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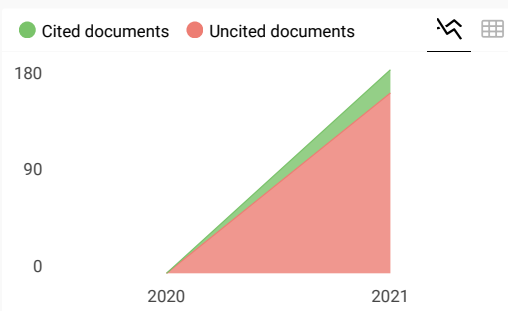
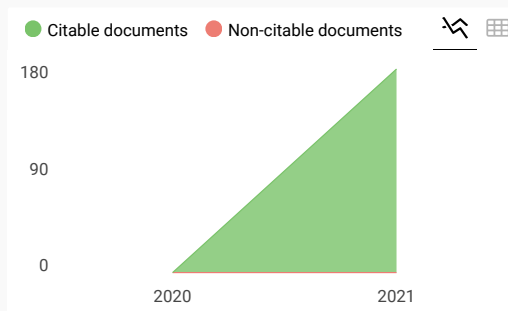
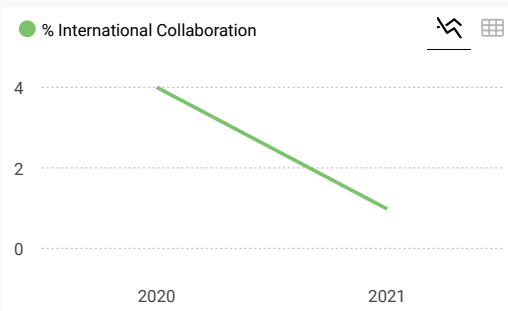
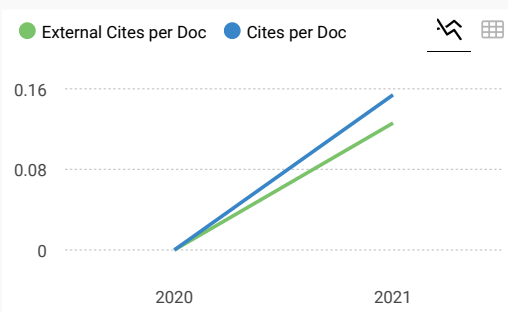
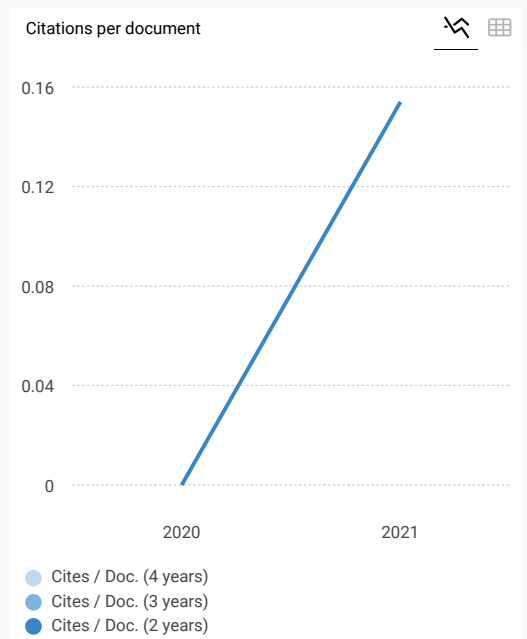
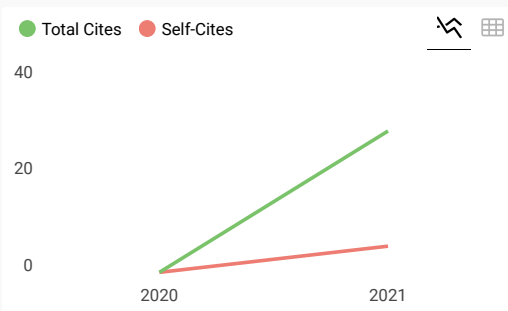
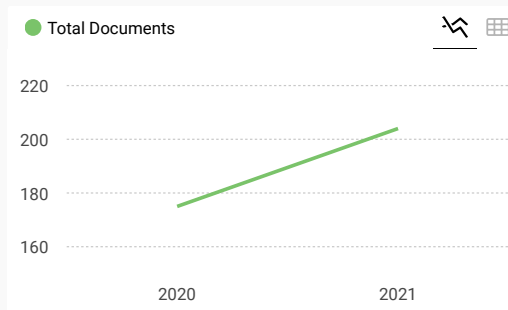
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ORIGINAL ARTICLE

The serum acetylcholinesterase (AChE) levels as an alternative diagnostic tool in pre-operative Hirschsprung's disease
(<https://www.balimedicaljournal.org/index.php/bmj/article/view/3610>)

Dennis Chrissandy Wasito, Iskandar Ali, Fransiska Kusumowidagdo, I Gusti Bagus Adria Hariastawa

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Tracing management and epidemiological characteristics of close contact COVID-19 in primary health care
(<https://www.balimedicaljournal.org/index.php/bmj/article/view/3705>)

Dwi Yulianingsih Putri Hanardi, Erna Rochmawati

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Diagnostic test of Immature Granulocyte Ratio (IG Ratio) to detect Early-Onset Neonatal Sepsis (EONS)
(<https://www.balimedicaljournal.org/index.php/bmj/article/view/3795>)

Sherly Karolina Simanjuntak, Sianny Herawati, Made Sukmawati, I Wayan Putu Sutirta Yasa, Ni Kadek Mulyantari, Anak Agung Wiradewi Lestari, I Nyoman Wande, I Made Ady Wirawan

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Factors influencing Bromage score in post-spinal anesthesia patients (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3435>)

Resiana Karnina, Nandya Satyaning Rahayu, Muhammad Faruk

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Clinical characteristics and mortality associated with COVID-19 in islamic hospital of Jemursari, Surabaya, Indonesia: A hospital-based retrospective cohort study (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3541>)

Evi Awwaliyah, Hotimah, Michio Shimabukuro

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Effect of tartrazine on blood urea nitrogen, creatinine levels, and renal tubular necrosis in adult male Wistar rats (*Rattus norvegicus*): an experimental study (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3623>)

Mulyati Sri Rahayu, Sri Wahyuni, Idha Fitriani, Habib Budiman Agung

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Transformation of the learning system in nursing education after the COVID-19 pandemic (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3720>)

Sulastri, Wachidah Yuniartika, Diah Ayu Agus Triana, Giyoto

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Evaluation of dermoscopic photoaging score among multiethnic in Medan, Indonesia (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3810>)

Nelva Karmila Jusuf, Imam Budi Putra, Medina Muslim

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ORIGINAL ARTICLE



A comparative study of full-thickness wound healing in rats using Nile tilapia skin and fresh human amnion (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3927>)

Nyssa Claresta Adhya Sastri, Iswinarno Doso Saputro, Lobredia Zarasade

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Association between metabolic syndrome and knee osteoarthritis (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3454>)

Ardyarini Dyah Savitri, Lysa Veterini, Meidyta Sinantryana Widyaswari , Diaz Syafrie Abdillah

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Distribution of blood-added tablets in adolescent girls in the COVID-19 pandemic (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3546>)

Pratiwi Hariyani Putri , Dini Setiarsih, Rizki Amalia

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Liver function characteristics of COVID-19 patients with obesity at Dr. Soetomo Hospital: case series (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3727>)

Erwin Maulana Farmanda Putra, Ummi Maimunah

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Clinicopathological characteristics and possible risk factors for extrauterine metastases in endometrial carcinoma (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3820>)

Teuku Mirza Iskandar, Very Great Eka Putra, Ediwibowo Ambari, Endy Cahyono, Lubena

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The effect of pursed-lips breathing and diaphragm exercises on the quality of life of COPD patient assessed by six-minutes walk test (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3474>)

Mulyadi, Ida Muna Junita, Teuku Zulfikar, Nurrahmah Yusuf, Mulkan Azhary, Hotimah Masdan Salim

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ORIGINAL ARTICLE

Acceptance of interprofessional education (IPE) for educators at health-based faculty universitas nahdlatul ulama Surabaya (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3495>)

