



DIKTISAINTEK  
BERDAMPAK



Universitas Alma Ata  
The Globe Inspiring University



# BOOK OF ABSTRACT

## THE 7<sup>TH</sup> ASIA-PACIFIC PARTNERSHIP ON HEALTH AND NUTRITION IMPROVEMENT CONFERENCE 2025

"Implementing Evidence-Based Practices to Improve Maternal and Child Health and Prevent Chronic Disease: Strategies for Sustainable Impact"



November 5<sup>th</sup>, 2025  
The Alana Yogyakarta Hotel and  
Convention Center

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THE 7<sup>TH</sup> APHNI 2025

# BOOK OF ABSTRACTS

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START DATE:

**NOVEMBER 5<sup>TH</sup> 2025**

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## OBJECTIVES

- Conference abstract books are published online by Universitas Alma Ata. Based on its theme:  
"To disseminate the latest research findings and evidence-based practices focused on improving maternal and child health and the prevention of chronic diseases."



## SCOPE OF THE CONFERENCE

### IN SCOPE:

- Nursing: Precision Care, Clinical Practice, Nursing Sciences, Complementary Care, Mental Health Nursing, Maternity Nursing, and Geriatric Nursing.
- Midwifery: Women's Health Issues, Pregnancy, Birth, and Maternity Care, Maternal and Child Health, Complementary Care, Comprehensive Care, and Case Reporting.
- Pharmacy: Clinical Pharmacy, Management Pharmacy, Herbal and Natural Medicine, Cosmetics, Advanced Pharmacy, Pharmaceutical Policy.
- Health: Health Science, Health Care System, Clinical Research, Nutrition Education, Public Health Nutrition, Maternal and Child Nutrition.
- Hospital Administration: Health Quality, Policy, and Economics, Health Information System, Clinical Pathway, E-Health, Hospital Management System, Health Decision Support System, Health Information Technology.
- Medicine: Child Health, Geriatrics, Women's Health.

THE 7<sup>TH</sup> APHNI 2025

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# WELCOME LETTER FROM CONFERENCE CHAIR

**DR. EKA NURHAYATI, S.ST.,M.KM**

## **Assalamualaikum warahmatullahi wabarakatuh**

On behalf of the APHNI Committee, I am delighted to welcome you to the 7th Asia-Pacific Partnership on Health and Nutrition Improvement (APHNI), held on November 5th, 2025, at The Alana Yogyakarta Hotel and Convention Center in Yogyakarta, Indonesia. The APHNI is an annual conference organised by the Faculty of Medicine and Health Sciences at Alma Ata University, Yogyakarta, and has been proudly held since 2019.

This year's conference focuses on the critical theme: "Implementing Evidence-Based Practices to Improve Maternal and Child Health and Prevent Chronic Disease: Strategies for Sustainable Impact." This event will provide an interactive international forum for sharing and exchanging the latest research and practical strategies.

Our goal is to enhance capacities for creating innovative health systems, contribute to the formulation of effective strategies, and stimulate future collaborations among researchers, practitioners, governments, and other stakeholders.

We are honoured to host esteemed speakers and participants from around the world. This 7th APHNI is particularly special, as it is held in celebration of the 10th Alma Ata University Anniversary and the 25th Alma Ata Foundation Anniversary.

I am writing to thank the committee from the Faculty of Medicine and Health Sciences at Alma Ata University for their hard work and dedication. The conference committee also gratefully acknowledges the invaluable technical and financial support from Alma Ata University.

I hope you find this conference engaging and informative. I want to encourage you to engage actively with those presenting their work. Should you have extra time, I hope you can extend your stay and enjoy the exotic and welcoming city of Yogyakarta.

Thank you for your participation.

# WELCOME LETTER FROM THE DEAN OF THE FACULTY OF MEDICINE AND HEALTH SCIENCES

**DR. TRIDJOKO HADIANTO DTM&H, MKES.**

**Assalamualaikum warahmatullahi wabarakatuh.**

**Ladies and gentlemen, esteemed colleagues, and distinguished guests,**

It is with great pleasure and anticipation that we gather for the 7th Asia-Pacific Partnership on Health and Nutrition Improvement (APHNI) under the insightful theme: "Implementing Evidence-Based Practices to Improve Maternal and Child Health and Prevent Chronic Disease: Strategies for Sustainable Impact." This year, the 7th APHNI is proudly hosted by the Faculty of Medicine and Health Sciences, Alma Ata University. This conference serves as a beacon of intellectual exchange and innovation in health and nutrition.

In today's dynamic landscape, characterised by Volatility, Uncertainty, Complexity, and Ambiguity, the role of health sciences in shaping a sustainable and healthy future is more vital than ever. Our collective pursuit of knowledge and innovation has the potential to redefine healthcare delivery, improve community well-being, and address persistent challenges in maternal and child health and chronic diseases.

This conference stands as a testament to the commitment of all participating institutions to address pressing global health challenges. The presentations and discussions unfolding will undoubtedly inspire new ideas, collaborations, and solutions, particularly in translating evidence-based practices into sustainable, real-world impact.

As we embark on this intellectual journey, let us remain open to diverse perspectives, engage in rigorous debate, and forge connections that transcend borders and disciplines. May the insights gained at this conference deepen our understanding of the role of health science in sustainable development and empower us to catalyse positive change within our societies.

I extend my heartfelt gratitude to the organisers, speakers, and attendees who have come together to make this event a reality. Let us embrace the spirit of collaboration and exploration as we navigate the critical intersections of health, nutrition, and policy.

**Thank you, and let the 7<sup>th</sup> APHNI commence.**

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# THE 7<sup>TH</sup> APHNI 2025 EVENT SPEAKERS



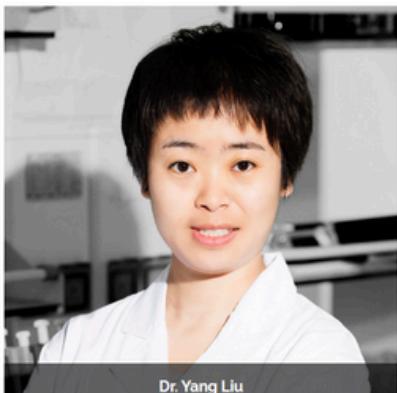
Prof. Dr. Hamam Hadi, MS., Sc.D., Sp.GK.



Mika Matsuzaki, Ph.D., MPH., MS.



Prof. Joel Gittelsohn, PhD., MS.



Dr. Yang Liu



Prof. Wan Abdul Manan Bin Wan Muda



Assoc. Prof. Pongtip Sithisarn



Dr. dr. Tri Djoko Hadianto, DTMH., M.Kes  
Alma Ata University, Indonesia



Assoc. Prof. Dr. Siti Roshaidai Binti Mohd Arifin



Jie Zhong, BSN, MSN, PhD, RN.

# THE 7<sup>TH</sup> APHNI 2025

## EVENT SCHEDULE

Check out the detailed schedule of the event to plan your day. Stay updated on all sessions, workshops, and keynote speeches.  
All times indicated below are in Western Indonesia Time (WIB / UTC+7).

07:00 - 07:55	<b>Registration</b>
08:15 - 08:30	 <b>Prof. Dr. Hamam Hadi, MS., Sc.D., Sp.GK.</b> <i>Rector of Alma Ata University, Indonesia</i> <i>Opening Speech</i>
<b>Session 1</b> <i>Nutrition and Medicine</i>	
08:55 - 09:15	 <b>Mika Matsuzaki, Ph.D., MPH., MS.</b> <i>Center for Human Nutrition, John Hopkins University, USA</i> <i>"The Impact of School Nutrition Laws on Student Eating and Their Nutritional Status."</i>
09:15 - 09:35	 <b>Prof. Joel Gittelsohn, PhD., MS.</b> <i>Johns Hopkins Bloomberg School of Public Health, John Hopkins University, USA</i> <i>"Potential School Canteen Intervention Based on Indonesian Perspectives."</i>
09:45 - 10:05	 <b>Dr. Yang Liu</b> <i>China Medical University, China</i> <i>"Digital Health Approaches for Preventing Childhood Obesity."</i>
10:05 - 10:25	 <b>Prof. Wan Abdul Manan Bin Wan Muda</b> <i>World Public Health Nutrition Association</i> <i>"Food as a Weapon of War and its Impact on Child Malnutrition."</i>
<b>Session 2</b> <i>Pharmacy and Hospital Administration</i>	
11:00 - 11:20	 <b>Assoc. Prof. Pongtip Sithisarn</b> <i>Faculty of Pharmacy, Mahidol University, Thailand</i> <i>"Harnessing Traditional Wisdom: Ethnomedicine Innovations for a Resilient and Sustainable Global Health System."</i>
11:20 - 11:40	 <b>Dr. dr. Tridjoko Hadianto, DTMH., M.Kes</b> <i>Dean Faculty of Medicine and Health Sciences, Alma Ata University, Indonesia</i> <i>"Innovations in Sustainable Hospital Management for Improved Non-Communicable Disease Care."</i>
<b>Session 3</b> <i>Midwifery and Nursing</i>	
13:05 - 13:25	 <b>Assoc. Prof. Dr. Siti Roshaidai Binti Mohd Arifin</b> <i>International Islamic University, Malaysia</i> <i>"Integrating Mental Health and NCD Services in Community Midwifery Practice: A Holistic Approach".</i>
13:25 - 13:45	 <b>Jie Zhong, BSN, MSN, PhD, RN.</b> <i>The University of Hong Kong</i> <i>"Bridging Research and Practice: Nursing Interventions for Non-Communicable and Chronic Disease Prevention".</i>
14:25	<b>Closing Remark</b>

