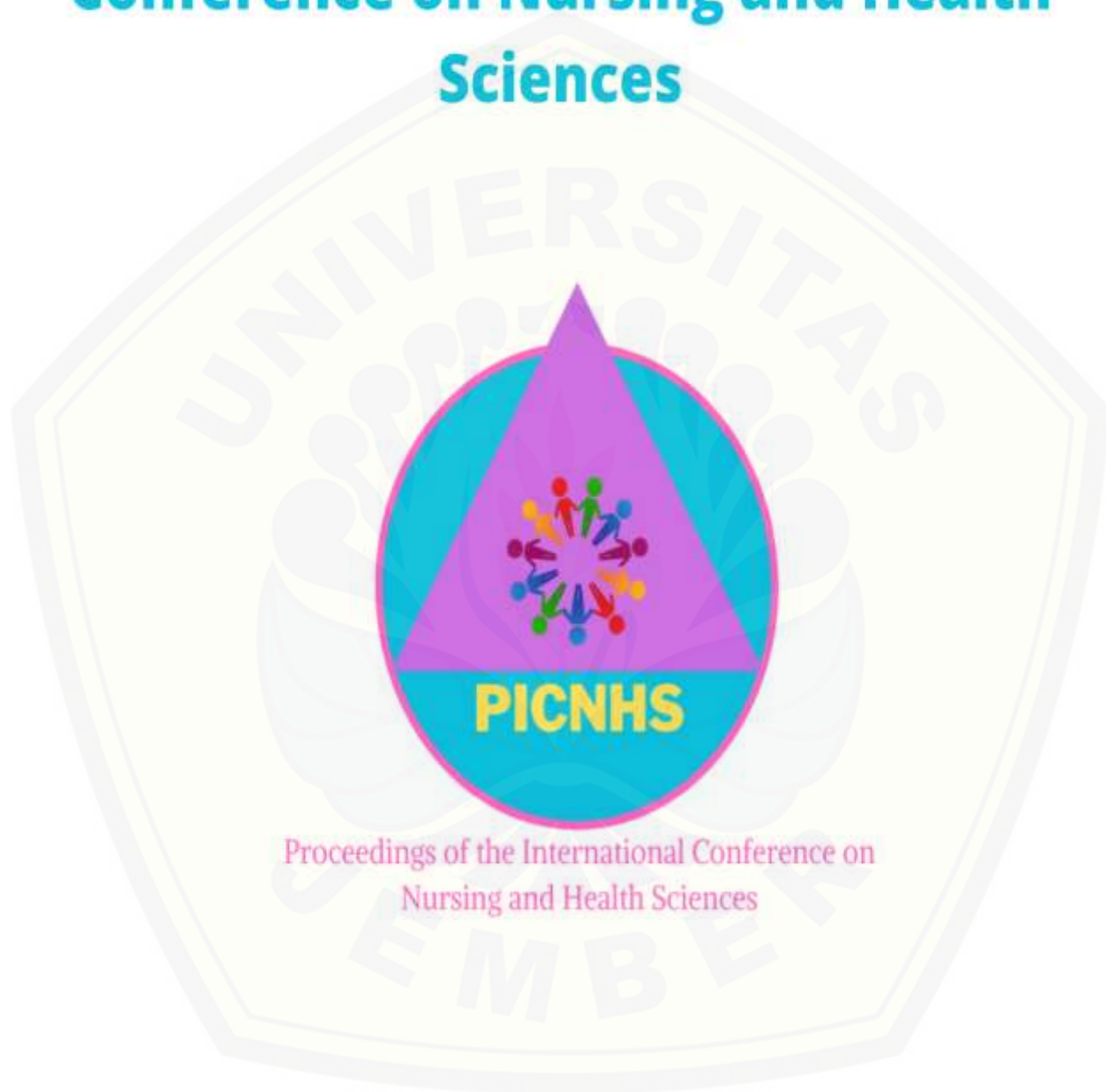


Proceedings of the International Conference on Nursing and Health Sciences



Proceedings of the International Conference on
Nursing and Health Sciences

CV Global Health Science Group

Editor In Chief

[Dr. Ns. Livana PH, M.Kep., Sp.Kep.J](#) [Orcid ID](#) [SINTA ID : 5983298](#) (Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia)

Editorial Board Member

Dr. Amel Dawod Kamel Goudia (Cairo University, Egypt)

Prof. Midhu Kurian (DSMS Institute of Nursing, West bengal, India)

Prof. Dr. Smriti Mani, MA(Phil), M.Phil in Nursing, Ph.D Nursing (Medical College and Hospital, West Bengal, India)

[Ns. Abdul Wakhid, M.Kep., Sp.Kep.J](#) (Ngudi Waluyo University, Indonesia)

Dr. Sandeep Poddar, MSc, Ph.D, Dip Diet (Lincoln University College, Malaysia)

Dr. Amin Kuncoro, SE., MM, CIQnR (Institut Teknologi dan Bisnis Semarang, Indonesia)

Dr. Ns. Mohammad Fatkhul Mubin, M.Kep., Sp.Kep.J (Universitas Muhammadiyah Semarang, Jawa Tengah, Indonesia)

Ns. Priharyanti Wulandari, M.Kep, Sp.Kep.Mat (Universitas Widya Husada Semarang, Jawa Tengah, Indonesia)

Ns, Mariyati, M.Kep., Sp.Kep.J (Universitas Widya Husada Semarang, Jawa Tengah, Indonesia)

Ns. Haeril Amir, M.Kep (Universitas Muslim Indonesia, Indonesia)

Aquartuti Tri Darmayanti, SST, MKM (STIKES Mamba'ul Ulum Surakarta, Indonesia)

Aris Widiyanto, S.Kep., MKM, M.Kep (STIKES Mamba'ul Ulum Surakarta, Indonesia)

Prof. Antonio Laguna-Camacho (Autonomous University of the State of Mexico, Mexico)

Prof. Pramila.R (Chirayu College of Nursing Bhopal, Madhya Pradesh, India)

Ns. Cyntia Theresia Lumintang, M.Kep (Universitas Katholik De La Salle Manado, Indonesia)

Irma Muslimin. S.KM., M.Kes (Poltekkes Kemenkes Mamuju, Indonesia)

Fifi Alviana, S.Kep., Ns., MSN (Universitas Sains Al-Qur'an, Indonesia)

Language Editing

[Prof. Dr. Yazid Basthomi, S.Pd., M.A](#) (Universitas Negeri Malang, Indonesia)

[M Faruq Ubaidillah, M.Pd](#) (Center for Academic Publication, LP2M, Universitas Negeri Malang, Indonesia)

Layout Editor

[Ns. Novi Indrayati, M.Kep](#) (Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia)

Ns. Sri Mulyani, S.Kep (Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia)

Reviewers Team

Prof. Lyn Karstadt (Murdoch University, Australia)

Dr. Sahar Mansour Ibrahim (Cairo University, Egypt)

Dr. Hanan Ebrahim Abd EL. Aziz Radi (Cairo University, Egypt)

Dr. Arnel Banaga Salgado (Assistant Professor- Psychology & Psychiatric Mental Health Nursing, RAK Medical and Health Sciences University, United Arab Emirates)

Edmar San Jose Elcarte, BSN, RN, LPT, CNN (University of the Philippines, Manila)

Laura A. Fillmore, DNP, MSN, RN, CNE (Chamberlain University, Amerika Serikat)

Nagwa Abd El- Fadeel Abd El- Hamid Afefy (Cairo University, Egypt)

Tumilara Amoo, BSN, PGDE, MPH (Elizade University, Nigeria)

[Ns. Ice Yulia Wardani., M.Kep., Sp.Kep.J](#) (Indonesian University, Indonesia)

[Dr. Ns. Mohammad Fatkhul Mubin, M.Kep., Sp.Kep.J](#) (Muhammadiyah University of Semarang, Indonesia)

[Ns. Natalia Ratna Yulianti, MAN](#) (St. Elisabeth School of Health, Semarang, Indonesia)

Prof. Rosna Awang Hashim (School of Education, Universiti Utara Malaysia, Malaysia)

Prof. Entesar Fatouh Abdelmoniem (Faculty of Nursing, Helwan University, Egypt).