Wiwik Afridah, Trimartiana , Prihartini Widiyanti, Mochammad Bagus Qomaruddin

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ORIGINAL ARTICLE

Frequency of Interleukin-6 rs 1800796 (-572G/C) and 2069837 (intron 2A/G), TNF- α rs1800750 (-376G/A), and 1800629 (-308G/A) polymorphism in COVID-19 patients with clinical degrees in Central Java (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3552>)

Reviono, Hendrastutik, Yulia Sari, Betty Suryawati, Darmawan ismail, Ketut Putu Yasa

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ORIGINAL ARTICLE

Fatigue and excessive daytime sleepiness among nurses (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3746>)

Septian Mixrova Sebayang, Made Suandika, Ita Apriliyani, Suci Khasanah, Asmat Burhan, Noor Yunida Triana, Dwi Astuti

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The pattern of osteocyte in dental socket bone regenerative induced by hydroxyapatite bovine tooth graft (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3844>)

Nanik Zubaidah, Sri Kunarti, Nadira Nurin Febrianti, Arif Rahman Nurdianto, Wanda Oktaria, Muhammad Luthfi

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Strengthening community roles to reduce stunting in COVID-19 pandemic in indonesia rural areas: capacity building program for cadres and local government (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3753>)

Supriyatningsih Wenang, Ima Rismawati, Lidia Febrianti, Bambang Edi Susyanto, Gina Puspita, Alfaina Wahyuni, Arlina Dewi, Dianita Sugijo, Sutantri, Diyah Nahdiyati, Anang Widhi Nirwansyah

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A study of molecular docking of l-tryptophan ligand as a compound in pineapples and bananas binding with the human serotonin transporter (SERT) (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3526>)

Susy Purnawati, Luh Putu Wrasiasi, Cokorda Bagus Jaya Lesmana, Sandra Megantara, Ronny Lesmana

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Fibrin glue as a novel therapy for contracted socket in comparison to mitomycin-c and triamcinolone acetonide at Dr. Soetomo General Academic Hospital, Surabaya, Indonesia (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3687>)

Firda Ayu Muthie, Evelyn Komaratih, Sutjipto, Dyah Fauziah, Budi Utomo

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The impact of age, gender, family history of allergy, clinical symptoms, and duration of illness on flare diameter of skin prick test (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3870>)

Uuk Rihuh Kusuma Wardana, Anang Endaryanto, Cita Rosita Sigit Prakoeswa

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Phytochemical screening, antioxidant activity and cytotoxicity assay from noni juice and fermented noni (*Morinda citrifolia* L.) (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3534>)

Handayani, Devyana Dyah Wulandari, Devyani Diah Wulansari

Online First: Sep 13, 2022 |

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Calming effect of Javanese Handwriting Calligraphy, preliminary study based on neuroaesthetics
(<https://www.balimedicaljournal.org/index.php/bmj/article/view/3598>)

Arman Yurisdaldi Saleh, Miky Miky Endro Santoso, Wawan Murwantara, Retno Yulianti, Imam Prabowo

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Factors related to family resilience during the COVID-19 pandemic (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3703>)

Martina Pakpahan, Lia Kartika, Mega Sampepadang

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Intensifying self-awareness of undergraduate students toward hypertension risk factors through health education
(<https://www.balimedicaljournal.org/index.php/bmj/article/view/3784>)

Ambar Relawati, Dewi Maulidawati

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ORIGINAL ARTICLE

Effects of probiotics and high fructose diet on De Ritis ratio, TGF-B levels, and liver histopathology of Sprague Dawley rats
(<https://www.balimedicaljournal.org/index.php/bmj/article/view/3397>)

Ninung Rose Diana Kusumawati, Damianus Galih Panunggal, Maria Mexitelia, Magdalena Sidhartani, Agustini Utari

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ORIGINAL ARTICLE

Parenting stress against symptoms of gadget addiction in elementary school age during the COVID-19 pandemic
(<https://www.balimedicaljournal.org/index.php/bmj/article/view/3539>)

Nur Hidayah, Esti Yunitasari, Hanik Endang Nihayati, Imamatul Faizah, Ratna Yunita Sari

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Restarting living donor kidney transplant during COVID-19: a single center experience (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3615>)

Mochammad Fairuz Zahran, Tanaya Ghinorawa

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Expression of Na⁺/K⁺ATPase and changes of corneal endothelium cell density after phacoemulsification with hypothermic perfusion (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3718>)

Ratih Justitia Kartika, Reni Prastyani, Dyah Fauziah, Soenarnatalina Melaniani, Wimbo Sasono

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The Effect of Beta vulgaris L. on the Malondialdehyde Levels in Male Wistar Rats Exposed to Cigarette Smoke (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3806>)

Alya Berliana Suharso, Puspita Kusuma Dewi, Edward Kurnia Setiawan Limijadi, Amallia Nuggetsiana Setyawati

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ORIGINAL ARTICLE

Relationship between Vitamin D Levels and Platelet Function in the Elderly Patients with Coronary Heart Disease (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3911>)

Charles Limantoro, Catharina Suharti, Trilaksana Nugroho, Friska Wilda Wijaya

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Knowledge and parity prevention of anemia in pregnancy (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3451>)

Tutik Ekasari, Mega Silvian Natalia, Muthmainnah Zakiyyah

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Parental support is important to improve clean and healthy living behavior for school-age children during the COVID-19 pandemic (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3544>)

R. Khairiyatul Afyah, Ratna Yunita Sari, Rusdianingseh, Yurike Septianingrum, Ika Mardiyanti, Robi Is Maulana, Firman Suryadi Rahman

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Stromal Tumor Infiltrating Lymphocytes (TIL) as a potential prognostic biomarker for recurrence in Locally Advanced Breast Cancer (LABC) patients (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3724>)

Dannu Novriandhika, Dwi Hari Susilo, Dyah Fauziah, Priangga Adi Wiratama, Desak Gede Agung Suprabawati

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Application of DNA Barcoding for authentication of Balinese traditional medicinal plant Purnajiwa (*Kopsia arborea* Blume. and *Euchresta horsfieldii*) (Lesch.) Benn (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3815>)

Putu Eka Pasmidi Ariati, Maria Malida Vernandes Sasadara, I Gede Putu Wirawan, Made Sritamin, I Ketut Suada, I Nyoman Wijaya, Rindang Dwiyani, I Putu Sudiarta, Ida Ayu Putri Darmawati

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A pilot study of new scoring system severity of striae distensae (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3968>)

Imam Budi Putra, Nelva Karmila Jusuf, Alviera Yulindra Amal

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The effect of oral phenytoin and vitamin C therapy on enterocutaneous fistula healing (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3469>)

Yohannes Sugiarto, Ignatius Riwanto, Trilaksana Nugroho

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Acceptance of the covid-19 vaccine based on health belief model (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3549>)

Eppy Setiyowati, Rahayu Anggraeni, Priyo Mukti Winoto, Domingas da Silva Soares Pereira, Paulo Lopes, Aquino Tinos Martins

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The effect of Curcuma longa on fasting blood glucose, MMP-9 and IFN- γ in diabetes mellitus: an experimental study (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3648>)

Shafira Zahra Ovaditya, Surya Pratama Brilliantika, Chodidjah Chodidjah, Titeik Sumarawati

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Expression of Superoxide Dismutase-1 (SOD-1) and changes of corneal endothelial morphology after phacoemulsification with hypothermic perfusion (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3734>)

Afia Nuzila Fadhlina, Luki Indriaswati, Nurwasis, Dyah Fauziah, Mahmudah

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ORIGINAL ARTICLE

Association between the levels of muscle-specific creatinine kinase (CK-MM) and the incidence of persistent myalgia in COVID-19 survivors (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3827>)

Aria Adhiatma, Christrijogo Sumartono Waloejo, Bambang Pujo Semedi, Hamzah , Prihatma Kriswidyatomo, Pudji Lestari

Online First: Nov 13, 2022 |

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ORIGINAL ARTICLE

Relationship between self-regulation with self- acceptance of hypertension patients during the covid- 19 pandemic period in Indonesia (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3499>)

Umdatul Soleha, Ah Yusuf, Oedojo Soedirham, Ratna Yunita Sari, R. Khairiyatul Afiyah, Chilyatiz Zahroh, Immatul Faizah