## GENERAL INSTRUCTIONS

- Each presenter will be given **a time slot of 7 minutes in total, divided into 5 minutes of presentation and up to 2-3 minutes** of answering questions (Q&A) from the audience and changing presenters at the podium or online. This allocated presentation time cannot be exceeded.
- As the schedule of presentation sessions is tight, all presenters must be ready and on time for their presentations. The moderator will keep the introductions of each presenter brief.
- Some sessions are hybrid, the lecture room settings for on-site attendees combined with Zoom for virtual participants. This setup will enable both on-site and virtual attendees to participate equally in the session.
- On-site and virtual presenters must give a live presentation at the APHNI 2025 Conference. To mitigate any connection issues, virtual presenters are required to submit a PowerPoint file to the APHNI committee (please refer to the Presentation Guidelines).
- Registration for the conference is required for participation in any session, whether virtually or on-site, as a presenter or attendee.
- APHNI 2025 virtual background is available for virtual presenters. Please download the file via APHNI 2025 Virtual Background
- Please read our Guidance for preparing presentation files.
- Please follow our Rules and Guidance when you give your live presentation.
- **Oral presentation sessions will be held from 11:00 a.m. to 12:30 p.m. and from 01:15 p.m. to 02:15 p.m.** on Wednesday, November 05, 2025. You will receive notification of your presentation room and time on 03 November 2025.

# PRESENTATION GUIDELINE

## TIME ALLOCATION

The oral presentation time was strictly limited to **5-7 minutes**. It **calls for no more than 10 slides followed by 2-3 minutes of Q&A**. Please ensure that your talk does not exceed the time limit.

## TECHNICAL REQUIREMENTS POWERPOINT PRESENTATIONS

1. The use of personal laptops was not permitted. Presentations will be run on the conference PC.
2. Please ensure that your slides are compatible with Microsoft PowerPoint 2016 or later.

## PRESENTATION FILE SUBMISSION DEADLINE: 03 NOVEMBER 2025

- [https://bit.ly/full\\_paper\\_submissionAPHNI2025](https://bit.ly/full_paper_submissionAPHNI2025)
- <https://bit.ly/powerpoint-submissionAPHNI>

## THE DAY OF PRESENTATION

- Please arrive at your session room at least 20 minutes before the session start time.
- It is recommended to bring a backup of your file on a USB drive.

## MODERATOR PROCEDURES

### BEFORE THE CONFERENCE

- Familiarize yourself with the content being presented during the session. Your presenters have been instructed to provide you with a draft of their presentation.
- Review the presentations for legibility and adherence to the Oral Presentation Guidelines and use of the Brewing Summit oral template (these will be provided). Provide any feedback to presenters in a timely manner.

### DURING THE CONFERENCE

- Using a timer will be key in keeping the session on time. There should be a timer at the podium, or you can use your phone's clock app. If the timer is missing, please check with the Registration Desk.
- **Start the session ON TIME - introduce yourself and the name of the session**

- **Remainder for the audience**

The oral presentation time was strictly limited to 5-7 minutes. It calls for no more than 10 slides followed by 2-3 minutes of Q&A. Please ensure that your talk does not exceed the time limit.

- **Introduce each presenter** - name, affiliation, and presentation title
- **Thank the presenters.** Please come prepared with questions that can stimulate dialogue.

### MONITOR

Monitor the discussion periods and keep conversations engaging and within the allotted time. Attendees with extended comments should speak with the author after the session. Repeat questions as needed to ensure all attendees can hear them.

## THE 7<sup>TH</sup> APHNI 2025

### PARALLEL SESSIONS OF ORAL PRESENTATIONS

Wednesday, November 05<sup>th</sup>, 2025 (11.00 – 14.15 WIB)

Room : Pandu (Offline)

Topic : Health Sciences

1. Pharmacy and Pharmacology
2. Maternal and Child Health
3. Epidemiology and Public Health
4. Clinical and Regenerative Medicine
5. Health Service Management

Moderator : Ns. Raden Jaka Sarwadhamana, S.Kep., M.P.H.

No	Time (WIB)	Presenter Code	Presenter	Title of Manuscript
1	11.00 – 11.07	A-004	dr. Salsabil Priladiya Rafida	Efficacy and Safety of Calendula officinalis in Prevention of Radiation-Induced Dermatitis: A Systematic Review
2	11.10 – 11.17	A-008	dr. Opi Sritanjung	Sweet Start, Bitter Future: Ultra-Processed Foods in Early Life and the Growing Risk of Childhood Obesity: A Systematic Review
3	11.20 – 11.27	A-016	Muhammadul Khoiriyah	Mechanistic optimization and farnz diffusion evaluation of fenofibrate-loaded solid lipid nanoparticles for fold-enhanced controlled release and potential bioavailability improvement
4	11.30 – 11.37	A-006	dr. Widya Khairunnisa Sarkowi	Efficacy and Safety of Secretome and Stem Cell-Derived Conditioned Media In The Management Of Chronic Plantar Ulcers In Leprosy: A Systematic Review And Meta-Analysis

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No	Time (WIB)	Presenter Code	Presenter	Title of Manuscript
5	11.40 – 11.47	A-007	dr. Stephanie Julia Kosasih	The Impact of Microplastic Exposure on Metabolic Disorder: A Scoping Review of Human Studies
6	11.50 – 11.57	A-013	Pramitha Sari	The Association Between Birth Weight with Appropriate Weight Gain in Infants Aged 0-6 Month at Imogiri District, Yogyakarta
7	13.00 – 13.07	A-017	Mamah Nurhikma	The relationship between gestational hypertension and the incidence of preterm labor
8	13.10 – 13.17	A-010	Arantika Meidya Pratiwi	Psychosocial Factors Associated with the Postpartum Quality of Life in Bantul, Yogyakarta, Indonesia
9	13.20 – 13.27	A-024	Fatimah	Adolescent Pregnancy Trends and Their Impact on Maternal Mortality: An Analysis of Health Data from Yogyakarta Special Region

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No	Time (WIB)	Presenter Code	Presenter	Title of Manuscript
10	13.30 – 13.37	A-029	Siska Ariftyana	Body Mass Index and Waist Circumference as risk factor of Hypertension Among Adults in Wonosari II Primary Health Care Area, Indonesia
11	13.40 – 13.47	A-027	Imram Radne Rimba Putri	Work environment improves motivation and work culture of administrative staff at Panembahan Senopati Bantul Regional General Hospital

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### PARALLEL SESSIONS OF ORAL PRESENTATIONS

Wednesday, November 05<sup>th</sup>, 2025 (11.00 – 14.15 WIB)

Room : Parikesit (Offline)

Topic : Nutrition and Food Science

- Public Health Nutrition & Epidemiology
- Food Science and Biomedical Nutrition
- Related Clinical & Public Health Topics

Moderator : apt. Diki Aprianto A., M.Clin.Pharm., FISQua.

No	Time (WIB)	Presenter Code	Presenter	Title of Manuscript
1	11.00 - 11.07	A-028	Lia Dian Ayuningrum	The Relationship Between Age, Gender, and Duration of Gadget Use on Adolescent Mental Health
2	11.10 - 11.17	A-012	Sofyan Indrayana	Improving Toenail Trimming Technique Among People with Type 2 Diabetes Mellitus Through Simulation
3	11.20 - 11.27	A-011	Sunarti	Proximate composition, dietary fibre, and inulin content of Purple Yam ( <i>Dioscorea alata</i> L) at various processing methods
4	11.30 - 11.37	A-015	Dian Wahyu Pratami	Anti-Inflammatory Properties of Sacha Inchi ( <i>Plukenetia Volubilis</i> ) Oil in Rat Fed High-Fat and Fructose Diet: A Study of NfkB, GPR120, 12/15LOX mRNA Expression and TNFa Protein Level of Visceral Adipose Tissue

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- Related Clinical & Public Health Topics

Moderator : apt. Diki Aprianto A., M.Clin.Pharm., FISQua.