Dr. Reda M Nabil Aboushady (Assistant Professor Maternal and Newborn Health Nursing Cairo University, Egypt)

Prof Eman Dawood (King Saud bin Abdulaziz University for Health Sciences , Kingdom of Saudi Arabia)

Prof Amani Abdel Fattah (Cairo University, Egypt)

Prof Sahar Yassien Mohammad (Ains Shams University, Egypt)

Rina Tri Handayani, S.Kep., Ns., M.Psi (STIKES Mamba'ul Ulum Surakarta, Indonesia)

Noviyanti Kartika Dewi., M.Pd.,Kons (Universitas PGRI Madiun, Indonesia)

Ns. Enok Sureskiarti.,M.Kep (Universitas Muhammadiyah Kalimantan Timur, Indonesia)

Evi Winingsih., M.Pd (Universitas Negeri Surabaya, Indonesia)

Joko Tri Atmojo, SKM., MKM (STIKES Mamba'ul Ulum Surakarta, Indonesia)

Prof. Nur Hidayah (Universitas Negeri Malang, Indonesia)
Prof. Charmini Jebapriya (Texcity College of Nursing Coimbatore Tamilnadu, India)
Prof. Abeer Saad Zaghoul Eswi (Faculty of Nursing, Cairo University, Egypt)
Ns. Ika Wulansari, M.Kep., Sp.Kep.Mat (Universitas Gorontalo, Indonesia)
Dr. Reda M nabil Aboushudy (Faculty of Nursing, Cairo University, Egypt)
Prof. Faiza Abou El-Soud (College of nusing, King Saud Bin Abdul Aziz University for health science - National Gaurd , Riyadh, Kingdom of Saudi Arabia)
Juliana Hindradjat, M.Th (Sekolah Tinggi Teologi Karisma Bandung, Indonesia)
Ari Khusumadewi, M.Pd (Universitas Negeri Surabaya, Indonesia)
Dr. R.H Kristina, SKM., M.Kes (Poltekkes Kemenkes Kupang, Indonesia)
Ns. Noor Sriyanah, M.Kep (Sekolah Tinggi Ilmu Kesehatan Makassar, Indonesia)
Dr. Amany Salama Ayoub (Cairo University, Egypt)
Najla A. Barnawi, BSN., MS., PhD (King Saud Bin Abdul Aziz University, Riyadh - National Guard, Kingdom of Saudi Arabia)
Ns. Anastasia Lamonge, Man., PhD (Universitas Katolik De La Salle Manado, Indonesia)
Ns Yulia Susanti, M.Kep., Sp.Kep.Kom (Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia)
Rischa Pramudia trisnani, M.Pd (Universitas PGRI Madiun, Indonesia)
Dr. Ns. Suradi Efendi, M.Kes (Sekolah tinggi Ilmu Kesehatan makassar, Indonesia)
Hesty Latifa Noor, S.KM., M.A.R.S. (Universitas Duta Bangsa, Indonesia)
Dr. Sharbat Thabet Hassanine (Fayoum University, Egypt)
Dr. Mennatallah Said (Cairo University, Egypt)
Dr. Eglal Hassannein Abdel Hakeim (Faculty of Nursing, King Salman University, Egypt)
Dr. Lizy Sonia Benjamin (College of nusing, King Khalid University, Abha, Kingdom of Saudi Arabia)
Dr. M. Ramli, M.A (Universitas Negeri Malang, Indonesia)
Dr. Manal Farouk Moustafa (Faculty of Nursing, Assiut University, Egypt)
Dr. Reda M Nabil Aboushady (Faculty of Nursing, Cairo University, Egypt)
Ns. Joanggi Wiriatarina Harianto, PhD (Universitas Muhammadiyah Kalimantan Timur, Indonesia)
Dr. Ina Debora Ratu Ludji, SKp., M. Kes. (Poltekkes Kemenkes Kupang, Indonesia)
Prof. Sahar Mossa Soliman (Faculty of Nursing, Ain Shams University, Egypt)
Ns. Candra Dewi Rahayu, M.Kep (Universitas Sains Al-Qur'an, Indonesia)
Dr. Nor Adila Mohd Noor (Universiti Teknologi MARA (UiTM), Malaysia)
Dr. Abeer S Asiri (College of Nursing, Abha King Khalid University, Kingdom of Saudi Arabia)
Prof. Nahed Fikry Hassan Khedr (Faculty of Nursing, Damietta University, Egypt)
Prof. Manal Farouk Moustafa (Faculty of Nursing, Assiut University, Egypt)

Articles

Factors Influencing Adolescent Behavior in HIV/AIDS Prevention

Marni Marni, Universitas Duta Bangsa Surakarta, Indonesia

Insanul Firdaus, Universitas Duta Bangsa Surakarta, Indonesia

Kresna Agung Yudhianto, Universitas Duta Bangsa Surakarta, Indonesia

Wahyuningsih wahyuningsih, STIKES Estu Utomo Boyolali, Indonesia

Allania Hanung, STIKES Estu Utomo Boyolali, Indonesia

Wahyu Ernawati, University Kader Bangsa Palembang, Indonesia

1-8

Anxiety of Preschool Children Undergoing Hospitalization

Amnita Ginting, STIKes Santa Elisabeth Medan, Indonesia

Friska Sembiring, STIKes Santa Elisabeth Medan, Indonesia

9-14

Development of the KePO Information System as an Effort for Online Breast Cancer Early Detection

Lilis Novitarum, STIKes Santa Elisabeth Medan, Indonesia

Arjuna Ginting, STIKes Santa Elisabeth Medan, Indonesia

Aprilita Br Sitepu, STIKes Santa Elisabeth Medan, Indonesia

15-20

Characteristics of Risk Food Consumption Behavior in People with High Blood Sugar Levels in Tanjung Anom

Imelda Derang, STIKes Santa Elisabeth Medan, Indonesia
Friska Sri Handayani Br Ginting, STIKes Santa Elisabeth Medan, Indonesia
Agustaria Ginting, STIKes Santa Elisabeth Medan, Indonesia
Ernita Rante Rupang, STIKes Santa Elisabeth Medan, Indonesia
21-26

Overview of Psychiatric Emergencies in Primary Health Care Centers

Andria Praghlapati, Faculty of Medicine, Universitas Diponegoro, Indonesia
Alifiati Fitrikasari, Faculty of Medicine, Universitas Diponegoro, Indonesia
Fitria Handayani, Faculty of Medicine, Universitas Diponegoro, Indonesia
27-32

Comparison of Antibiofilm Activities of Green Coffee Beans (*Coffea Canephora P.*) and Roasted Robusta Coffee (*Coffea Canephora L.*) Against *Staphylococcus Aureus* ATCC 25923