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The correlation between the usage of kami pekarasa card (cards of pregnant mother for posyandu's members and villages authority holders) and the visit coverage of k4 pregnant mother during COVID-19 pandemic event (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3555>)

Iis Hanifah, Tutik Hidayati, Riska Faraswati

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Ultrasound assessment of femoral cartilage thickness among healthy Indonesian adults (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3667>)

Rita Vivera Pane, Aisyah, Hajar Ariani, Erwien Isparnadi, Aufar Zimamuz Zaman Al Hajiri, Albert Setiawan

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Histopathology of colorectal cancer in Cut Meutia Hospital, Aceh-Indonesia from 2017-2020 (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3750>)

Muhammad Sayuti, Muhammad Syahriza, Ghisca Chairiyah Ami

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ORIGINAL ARTICLE

The performance of various laboratory parameters to differentiate follicular thyroid carcinoma and follicular thyroid adenoma (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3521>)

Satriya Kelana, Dwi Hari Susilo, Sahudi

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ORIGINAL ARTICLE

Comparative effect of incentive spirometry and diaphragm breathing to functional capacity in COVID-19 patient in an isolated ward (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3579>)

Amien Suharti, Evi Rachmawati Nur Hidayati, Hafizia Asri Yusviani

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ORIGINAL ARTICLE

The sensitivity pattern of ciprofloxacin and amoxicillin in chronic suppurative otitis media (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3756>)

Lilis Suryani, Asti Widuri, Muhammad Kurniawan, Bombong Nurpagino

Online First: Nov 15, 2022 |

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ORIGINAL ARTICLE

Role of neutrophil gelatinase-associated lipocalin (NGAL) as a acute prerenal kidney injury marker: Exploring factors associated with its postoperative levels in hypotension-controlled otorhinolaryngology surgery (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3868>)

Andy Nauman Saputra, Prananda Surya Airlangga, Boby Abdul Rahman, Edward Kusuma, Prihatma Kriswidyatomo, Christrijogo Sumartomo

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ORIGINAL ARTICLE

Risk Factors of Titanium Mesh Exposure: Experience from a Tertiary Referral Center (<https://www.balimedicaljournal.org/index.php/bmj/article/view/2428>)

Christian Beta Kurniawan, Akhmad Imron, Muhammad Rainda Farhan

Online First: Oct 24, 2022 |

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ORIGINAL ARTICLE

The relationship of parent's nutrition knowledge level and teacher's food parenting on nutritional status ff pre-school aged children (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3532>)

Yanesti Nuravianda Lestari, Eko Farida, Nur Amin, Amelia Setyowati, Wiwik Afrida, Fifi Khoirul Fitriyah

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ORIGINAL ARTICLE

Serum ferritin level in pediatric patients with acute lymphoblastic leukemia (ALL) in the early stage of diagnosis and remission phase (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3595>)

Novia, Nelly Rosdiana, Supriatmo



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ORIGINAL ARTICLE

Correlation of chest radiography of confirmed COVID-19 patients with comorbid hypertension and diabetes mellitus (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3691>)

Ana Majdawati, Annisa

Online First: Nov 15, 2022 |

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ORIGINAL ARTICLE

Gut microbiome analysis in human living close to livestock at Mlati district, Sleman, Yogyakarta (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3774>)

Yulia Sari, Betty Suryawati, Ari Natalia Probandari, Hartono, Wayan Tunas Artama, Bambang Purwanto, Soetrisno

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ORIGINAL ARTICLE

Renal function features in pediatric acute lymphoblastic leukemia during high-dose methotrexate chemotherapy (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3890>)

Adkhiatul Muslihatin, Mia Ratwita Andarsini, Andi Cahyadi, Risky Vitria Prasetyo, I Dewa Gede Ugrasena, Maria Christina Shanty Larasanti

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ORIGINAL ARTICLE

The effect of discharge planning on the stability of blood sugar levels in type 2 diabetes mellitus patients (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3537>)

Difran Nobel Bistara, Erika Martining Wardani, Susanti, Andreas Putro Ragil Santoso, Abdul Hakim Zakkiy Fasya, Ary Andini

Online First: Sep 13, 2022 |

 Abstract

 pdf (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3537/2223>)

ORIGINAL ARTICLE

Association between serum TNF- α level with the incidence of metastases in women with breast cancer in Dr. Soetomo General Hospital, Indonesia (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3611>)

Rachman Efendi, Husnul Ghaib, Iskandar Ali



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ORIGINAL ARTICLE

Fibrin glue: an anti-fibrotic agent for contracted socket (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3707>)

Ivon Bremmy Wydha Saputro, Yulia Primitasari, Susy Fatmariyanti, Dyah Fauziah, Budi Utomo

Online First: Nov 9, 2022 |

 Abstract

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ORIGINAL ARTICLE

Carotid intima-media thickness in the first descendant of coronary artery disease patients with Apolipoprotein-E4 genotype (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3798>)

Ahmad Rafi Satrio Prayogo, Elvira Yunita, Rachmawaddah Yolanda, Ismir Fahri, Novriantika Lestari, Marisadonna Asteria, Ahmad Azmi Nasution, Jusup Endang, Sipriyadi, Ellen Maidia Djatmiko

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 Abstract

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ORIGINAL ARTICLE

Clinical and laboratory comparison between End-Stage Kidney Disease patients with and without COVID-19: a cross-sectional study in a top referred hospital of West Nusa Tenggara (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3440>)

I Gede Yasa Asmara, I Gusti Ngurah Ommy Agustriadi, I Made Sujaya, Salim Said Thalib, Rina Lestari, Suryani Padua Fatrullah, Komang Sri Rahayu Widiarsari, Indana Eva Ajmala, Metta Octora

Online First: Sep 5, 2022 |

 Abstract

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ORIGINAL ARTICLE

A study of efficacy, safety, and acceptance of two combined oral contraceptive pills containing 150 mcg Levonorgestrel and 30 mcg Ethinyl Estradiol at Dr. Kariadi Hospital, Semarang, Indonesia (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3629>)

Syarief Thaufik Hidayat, Hary Tjahjanto, Robert Eria, Yenny Kartika Gozali

Online First: Sep 27, 2022 |

 Abstract

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ORIGINAL ARTICLE

Soft skills elements in structured clinical skill assessment: a qualitative study (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3721>)



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ORIGINAL ARTICLE

Bacterial colonization in atopic dermatitis (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3811>)

Deryne Anggia Paramita, Khairina, Nova Zairina Lubis

Online First: Dec 13, 2022 |

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ORIGINAL ARTICLE

The effects of oral antihistamines on the formation of granulation tissue on full-thickness wounds in white rats *Rattus norvegicus* (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3928>)

Taufiqur Rakhim Aditra, Agus Santoso Budi, Iswinarno Doso Saputro

Online First: Dec 20, 2022 |

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ORIGINAL ARTICLE

Antioxidant activity of *Tinospora crispa* extracted with different ethanol solvents (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3467>)

Renny Novi Puspitasari , Sri Agus Sudjarwo, Agung Pranoto , Achmad Basori

Online First: Sep 9, 2022 |

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ORIGINAL ARTICLE

Correlation of magnetic angiography with relative cerebral blood flow on arterial spin labeling using magnetic resonance imaging in acute ischemic stroke patients (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3547>)

Utami Ambarsari, Arif Faisal, Hari Basuki Notobroto, Erna Furaidah, Yunita Lestari Indrianto, Naura Anindya Candini

Online First: Sep 28, 2022 |

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ORIGINAL ARTICLE

Utilization of local culture "Bapalas Bidan" as a postpartum counseling media on contraception tools (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3641>)



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ORIGINAL ARTICLE

Ameliorative effect of 50% ethanol extract of moringa leaves (*Moringa oleifera* Lam.) on lead-induced oxidative stress in the liver of male wistar rat model (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3728>)

Agung Saprasetya Dwi Laksana, Lily Kusumasita , Falah Faniyah

Online First: Dec 8, 2022 |

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ORIGINAL ARTICLE

Transcortical selective amygdalohippocampectomy for intractable mesial temporal lobe epilepsy: a review of outcomes in a single center (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3475>)