No	Time (WIB)	Presenter Code	Presenter	Title of Manuscript
5	11.40 - 11.47	A-018	Annisa Fatmawati	Comprehensive Phytochemical Profiling and Quercetin Identification in Moringa oleifera Leaf Extracts Using FTIR and LC-HRMS Orbitrap Techniques
6	11.50 - 11.57	A-31	Shela Sofyan	The Effect Of Giving Rhizome Ethanol Extract Temulawak (Curcuma Xanthorrhiza Roxb) On Total Cholesterol Levels In Male Rats Of Wistar Strain
7	13.00 - 13.07	A-021	Rindi Nuryani	Factors Associated with Dietary Diversity Among Toddlers Aged 12-59 Months in Gunungkidul, Indonesia
8	13.10 - 13.17	A-022	Herni Dwi Herawati	Picky Eating Among Indonesian Preschoolers: Associations with Feeding Practices, Caregiver Type, Health, and Nutritional Status

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No	Time (WIB)	Presenter Code	Presenter	Title of Manuscript
9	13.20 – 13.27	A-20	Herwinda	Drivers of Ultra-Processed Food Consumption for Infant and Young Child Feeding: A Mixed-Methods Study in Indonesia Urban Area
10	13.30 – 13.37	A-026	Lisana Shidiq Aliya	Healthy Eating Index (HEI) and Its Predictors in Indonesian Adult Women

## THE 7<sup>TH</sup> APHNI 2025

### PARALLEL SESSIONS OF ORAL PRESENTATIONS

Wednesday, November 05<sup>th</sup>, 2025 (11.00 – 14.15 WIB)

Room : Pergiwati (Online & Offline)

Topic : Public Health

- Maternal and Child Health
- Social Support and Mental Health
- Reproductive and Adolescent Health
- Public Health Nutrition
- Biomedical & Toxicology

Moderator : apt. Sundari Desi Nuryanti, M. Sc

No	Time (WIB)	Presenter Code	Presenter	Title of Manuscript
1	11.00 – 11.07	A-001	Amienia Fajar Amanati	Knowledge as The Core: Unraveling the Role of Husband's Support, Maternal Stress, and Breastfeeding Skills in Achieving Exclusive Breastfeeding
2	11.10 – 11.17	A-002	Afinda Nur Prasantiara	The Social Support Paradox: How Social Support Encourages Contraceptive Use among Early Married Women
3	11.20 – 11.27	A-003	Ahmad Nafil Mursyidan	Social Support and The Risk of Depression among Postpartum Mothers in the Rural Area of Jember Regency
4	11.30 – 11.37	A-005	Aprinia Dian Nurhayati	The Resilience of Iron: Analyzing the Relationship Between Maternal Iron Intake, Hemoglobin Status, and Iron Content in Exclusive Breastfeeders

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Moderator : apt. Sundari Desi Nuryanti, M. Sc

No	Time (WIB)	Presenter Code	Presenter	Title of Manuscript
5	11.40 – 11.47	A-009	Feni Sulistyawati	External Determinants of Adolescent Sexual Behavior among Islamic Boarding School Students in Bali
6	11.50 – 11.57	A-023	Emi Yunita	From Awareness to Action: The Impact of Microplastic-Free Lifestyle Education on Breastfeeding Mothers' Knowledge and Behavior
7	13.00 – 13.07	A-025	Rahmatika Meilansari	Combining Deep Breathing with Positive Affirmations to Reduce Anxiety in Nurses at the Bantul Community Health Care
8	13.10 – 13.17	A-032	Effatul Afifah	Role of Social Engagement System in SaSo Exercise on Insulin Resistance among Women with Gestational Diabetes Mellitus

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Moderator : apt. Sundari Desi Nuryanti, M. Sc

No	Time (WIB)	Presenter Code	Presenter	Title of Manuscript
9	13.20 – 13.27	A-30	Yhona Paratmanitya	Linear association between meal skipping frequency and body mass index among preconception women in Bantul, Indonesia
10	13.30 – 13.37	A-014	Eva Nurinda	Evaluation of Cytotoxic Potential of a Combined Extracts of Cinnamon ( <i>Cinnamomum zeylanicum</i> ) and Ginger ( <i>Zingiber officinale</i> ) Using the Brine Shrimp Lethality Test (BSLT) Assay
11	13.10 – 13.17	A-019	Ari Susiana	The Relationship Between Patients' Knowledge of Beyond Use Date (BUD) of Non-Sterile Compounded Medications and Drug Storage Behavior at Sewon Primary Health Center, Yogyakarta

# ABSTRACT OF PARTICIPANTS

**THE 7<sup>TH</sup> ASIA-PACIFIC PARTNERSHIP  
ON HEALTH AND NUTRITION  
IMPROVEMENT CONFERENCE 2025**

**"Implementing Evidence-Based Practices to  
Improve Maternal and Child Health and Prevent  
Chronic Disease: Strategies for Sustainable Impact"**



**Presented by**

**This refers to the authors  
and researchers whose work  
is featured inside the book.  
They are the ones  
presenting the research.**

**Presented to**

**ALL CONFERENCE  
ATTENDEES**

## **Psychosocial Factors Associated with the Postpartum Quality of Life (PQOL) in Bantul, Yogyakarta, Indonesia**

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### **ABSTRACT**

**Background:** The postpartum period is a critical period marked by significant physical and psychological changes that can affect a mother's quality of life. This period is a crucial time that contributes to the Maternal Mortality Rate (MMR). Postpartum Quality of Life (PQOL) encompasses various aspects of health and a mother's ability to fulfil her role, which are influenced by many factors, including psychosocial factors. Therefore, in-depth research on specific psychosocial factors related to PQOL in Bantul, Yogyakarta, is important to provide a basis for developing appropriate interventions to improve mothers' well-being after childbirth.

**Objectives:** To determine the relationship between psychosocial factors, including family support, postpartum blues, fatigue, and postpartum quality of life among postpartum mothers in Bantul, Yogyakarta, Indonesia.

**Methods:** This study used an observational, cross-sectional design. A purposive sample of 93 respondents was selected from a population of postpartum mothers on days 3-40. The research instruments used were a family support questionnaire, the Edinburgh Postnatal Depression Scale (EPDS), and a fatigue questionnaire. Postpartum quality of life was measured using the World Health Organization Quality of Life-Brief (WHOQOL-BREF). Data were analysed using the Kendall Tau test.

**Results:** The results showed significant relationships between family support ( $p<0,05$ ;  $r=0.583$ ) and fatigue ( $p<0,05$ ;  $r=-0.299$ ) and postpartum quality of life. There was no significant relationship between postpartum blues and postpartum quality of life.

**Conclusions:** These findings indicate that interventions focused on strengthening support systems and fatigue management are key to improving the well-being of postpartum mothers. Health workers are expected to assess and strengthen family support in every postpartum care provided. Fatigue management education, including relaxation techniques, sleep optimisation, and sharing household chores, can be taught to mothers and husbands during postpartum visits.

**Keywords:** psychosocial factors; family support; fatigue; postpartum blues; postpartum quality of life; PQOL.

# Improving Toenail Trimming Technique Among People with Type 2 Diabetes Mellitus Through Simulation

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## ABSTRACT

**Background:** Diabetic foot ulcer is a major complication of Type 2 Diabetes Mellitus (T2DM), often leading to amputation and increased mortality. Effective preventive strategies, particularly enhancing patients' competency in foot care, are essential. However, the ability to perform safe nail trimming as part of foot care among individuals with T2DM requires improvement. Therefore, nail-trimming simulation might be an effective approach to enhance foot care skills among patients with T2DM.

**Objectives:** This study aimed to examine the effect of nail-trimming simulation on foot care skills among individuals with Type 2 Diabetes Mellitus.