Septian Maulid Wicahyo, Universitas Duta Bangsa Surakarta, Indonesia
Tatiana Siska Wardani, Universitas Duta Bangsa Surakarta, Indonesia
Susanti Erikania, STIKES Bhakti Husada Mulia, Indonesia
33-44

Description of Hypertension Sufferers on Elderly in Nursing Home Resident

Friska Sembiring, STIKes Santa Elisabeth Medan, Indonesia
Amnita Ginting, STIKes Santa Elisabeth Medan, Indonesia
45-50

The Influence Of Determinants Abuse of Addictive Substances (Drugs) and Mental Health in Adolescent The Influence of Determinants Abuse of Addictive Substances (Drugs) and Mental Health in Adolescent : mental health nursing, Addictive, Adolescent ; drug

Andriani Mei Astuti, Universitas Duta Bangsa Surakarta, Indonesia
Rovica Probowati, Universitas Duta Bangsa Surakarta, Indonesia
Adi Buyu Prakoso, Universitas Duta Bangsa Surakarta, Indonesia
51-56

Association Between Sensory Profile and Daily Functioning in Children with Autism

Isti Anindya, Faculty of Medicine, Universitas Indonesia, Indonesia
Amin Soebandrio, Faculty of Medicine, Universitas Indonesia, Indonesia
Ibnu Agus Ariyanto, Faculty of Medicine, Universitas Indonesia, Indonesia
Rini Sekartini, Faculty of Medicine, Universitas Indonesia, Indonesia
Tjhin Wiguna, Faculty of Medicine, Universitas Indonesia, Indonesia
Novika Purnama Sari, Faculty of Medicine, Universitas Indonesia, Indonesia
57-64

Stress Levels and Quality of Life of Families Caring for People with Mental Disorders: Literature Review

Tri Sumarsih, Faculty of Health Science, Universitas Muhammadiyah Gombong, Indonesia
Fina Widya Ningsih, Faculty of Health Science, Universitas Muhammadiyah Gombong, Indonesia
Norkiah binti Arsat, Faculty of Medicine and Health Sciences, University Malaysia Sabah, Malaysia
Meidiana Dwidiyanti, Faculty of Medicine and Health Sciences, Universitas Diponegoro, Indonesia
65-72

The Level of Knowledge and Self-Management is Related to the Quality of Life of Hypertensive Patients

Januarty Nur Fitriani, Akademi Keperawatan Pemerintah Kabupaten Ngawi, Indonesia
Dhian Luluh Rohmawati, Akademi Keperawatan Pemerintah Kabupaten Ngawi, Indonesia
Dika Lukitaningtyas, Akademi Keperawatan Pemerintah Kabupaten Ngawi, Indonesia
73-82

Quality of Life of Post Stroke Patients: Descriptive Study

Trio Gustin Rahayu, Health Science Faculty, Universitas Faletihan, Indonesia

Solis Setiyani, Health Science Faculty, Universitas Faletahan, Indonesia
83-88

The Effect of Giving Warm Water Foot bath Mixed with Salt on Blood Pressure in Elderly People with Hypertension

Dwi Lestari Mukti Palupi, Universitas Duta Bangsa Surakarta, Indonesia
Muzaroah Ermawati Ulkhasanah, Universitas Duta Bangsa Surakarta, Indonesia
Agung Widiastuti, Universitas Duta Bangsa Surakarta, Indonesia
Marni Marni, Universitas Duta Bangsa Surakarta, Indonesia
Fahrudin Nasrul Sani, Universitas Duta Bangsa Surakarta, Indonesia
89-92

Basic Data on Relapse Conditions of Mental Disabilities (People with Mental Disorders) in Kebumen District, Central Java Indonesia

Ike Mardiaty Agustin, Universitas Sebelas Maret Surakarta, Indonesia
Munawir Yusuf, Universitas Sebelas Maret Surakarta, Indonesia
Adriesti Herdaetha, Dr. Arif Zainudin Regional Mental Hospital, Indonesia
Agung Wibowo, Universitas Sebelas Maret Surakarta, Indonesia
93-98

The Relationship Between Low Birth Weight and the Incidence of Stunting in Toddlers 2 Years Old

Desriati Sinaga, STIKes Santa Elisabeth Medan, Indonesia
Merlina Sinabariba, STIKes Santa Elisabeth Medan, Indonesia
Ermawaty Arisandi, STIKes Santa Elisabeth Medan, Indonesia
99-102

The Use of Electronic Medical Records

Pomarida Simbolon, STIKes Santa Elisabeth Medan, Indonesia
Arjuna Ginting, STIKes Santa Elisabeth Medan, Indonesia
Jev Boris, STIKes Santa Elisabeth Medan, Indonesia
103-110

Analysis Calculating of Hospital Labor Requirements Using the Workload Analysis Method

Hesty Latifa Noor, Faculty of Health Sciences, Universitas Duta Bangsa Surakarta, Indonesia
Ilyas Syafiq Darul Ridzuan, Institute of Medical Science Technology, Universiti Kuala Lumpur, Malaysia
Vina Januar Isnaini, Faculty of Health Sciences, Universitas Duta Bangsa Surakarta, Indonesia
111-116

Web-Based Patient Clinical Data Information System at Clinic Pratama

Agung Suryadi, Universitas Duta Bangsa Surakarta, Indonesia
Nurhayati Nurhayati, Universitas Duta Bangsa Surakarta, Indonesia
Marco Lukisla Nikato Sihotang, Universitas Duta Bangsa Surakarta, Indonesia
Athica Cytra Pertiwi, RS UNS Surakarta, Indonesia
117-126

The Importance of Nutrition Education to Change Mother's Knowledge and Behaviour in Achieving Adequate Nutrition for Toddler

Poppy Fitriyani, Faculty of Nursing, Universitas Indonesia, Indonesia
Sigit Mulyono, Faculty of Nursing, Universitas Indonesia, Indonesia
Tri Widyastuti Handayani, Poltekkes Kemenkes Yogyakarta, Indonesia
127-134

Effectiveness of Diabetes Mellitus Therapy

Kusumaningtyas Siwi Artini, Universitas Duta Bangsa Surakarta, Indonesia

Kharisma Jayak P, Universitas Duta Bangsa Surakarta, Indonesia

Nur Shukriyah Binti Mohamad Hazir, Institute of Medical Sciece Technology, University Kuala Lumpur, Indonesia

Intan Malla Pahlawaningrum, Universitas Duta Bangsa Surakarta, Indonesia
135-140

Effectiveness of Hedon (Heel Donut) as an Effort to Prevent Pressure Ulcers on the Calcaneal of Tractioned Patients

Ikrima Rahmasari, Universitas Duta Bangsa Surakarta, Indonesia

Endrat Kartiko Utomo, Universitas Duta Bangsa Surakarta, Indonesia

Ilyas Syafiq Darul Ridzuan, University Kuala Lumpur, Malaysia

Sukini Sukini, Ortopedi Prof. Dr. Soeharso Surakarta Hospital, Indonesia

141-146

Literatur Review: Acupressure Pericardium (P6) Therapy to Reduce the Frequency of Nausea and Vomiting in Pregnant Woman

Ana Yuliana, Faculty of Health Sciences, Universitas Duta Bangsa Surakarta, Indonesia

Anik Sulistiyanti, Faculty of Health Sciences, Universitas Duta Bangsa Surakarta, Indonesia

Darah Ifalahma, Faculty of Health Sciences, Universitas Duta Bangsa Surakarta, Indonesia