Aris Catur Bintoro, Muhamad Thohar Arifin, Harsono, Amin Husni, Surya Pratama Brilliantika, Yuriz Bakhtiar, Novita Ikbar Khairunnisa, Rofat Askoro, Jacob Bunyamin, Soeharyo Hadisapurto, Zainal Muttaqin

Online First: Nov 1, 2022 |

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 pdf (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3475/2293>)

ORIGINAL ARTICLE

Exercise decrease the expression of MCP-1 in perivascular adipose tissue (PVAT) in obese mice (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3496>)

Hotimah Masdan Salim, Aisyah Aisyah, Michio Shimabukuro

Online First: Sep 11, 2022 |

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ORIGINAL ARTICLE

Stress, motivation, satisfaction, and learning achievement: A case study (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3553>)

Widya Addiarto, Yulia Rachmawati Hasanah

Online First: Sep 30, 2022 |

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ORIGINAL ARTICLE

Visual science mapping and future direction of pediatric acupuncture: a bibliometric analysis from Scopus database and



VOSviewer (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3747>)

Selfi Handayani, Nanang Wiyono, M. Nur Dewi Kartikasari, Endang Listyaningsih Suparyanti, Annang Giri Moelyo, Balgis, Faizal Muhammad, Ahmad Fasichul Iman

Online First: Nov 18, 2022 |

 Abstract

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ORIGINAL ARTICLE

Circumcision in Bali? a survey of knowledge and attitude of Balinese parents toward their son's circumcision in elementary school Denpasar, Bali (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3516>)

I Wayan Jordan Junior, Rizky Darmawan, Dhanu Aryawangsa, Adi Satrya Palguna, Nindya Prahasari, Anak Agung Gde Oka

Online First: Dec 8, 2022 |

 Abstract

 pdf (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3516/2396>)

ORIGINAL ARTICLE

Transcatheter aortic valve implantation: A review article (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3571>)

Starry Homenta Rampengan, Jansen Chitrahadinata

Online First: Sep 5, 2022 |

 Abstract

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ORIGINAL ARTICLE

The effect of intravenous remifentanyl and fentanyl postoperative delirium incidence in patients receiving elective orthopedic surgeries (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3851>)

Hanung Aryana, Dedi Susila, Belindo Wirabuana

Online First: Dec 1, 2022 |

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ORIGINAL ARTICLE

Granulocyte colony-stimulating factor therapy as a bridging treatment for pediatric decompensated liver cirrhosis prior to liver transplantation: an open-label randomized clinical trial (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3527>)

Tri Hening Rahayatri, Alida Harahap, Aryono Hendarto, Hanifah Oswari, Rianto Setiabudy, Akmal Taher

Online First: Sep 23, 2022 |

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 pdf (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3527/2236>)

ORIGINAL ARTICLE



Medico-socio-economic perspective of congenital hydrocephalus patients treatment in dr. Soetomo Academic General hospital, Surabaya, Indonesia (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3586>)

Heru Kustono, Muhammad Arifin Parenrengi, Arief Wibowo, Agus Turchan, Kurnia Kusumastuti, Asra Alfauzi

Online First: Dec 8, 2022 |

 Abstract

 pdf (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3586/2394>)

ORIGINAL ARTICLE

Regenerative alveolar bone in dental sockets of diabetic wistar rats post tooth extraction (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3874>)

Nanik Zubaidah, Muhammad Luthfi, Wisnu Setyari, Retno Palupi, Nur Imamatul Ummah, Ardyta Lintang Maheswari, Arif Rahman Nurdianto, Fathillah Abdul Razak

Online First: Nov 25, 2022 |

 Abstract

 pdf (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3874/2331>)

ORIGINAL ARTICLE

Anti-inflammatory effects and potential mechanisms of *Mitragyna speciosa* methanol extract on λ -karagenan-induced inflammation model (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3535>)

Hotimah Masdan Salim, Choirotussanijjah, Evi Sylvia Awwalia, Ilham Putera Alam

Online First: Sep 13, 2022 |

 Abstract

 pdf (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3535/2255>)

ORIGINAL ARTICLE

Grape (*Vitis vinifera* L.) skin extract reduced levels of SGPT and SGOT and improved the liver tissue structure of Wistar rats (*Rattus norvegicus*) fed a high-cholesterol diet (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3602>)

Siti Maryam, Ni Kadek Alit Arsani, Sartika Tangguda

Online First: Oct 13, 2022 |

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ORIGINAL ARTICLE

Understanding the purchasing behaviors of halal cosmetics of teenagers in Indonesia using the theory of planned behavior and theory of consumption value (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3704>)

Titih Huriah, Iman Permana, Mega Octavia, Siti Hazariah Binti Abdul Hamid

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ORIGINAL ARTICLE

The Effect of chair-based exercise and vitamin d levels with hand grip strength in elderly woman
(<https://www.balimedicaljournal.org/index.php/bmj/article/view/3786>)

Dwi Ngestiningsih, M Agung Wibowo Wicaksono, Probosuseno, Yuswo Supatmo, Banundari Rachmawati

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ORIGINAL ARTICLE

Comparison of intestinal fatty acid binding protein (I-FABP) level between pre- and post-surgery and its associated determinants in patients with microscopic otorhinolaryngology surgeries (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3893>)

Yuda Atmajaya, Mohammad Satriyo Wibowo, Prananda Surya Airlangga, Maulydia, Prihatma Kriswidyatomo, Muhtarum Yusuf, Budi Utomo

Online First: Dec 1, 2022 |

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ORIGINAL ARTICLE

The effectiveness of the self-care management model in midwife care through android application as an effort to increase the ability of pregnant mothers in early detection of pregnancy at risk during the COVID-19 pandemic
(<https://www.balimedicaljournal.org/index.php/bmj/article/view/3430>)

Ika Mardiyanti , Annif Munjidah, Nanik Handayani, Siska Nurul Abidah, Hinda Novianti, Uliyatul Laili, Lailatul Khusnul Rizki

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ORIGINAL ARTICLE

Blockchain integration for hospital information system management (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3540>)

Naufal Adi Satrio, Sritrusta Sukaridhoto, M. Udin Harun Al Rasyid, Rizqi Putri Nourma Budiarti, Ilham Achmad Al-Hafidz, Evianita Dewi Fajrianti

Online First: Sep 14, 2022 |

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ORIGINAL ARTICLE

Implementation of the blood donation preservation strategy at Indonesian red cross (IRC) blood donor unit (BDU) Banda Aceh during the COVID-19 pandemic (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3622>)

Teuku Ilhami Surya Akbar, Maulana Ikhsa, Ratna Sari Dewi

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ORIGINAL ARTICLE

Systemic Lupus Erythematosus Flare Triggered by COVID-19 Infection: A Case-Based Review (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3719>)

Maria Sarce Tio, Arundina Sanyoto

Online First: Oct 27, 2022 |

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ORIGINAL ARTICLE

Excessive physical exercise caused a decrease in CD4+ and Hematopoietic Stem Cell (HSC) levels in Wistar rats (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3809>)

Si Ngurah Oka Putrawan, I Made Jawi, I Wayan Putu Sutirta Yasa, Anak Agung Ngurah Subawa, Ida Bagus Putra Manuaba

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 Abstract

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ORIGINAL ARTICLE

The effect of freeze-dried human amnion on New Zealand rabbit tendon healing (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3926>)

Melissa Anita Ayu Iustitiati, Sitti Rizalijana, Agus Santoso Budi

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Effect of aromatherapy blend essential oils (lemongrass and lemon) on sleep quality in pregnant women's third trimester (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3453>)

Fritria Dwi Anggraini , Siska Nurul Abidah, Esty Puji Rahayu, Fauziyatun Nisa

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ORIGINAL ARTICLE

The effect of syzygium polyanthum (wight) extract in histological changes of kidney in diabetic mice model (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3545>)

David Sajid Muhammad, Hotimah Masdan Salim, Cici Dita Virlliana, Adyan Donastin, Agus Aan Adriansyah

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ORIGINAL ARTICLE

Comparison of outcomes between a ruptured and unruptured intracranial aneurysm: results from an Indonesian cohort study (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3725>)

Julius July, Patrick Putra Lukito, Vanessa Angelica, Jeremiah Hilkiah Wijaya, Audrey Hamdoyo, Nyoman Aditya Sindunata, Rusli Muljadi