**Methods:** A quasi-experimental design with a one-group pretest–posttest approach was employed. A total of 49 patients with Type 2 Diabetes Mellitus (T2DM) were recruited through purposive sampling, whose inclusion criteria included being 45–59 years old, registered patients at the Imogiri I Community Health Center, and residing within its working area. Patients presenting with foot ulcers, physical limitations, severe complications, or cognitive impairment (all confirmed by medical record review) were excluded from the study. The intervention consisted of health education using leaflets, followed by a nail-trimming simulation session (both derived from the guideline book). Foot care skills, particularly those related to nail trimming, were assessed using a structured observation checklist (derived from a guideline book) before and after the intervention. The pre-test was conducted just before the intervention, and the post-test was performed 7 days after the intervention. Data were analyzed using the Wilcoxon signed-rank test.

**Results:** The mean score of foot care skills in nail trimming increased significantly from 1.27 in the pretest to 2.82 in the posttest. Statistical analysis indicated that the simulation had a highly significant effect on skill improvement ( $p < 0.001$ ).

**Conclusions:** The nail-trimming technique simulation proved to be an effective method for significantly improving nail care skills among patients with Type 2 Diabetes Mellitus. It is recommended that healthcare providers integrate simulation-based training into routine diabetic foot care education programs.

**Keywords:** type 2 diabetes mellitus; diabetic foot ulcer; simulation-based training; foot care; toenail trimming.

**Anti-Inflammatory Properties of Sacha Inchi (*Plukenetia Volubilis*) Oil in Rat Fed High-Fat and Fructose Diet: A Study of Nfk $\beta$ , GPR120, 12/15LOX mRNA Expression and TNF $\alpha$  Protein Level of Visceral Adipose Tissue**

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**ABSTRACT**

**Background:** The diet of modern society tends to be high in fat and fructose. This condition can lead to the accumulation of body fat, which in turn can cause inflammation. Sacha inchi oil, which contains a high amount of polyunsaturated fatty acids (PUFAs), exhibits anti-inflammatory properties, making it a potential functional food for preventing adipose tissue inflammation.

**Objectives:** To evaluate the anti-inflammatory potential of *sacha inchi* oil on visceral adipose tissue resulting from a high-fat and fructose diet.

**Methods:** A total of 30 rats were divided into five groups, namely the normal group (N), the high-fat and fructose diet (HFFD) group, and the sacha inchi oil intervention group with three different doses, which were 0.13 g (S1), 0.26 g (S2), and 0.39 g (S3). Each group underwent examination of visceral adipose tissue, including qPCR analysis to determine mRNA expression of NF $\kappa$ B, GPR120, 12/15LOX, and ELISA analysis to measure TNF $\alpha$  protein levels.

**Results:** The HFFD group showed adipose tissue inflammation, characterized by increased NF $\kappa$ B mRNA expression and TNF $\alpha$  protein levels compared to the N group. Improvement in inflammation was indicated by decreased NF $\kappa$ B mRNA expression and TNF $\alpha$  protein levels, and increased GPR120 and 12/15 LOX mRNA expression in the sacha inchi oil intervention group. GPR 120 mRNA expression at dose 0.26g (S2) showed the most significant results; 12/15 LOX mRNA expression at dose 0.13g (S1) showed the most significant results; while NFkB mRNA expression and TNF $\alpha$  protein levels at dose 0.26g (S2) showed the most significant results.

**Conclusions:** Sacha inchi oil can prevent inflammation in rat adipose tissue induced by a high-fat and fructose diet.

**Keywords:** high-fat and fructose diet; inflammation; sacha inchi oil; visceral adipose

# Evaluation of Cytotoxic Potential of a Combined Extract of Cinnamon (*Cinnamomum zeylanicum*) and Ginger (*Zingiber officinale*) Using the Brine Shrimp Lethality Test (BSLT) Assay

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## ABSTRACT

**Background:** Natural spices like *Cinnamomum zeylanicum* (cinnamon) and *Zingiber officinale* (ginger) are rich in bioactive compounds with diverse pharmacological activities, including cytotoxic effects. The Brine Shrimp Lethality Test (BSLT) is a reliable bioassay to evaluate the cytotoxic potential of natural products, often correlating with antitumor activity.

**Objectives:** This study aimed to assess and compare the cytotoxic potential of cinnamon, ginger, and their combined extracts using the BSLT assay.

**Methods:** Ethanolic extracts of *C. zeylanicum* bark and *Z. officinale* rhizome were prepared by maceration. Cytotoxicity was tested against *Artemia salina* nauplii at different concentrations (0, 25, 50, 100, 200, 400, 800 ppm). Mortality was recorded after 24 hours, and LC<sub>50</sub> values were calculated using probit analysis to determine potency.

**Results:** The individual extracts of cinnamon and ginger exhibited moderate cytotoxicity with LC<sub>50</sub> values of 350.847 ppm and 805.439 ppm, respectively. The combined extract of cinnamon and ginger demonstrated significantly higher cytotoxicity, with an LC<sub>50</sub> of 291.458 ppm, indicating a synergistic interaction between the bioactive compounds present in both extracts. The combined extract suggests additive or synergistic effects, possibly mediated through oxidative stress and modulation of the mitochondrial pathway.

**Conclusions:** The combination of *Cinnamomum zeylanicum* and *Zingiber officinale* extracts exhibited more potent cytotoxic activity than either extract alone, as evidenced by a lower LC<sub>50</sub> value in the BSLT assay. These findings support the potential of spice-based phytochemical combinations as promising sources of natural cytotoxic agents for further in vitro and in vivo evaluation of their antitumor properties.

**Keywords:** *cinnamomum zeylanicum*; *zingiber officinale*; cytotoxicity; brine shrimp lethality test; LC<sub>50</sub>.

# The Relationship Between Gestational Hypertension and the Incidence of Preterm Labor

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## ABSTRACT

**Background:** Preterm birth is a leading cause of neonatal morbidity and mortality globally. According to the latest global estimates from the WHO for the year 2020, an estimated 13.4 million babies were born preterm, with national rates varying widely from 4% to 16%. In 2022, the global average infant mortality rate was 17 deaths per 1,000 live births, and 2.3 million children died in their first month of life due to causes including infectious diseases, pneumonia, and premature birth. In Indonesia, the prevalence of preterm birth was approximately 10% in 2022, with 1,023 cases recorded in the Special Region of Yogyakarta (DIY) by October 2024. Gestational hypertension, a condition characterized by elevated blood pressure after 20 weeks of pregnancy, is a significant risk factor.

**Objectives:** This study aimed to determine the relationship between gestational hypertension and the incidence of preterm birth

**Methods:** This study employed a retrospective correlational design. It was conducted at Sleman Regional General Hospital in the DIY Province, targeting mothers who had given birth within the past two years. The study sample consisted of 184 medical records selected via purposive sampling, comprising a balanced composition of 92 term and 92 preterm birth cases. Data were collected from secondary sources, specifically medical records. The data were analyzed using the Chi-square test.

**Results:** The characteristics of 184 mothers were examined. The majority were aged 20–35 years (n=129, 70.1%), had a secondary education (n=129, 70.1%), were not working (n=112, 60.9%), and were multiparous (n=121, 65.8%). Most participants had no prior history of illness (n=133, 72.2%) and did not have gestational hypertension (n=161, 87.5%). Among the 92 mothers who experienced preterm birth, only 3 (3.3%) had a history of hypertension. In contrast, among the 92 mothers who had term births, 20 (21.7%) had a history of hypertension. A statistically significant relationship was found between gestational hypertension and preterm birth ( $p < 0.001$ )

**Conclusions:** There is a significant association between gestational hypertension and the incidence of preterm birth. While a significant statistical relationship exists between hypertension and birth outcomes, our findings show an unexpected inverse association. In this study, a history of hypertension was linked to a lower incidence of preterm birth.

**Keywords:** gestational hypertension; preterm birth; midwifery

## Comprehensive Phytochemical Profiling and Quercetin Identification in *Moringa oleifera* Leaf Extracts Using FTIR and LC-HRMS Orbitrap Techniques

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### ABSTRACT

**Background:** *Moringa oleifera* leaves are rich in phenolic and flavonoid compounds, particularly quercetin, which contribute to their potent antioxidant and therapeutic properties. However, comprehensive chemical profiling, which combines total phenolic content, FTIR functional group characterization, and LC-HRMS Orbitrap identification, is limited.

**Objectives:** This study aimed to determine the total phenolic content (TPC) of *Moringa oleifera* Leaf Ethanolic Extract (MOLEE), characterize functional groups indicative of phenolic and flavonoid compounds using FTIR spectroscopy, and identify individual phytochemicals, including quercetin, using LC-HRMS Orbitrap analysis

**Methods:** The TPC of leaf simplicia and its 70% ethanolic extract (MOLEE) was quantified with the Folin–Ciocalteu method. Functional groups were characterized by FTIR spectroscopy. LC-HRMS Orbitrap analysis was employed to identify bioactive compounds with high precision.