147-152

Knowledge about Worms in Primary 1 School

David Sumanto Napitupulu, STIKes Santa Elisabeth Medan, Indonesia

Jagentar Parlindungan Pane, STIKes Santa Elisabeth Medan, Indonesia

Lindawati Simorangkir, STIKes Santa Elisabeth Medan, Indonesia

153-156

Relationship of Therupetic Communication with Caring Behavior of Nurses in the Inpatient Unit

Mestiana Br Karo, STIKes Santa Elisabeth Medan, Indonesia

Amnita Ginting, STIKes Santa Elisabeth Medan, Indonesia

Rotua Elvina Pakpahan, STIKes Santa Elisabeth Medan, Indonesia

157-162

Effectiveness of Auricular Acupressure for Maternity Blues

Rovica Probowati, Universitas Duta Bangsa Surakarta, Indonesia

Andriani Mei Astuti, Universitas Duta Bangsa Surakarta, Indonesia

Hakim Anasulfalah, Sekolah Tinggi Ilmu Kesehatan Mamba'ul Ulum Surakarta, Indonesia

Dini Tri Wahyuni, Universitas Duta Bangsa Surakarta, Indonesia

163-170

Knowledge and Readiness of Nurses in Carrying Out Restrain and Seclusion

Eka Malfasari, Institut Kesehatan Payung Negeri Pekanbaru, Indonesia

Yeni Devita, Institut Kesehatan Payung Negeri Pekanbaru, Indonesia

Gita Adelia, Institut Kesehatan Payung Negeri Pekanbaru, Indonesia

171-182

Investigating the Risk Factors for Non Typhoidal Salmonella in Pediatric Populations: A Systematic Review

Aris Widiyanto, Sekolah Tinggi Ilmu Kesehatan Mamba'ul Ulum Surakarta, Indonesia

Trisakti Halimah, Sekolah Tinggi Ilmu Kesehatan Mamba'ul Ulum Surakarta, Indonesia

Ahmad Syauqi Mubarak, Sekolah Tinggi Ilmu Kesehatan Mamba'ul Ulum

Surakarta, Indonesia

Hakim Anasulfalah, Sekolah Tinggi Ilmu Kesehatan Mamba'ul Ulum Surakarta, Indonesia

Joko Tri Atmojo, Sekolah Tinggi Ilmu Kesehatan Mamba'ul Ulum Surakarta, Indonesia

Ihsan Hanif, Sekolah Tinggi Ilmu Kesehatan Mamba'ul Ulum Surakarta, Indonesia

183-192

Determinant Factors of Quality of Life at School in Early Adolescents: A Multivariate Analysis

Nur Eni Lestari, Faculty of Health Sciences, Universitas Indonesia Maju, Indonesia
Irma Herliana, Faculty of Health Sciences, Universitas Indonesia Maju, Indonesia
193-202

Effectiveness of Group Cognitive Behavior Therapy (CBT) with Mindfulness on Depression and Clinical Outcomes in Hemodialysis Patients

Uswatun Hasanah, 1Akademi Keperawatan Dharma Wacana, Indonesia
Malehah Mohd Noh, Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah, Indonesia
Norkiah Arsat, Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah, Namibia
203-210

A Recent Update: Molecular Mechanism of Kombucha as A Probiotic for Obesity Management

Zulfia Rosyidatun Nisa, Nutrition Sciences of Postgraduate Program, Universitas Sebelas Maret, Indonesia
Sinu Andhi Jusup, Faculty of Medicine, Universitas Sebelas Maret, Indonesia
Ratih Dewi Yudhani, Faculty of Medicine, Universitas Sebelas Maret, Indonesia
211-226

Implementation Strategy of Evidence-Based Practice in Nursing: An Integrative Review

La Ode Muhammad Suyatno, Central Buton District Health Office, Indonesia
Syahrul Syahrul, Faculty of Nursing, Universitas Hasanuddin, Indonesia
227-244

Relationship of Birth Weight and Birth Length with the Incidence of Stunting

Yulia Rahmawati Wibowo Putri, Universitas Sebelas Maret, Indonesia
Sri Mulyani, Faculty of Medicine, Universitas Sebelas Maret, Indonesia
Budiyanti Wiboworini, Faculty of Medicine, Universitas Sebelas Maret, Indonesia
245-250

The Effectiveness of Warm Water Foot Baths Mixed with Salt and Lemongrass on Reducing Blood Pressure in Elderly People Aged 45-55 Years

Kasmawati Kasmawati, Faculty of Nursing, Universitas Hasanuddin, Indonesia
251-264

The Role of Parents' Interpersonal Communication in Accompanying Children with use Gadgets

Nurul Huda, Universitas Jember, Indonesia
Evy Aristawati, Universitas Jember, Indonesia
Bagus Dwi Cahyono, Universitas Jember, Indonesia
265-272

Implementation of Hypertension Exercises to Lower Blood Pressure in Elderly People with Hypertension in Ikedaen Okinawa Japan

Jihan Natasya Fatikha, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia
Riani Pradara Jati, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia
273-276

The Influence of Taboo Food Culture on Nutrition of Pregnant Women in the Konjo Community in Bulukumba District

Asrar As, Universitas Hasanuddin, Indonesia
277-282

The Relationship between Health Literacy and Blood Sugar Control in Patients with Type II Diabetes Mellitus at the Pekkabata Health Center Polewali Mandar

Masyitah Wahab, Universitas Hasanuddin, Indonesia
Nurfadhila Nurfadhila, Universitas Hasanuddin, Indonesia
Agustina Fatmawati, STIKes Bina Generasi Polewali Mandar, Indonesia
283-290

The Effect of Asthma Gymnastics on Peak Expiratory Flow among Asthma Patients

Erik Kusuma, Faculty of Nursing, Universitas Jember, Indonesia
Dwining Handayani, Faculty of Nursing, Universitas Jember, Indonesia
R.A. Helda Puspitasari, Faculty of Nursing, Universitas Jember, Indonesia
Ayu Dewi Nastiti, Faculty of Nursing, Universitas Jember, Indonesia
291-298

The Influence of Health Education and Training on Knowledge and Skills of KSR Students in Sprain and Strain First Aid using the RICE (Rest, Ice, Compression, Elevation) Method

Ulfa Mawarda, Faculty of Nursing, Universitas Muhammadiyah Kalimantan Timur, Indonesia
Misbah Nurjannah, Faculty of Nursing, Universitas Muhammadiyah Kalimantan Timur, Indonesia
299-306

Nursing Care for Decubitus Prevention using Range of Motion (ROM) in Patients with Stroke at Ikedaen Byoing Hospital Japan

Yayuk Susianti, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia
Riani Pradara Jati, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia
307-310

Nursing Care for Management of Hold Relax to Reduce Pain in Elderly with Osteoarthritis at Ikedaen Hospital Japan

Siti Nur Afifah, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia
Riani Pradara Jati, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia
311-314

The Effect of Boiling Papaya Leaves on Joint Pain Complaints in Older People with Rheumatoid Arthritis at the Pekkabata Public Healthcare

Normalia Normalia, Faculty of Nursing, Universitas Hasanuddin, Indonesia
315-324

The Effect of the Combination of Basil Leaf (Cimum Basilicum) and Bay Leaf (Syzygium Polyanthum) Boiled Water on the Level of Clansia Uric Acid in Rumpa Village

Gabriella Delfie Natalia, Universitas Hasanuddin, Indonesia
Theresia Ina, STIKes Bina Generasi Polewali Mandar, Indonesia
325-334

Comparison of Examination Result of Streptococcus Results B Hemolyticus in Throat Swab Culture Method and Rapid Antigen Detection Test (RADT) in Tonsillitis Patient