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 Abstract

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ORIGINAL ARTICLE

The role of serum ferritin level and disease severity in COVID-19 with type 2 diabetes mellitus patients (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3818>)

Fauzia Noor Liani, Sony Wibisono Mudjanarko, Hermina Novida

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ORIGINAL ARTICLE

Formation of woven bone in orthodontic tooth movement tension areas after giving Mangostin by expression of Runx-2 and IL-10 (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3971>)

Ida Ayu Arnawati, I Ketut Sudiana

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ORIGINAL ARTICLE

The effect of Quran recitation on t-cell lymphocyte activity in mice model of breast cancer (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3473>)

Akbar Reza Muhammad, Yunyastiti D. Palupi, Mega Astri, Hafid Algristian

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ORIGINAL ARTICLE

Protective effect of lavender essential oils on depression and multi-organ stress (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3655>)

Hafid Algristian, Tri Wahyuni Bintarti, Rani Nur Mukaromatim Baroroh, Qorieatul Leila, Reina Ulfa, Amelia Krismawati, Mifa Nurdiana, Giftania Wardhani Sudjarwo, Adhi Wibowo Nurhidayat, Irawan Satriotomo, Retno Handajani

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ORIGINAL ARTICLE

Efficacy of therapeutic plasma exchange and convalescent plasma therapy in moderate-to-severe COVID-19 patients (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3493>)

Reviono, Faizal Muhammad, Ken Zuraida Maharestri, Ihsan Hanif, Coana Sukmagautama, Hendrastutik Apriningsih, Arif Zuhail Amin Hananto, Harsini

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REVIEW

Mechanism of oxidative stress in obesity (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3849>)

Gede Eka Rusdi Antara, Sri Maliawan

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REVIEW

Comparison of sperm parameters and fertility rate in subclinical varicocele patients treated with varicocelectomy versus no varicocelectomy: a systematic review (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3685>)

Afdal, Fakhri Zuhdian Nasher

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REVIEW

Clostridium difficile virulence factors as the cause of antibiotic-associated diarrhea (AAD): a literature review (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3696>)

Ni Luh Putu Harta Wedari, Ni Nyoman Sri Budayanti, Agus Eka Darwinata

Online First: Oct 5, 2022 |

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REVIEW

Spine vascular lesions from embryology to imaging findings review article with serial cases (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3812>)

Sri Andreani Utomo, Abdul Hafid Bajamal, Yuyun Yueniwati P.W.

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REVIEW

Benefits and challenges of peer learning methods in health professional students: A literature review (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3755>)

Dyah Sriwigati, Lisa Musharyanti

Online First: Nov 14, 2022 |

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REVIEW

Behavioral intervention on nonpharmacological pain management for child : a systematic review (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3531>)

Wesiana, Ugrasena, Yuni Sufyanti, Nur Hidayah, Resti Utami

Online First: Sep 10, 2022 |

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REVIEW

The use of telemedicine in COVID-19 pandemic era: a systematic review (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3594>)

Dwi Martha Nur Aditya, Viskasari Pintoko Kalanjati, Dimas Bathoro Bagus Pamungkas, Maya Rahmayanti Syamhadi, Jesslyn Angelina Soegiharto Wibowo, Kevin Muliawan Soetanto

Online First: Dec 26, 2022 |

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REVIEW

Medicinal Plants - A Promising Breakthrough in the Management of Alzheimer's Disease Progression Compared to NSAID: A Systematic Review (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3899>)

Paulus Sugianto, Widiana Ferriastuti, Kiking Ritarwan, Dwi Putri Rahayu Tampubolon

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[pdf \(https://www.balimedicaljournal.org/index.php/bmj/article/view/3899/2430\)](https://www.balimedicaljournal.org/index.php/bmj/article/view/3899/2430)

REVIEW

Comparison between mini-Percutaneous Nephrolithotomy (PCNL) and standard PCNL in pediatric patients: a systematic review and meta-analysis (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3563>)

Kindy Aulia, Widi Atmoko, Ponco Birowo, Nur Rasyid

Online First: Sep 30, 2022 |



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REVIEW

Inflammation in obesity: a review (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3850>)

Tjokorda Istri Anom Saturti

Online First: Dec 17, 2022 |

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REVIEW

COVID-19 emergency response in Southeast Asian region: A bibliographic analysis using VOSviewer software (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3758>)

Ferry Fadzlul Rahman, Fahni Haris

Online First: Nov 16, 2022 |

 Abstract

 pdf (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3758/2337>)

REVIEW

One health strategy in prevention and control of parasitic zoonosis globally and Indonesia- from theory to practice: a mini-review (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3632>)

Khesara Sastrin Prasita Negara, Yulia Sari, Lilik Wijayanti, Sri Haryati, Azzahra Harmalia Anjani, An'nurihza Zidhan Azhara, Azzahra Fadhli Aulia Nisa

Online First: Nov 13, 2022 |

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 pdf (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3632/2322>)

REVIEW

Crosstalk between hypoxia and inflammation in non-Hodgkin lymphoma (<https://www.balimedicaljournal.org/index.php/bmj/article/view/3491>)

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
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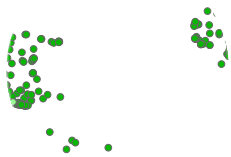


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Relationship between CYP2C19 polymorphisms and weight gain in epilepsy patients treated with divalproex sodium: does gender matter?



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ABSTRACT

Introduction: Epilepsy is an unprovoked seizure caused by an abnormal paroxysmal neuronal release in the brain. One of epilepsy treatments is anti-epileptic drug divalproex sodium. It is often prescribed to control seizures but it increases body weight. Weight gain may decrease the effectiveness of epilepsy treatment and cause endocrine disorders. CYP2C19 polymorphism may help physicians map patients vulnerable to weight gain due to divalproex sodium. This study aimed to determine the relationship between CYP2C19 polymorphisms and the incidence of weight gain based on gender in epilepsy patients treated with divalproex sodium.

Methods: This cross-sectional study consisted of 17 male and 23 female patients. The polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) was used to identify CYP2C19 polymorphism which was grouped into: extensive metabolizer, intermediate metabolizer and poor metabolizer. The results were analyzed using Chi-squared test to determine the relationship between CYP2C19 and each variable (gender, age, epilepsy types, valproic acid types, family history of obesity and presence of weight gain) based on of gender.

Results: The results showed that there was no statistically significant association between CYP2C19 polymorphisms and gender-based epilepsy patients groups ($p > 0.05$). We found that most of the subjects in this study were women with an increase in body weight by 57.5%. There was no association of CYP2C19 polymorphism with type of divalproex sodium, dose of divalproex sodium, length of treatment, type of epilepsy and family history of obesity.

Conclusion: There is no significant association between CYP2C19 polymorphism and weight gain between genders in epilepsy patients.

Keywords: CYP2C19 polymorphism, epilepsy, divalproex sodium, body weight, gender.

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INTRODUCTION

Epilepsy is a cerebral disease due to abnormal paroxysmal neuronal release in the brain and one of the epilepsy therapies is using antiepileptic/anti-seizure drugs.¹⁻⁴ The most commonly prescribed anti-seizure is valproic acid (VPA). Since VPA has been known to cause a serious side effects, it is also available as the combination with sodium valproate to be divalproex sodium.^{5,6} Both produce similar treatment results and can be used interchangeably under equivalent dose adjustment.⁷ VPA or divalproex sodium has broad indications, besides seizures and epilepsy, such as bipolar psychiatric disorders, schizophrenia, borderline personality disorder, and

migraine prophylaxis.^{7,8} Despite having a broad spectrum, one of the most widely reported side effects of divalproex sodium is weight gain.⁹ Weight gain is also at risk of decreasing patient adherence and discontinuing antiepileptic drugs. Drug-induced weight gain is also responsible for the incidence of endocrine disorders (menstrual disorders, polycystic ovaries, and hyperandrogenism).^{8,10,11}

The frequency of weight gain occurrence after consuming divalproex sodium or VPA still varies. Two studies from Italy and Austria reported a significant increase in body weight (≥ 5 kg) occurred in 23.5% of men and 43.6% of women who were treated with VPA.^{12,13} Other studies also showed an increase in body weight for 2 kg after 1 month of

therapy.^{12,14} Weight gain also occurred in 71% of VPA users and 58% in children and adolescents receiving VPA. This weight gain is more common in women than men.^{8,15,16} A study in Japan showed that VPA increased serum testosterone levels in epilepsy patients, especially those who were treated with VPA since less than 20-year-old.⁹ Testosterone positively correlates with orexigenic ghrelin level, conveying hunger signals to the brain.^{17,18}

In clinical practice, not all patients experience weight gain despite taking VPA or divalproex sodium at high doses for a long period of time. This raises the suspicion of the influence of genetic variation on the incidence of weight gain due to VPA. Many studies have identified genes associated with VPA-induced

weight gain and have focused on factors influencing the molecular pathways involved in appetite stimulation and inhibition of food satisfaction.¹⁰ CYP2C19 is one of the predominant enzymes in divalproex sodium metabolism. Three CYP2C19 genotypes were grouped in this study, namely the homozygous wild type/extensive metabolizer (EM) allele of CYP2C19*1/*1, the heterozygous intermediate metabolizer (IM) allele of CYP2C19*1/*2 or CYP2C19*1/*3 and the heterozygous poor metabolizer (PM) allele of CYP2C19*2/*3.

