels of efficacy and safety, and differ in their price range.

Conclusion: Out of all the analyzed interventions, Crocus sativus could be used as a potential treatment for Alzheimer patients due to its comparable level of efficacy and safety to that of standard therapy and cost effective, but there needs to be a standardized extract for the Indonesian population to easily obtain.

Keywords: herbal medicine, nootropics, cognitive function, Alzheimer's disease

WM 171.5

Herqutanto, Dewi Riana, Nuri Purwito Adi, Dewi S Soemarko, Retno Asti W

The Risk of Depression Among Health Workers During the Covid-19 Pandemic: A Study at Type B Hospitals in Indonesia Using PHQ-9

Health Science Journal of Indonesia 2023; 14; 13-20

Background: Hospital workers are vulnerable in the fight against COVID-19 and may experience significant psychological and mental health consequences. Depression is one of the emotional and mental disorders that can affect the health services provided by hospital workers. This study aimed to determine the relationship between occupational factors and other factors towards the risk of depression during the Covid-19 pandemic among workers at type B hospital.

Methods: This study is a cross-sectional study using secondary data, a total of 669 workers (22-59 years age) were included. Demographic variables and work-related variables were collected from the Human Resources Unit (HR) and the Occupational Safety and Health Committee Unit (K3RS) of a type B hospital. Their risk of depression was measured using Patient Health Questionnaire (PHQ-9) and occupational stress assessed by the Survey Diagnostic Stress (SDS). SPSS versions 27 was used to conduct data analysis.

Results: Prevalence of depression among workers in type B hospital is 15.1%. Multivariate logistic regression analyses show that role conflict stressors (OR 3.68, 95% CI = 1.69 – 8.01) were more important risk factor for depression than quantitative workload stressor and career development stressor.

Conclusion: A high prevalence of depression was found among workers in type B hospital during the COVID-19 outbreak. Paying attention to job role conflict at the workplace will be useful for decreasing

the risk of depression. Regular mental health checks and counseling should be performed along with periodic health checks.

Keywords: depression, workers, hospitals, Covid-19, occupational factors, Indonesia

WS 104

Reni Eka Septiani, Tri Mulyaningsih, Mulyanto

The Effect of Macroeconomics and Access to Health Service on Stunting in Indonesia

Health Science Journal of Indonesia 2023; 14; 21-32

Background: The prevalence of stunting in Indonesia is still above the World Health Organization standard. This study aims to analyze the effect of economic growth, income inequality, the Human Development Index (HDI), poverty, government spending on the health sector, and access to health services on the prevalence of stunting in Indonesia.

Methods: The random effect technique is utilized to estimate the role of macroeconomic variables and access to health services on stunting in 34 provinces in Indonesia.

Results: Economic growth has a positive effect on stunting, HDI and access to health services has a negative effect on stunting. Income inequality, poverty, and government spending on the health sector has no effect on stunting.

Conclusion: Economic growth has a positive effect on stunting because the growth of income is not evenly distributed and income increases are not spent on nutrition. Increasing inclusive economic development and policies that lead to stunting reduction, especially in provinces with high stunting rates are very much needed. HDI and better access to health services are proven to lower stunting. Some policy recommendations are improving access to health services and making sure that the services can reach all pregnant women. Optimizing nutrition services, consultations, and education for pregnant women through health service centers are very much needed.

Keywords: stunting, macroeconomics, access to health services

WF 415

Kristina L Tobing, Oster Suriani, Dina Bisara Lolong, Ferry Ahmadi, Asep Hermawan, Siti Isfandari

Under-Reported Tuberculosis Among Children: Subsample Analysis Indonesia Tuberculosis Inventory Study 2016-2017

Health Science Journal of Indonesia 2023; 14; 33-40

Background: Indonesia has the third highest TB burden after India and China. TB disease in children reached an estimated one million worldwide, with 233,000 deaths due to TB in 2017. The study aimed to provide under-reporting TB in children <15 years.

Methods: Inventory TB study data were used for analysis. This perspective district-based study in Indonesia involves all health facilities in selected areas that have diagnosed and treated TB in children in the last three months. All cases of TB in children who were clinically diagnosed and bacteriologically confirmed and categorized as new cases or re-treated were included for analysis.

Results: Total cases of TB 23,320 in all group ages obtained by health care facilities from 23 districts/ cities. Most TB cases occurred in the age group ≥ 15 (82%), while the remaining 18% were aged < 15 years. The under-reporting rate of TB <15 years was 54%. Under-reporting of TB in the age group < 15 years mostly in non-primary health care facilities (71%), for example, hospitals, clinics, general practitioners, and pediatricians, whereas the rest is from primary health care (19%).

Conclusion: Under-reporting of TB in children is still above 50%, especially in the 0-4 year age group. Under-reporting of TB in children mainly occurs in non-primary healthcare facilities. For this reason, the role of the regions, especially the health office, needs to supervise and guide hospitals, clinics, and private practitioners regarding the recording and to report TB in children to an integrated tuberculosis information system.

Keywords: tuberculosis, underreporting, inventory

QW 168.5.C8

Silvia Tri Widyaningtyas, Fera Ibrahim, Ekawati Betty Pratiwi, Tanaya Subiantistha

Cloning and Expression of SARS-CoV-2 Membrane Recombinant Protein in Prokaryotic Expression System

Health Science Journal of Indonesia 2023; 14; 41-48

Background: The M protein is one of the structural protein of SARS CoV-2. The M protein is relatively conserved and stable than other structural protein. This made immunodominant epitopes of M protein has the advantage to be learned with the aim to understanding its immunogenicity and its antigenicity. Several studies have shown that M protein successfully expressed in several expression system, E. coli was one of them. In this study, M gene of SARS CoV-2 was cloned, sequenced, expressed in E. coli BL21 (DE3) system, and purified with denature condition. The membrane recombinant protein can be used for development of a SARS CoV-2 antibody diagnostic system.

Methods: the gene encoding the SARS-CoV-2 M protein in the form of gBlocks was cloned into the cloning vector and then subcloned into the pQE80L prokaryotic expression vector. There were three stages of recombinant plasmids verification which were the colony PCR, restriction, and sequencing. The M gene cloned in pQE80L was expressed by using BL21 and purified under denature condition.

Results: The recombinant plasmid pQE80L was confirmed containing M protein using primer that specifically amplify the multiple cloning sites (MCS) of pQE80L and produce 595 bp amplicon that indicating the presence of recombinant gene. Restriction of recombinant plasmid using BamHI and HindIII produced 306 bp and 4709 bp DNA bands. The sequence of M gene in pEQ80L has been confirmed by sequencing. Further to ensure the M gene could be expressed in prokaryotic system, the recombinant plasmid was transformed into BL21 bacteria. The SARS-CoV-2 membrane protein with a size of 11,83 kDa has been successfully expressed and purified using the Ni-NTA agarose purification technique under denature conditions.

Conclusion: the gene encoding the membrane protein of SARS-CoV-2 has been successfully cloned and expressed in the prokaryotic expression system.

Keywords: SARS-CoV-2, membrane protein, cloning