F. Pramonodjati, Faculty of Computer Science, Universitas Duta Bangsa, Indonesia
Nurulshyha Md Yatim, Universitas Kuala Lumpur MESTECH, Malaysia
Selvina Dwi Rahmawati, Faculty of Computer Science, Universitas Duta Bangsa, Indonesia
335-342

Family Experiences of Patients with Diabetes Mellitus in Southeast and South

Syamsul Alam Natsir, Faculty of Nursing, Universitas Hasanuddin, Indonesia
Syahrul Syahrul, Faculty of Nursing, Universitas Hasanuddin, Indonesia
343-352

The Relationship between Food Insecurity and the Incidence of Stunting

Nurul Arfiah, Universitas Sebelas Maret, Indonesia
353-358

The Relationship between Parenting and Family Socioeconomic Status on Adolescent Depression Age 15-17 Years

Burhanto Burhanto, Faculty of Nursing, Universitas Muhammadiyah Kalimantan Timur, Indonesia
Firda Safirah, Faculty of Nursing, Universitas Muhammadiyah Kalimantan Timur, Indonesia
359-372

Description of Nurses' Self Efficacy in Determining Patient Priorities in the Emergency Installation of A Type B Hospital in the Gorontalo Region

Ibrahim Suleman, Universitas Negeri Gorontalo, Indonesia
373-380

The Relationship between Body Mass Index with Knowledge and Energy Intake in Diabetic Patients in Prolanis Club

Atika Nuswantari, Universitas Sebelas Maret, Indonesia
Yulia Lanti Retno Dewi, Universitas Sebelas Maret, Indonesia
Setyo Sri Rahardjo, Universitas Sebelas Maret, Indonesia
381-386

Anal Swab Examination of Salmonella in Typhoid Patients after Antibiotics Treatment

Anggraeni Sih Prabandari, Universitas Duta Bangsa, Indonesia
Nor Isnida Ismail, Universitas Kuala Lumpur MESTECH, Malaysia
Nataly Ayu Utami, Universitas Duta Bangsa, Indonesia
387-390

The Effect of Exclusive Breastfeeding on Stunting Toddlers: A Scoping Review

Rokhiyatul Maila Putri, Universitas Sebelas Maret, Indonesia
Sumardiyono Sumardiyono, Universitas Sebelas Maret, Indonesia
Ismiranti Andarini, Universitas Sebelas Maret, Indonesia
391-402

Treatment of Elderly Parkinson's Suffers by Carrying Out Stretching Exercise Therapy at Aiwakai Medical Corporation Ikedaen Okinawa Japan

Kamelia Aushofi, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia
Riani Pradara Jati, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia
403-404

The Effectiveness of Education Basic Life Support (BLS) Simulation Toward Increasing of the Youth Red Cross Student Abilities

Ni Nyoman Chrisna Purnama Devi, Sekolah Tinggi Ilmu Kesehatan YARSI Mataram, Indonesia
Baiq Nurainun Apriani Idris, Sekolah Tinggi Ilmu Kesehatan YARSI Mataram, Indonesia
Supriyadi Supriyadi, Sekolah Tinggi Ilmu Kesehatan YARSI Mataram, Indonesia
405-412

Trends in Short Birth Length and Stunting Incidence in Blora, 2019-2023

Maniek indah Kurniatri, Universitas Sebelas Maret, Indonesia
Vitri Widyaningsih, Universitas Sebelas Maret, Indonesia
Ika Sumiyarsi Sukamto, Universitas Sebelas Maret, Indonesia
413-420

The Relationship between Religiosity and Emotional Intelligence in Nursing Students at Universitas Negeri Gorontalo

Mihrawaty S. Antu, Universitas Negeri Gorontalo, Indonesia
421-428

Implementation of Brain Exercises on Power Changes Remember the Elderly at Iryou Houjin Fukujukai Nishihara Keiaien Japan

Dewi Yulia Agustina, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia
Setianingsih Setianingsih, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia
429-434

Nutrition Education Intervention Via Instagram among Adolescents: A Scoping Review

Abdul Malik Simatupang, Universitas Sebelas Maret, Indonesia
Yulia Lanti Retno Dewi, Universitas Sebelas Maret, Indonesia
Tri Rejeki Andayani, Universitas Sebelas Maret, Indonesia
435-450

Dual Taks Training Therapy to Reduce Physical Mobility Disorders in Mrs.T with Stroke at Chuzan Hospital Okinawa Japan

Cholifatul Nysa, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia

Muhammad Khabib Burhanuddin Iqomh, Sekolah Tinggi Ilmu Kesehatan

Kendal, Indonesia

451-458

Aiueo Therapy in Improving Speech Ability in Aphasia with Cerebral Infarction at Chuzan Hospital Okinawa Japan

Luluk Latifatul Muzakiyah, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia

Muhammad Khabib Burhanuddin Iqomh, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia

459-462

The Effect of the Application of Discharge Planning on Family Knowledge and Attitudes in Caring for Pediatric Patients after Thyroid in the Asoka Treatment Room of RSUD Hajjah Andi Depu Polewali Mandar

Yusryah Yusryah, Universitas Hasanuddin, Indonesia

Wardi Wardi, STIKes Bina Generasi Polewali Mandar, Indonesia

Abd. Rauf, STIKes Bina Generasi Polewali Mandar, Indonesia

463-468

Implementation of Walking Assisting Equipment and Physical Exercise to Increase Muscle Strength and Improve Physical Mobility in Stroke Patients

Karimatun Nisa'wahyuningtyas, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia

Muhammad Khabib Burhanuddin Iqomh, Sekolah Tinggi Ilmu Kesehatan

Kendal, Indonesia

469-472

The Effectiveness of Implementing Brain Exercises on Cognitive Function in Elderly with Dementia at Katsuren Hospital Japan

Rizki Yulya Ningsih, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia

Muhammad Khabib Burhanuddin Iqomh, Sekolah Tinggi Ilmu Kesehatan

Kendal, Indonesia

473-478

Implementation of Walking Therapy in Elderly with Nursing Problems Risk of Falls in Iryou Houjin Fukujukai Nishihara Keiai Japan

Diyah Titi Sari, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia

Setianingsih Setianingsih, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia

473-478

Implementation of Mobilization in Stroke Patients with Decubitus Ulcer Undergoing Total Bedrest at Iryou Houjin Fukujukai Nishihara Keiai Japan

Rahmawati Khoerunnisa, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia

Setianingsih Setianingsih, Sekolah Tinggi Ilmu Kesehatan Kendal, Indonesia

483-486

Analysis of the Relationship between Knowledge, Perception, Attitude, and Behavior of Emergency Room Nurses Toward Interprofessional Collaboration

Dwi Widyastuti, Universitas Muhammadiyah Kalimantan Timur, Indonesia

Milkhatun Milkhatun, Universitas Muhammadiyah Kalimantan Timur, Indonesia

Priyo Handayono, Universitas Muhammadiyah Kalimantan Timur, Indonesia

Devi Nurul Jannah, Universitas Muhammadiyah Kalimantan Timur, Indonesia

Aqmarina Abidah, Universitas Muhammadiyah Kalimantan Timur, Indonesia

Lisa Adila, Universitas Muhammadiyah Kalimantan Timur, Indonesia

487-494

The Correlation Self-Care Management Behavior with the Life Quality of Diabetes Mellitus