In the group of patients with an increased body weight, 70% had an EM genotype while the PM population was only 5%. However, in the normal or decreased weight group, the EM and PM populations were balanced (50%). In general, the frequency of PM in Asian population is 15-25%.⁹ This finding was preceded by a study, by the same researchers, that demonstrated an association between CYP2C19 polymorphisms and weight gain in patients receiving VPA. It was concluded that in women receiving VPA, body mass index ($p=0.002$) and weight gain ($p=0.032$) were higher in patients with heterozygous EM and PM CYP2C19 polymorphisms than in homozygous EM. But, in the follow-up study, the higher BMI and weight gain were found in heterozygous EM.⁹ Different results were also shown by a recent study that the risk of weight gain was three times higher in CYP2C19*1/*2 and CYP2C19*2/*2 than in CYP2C19*1/*1 of 108 VPA-treated epilepsy patients.¹⁹

The high incidence of weight gain after divalproex sodium or VPA treatment in female patients compared to male patients raises the suspicion of a different role of sex hormones in CYP2C19 gene polymorphisms and body weight by sex. Another study found an association of CYP2C19 polymorphisms with divalproex sodium, increased appetite and testosterone metabolism.²⁰ The differences in population, genotype, study methods and other factors might affect the study results obtained. This study was conducted to determine the relationship between CYP2C19 gene polymorphisms and weight gain associated with sex, based on divalproex sodium types, daily dosage,

length of treatment, epilepsy types, family history of obesity, testosterone level and estrogen level.

METHODS

Study design and sample collection

This analytical cross-sectional study consisted of two sample groups and was compared simultaneously. The patients had been treated with divalproex sodium and divalproex sodium extended-release (ER) monotherapy at Airlangga University Hospital for 6 months. The subjects of this study were epilepsy patients who received valproic acid. They were selected using purposive consecutive sampling method based on inclusion and exclusion criteria. The inclusion criteria were 18-50 years old, with no history of impaired liver or kidney function, willing to participate and follow all study procedures. Specifically for the female patients, they had had regular menstrual cycles. The exclusion criteria were pregnant patients, who had a history of weight gain >2.5 kg in six months before being treated with divalproex sodium and divalproex sodium ER, used hormonal contraception, corticosteroid, or herbal medicine, and followed a weight gain or loss program. From the calculation of the sample size for two populations, the total sample size was 40 patients.

PCR-RFLP test

The materials for DNA isolation consisted of lysis buffer for cell membranes (CMLB), lysis buffer for nuclear membranes (NMLB), Tris-EDTA (TE) buffer (10 mM Tris HCl pH 7.4 and 0.1 mM Na₂EDTA) and Tris-borate-EDTA (TBE) buffer 5x (54 g Trisbase, 27.5 g boric acid, 20 mL 0.5 M Na₂EDTA pH 8). Primers used for polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) test was shown in [Table 1](#).

Genotyping

The DNA was isolated from 3 ml EDTA-anticoagulated blood using an automatic gene extractor. CYP2C19 was genotyped using real-time PCR. Four reaction solutions were added to each sample according to the instruction. The internal reference probe was added to control the quality of the reaction. Each experiment was performed using a positive and a

blank control. The PCR reaction consisted of a 30-minute hold at 37°C, a 15-minute hold at 95°C, followed by 30 cycles of 30 s at 95°C, 30 s at 56°C and 45 s at 65°C. The samples were amplified with GeneAmp PCR system 2400. When the amplification curve was obtained, the samples were analyzed using the cycle threshold value (CT-value). MyTaq HS Red Mix reagent, PCR Grade Water and primer were prepared at room temperature to amplify the genomic DNA. The remainder of the extracted DNA was stored at 2-8°C for 24 hours or -70°C for a longer period of storage. The CYP2C19 genotypes were identified with gel electrophoresis device and gel documentation XR. The results were categorized into three groups: patients with at least two *2 or *3 alleles (*2/*2, *2/*3, or *3/*3) as poor metabolizers (PM), those with one *2 or *3 allele (*1/*2 or *1/*3) as intermediate metabolizers (IM) and those without a *2 or *3 alleles (*1/*1) were classified as extensive metabolizers (EM).

Estrogen level examination

Blood sample was taken before 10 a.m. and processed to be separated from serum. It was stored at room temperature (20-25 °C). The blood containing precipitation was centrifuged at 10,000g for less than 2 hours to avoid evaporation. Before inserting the estradiol kit reagent into the apparatus of Electrochemiluminescence Immunoassay (ECLIA), the sample was inverted 30 times and gently shaken to suspend the blood sample. The complete suspension was confirmed visually, followed by the kit reagent removal. The sample was then stored at 2-9°C.

Free testosterone examination

The level of testosterone was analysed using enzyme immunoassay analysis (EIA). Blood sample was taken before 10 a.m. A total of 4-5 mL of each serum-free blood sample was stored in a centrifuge tube at 4°C for 24 hours or less than -10°C if it is analysed for more than 24 hours. Each calibrator, control, and specimen was pipetted 25 µL into the labelled wells. A total of 100 µL of conjugate working solution were added into each well and shaken for 10 seconds. The plate was incubated at 37°C for one hour. The wells

were washed three times with 350 μ L of diluted wash buffer in each well and dried carefully with absorbent paper. As much as 150 μ L of 3,3',5,5'-tetramethylbenzidine (TMB) substrate were pipetted into each well. The plate was incubated at 37°C for 10-15 minutes and pipetted 50 μ L stopping solution into each well. The results were read in a microwell plate reader at 450 nm within 20 minutes.

Statistical analysis

The association between the CYP2C19 genotypes and patients based on divalproex sodium type, dosage, duration of therapy, epilepsy types, family history

of obesity, free testosterone, estrogen level were analysed using Chi-squared test. The results were considered significant at $p < 0.05$. All analyses were conducted using SPSS software (NY, USA).

RESULTS

There were 40 epilepsy patients included in this study. They were divided into two groups, patients with increased bodyweight and no increase in bodyweight group (Table 2).

The distribution of all three polymorphism groups were 60% (n=24) as EM, 37.5% (n=15) as IM and 2.5% (n=1)

as PM. In male patients, the EM group was 11 (27.5%) and the IM group was 6 (15%). The EM group was 13 (32.5%) and the IM group was 9 (22.5%) in female patients. The IM and PM groups were mostly found in female group (Table 3).

The relationship analysis between CYP2C19 polymorphisms and sample variables (divalproex sodium types, dosage, length of treatment, epilepsy types, family history of obesity, free testosterone and estrogen level) is presented in Table 4. We found no significant relationship in CYP2C19 polymorphisms towards both of patients groups, in terms of divalproex sodium type (male vs. female, $p=0.162$ vs $p=0.414$), length of treatment (male vs. female, $p=1.000$ vs $p=0.478$) and family history of obesity (male vs. female, $p=0.640$ vs $p=1.000$).

Table 1. Primers used in PCR-RFLP test.