**Results:** The total phenolic content of MOLEE was  $47.35 \pm 3.45$  mg GAE/g extract, significantly higher than that of the simplicia ( $8.13 \pm 1.7$  mg GAE/g). FTIR spectra revealed prominent absorption bands at  $3410\text{ cm}^{-1}$  ( $-\text{OH}$  stretching),  $1650\text{ cm}^{-1}$  ( $\text{C}=\text{O}$  stretching), and  $1510\text{ cm}^{-1}$  ( $\text{C}=\text{C}$  aromatic ring), which overlapped with the standard quercetin peaks, confirming the presence of phenolic compounds. LC-HRMS Orbitrap detected phenolic compounds, dominated by flavonoids (quercetin, kaempferol, apigenin), phenolic acids, and fatty acid derivatives, consistent with the FTIR findings.

**Conclusions:** The combination of high phenolic content, FTIR functional similarity with quercetin, and LC-HRMS identification confirms the abundance of quercetin and related phenolic compounds in MOLEE. These findings reinforce the potential of *Moringa oleifera* leaves as a rich source of natural antioxidants for pharmaceutical and nutraceutical development.

**Keywords:** FTIR; LC-HRMS Orbitrap; *Moringa oleifera*; phenolic content; quercetin

# **Improving Breastfeeding Mothers' Knowledge on Microplastic Exposure Prevention through Community-Based Health Education**

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## **ABSTRACT**

**Background:** Microplastics are an emerging environmental and public health concern due to their presence in human biological samples, including breast milk. Exposure occurs through daily consumption and the use of plastic-based utensils. In Indonesia, awareness among breastfeeding mothers regarding microplastic contamination and its health impact remains limited, particularly in rural and semi-urban areas.

**Objectives:** This community service project aimed to improve the knowledge and awareness of breastfeeding mothers about healthy living, free from microplastic exposure, through education and socialization activities conducted at Teja Public Health Center in Pamekasan Regency.

**Methods:** A pre-post experimental design was used, involving 35 breastfeeding mothers. The intervention consisted of participatory health education sessions using lectures, group discussions, and demonstrations on safe food preparation and non-plastic alternatives. Knowledge was measured before and after the intervention using a structured questionnaire. Data were analyzed using SPSS version 25 with a paired t-test to assess pre- and post-intervention differences.

**Results:** Participants' mean knowledge score increased significantly from 26.2% (pre-test) to 82.5% (post-test), indicating a 56.3% improvement ( $p < 0.001$ ). The highest improvement (71.4%) was found in the topic "daily preventive practices." Moreover, 97.1% of participants reported being satisfied with the program, and 100% stated that the education provided new knowledge relevant to their daily lives.

**Conclusions:** Educational and socialization programs effectively improved breastfeeding mothers' knowledge and awareness of how to prevent microplastic exposure. Strengthening community-based health promotion is essential to support sustainable, microplastic-free living practices for maternal and child health.

**Keywords:** microplastic; breastfeeding mother; health education; environmental awareness; community empowerment

## **Adolescent Pregnancy Trends and Their Impact on Maternal Mortality: An Analysis of Health Data from Yogyakarta Special Region**

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### **ABSTRACT**

#### **Contrasting Trends in Family Health: An Analysis of the Decline in Maternal Mortality and the Rise in Adolescent Births in Five Regencies/Cities (2022-2024)**

**Background:** Maternal and adolescent health are crucial pillars of public health. The Maternal Mortality Ratio (MMR), adolescent births, and Unwanted Pregnancies (KTD) are strategic issues requiring periodic monitoring. The analysis of these data trends and percentage changes is essential for evaluating intervention effectiveness and identifying emerging challenges at the regional level.

**Objective:** This study aims to describe trends and calculate percentage changes in key family health indicators, including the Maternal Mortality Ratio (MMR), total births, adolescent births, and Unwanted Pregnancies (KTD), across five regencies/cities during the 2022-2024 period.

**Methods:** A quantitative descriptive analysis was used, utilising annual aggregate secondary data. Data from the five regions (Kulon Progo, Bantul, Gunung Kidul, Sleman, and Kota Yogyakarta) were compiled. The analysis focused on calculating year-on-year percentage changes and comparing them with the 2022 baseline to refine the trend findings.

**Results:** The analysis results show contrasting trends. A significant achievement was observed in the decline of the Maternal Mortality Ratio (MMR), which decreased by 41.9% in 2024 compared to the 2022 baseline (from 43 to 25 cases). This trend was supported by a 9.98% decrease in total births over the same period. However, a significant challenge emerged in adolescent health. Adolescent births (ages 10-18) in 2024 were recorded as 18.2% higher than in 2022. A similar pattern was observed for Unwanted Pregnancies (KTD), which was 16.2% higher than in 2022, although both had declined from their 2023 peak.

**Conclusion:** The 2022-2024 period demonstrates substantial success in maternal mortality reduction programs. However, there has been a significant and unresolved increase in adolescent births and KTD, with case levels in 2024 remaining much higher than in 2022. This indicates the urgency of strengthening reproductive health interventions and programs that specifically target the adolescent population.

**Keywords:** maternal mortality ratio (MMR); adolescent births; unwanted pregnancy; trend analysis; percentage change; family health

## **The combination of Deep Breathing and Positive Affirmations is effective in reducing anxiety scores among nurses at the Bantul Community Health Centre.**

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### **ABSTRACT**

**Background:** According to the WHO (2022), in 2019, approximately 970 million people worldwide experienced mental disorders, with anxiety and depression being the most prevalent. In Indonesia, 18,373 individuals were reported to suffer from anxiety disorders in 2020, showing a 6.8% increase. Early detection of anxiety disorders is crucial to enable prompt treatment and prevent further complications.

**Objectives:** This study aimed to determine the effectiveness of combining deep breathing exercises with positive affirmations in reducing anxiety among nurses at the Bantul Community Health Centre, Yogyakarta.

**Methods:** This quantitative research employed a pre-experimental design with a one-group pretest–posttest approach. The study population consisted of 56 nurses from six inpatient community health centre facilities in Bantul Regency. A total of 26 respondents were selected using purposive sampling. Data were collected using pretest and posttest questionnaires based on the DASS-42 (Depression Anxiety Stress Scale) instrument. Statistical analysis was conducted using the Wilcoxon signed-rank test.

**Results:** The intervention led to a significant decrease in anxiety among nurses. The Wilcoxon test yielded a p-value of 0.000 ( $p < 0.05$ ), indicating a statistically significant effect of combining deep breathing and positive affirmations on reducing anxiety score.

**Conclusions:** The combination of deep breathing relaxation and positive affirmations is an effective strategy for reducing anxiety scores among nurses. This intervention shows potential for reducing anxiety.

**Keywords:** anxiety; nurses; deep breathing; positive affirmation; community health centers

## **Work Environment Improves Motivation and Work Culture of Administrative Staff at Panembahan Senopati Bantul Regional General Hospital: A Cross-Sectional Study**

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### **ABSTRACT**

**Background:** A conducive work environment significantly affects employee motivation and organizational culture, particularly in healthcare settings where administrative staff are key to hospital efficiency. Understanding this relationship is crucial for enhancing performance and service quality.

**Objectives:** This study aims to analyze the relationship between the work environment, motivation, and organizational culture among administrative staff at Panembahan Senopati Hospital, Bantul, Indonesia.

**Methods:** This quantitative analytical study used a cross-sectional design involving 62 administrative staff selected through total sampling. Inclusion criteria were employees with at least one year of service; incomplete questionnaires were excluded. The work environment questionnaire (26 items) assessed physical conditions, interpersonal relationships, and managerial support. The motivation questionnaire (10 items) covered intrinsic and extrinsic factors, and the organizational culture questionnaire (20 items) examined shared values, communication, and teamwork. All instruments used a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) and showed good reliability (Cronbach's  $\alpha$  > 0.70). Data were analyzed using the Spearman rank correlation test.

**Results:** The median (min-max) scores were 38.50 (24-49) for motivation, 104 (71-130) for work environment, and 75.50 (54-95) for organizational culture. The results of the Spearman rank test showed a significant positive correlation between the work environment and motivation ( $p = 0.008$ ;  $r = 0.335$ ), and a stronger positive correlation between the work environment and organizational culture ( $p < 0.001$ ;  $r = 0.613$ ). These findings indicate that a better work environment is associated with higher motivation and a stronger organizational culture among hospital administrative staff.