Gusti Pandi Liputo, Faculty of Sports and Health, Universitas Negeri Gorontalo, Indonesia
Nurdiana Djamaluddin, Faculty of Sports and Health, Universitas Negeri Gorontalo, Indonesia
Nova Novianti Lamangida, Faculty of Sports and Health, Universitas Negeri Gorontalo, Indonesia
495-502

The Effect of Virgin Coconut Oil (VCo) in Reducing Diaper Rash in Children with Acute Gastroenteritis

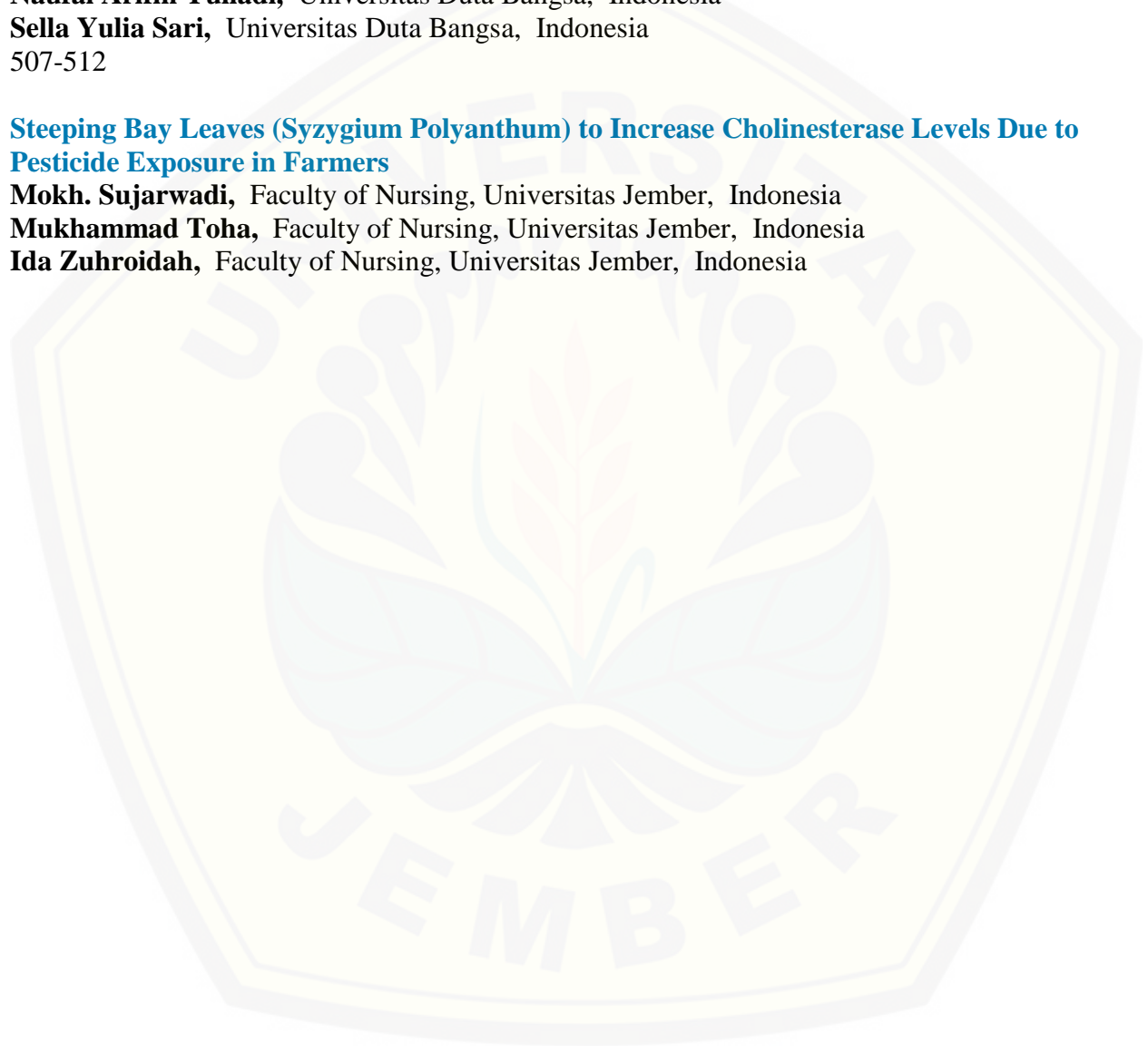
Nova Ari Pangesti, Sekolah Tinggi Ilmu Kesehatan Pemkab Purworejo, Indonesia
Eko Riyanti, Sekolah Tinggi Ilmu Kesehatan Pemkab Purworejo, Indonesia
Fahreza Alif Maulana, Sekolah Tinggi Ilmu Kesehatan Pemkab Purworejo, Indonesia
503-506

Accuracy of the Tentative Underlying Cause of Death Code Based on Rule 1 And Rule 2

Linda Widyaningrum, Universitas Duta Bangsa, Indonesia
Naufal Arifin Yuliadi, Universitas Duta Bangsa, Indonesia
Sella Yulia Sari, Universitas Duta Bangsa, Indonesia
507-512

Steeping Bay Leaves (*Syzygium Polyanthum*) to Increase Cholinesterase Levels Due to Pesticide Exposure in Farmers

Mokh. Sujarwadi, Faculty of Nursing, Universitas Jember, Indonesia
Mukhammad Toha, Faculty of Nursing, Universitas Jember, Indonesia
Ida Zuhroidah, Faculty of Nursing, Universitas Jember, Indonesia



STEEPING BAY LEAVES (*SYZYGIUM POLYANTHUM*) TO INCREASE CHOLINESTERASE LEVELS DUE TO PESTICIDE EXPOSURE IN FARMERS

Mokh. Sujarwadi*, Mukhammad Toha, Ida Zuhroidah

D3 Nursing Study Program, Faculty of Nursing, Universitas Jember, Jl. Kalimantan Tegalboto No.37, Krajan Timur, Sumbersari, Jember, Jawa Timur 68121, Indonesia

*sujarwadi.akper@unej.ac.id

ABSTRACT

Farmers are at high risk of pesticide exposure. The threat of death from pesticides reaches 168,000 per year. Pesticide free radicals cause health problems in the form of impaired function of nerves, liver, and kidneys and cause cancer. Low blood cholinesterase (CHE) indicates pesticide residue. Steeping bay leaves (*Syzygium polyanthum*) are expected to improve liver function to detoxify pesticide-free radicals that have already entered the body. This study aims to determine the effect of steeping bay leaves (*Syzygium polyanthum*) on increased cholinesterase (CHE) levels. Qualitative research with pre-experimental design one group pre-test-post test. As a population is a group of farmers in the Pasuruan area. The sample size in this study was 20 respondents using purposive sampling techniques. The research procedure is to measure cholinesterase levels in the blood before and after steeping bay leaves (*Syzygium polyanthum*) after 15 days. The data were analyzed by paired t-test. There was an increase in average blood cholinesterase levels of 399.35 U/L after 15 days of regular consumption. Blood cholinesterase levels before treatment were 5,301.25 U/L and after treatment became 5,700.00 U/L. The paired t-test results showed a significance value of $p = 0.000$. The average working time of the participants 18.5 years is very likely to have a lot of pesticide residues in their bodies and cause disruption of the normal function of several organs, causing mild and severe health problems. Bay leaf steeping (*syzygium polyanthum*) has been shown to increase cholinesterase (CHE) levels. To avoid the threat of health problems, farmers should diligently consume steeping bay leaves regularly.