Genes	Primer	Sequence
CYP2C19*2	Forward	5'-CAGAGCTTGGCATAATTGTATC
	Reverse	5'-GTAAACACAAAAGTAGTCAATG
CYP2C10*3	Forward	5'AAATTGTTTCCAATCATTAGCT
	Reverse	5'-ACTTCAGGGCTTGGTCAATA

Table 2. Demographic characteristics of the included patients.

Demographic characteristics	Total (n)	Percentage (%)
Gender		
Male	17	42.5
Female	23	57.5
Age (years)		
18-20 (inclusion criteria >18)	9	22.5
21-30	6	15.0
31-40	6	15.0
41-50	18	45.0
51-60	1	2.5
Epilepsy type		
General	19	47.5
Focal	20	50.0
Absence	1	2.5
Divalproex sodium type		
Divalproex sodium	20	50.0
Divalproex sodium ER (extended release)	20	50.0
Family history of obesity		
Yes	28	70.0
No	12	30.0
Weight gain		
Yes	20	50.0
No	20	50.0

Table 3. Distribution of CYP2C19 polymorphisms based on gender of the patients.

Gender	CYP2C19 polymorphism		
	*1/*1 (EM)	*1/*2 and *1/*3 (IM)	*2/*3 (PM)
Male	11 (27.5%)	6 (15%)	0 (0%)
Female	13 (32.5%)	9 (22.5%)	1 (2.5%)
Total	24 (60%)	15 (37.5%)	1 (2.5%)

DISCUSSION

There were 40 patients included in this study. Based on Table 2, the patients were mostly female (57.5%) with the age ranging between 41 and 50 years (45%). They were almost equally distributed to generalized epilepsy (47.5%) and focal epilepsy (50%). During divalproex sodium therapy, women with generalized epilepsy are vulnerable to anovulatory cycles, polycystic ovaries and obesity.²¹ A significant rise of testosterone level is especially noticeable in women who begin treatment at less than 20 years, suggesting that young female epilepsy patients are at higher risk to the effects of divalproex sodium.²²

Based on observations and interviews, 70% of the patients had a family history of obesity. It may cause other family members to be more likely to be obese and gain weight due to divalproex sodium consumption.^{23,24} This study suggested no significant relationship between family history of obesity and the CYP2C19 in causing increased body weight of divalproex sodium-treated patients.

Reproductive hormones, like testosterone and estrogen, are important modulators of energy balance and food intake.²⁵ CYP2C19 has been linked to the metabolism of estrogen and testosterone. CYP2C19 is able to catalyze the oxidative catalysis of testosterone to produce 2b-, 6b-, 15b-, and 16b-hydroxytestosterone.²⁶

Table 4. Relationship of CYP2C19 polymorphism and clinical parameters in epilepsy patients based on gender.

Parameter	Male			p-value	Female			p-value
	EM (%)	IM (%)	PM (%)		EM (%)	IM (%)	PM (%)	
Divalproex sodium type				0.162				0.414
Divalproex sodium ER	8 (80.0)	2 (20)	0 (0)		4 (40)	6 (60)	0 (0)	
Divalproex sodium	3 (42.9)	4 (57)	0 (0)		8 (60)	4 (33)	1 (7)	
Dosage (mg per day)				0.102				0.590
750–1500	5 (100)	0 (0)	0 (0)		1 (33.3)	1 (33.3)	1 (33.3)	
<750	(50)	6 (50)	0 (0)		11 (55)	9 (45)	0 (0)	
Length of treatment (month)	11 (64.7)	6 (35.3)	0 (0)	1.000	12 (52)	10 (43)	1 (3)	0.478
Epilepsy types								0.414
General	6 (75)	2 (25)	0 (0)	0.620	7 (64)	3 (27)	1 (9)	
Focal/Absence	5 (55.6)	4 (44.4)	0 (0)	0.620	5 (42)	7 (58)	0 (0)	
Family history of obesity				0.640				1.000
No	4 (57)	3 (42.9)	0 (0)		3 (60)	1 (20)	1 (20)	
Yes	7 (70)	3 (30)	0 (0)		9 (50)	9 (50)	0 (0)	
Free testosterone				0.644				1.000
Normal	7 (70)	3 (30)	0 (0)		11 (52)	9 (43)	1 (5)	
Increase	1 (100)	0 (0)	0 (0)		1 (100)	0 (0)	0 (0)	
Decrease	4 (66.1)	2 (33.9)	0 (0)		0 (0)	1 (100)	0 (0)	
Estrogen level				0.515				0.090
Normal	8 (57.1)	6 (42.9)	0 (0)		12 (6)	7 (35)	1 (5)	
Increase	2 (66.7)	1 (33.3)	0 (0)		0 (0)	2 (100)	0 (0)	
Decrease	0 (0)	0 (0)	0 (0)		0 (0)	1 (100)	0 (0)	

A high level of testosterone in women may cause insulin resistance and abdominal fat accumulation.²⁶ In men, the situation appears to be exactly the contrary, with more abdominal fat is associated with lower testosterone levels.²⁶ Estrogen may stimulate appetite and consequently cause weight gain. According to another study, CYP2C19 heterozygous EM and PM is associated with the increased level of testosterone and estrogen that induce weight gain, primarily on female epilepsy patients treated with divalproex sodium, though the actual mechanism remains unclear.⁹ In this study, the three CYP2C19 genotypes were mostly distributed in female patients, where EM group was 13 (32.5%), IM group was 9 (22.5%) and PM group was 1 patient (2.5%) (Table 3). However, we found no significant relationship between the reproductive hormones (testosterone and estrogen) and CYP2C19 polymorphisms in inducing weight gain of divalproex sodium-treated patients, whether male or female.

Divalproex sodium inhibits the CYP2C19 to bind with a substrate which is needed to catalyze the conversion of androgens to estrogens. The inhibition

of divalproex sodium works by binding to the enzyme's active site. Consequently, when the enzyme binds to a substrate (e.g., testosterone), the enzyme becomes inactive and the androgen conversion is disrupted.²⁷ In those with IM and PM polymorphisms, the divalproex sodium will cause a lower testosterone catalysis and increase the testosterone level. The excessive testosterone level may cause a rise of appetite and body weight.^{26,28}

The average dose of divalproex sodium (mg/day) and the gender of the patients was not significantly associated. There is also no relationship between dose of divalproex sodium (mg/day) and CYP2C19 polymorphisms (Table 4). This result is different from a study in Japan that found a significant association between CYP2C19 cytochrome polymorphisms and weight gain, also a higher incidence of overweight was higher in women who lost one or two CYP2C19 alleles ($p < 0.05$).⁹

Based on this study, there was no significant relationship between the CYP2C19 polymorphisms and gender-based bodyweight in epilepsy patients treated with divalproex sodium. This is similar to a previous finding that there

was no significant relationship between gender of the patients and valproic acid in inducing weight gain ($p > 0.05$).⁹

CONCLUSION

Our data suggest no association between CYP2C19 polymorphism and weight gain, in divalproex sodium-treated epilepsy patients. The result is not differed whether on male or female patients.

ETHICAL APPROVAL

The study protocol was approved by the ethical committee of Faculty of Medicine, Universitas Airlangga, Indonesia (No. 128/EC/KEPK/FKUA/2021).

COMPETING INTERESTS

The authors declare no conflict of interest.

GRANT INFORMATION

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AUTHOR CONTRIBUTION

All author had contributed in manuscript writing and agreed for the final version of the manuscript for publication.