**Conclusions:** A supportive work environment significantly improves employee motivation and strengthens organisational culture. Hospital management should focus on creating a positive, well-structured work environment to improve administrative performance and sustain a productive organisational climate.

**Keywords:** work environment; motivation; organisational culture; hospital administration; cross-sectional study.

# The Relationship Between Age, Gender, and Duration of Gadget Use on Adolescent Mental Health

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## ABSTRACT

**Background:** Adolescents experience rapid emotional and behavioural changes, making them vulnerable to various mental health challenges in the digital age, where the use of gadgets is widespread. Demographic variables such as age and gender can also affect emotional stability.

**Objectives:** This study aimed to examine the relationship between age, gender, and duration of gadget use with adolescent mental health

**Methods:** A quantitative correlational study with a cross-sectional design was conducted among 69 twelfth-grade students (15-18 years) of Vocational High School Muhammadiyah 2 Boja, selected through accidental sampling. Research instruments included the Strengths and Difficulties Questionnaire (SDQ-18) to assess mental health and a Gadget Usage Duration Questionnaire. Data were analysed using univariate, bivariate (Chi-Square test), and multivariate (multiple linear regression) analyses.

**Results:** Adolescents with high levels of gadget use tend to have abnormal emotional difficulties (93.8%) and abnormal emotional strength (87.5%). Conversely, adolescents with low gadget use mostly show normal emotional conditions, both in terms of difficulties (82.4%) and strengths (94.1%). The results of the relationship analysis show that gadget use is significantly related to mental health ( $p < 0.001$ ), as is age ( $p = 0.027$ ), whereas gender is not significantly related ( $p = 0.117$ ). Multiple regression analysis revealed that gadget use, emotional support, and difficulties significantly influenced emotional strength and behavioural challenges ( $p < 0.05$ ). This research model explained 81.2% of the variance in emotional strength ( $R^2 = 0.812$ ) and 76.5% of the variance in behavioural difficulties ( $R^2 = 0.765$ ). Age and gender did not show a significant relationship with these two variables.

**Conclusions:** Adolescent mental health in the digital era is influenced by the interplay of demographic and behavioural factors. Excessive gadget use, combined with age and gender differences, can exacerbate emotional instability. Interventions promoting balanced digital use and gender-sensitive mental health education are essential.

**Keywords:** *adolescents; mental health; gadget use; age, gender; digital era*

# **Body Mass Index and Waist Circumference as Risk Factors of Hypertension Among Adults in Wonosari II Primary Health Care Area, Indonesia**

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## **ABSTRACT**

**Background:** Hypertension is one of the leading causes of premature death worldwide, affecting more than 1.28 billion adults. In Indonesia, its prevalence reaches 30.8%, and in Gunung Kidul Regency, it is as high as 39.25%. Overweight and central obesity, measured through Body Mass Index (BMI) and waist circumference, are key risk factors contributing to the development of hypertension.

**Objectives:** This study aimed to determine the roles of nutritional status and waist circumference as risk factors and to analyse their relationships with hypertension, as well as the most influential contributing variables among adults.

**Methods:** This quantitative study used a cross-sectional design involving adults aged 19–59 years (N=32,489). A total of 138 respondents were selected using simple random sampling through OpenEpi. Data were collected through questionnaires and direct measurements of BMI, waist circumference, and blood pressure. Statistical analyses were conducted using chi-square and binary logistic regression tests with a significance level of  $p<0.05$ .

**Results:** Most respondents were aged 41–50 years (40.5%) and female (80.4%), with 50.7% having a family history of hypertension. The prevalence of hypertension was 61.6%, overweight/obesity based on BMI was 65.2%, and central obesity was 79%. Significant associations were found between BMI and hypertension ( $p=0.003$ ) and between waist circumference and hypertension ( $p=0.001$ ). The dominant factors were family history of hypertension ( $p=0.000$ ; OR=4.902) and waist circumference ( $p=0.003$ ; OR=4.896).

**Conclusions:** BMI and waist circumference are significantly associated with hypertension among adults. Family history of hypertension and waist circumference are the most dominant predictors of hypertension incidence.

**Keywords:** hypertension; body mass index; waist circumference; obesity; risk factors

# Linear Association Between Meal Skipping Frequency and Body Mass Index Among Preconception Women in Bantul, Indonesia

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## ABSTRACT

**Background:** Nutrition during preconception is essential to ensuring a healthy pregnancy. Meal skipping behavior can affect nutritional status, but research on meal skipping in preconception women is limited.

**Objectives:** To determine the association between meal skipping frequency and body mass index among preconception women in Bantul, Indonesia.

**Methods:** This cross-sectional study was conducted in 4 districts in Bantul, Indonesia, and included 275 premarital women of reproductive age who visited the office of religious affairs to register their marriages. We collected information on habitual meal frequency and anthropometric data (weight and height) to calculate body mass index (BMI). Linear regression analysis was conducted to determine the association between meal skipping frequency and BMI.

**Results:** The study revealed that the median meal skipping frequency was 3 times per week, and breakfast was the most frequently skipped meal (55.3%). The mean BMI was  $22.46 \pm 4.28$  kg/m<sup>2</sup>, and 23.3% of participants had a BMI  $> 25.00$  kg/m<sup>2</sup>. Linear regression analysis showed that BMI increased by 0.32 kg/m<sup>2</sup> for each additional meal-skipping frequency ( $p \leq 0.000$ ).

**Conclusions:** Meal skipping frequency and BMI have a linear relationship: higher meal skipping frequency is associated with higher BMI. Efforts are needed to raise awareness among preconception women of reproductive age about the negative impact of meal skipping behavior on their nutritional status.

**Keywords:** body mass index, meal skipping, nutritional status, preconception, premarital

## The Effect Of Giving Rhizome Ethanol Extract Temulawak (*Curcuma Xanthorrhiza Roxb*) on Total Cholesterol Levels In Male Rats Of Wistar Strain

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### ABSTRACT

**Background:** Temulawak rhizome (*Curcuma xanthorrhiza Roxb*) is a plant with many benefits. Flavonoids work to lower total cholesterol levels.

**Objectives:** This study examined the effect of ethanol administration of temulawak rhizome ethanol extract (*Curcuma xanthorrhiza Roxb*) on total cholesterol levels in male rats of the Wistar strain induced by high-fat feed.

**Methods:** This study was an *in vivo* experiment on male Wistar rats using a pretest-*posttest control design*. Thirty-six male rats of the Wistar strain (*Rattus norvegicus L.*) were induced to high-fat feed using chicken egg yolks and cow brain juice for 9 days. On the 10th day, as data (pretest), in the eye blood of rats, the total cholesterol level was measured using the Catridge Lipid Panel Test, which was inserted on the *Nesco BL-101 5in1 Lipid Panel Monitoring System*. On the 11th day, the rats were given treatment. The group was divided into six, namely the normal group (AD II standard pellets), the negative group (CMC-Na 1%), the positive group (Simvastatin 0.9 mg/KgBB), and the temulawak rhizome ethanol extract group (*Curcuma xanthorrhiza Roxb*) with 3 doses, namely: 400 mg/kgBB; 600 mg/kgBB; and 800 mg/kgBB. On the 17th day, the rats fasted for 12 hours, and the total cholesterol level in the rats' ocular blood was measured (*posttest*).

**Results:** Phytochemical screening of ethanol extract of curcuma rhizome (*Curcuma xanthorrhiza Roxb*) showed positive for alkaloids, saponins, flavonoids, and tannins. Ethanol extract of curcuma rhizome (*Curcuma xanthorrhiza Roxb*) was able to reduce total cholesterol levels in groups IV, V, and VI by  $15.11\% \pm 4.21$ ,  $26.21\% \pm 4.02$ , and  $26.34\% \pm 10.12$ , respectively. Simvastatin (group III) was  $21.71\% \pm 7.81$ . Based on a Post-Hoc Tukey HSD analysis, group VI showed a reduction in total cholesterol levels comparable to group III (Sig.  $0.450 > 0.05$ ).

**Conclusions:** Administration of the ethanol extract of the curcuma rhizome (*Curcuma xanthorrhiza Roxb*) can reduce total cholesterol levels, with an optimal dose of 800 mg/kgBB in rats, comparable to simvastatin 10 mg.