Keywords: cholinesterase levels; famers; pesticide exposure; steeping bay leaves (*syzygium polyanthum*)

INTRODUCTION

Farmers have a high risk of exposure to pesticides. Some factors that affect farmers' exposure to pesticides include organophosphate and organochlorine pesticides which are widely used by farmers and have high toxicity (Panggabean et al., 2023). Comment utiliser les pesticides en général en pulvérisant cela facilite l'entrée des toxines des pesticides par le système respiratoire (Boateng et al., 2023). In general, farmers in rural areas have a low level of education, which affects the low understanding of the dangers of pesticides and the low level of compliance with the use of personal protective equipment (Tambo et al., 2023). Pesticides that have high toxicity cause health problems. The threat of death due to prolonged contact with pesticides reaches 168,000 per year (Febriana et al., 2023). Early detection efforts for pesticide exposure can be done by checking blood cholinesterase levels. Low blood cholinesterase indicates that there are pesticide residues in the farmer's body (Silva et al., 2023). Pesticide free radicals gradually cause health problems in the form of impaired function of nerves, liver, and kidneys and cause cancer (Hesami Arani et al., 2023). Steeping bay leaves are expected to improve liver function to detoxify pesticide-free radicals that have already entered the body (Hartanti et al., 2019).

Bay leaves contain vitamins A, B6, and C which can support the performance of lymphocytes and neutrophils to fight free radical agents. The active substance of bay leaves (*Syzygium polyanthum*) can reduce the risk of stomach irritation that can be caused by exposure to pesticides in the

gastrointestinal tract or due to increased stomach acid through the mechanism of inhibition of the urease enzyme. The content of polyphenols in bay leaves (*Syzygium polyanthum*) can reduce the risk of cardiovascular disease and keep the heart working optimally. Linalool contained in bay leaves is believed to reduce stress and depression (Hartanti et al., 2019). Furthermore, the aim of this study is to determine the effect of steeping bay leaves (*syzygium polyanthum*) to increase blood cholinesterase (CHE) levels as an indicator of improved body function against pesticide exposure in farmers.

METHOD

Study design praeksperimental one group pretest-posttest (Epidemiologico, 2020). 20 respondents were eligible for the first stage of blood cholinesterase and Hb measurements. Anamnesa related to health complaints experienced in the last week and then gave bay leaf steeping every day for 2 weeks. Furthermore, measurements of cholinesterase levels, Hb levels, and anamnesis about health complaints were carried out. The research setting will be carried out from July to August 2023 in 4 Pasuruan areas that have large rice fields, namely Bangil District, Grati District, Gadingrejo District, and Rejos District. In addition, the area has a population mostly working as farmers with a low level of education so there is still low compliance in the use of personal protective equipment according to safety standards. Participants were 20 farmers selected by purposive sampling with criteria 1). Hb levels and BMI within normal limits, 2). Gender: male, age 25-56 years, 3). Not smoking while treating, 4). As a farmer for more than 3 years and frequent contact with pesticides. Variables in this study included steeping and greetings and cholinesterase levels.

Bay leaves (*Syzygium polyanthum*) are given in the form of steeping, the manufacturing process is as follows: 100 grams of bay leaves (*Syzygium polyanthum*) are boiled with 1000 cc of water to boil then let stand for 30 minutes and then drink until finished. Regular bay leaf steeping every day for 2 weeks. Blood cholinesterase is an enzyme produced by the liver used as a parameter for exposure to organophosphate pesticides. Cholinesterase examination is done by taking the respondent's venous blood as much as 1-2 cc. Blood collection was carried out 2 times per participant, namely before treatment and after treatment. Venous blood measurement that has been taken is then taken to the health laboratory for measurement of cholinesterase levels. Normal values of cholinesterase for ages less than 40 years are 4,260-11,250 U/L while for ages over 40 years 5,320-12,920 U/L. Bias is anticipated by restricting participants through inclusion criteria and encouraging participants to comply with recommended recommendations such as getting enough rest and not smoking during treatment. The study size sample of as many as 20 from 4 research locations, with each region taking as many as 5 participants who had met the inclusion criteria. Quantitative variables of participants' blood cholinesterase levels are data with a ratio scale, then comparative analysis is carried out to assess whether there is a difference in average values between before and after treatment in participants. Statistical methods data obtained are first carried out normality tests to assess whether the data group is normally distributed or not, if it is normally distributed it is tested with a parametric paired sample t-test, if it is not normally distributed it is tested with a nonparametric test. The conclusion is based on a probability value of < 0.05 , then H_0 is rejected.

RESULTS AND DISCUSSION

Table 1.
CHE participant rate by age

Age Group	f	%	CHE			
			<Normal		Normal	
< 40 years	4	20%	1	5%	3	15 %
≥ 41 years	16	80%	9	45%	7	35%
Total	20	100%	6	50%	10	50%

Based on the data table above, the age of 80% of participants over 40 years with CHE enzyme levels below normal as much as 45% and 35% normal. The age of participants under 40 years was 20% with normal CHE levels of 15% and 5% below normal.

Table 2.
Participant's length of work as a farmer

LENGTH OF WORK	SUM	%
5-10 years	2	10
11-15 years	4	20
16-20 years	5	25
21-25 years	8	40
26-30 years	1	5
Total	20	100

Based on the data table of working as farmers, 40% of participants worked as farmers between 21-25 years.

Health complaints experienced by participants

Based on the results of interviews with participants, data were obtained; Complaints of dizziness as much as 70% but after treatment to 65%, complaints of muscle pain remained at 45% but the quality of pain has been reduced, diarrhea at 1% but after treatment to 0%, mild itching 60% down to 25%, complaints of watery eyes 30% down to 25%, anorexia 10% down to 0%.

Haemoglobin (Hb) participant levels

Haemoglobin (Hb) levels of participants before treatment were still in the normal range of 10.7 g/dl to 14.1 g / dl.

Body Mass Index (BMI) participant

From the measurement results, there are body mass indexes between 18.5 to 25.2, these results are still within the normal range.

Table 3.
Cholinesterase (CHE) participant levels

	Pretest		Posttest		Mean Difference
	Mean	SD	Mean	SD	
CHE	5.301,25	1.677	5.700,0	1.502	399,35

There was an increase in cholinesterase enzyme levels by 399.35 U/L after consuming bay leaf steeping regularly for 15 days.

Table 4.
 Parametric Test Paired sample t test.

	MEAN	SD	t	df	Sig. (2-tailed)
Pair 1 CHE <i>Pretest</i> -CHE <i>Posttest</i>	-399.35	419.907	-4.253	19	.000

From the paired sample t test results, the mean value is -399.35 and the standard deviation value is 419.907, the significance value p value = 0.000 with alpha 0.005.

Decreased cholinesterase (CHE) levels of participants over the age of 40 are aggravated by degenerative processes (Panggabean et al., 2023). Decreased blood plasma cholinesterase (CHE) levels in participants under the age of 40 years due to frequency and duration of pesticide exposure (Hamka et al., 2021). The average length of work of participants of 18,5 years is very likely to have a lot of pesticide residues in their bodies and cause disruption of the normal function of several organs, causing mild and severe health problems (Pawestri & Sulistyaningsih, 2021). There is a strong association between the length of work with decreased CHE rates (Aguera et al., 2022). Measurement of Hb levels and BMI to assess the nutritional status of participants to narrow down confounding variables that can cause bias in research results even though there is no significant relationship between Hb levels and CHE. Nutritional status can affect the body's ability to ward off free radicals from pesticides (Abraham et al., 2023). The entrance of pesticides into the body through the skin, and mucous lining of the gastrointestinal and respiratory tracts (Sandoval-Herrera et al., 2023). Complaints felt in the form of dizziness, nausea, fatigue, and mild diarrhea caused by pesticides binding to CHE and forming phosphorylated cholinesterase (Omedes et al., 2024). CHE levels in blood plasma increase after consuming steeping bay leaves regularly every day. The use of personal protective equipment during contact with pesticides can minimize the entry of pesticides into the body because several prevalence studies results show low CHE caused by frequency, duration of contact with pesticides, and compliance with the use of personal protective equipment (Hyland et al., 2024). Likewise, the procedures for the use and use of pesticides must be adjusted to the rules of use that are available on the packaging (Erminia Schiano et al., 2024).