REFERENCES

- Moshé SL, Perucca E, Ryvlin P, Tomson T. Epilepsy: new advances. *Lancet* [Internet]. 2015;385(9971):884–98. Available from: [http://dx.doi.org/10.1016/s0140-6736\(14\)60456-6](http://dx.doi.org/10.1016/s0140-6736(14)60456-6)
- Banerjee PN, Filippi D, Allen Hauser W. The descriptive epidemiology of epilepsy—a review. *Epilepsy Res* [Internet]. 2009/04/15. 2009 Jul;85(1):31–45. Available from: <https://pubmed.ncbi.nlm.nih.gov/19369037>
- Sekarsari D, Kalanjati VP, Machin A, Gunawan PI. Profile Of Epilepsy Patients In Pediatric Ward At Dr. Soetomo General Academic Hospital, Surabaya, Indonesia In The Period Of January-December 2017. *Maj Biomorfologi* [Internet]. 2020;30(2):34. Available from: <http://dx.doi.org/10.20473/mbiom.v30i2.2020.34-38>
- Kurniawaty Y, Kalanjati VP. Mechanism of neurological disorders in epilepsy. *Biomorfologi Magazine*. 2013;26(1):16–21.
- Ardianto C, Wardani HA, Nurrahmi N, Rahmadi M, Khotib J. Alpha-lipoic acid ameliorates sodium valproate-induced liver injury in mice. *Vet world* [Internet]. 2020/05/22. 2020 May;13(5):963–6. Available from: <https://pubmed.ncbi.nlm.nih.gov/32636594>
- Ratri DMN, Rahmadi M, Islamiyah WR, Harum NF. Overview of therapeutic changes in antiepileptic drugs in adult patients. *J Basic Clin Physiol Pharmacol* [Internet]. 2020;30(6). Available from: <http://dx.doi.org/10.1515/jbcpp-2019-0346>
- Schwartz TL, Massa JL, Gupta S, Al-Samarrai S, Devitt P, Masand PS. Divalproex Sodium Versus Valproic Acid in Hospital Treatment of Psychotic Disorders. *Prim Care Companion J Clin Psychiatry* [Internet]. 2000 Apr;2(2):45–8. Available from: <https://pubmed.ncbi.nlm.nih.gov/15014582>
- Li H, Wang X, Zhou Y, Ni G, Su Q, Chen Z, et al. Association of LEPR and ANKK1 Gene Polymorphisms with Weight Gain in Epilepsy Patients Receiving Valproic Acid. *Int J Neuropsychopharmacol* [Internet]. 2015 Mar 3;18(7):pyv021–pyv021. Available from: <https://pubmed.ncbi.nlm.nih.gov/25740917>
- Noai M, Soraoka H, Kajiwara A, Tanamachi Y, Oniki K, Nakagawa K, et al. Cytochrome P450 2C19 polymorphisms and valproic acid-induced weight gain. *Acta Neurol Scand* [Internet]. 2015;133(3):216–23. Available from: <http://dx.doi.org/10.1111/ane.12473>
- Martin CK, Han H, Anton SD, Greenway FL, Smith SR. Effect of valproic acid on body weight, food intake, physical activity and hormones: results of a randomized controlled trial. *J Psychopharmacol* [Internet]. 2008/06/26. 2009 Sep;23(7):814–25. Available from: <https://pubmed.ncbi.nlm.nih.gov/18583434>
- Mahmud AA, Anu UH, Foysal KA, Hasan M, Sazib SM, Ragib AA, et al. Elevated serum malondialdehyde (MDA), insulin, follicle-stimulating hormone (FSH), luteinizing hormone (LH), and thyroid-stimulating hormone (TSH), and reduced antioxidant vitamins in polycystic ovarian syndrome patients. *Narra J* [Internet]. 2022;2(1). Available from: <http://dx.doi.org/10.52225/narra.v2i1.56>
- Verrotti A, Manco R, Agostinelli S, Coppola G, Chiarelli F. The metabolic syndrome in overweight epileptic patients treated with valproic acid. *Epilepsia* [Internet]. 2010;51(2):268–73. Available from: <http://dx.doi.org/10.1111/j.1528-1167.2009.02206.x>
- El-Khatib F, Rauchenzauner M, Lechleitner M, Hoppichler F, Naser A, Waldmann M, et al. Valproate, weight gain and carbohydrate craving: A gender study. *Seizure* [Internet]. 2007;16(3):226–32. Available from: <http://dx.doi.org/10.1016/j.seizure.2006.12.009>
- Luef G, Abraham I, Trinka E, Unterberger I, Hoppichler F, Bauer G, et al. Weight change associated with valproate and lamotrigine monotherapy in patients with epilepsy. *Neurology* [Internet]. 2001;57(3):565.2–566. Available from: <http://dx.doi.org/10.1212/wnl.57.3.565-a>
- Grosso S, Mostardini R, Piccini B, Balestri P. Body Mass Index and Serum Lipid Changes During Treatment with Valproic Acid in Children with Epilepsy. *Ann Pharmacother* [Internet]. 2009;43(1):45–50. Available from: <http://dx.doi.org/10.1345/aph.11414>
- Carlson JA, Dabiri G, Cribier B, Sell S. The immunopathobiology of syphilis: the manifestations and course of syphilis are determined by the level of delayed-type hypersensitivity. *Am J Dermatopathol* [Internet]. 2011 Jul;33(5):433–60. Available from: <https://pubmed.ncbi.nlm.nih.gov/21694502>
- Borgquist A, Meza C, Wagner EJ. The role of AMP-activated protein kinase in the androgenic potentiation of cannabinoid-induced changes in energy homeostasis. *Am J Physiol Endocrinol Metab* [Internet]. 2014/12/30. 2015 Mar 15;308(6):E482–95. Available from: <https://pubmed.ncbi.nlm.nih.gov/25550281>
- Patterson M, Bloom SR, Gardiner J V. Ghrelin and appetite control in humans—Potential application in the treatment of obesity. *Peptides* [Internet]. 2011;32(11):2290–4. Available from: <http://dx.doi.org/10.1016/j.peptides.2011.07.021>
- Mani B, Nair PP, Sekhar A, Kamalanathan S, Narayan SK, Kesavan R. CYP2C19 & UGT1A6 genetic polymorphisms and the impact on Valproic acid-induced weight gain in people with epilepsy: Prospective genetic association study. *Epilepsy Res* [Internet]. 2021;177:106786. Available from: <http://dx.doi.org/10.1016/j.eplesyres.2021.106786>
- Aruwatari J, Ishitsu T, Nakagawa K. Update on the Genetic Polymorphisms of Drug-Metabolizing Enzymes in Antiepileptic Drug Therapy. *Pharmaceuticals (Basel)* [Internet]. 2010 Aug 20;3(8):2709–32. Available from: <https://pubmed.ncbi.nlm.nih.gov/27713373>
- Morrell MJ, Giudice L, Flynn KL, Seale CG, Paulson AJ, Doñe S, et al. Predictors of ovulatory failure in women with epilepsy. *Ann Neurol* [Internet]. 2002;52(6):704–11. Available from: <http://dx.doi.org/10.1002/ana.10391>
- Isojärvi JIT, Laatikainen TJ, Knip M, Pakarinen AJ, Juntunen KTS, Myllylä V V. Obesity and endocrine disorders in women taking valproate for epilepsy. *Ann Neurol* [Internet]. 1996;39(5):579–84. Available from: <http://dx.doi.org/10.1002/ana.410390506>
- van der Sande MA. A template for improved prevention and control of cardiovascular disease in sub-Saharan Africa. *Health Policy Plan* [Internet]. 2001;16(4):345–50. Available from: <http://dx.doi.org/10.1093/heapol/16.4.345>
- McIntyre RS, Konarski JZ, Keck PE. Psychotropic-Induced Weight Gain: Liability, Mechanisms and Treatment Approaches [Internet]. *Obesity and Mental Disorders*. Informa Healthcare; 2006. p. 307–54. Available from: <http://dx.doi.org/10.3109/9780849374517.014>
- Hirschberg AL. Sex hormones, appetite and eating behaviour in women. *Maturitas* [Internet]. 2012;71(3):248–56. Available from: <http://dx.doi.org/10.1016/j.maturitas.2011.12.016>
- Choi MH, Skipper PL, Wishnok JS, Tannenbaum SR. Characterization of testosterone 11 β -hydroxylation catalyzed by human liver microsomal cytochromes P450. *Drug metab dispos* [Internet]. 2005;33(6):714–8. Available from: <http://dx.doi.org/10.1124/dmd.104.003327>
- Muftuoglu Y, Mustata G. Aromatase inhibitors and antiepileptic drugs: a computational systems biology analysis. *Reprod Biol Endocrinol* [Internet]. 2011 Jun 21;9:92. Available from: <https://pubmed.ncbi.nlm.nih.gov/21693043>
- Usmani KA, Rose RL, Hodgson E. Inhibition and Activation of the Human Liver Microsomal and Human Cytochrome P450 3A4 Metabolism of Testosterone by Deployment-Related Chemicals. *Drug Metab Dispos* [Internet]. 2003;31(4):384–91. Available from: <http://dx.doi.org/10.1124/dmd.31.4.384>



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