**Keywords:** hypercholesterolemia; temulawak rhizome ; flavonoids; percolation

# **Effectiveness of a Digital Nutrition Education Module (Smart MBG) in Improving Nutrition Literacy and Healthy Eating Behavior Among Elementary School Students Participating in the Free Nutritious Meal Program in Yogyakarta**

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## **ABSTRACT**

**Background:** The Free Nutritious Meal (MBG) Program aims to ensure balanced nutrition for Indonesian elementary school students. However, national data show low nutrition literacy (only 28% understand MBG content). To address this, a digital nutrition education module, Smart MBG, was developed to promote nutrition knowledge and healthy eating behaviors through an interactive platform.

**Objectives:** This study aimed to assess the development, feasibility, and effectiveness of the Smart MBG digital module in improving nutrition literacy and healthy eating behaviors among MBG recipients.

**Methods:** A research and development (R&D) design was applied across seven stages: needs assessment, design, expert validation, trials, evaluation, revision, and effectiveness testing. A quasi-experimental one-group pretest–posttest design was conducted among 84 elementary students at MIN 1 Yogyakarta. Data were collected using validated questionnaires on nutrition literacy and observed eating behaviors, analyzed using paired t-test and Wilcoxon test, and complemented by qualitative focus group discussions.

**Results:** Following the intervention, students' mean nutrition literacy scores increased by 21.4% ( $p < 0.01$ ), accompanied by improvements in healthy eating practices (e.g., increased vegetable consumption and handwashing). The module's effectiveness is attributed to its interactive digital approach, which stimulates active participation and self-learning, similar to findings in South Korea and Finland. The Smart MBG module demonstrated high feasibility and acceptability. Limitations included the absence of a control group and a short follow-up duration.

**Conclusions:** The *Smart MBG* digital nutrition education module effectively improved nutrition literacy and promoted healthier eating behaviors among elementary school students. Integrating digital learning tools within the MBG Program could enhance its long-term impact on children's dietary habits and nutrition awareness. Future studies with controlled designs and extended monitoring are recommended to evaluate scalability and long-term effectiveness.

**Keywords:** digital nutrition education; Smart MBG; nutrition literacy; healthy eating behavior; elementary school

# **The Relationship Between Patients' Knowledge of Beyond Use Date (BUD) of Non-Sterile Compounded Medications and Drug Storage Behavior at Sewon Primary Health Center, Yogyakarta**

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## **ABSTRACT**

**Background:** The principal issue frequently encountered in society is confusion regarding drug stability, especially beyond the use-by date (BUD). Many people are unfamiliar with BUD, mistakenly equate it with Expiration Date (ED), and do not understand the short stability of compounded medications, leading to improper storage and usage behaviors.

**Objectives:** This study aimed to analyze the relationship between a patient's knowledge about BUD and their behavior in storing and using medication. The study design was cross-sectional. Eighty respondents were selected through purposive sampling at the Sewon Primary Health Center in Yogyakarta.

**Methods:** The study employed a cross-sectional design. Research was conducted from January to February 2025 at the Sewon Primary Health Center in Yogyakarta. Eighty respondents were selected through purposive sampling. Data were collected through a validated questionnaire. The chi-square test was used for correlation analysis.

**Results:** The results of the univariate analysis showed that patients' knowledge about BUD was mostly in the high category, which included 59 respondents (73.8%). Accordingly, patients' medication storage behavior was also mostly classified as good, with 47 respondents (58.8%). Based on descriptive statistics, the mean value for the knowledge variable was  $21.0 \pm 1.701$ , while the mean value for the behavior variable was  $41.38 \pm 3.605$ .

**Conclusions:** The conclusion of this study showed that there was a significant relationship between patients' knowledge about BUD of non-sterile compounded drugs and their medication storage behavior, with a significance value of 0.015 ( $p < 0.05$ ).

**Keywords:** non-sterile; behavior; knowledge; bud; cross-sectional

## **The Social Support Paradox: How Social Support Encourages Contraceptive Use among Early Married Women**

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### **ABSTRACT**

**Background:** Early marriage remained a persistent public health issue in Indonesia, particularly in rural areas of Jember regency. Young women face very strong pressure to bear children soon after marriage to prove their fertility potential. Contraceptive utilization is critical for improving the well-being of young mothers.

**Objectives:** This study aims to analyze the association of social support and contraceptive utilization among early married women

**Methods:** A quantitative cross-sectional study was conducted from May to June 2023, involving 93 women who married before age 19, selected by simple random sampling. Data were collected using a structured social support questionnaire to assess support from spouses, in-laws, and health workers, comprising 18 questions. Data was analyzed using the contingency coefficient test with a significance level of 0.05.

**Results:** A high percentage of respondents used contraception (92.5%), with 60.5% of them using injectable methods. Respondents also received high support from their husbands (92.5%), in-laws (73.1%), and health workers (95.7%). The research found a correlation between spouse's support ( $p$ -value = 0.000;  $r$  = 0.568); in-law support ( $p$ -value = 0.000;  $r$  = 0.426); in-law support ( $p$ -value = 0.001;  $r$  = 0.323) and contraceptive utilization.

**Conclusion:** The high levels of social support are linked to higher rates of contraceptive utilization among young married women in rural Jember. It suggests that supportive family and community environments can actually encourage the utilization of contraception, even among those who married early. Therefore, strengthening community-based education and involving important family members, particularly husbands and in-laws, is essential for maintaining and promoting family planning participation.

**Keywords:** contraceptive use, early marriage, family, social support, spouse

## **Knowledge as The Core: Unraveling the Role of Husband's Support, Maternal Stress, and Breastfeeding Skills in Achieving Exclusive Breastfeeding**

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### **ABSTRACT**

**Background:** Exclusive breastfeeding is essential to a baby's survival and growth. Factors related to a mother's mental state and behavior influence whether a mother can breastfeed exclusively. However, a mother's knowledge about breastfeeding often plays a key role in her decision to breastfeed exclusively and in her confidence in doing so.

**Objectives:** This study aimed to analyze the association between mothers' knowledge, husband support, stress, and breastfeeding skills with exclusive breastfeeding practices in rural areas.

**Methods:** The study used a quantitative, cross-sectional, observational-analytic design and involved 82 mothers with babies aged 6-9 months, selected through systematic random sampling. Data were collected through interviews and observations, then analyzed univariately and bivariately using logistic regression.

**Results:** About 59.8% of the mothers in the study exclusively breastfed their babies. The study found that maternal knowledge had the strongest correlation to exclusive breastfeeding (COR = 4.28;  $p < 0.001$ ). Support from the husband (COR = 1.58;  $p < 0.001$ ) and breastfeeding skills (COR = 1.24;  $p < 0.001$ ) were also positively linked with exclusive breastfeeding. However, higher stress levels were related to lower rates of exclusive breastfeeding (COR = 0.77;  $p < 0.001$ ). These results show that knowledge not only directly impacts breastfeeding behavior but also affects how other psychosocial factors influence breastfeeding success.

**Conclusion:** To improve breastfeeding outcomes, efforts should focus on increasing maternal knowledge through education, managing stress, involving partners, and improving breastfeeding skills. Creating breastfeeding programs that involve the whole family can help mothers in rural, low-resource areas meet their breastfeeding goals.

**Keywords:** breastfeeding skills, exclusive breastfeeding, knowledge, spouse, stress

## **Social Support and The Risk of Depression among Postpartum Mothers in the Rural Area of Jember Regency**

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### **ABSTRACT**

**Background:** Postpartum depression occurring 2-5 weeks after delivery is becoming a significant public health problem that affects 50-60% of the global population. Untreated postpartum depression poses a serious risk for both mother and infants, and has lasting effects on maternal well-being and child development.

**Objectives:** This study aims to analyze the relationship between social support and the tendency towards postpartum depression.

**Methods:** This quantitative cross-sectional study was conducted at the Sukorambi Community Health Center, Jember, in August-September 2024. The study population was 71 mothers in the postpartum period (2-8 weeks postpartum). A sample of 63 respondents was selected using simple random sampling. Primary data were collected through interviews using the validated Edinburgh Postnatal Depression Scale (EPDS) questionnaire for postpartum depression, and a validated social support questionnaire assessing husband, family, and health worker support.

**Results:** The results showed that 50.8% of respondents indicated experiencing postpartum depression. Social support plays a crucial role; low husband support (34.9% of depressed mothers;  $p$ -value=0.004;  $C = 0.343$ ) and low family support (30.2% of depressed mothers;  $p$ -value=0.015;  $C = 0.292$ ) were significantly correlated with the incidence of postpartum depression. Meanwhile, health worker support showed no significant correlation ( $p = 0.082$ ).

**Conclusion:** There is a strong link between social support, especially from husbands and family involvement, and postpartum depression risk. Integrating husbands and families in postpartum education and peer-support groups, and implementing routine mental health screening and referral systems within community health services.