CONCLUSION

Bay leaf steeping has been shown to increase cholinesterase (CHE) levels. To avoid the threat of health problems, farmers should diligently consume steeping bay leaves regularly.

REFERENCES

- Abraham, A. J., Duvall, E. S., le Roux, E., Ganswindt, A., Clauss, M., Doughty, C. E., & Webster, A. B. (2023). Anthropogenic supply of nutrients in a wildlife reserve may compromise conservation success. *Biological Conservation*, 284(December 2022), 110149. <https://doi.org/10.1016/j.biocon.2023.110149>
- Aguera, R. G., Freires, C. da S., Oliveira, L. O. de, Monteiro, L. R., Lini, R. S., Romoli, J. C. Z., Freire, B. M., Nerilo, S. B., Machinski Junior, M., Batista, B. L., & Mossini, S. A. G. (2022). Risk evaluation of occupational exposure of southern Brazilian flower farmers to pesticides potentially leading to cholinesterase inhibition and metals exposure. *Environmental Toxicology and Pharmacology*, 93, 103874. <https://doi.org/10.1016/j.etap.2022.103874>
- Boateng, K. O., Dankyi, E., Amponsah, I. K., Awudzi, G. K., Amponsah, E., & Darko, G. (2023). Knowledge, perception, and pesticide application practices among smallholder cocoa

farmers in four Ghanaian cocoa-growing regions. *Toxicology Reports*, 10(October 2022), 46–55. <https://doi.org/10.1016/j.toxrep.2022.12.008>

Epidemiologico, C. del conocimiento. (2020). STROBE Statement—Checklist of items that should be included in reports of. *Universidad de Los Andes*, 1, 1–2. http://files.figshare.com/422353/Checklist_S1.doc

Erminia Schiano, M., Sodano, F., Cassiano, C., Magli, E., Seccia, S., Grazia Rimoli, M., & Albrizio, S. (2024). Monitoring of seven pesticide residues by LC-MS/MS in extra virgin olive oil samples and risk assessment for consumers. *Food Chemistry*, 442(September 2023), 138498. <https://doi.org/10.1016/j.foodchem.2024.138498>

Febriana, S. A., Khalidah, M., Huda, F. N., Sutarni, S., Mahayana, I., Indrastuti, N., Setyopranoto, I., Waskito, F., Prawiroranu, S., Dwianingsih, E. K., & Malueka, R. G. (2023). Prevalence of pesticide related occupational diseases among Indonesian vegetable farmers – A collaborative work. *Toxicology Reports*, 10(January), 571–579. <https://doi.org/10.1016/j.toxrep.2023.04.016>

Hamka, Utami, T. N., Sillehu, S., Pelu, A. D., Djarami, J., Tukiman, S., Tunny, I. S., Tuharea, A., & Cahyawati, S. (2021). Analyzing the use of pesticides on health complaints of farmers in Waihatu Village, Indonesia. *Gaceta Sanitaria*, 35, S23–S26. <https://doi.org/10.1016/j.gaceta.2020.12.007>

Hartanti, L., Yonas, S. M. K., Mustamu, J. J., Wijaya, S., Setiawan, H. K., & Soegianto, L. (2019). Influence of extraction methods of bay leaves (*Syzygium polyanthum*) on antioxidant and HMG-CoA Reductase inhibitory activity. *Heliyon*, 5(4), e01485. <https://doi.org/10.1016/j.heliyon.2019.e01485>

Hesami Arani, M., Kermani, M., Rezaei Kalantary, R., Jaafarzadeh, N., & Bagheri Arani, S. (2023). Pesticides residues determination and probabilistic health risk assessment in the soil and cantaloupe by Monte Carlo simulation: A case study in Kashan and Aran-Bidgol, Iran. *Ecotoxicology and Environmental Safety*, 263(July), 115229. <https://doi.org/10.1016/j.ecoenv.2023.115229>

Hyland, C., Hernandez, A., Gaudreau, É., Larose, J., Bienvenu, J. F., Meierotto, L., Som Castellano, R. L., & Curl, C. L. (2024). Examination of urinary pesticide concentrations, protective behaviors, and risk perceptions among Latino and Latina farmworkers in Southwestern Idaho. *International Journal of Hygiene and Environmental Health*, 255(October 2023). <https://doi.org/10.1016/j.ijheh.2023.114275>

Omedes, S., Crespo-Picazo, J. L., Robinson, N. J., García-Párraga, D., & Sole, M. (2024). Identifying biomarkers of pollutant exposure in ocean sentinels: Characterisation and optimisation of B-esterases in plasma from loggerhead turtles undergoing rehabilitation. *Chemosphere*, 348(August 2023). <https://doi.org/10.1016/j.chemosphere.2023.140770>

Panggabean, A. S., Setyopranoto, I., Wicaksono, A. R., Rismawan, A., Dwianingsih, E. K., Tama, W. N., Gofir, A., Setyaningrum, C. T. S., Sutarni, S., Asmedi, A., Rhamadianti, A. F., Bawono, R. G., & Malueka, R. G. (2023). Neuropathy caused by pesticide exposure on farmers in Ngablak District, Magelang, Central Java, Indonesia: An electroneuromyography

- study. *Toxicology Reports*, 11(1), 330–338. <https://doi.org/10.1016/j.toxrep.2023.09.020>
- Pawestri, I. N., & Sulistyaningsih, E. (2021). Neurobehavioral performance of Indonesian farmers and its association with pesticide exposure: A cross-sectional study. *Clinical Epidemiology and Global Health*, 11(February), 100754. <https://doi.org/10.1016/j.cegh.2021.100754>
- Sandoval-Herrera, N., Castillo, J. P., Ching, M. E. A., Herrera M., L. G., Faure, P. A., & Welch, K. (2023). Non-destructive methods to assess pesticide exposure in free-living bats. *Science of the Total Environment*, 870(February), 162011. <https://doi.org/10.1016/j.scitotenv.2023.162011>
- Silva, V., Gai, L., Harkes, P., Tan, G., Ritsema, C. J., Alcon, F., Contreras, J., Abrantes, N., Campos, I., Baldi, I., Bureau, M., Christ, F., Mandrioli, D., Sgargi, D., Pasković, I., Polić Pasković, M., Glavan, M., Hofman, J., Huerta Lwanga, E., ... Geissen, V. (2023). Pesticide residues with hazard classifications relevant to non-target species including humans are omnipresent in the environment and farmer residences. *Environment International*, 181(July). <https://doi.org/10.1016/j.envint.2023.108280>
- Tambo, J. A., Mugambi, I., Onyango, D. O., Uzayisenga, B., & Romney, D. (2023). Using mass media campaigns to change pesticide use behaviour among smallholder farmers in East Africa. *Journal of Rural Studies*, 99(March), 79–91. <https://doi.org/10.1016/j.jrurstud.2023.03.001>