**Keywords:** family support, husband support, postpartum, postpartum depression

## **Efficacy and Safety of *Calendula Officinalis* in Prevention of Radiation-Induced Dermatitis: A Systematic Review**

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### **ABSTRACT**

**Background:** Cancer remains the leading global health concern, with 19.3 million new cases detected and 10 million cancer-related mortality reported in 2020. Currently, radiotherapy is received by half of all cancer patients, either as a mono-radiotherapy or as combination therapy with other modalities. Affecting up to 95% of cancer patients, radiation-induced dermatitis (RID) is a significant side effect of radiotherapy, leading to progressive skin alterations. Unfortunately, there is no standard prevention protocol for RID. Among potential natural remedies, *Calendula officinalis* is well-known for its anti-inflammatory, antioxidant, antibacterial, and wound-healing properties, making it a promising candidate for managing RID.

**Objectives:** This systematic review evaluates the efficacy of *Calendula officinalis* in preventing RID through its anti-inflammatory and antioxidant properties.

**Methods:** We followed PRISMA guidelines to include studies published from June 2015 to June 2025 on *Calendula* for RID prevention in cancer patients, and we assessed eligible trials for data and risk of bias using the Cochrane RoB 2 tool.

**Results:** A total of five studies were included, with two studies reporting that *Calendula* reduced the incidence of grade 2 RID in the *Calendula* group ( $p = 0.012$ ;  $p = 0.013$ ;  $p > 0.05$ ), while others showed no difference. Some improvements were seen in pruritus and xerosis, though pain and quality of life remained similar.

**Conclusion:** *Calendula* was generally well tolerated, with two cases of hypersensitivity reported in the literature. Further well-designed, standardized RCTs are necessary to confirm its efficacy and safety.

**Keywords:** *calendula officinalis*; cancer; radiation-induced dermatitis; radiotherapy

## The Resilience of Iron: Analyzing the Relationship Between Maternal Iron Intake, Hemoglobin Status, and Iron Content in Exclusive Breastfeeders

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### ABSTRACT

**Background:** Maternal iron status (intake and hemoglobin levels) and the iron concentration in breast milk are critical determinants of infant health and development.

**Objectives:** This research aimed to analyze the associations among maternal iron intake, maternal hemoglobin levels, and breast milk iron content.

**Methods:** This cross-sectional study was conducted in Malang City, East Java, from July to September 2025, and involved 31 mothers who were exclusively breastfeeding their infants. Maternal dietary iron intake was measured by the Semi-Quantitative Food Frequency Questionnaire (SQ-FFQ), breast milk iron (Fe) content was analyzed by the spectrophotometric method, and hemoglobin in maternal blood was tested by the flow cytometry method.

**Results:** The mean iron content of breast milk was  $0.06+0.10\text{mg/dL}$ , while the mean of maternal hemoglobin concentration was  $12.3+1.1\text{g/dL}$ . The average dietary iron intake among mothers was  $22.5 \pm 12.3 \text{ mg/day}$ . The Spearman correlation analysis showed a weak positive correlation between breast milk iron content and maternal hemoglobin level ( $r = 0.0068$ ,  $p > .05$ ), suggesting that higher maternal hemoglobin was associated with slightly higher breast milk iron levels. However, this relationship was not statistically significant. Conversely, maternal dietary iron intake showed weak negative correlations with breast milk iron content ( $r = -0.0210$ ,  $p > .05$ ) and maternal hemoglobin concentration ( $r = -0.3106$ ,  $p > .05$ ). These negative coefficients suggest an inverse association, but the associations were not significant.

**Conclusions:** Overall, these findings imply that variations in maternal dietary iron and hemoglobin levels have minimal influence on breast milk iron concentration, which is likely maintained through physiological regulation independent of maternal intake.

**Keywords:** breast milk quality; hemoglobin concentration; iron homeostasis; maternal iron status; infant health and development.

# **Efficacy And Safety of Secretome and Stem Cell-Derived Conditioned Media in The Management of Chronic Plantar Ulcers in Leprosy: A Systematic Review And Meta-Analysis**

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## **ABSTRACT**

**Introduction:** Leprosy is a neglected disease that remains a significant issue in Indonesia. Chronic plantar ulcers in leprosy (CPUL) are among the most disabling complications, often resulting in secondary infections and amputation. Conventional treatments often fail to achieve satisfactory outcomes. In recent years, secretomes and stem cell-derived conditioned media (CM) have shown promise for treating chronic ulcers due to their regenerative and anti-inflammatory properties. Therefore, this review aims to evaluate the use of secretome and CM in the management of CPUL.

**Methods:** A systematic search was conducted following PRISMA guidelines across PubMed, Google Scholar, and Embase. Studies involving CPUL patients treated with secretome or CM were included. Risk of bias was assessed using the Cochrane RoB-2 for randomized trials, ROBINS-I for non-randomized studies, and GRADE for meta-analysis. A random-effects meta-analysis was conducted to pool the pre- and post-treatment mean differences (MDs) in ulcer size using the restricted maximum likelihood method. Subgroup analyses were performed at Weeks 2, 4, and 8.

**Results:** Five studies involving 190 patients were included, with variations in secretome/CM sources and treatment duration. CM and secretome significantly reduced ulcer size (pooled MD of  $-1.05 \text{ cm}^2$ ;  $p < 0.0001$ ) across a 2–8-week period. Subgroup analyses showed early and sustained improvement: Week 2 (MD =  $-0.89 \text{ cm}^2$ ,  $p = 0.0262$ ), Week 4 (MD =  $-1.12 \text{ cm}^2$ ,  $p = 0.0387$ ), and Week 8 (MD =  $-1.11 \text{ cm}^2$ ,  $p = 0.0426$ ). No adverse effects were observed.

**Conclusion:** Secretome and CM showed potential as safe and effective treatments for CPUL, though further large-scale trials are needed to validate their efficacy.

**Keywords:** chronic plantar ulcers in leprosy (CPUL); leprosy; secretome; stem cell-conditioned medium; ulcer reduction

# The Impact of Microplastic Exposure on Metabolic Disorder: A Scoping Review of Human Studies

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## ABSTRACT

**Background:** The exponential increase in plastic production since the 1950s has led to the presence of microplastics in the environment. These persistent and bioaccumulative particles are increasingly detected in humans through ingestion, inhalation, and skin contact, with detection in the blood, lungs, placenta, colon, and breast milk. Their ability to act as vectors for toxic chemicals raises concerns about adverse health effects, particularly related to metabolic regulation.

**Objectives:** This scoping review aims to systematically map and synthesize current evidence from human and in vitro studies on the impact of MPs on metabolic health and their possible contribution to metabolic disorders.

**Methods:** Following the PRISMA-ScR 2018 guidelines and the Joanna Briggs Institute methodology, a comprehensive search was performed in PubMed, ScienceDirect, Web of Science, and Google Scholar (2015–2025). Eligible studies included open-access publications that assessed microplastic exposure via ingestion, inhalation, or dermal contact in humans and reported outcomes related to obesity, dyslipidemia, insulin resistance, or diabetes mellitus.

**Results:** Evidence indicates that MPs can accumulate in tissues and organs, inducing oxidative stress, inflammation, cytotoxicity, and immune dysregulation. Animal models consistently demonstrate disruptions in glucose and lipid metabolism, gut microbiota imbalance, and activation of PPAR $\gamma$  and RXR pathways, supporting their role as endocrine-disrupting chemicals (EDCs) and obesogens. Although direct human evidence is limited, early studies suggest possible associations between MPs' exposure and metabolic dysregulation.

**Conclusions:** Current findings highlight the potential role of MPs in the pathogenesis of metabolic disorders. However, robust longitudinal and epidemiological studies are urgently needed to establish causal links, exposure thresholds, and long-term health outcomes.

**Keywords:** microplastics; metabolic disorders; obesogens; oxidative stress; gut microbiota

# **Sweet Start, Bitter Future: Ultra-Processed Foods in Early Life and the Growing Risk of Childhood Obesity: A Systematic Review**

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## **ABSTRACT**

**Background:** Early childhood represents a critical window for growth and metabolic programming. Consumption of ultra-processed foods (UPFs), including instant cereals, snacks, and sweetened beverages, during infancy and **the preschool years raises concern about their role in the development of early obesity and chronic disease**. Although adult studies consistently link UPFs to adverse metabolic outcomes, evidence among young children remains limited.

**Objectives:** To examine the association between UPF consumption and obesity risk among children under five years of age.

**Methods:** A systematic synthesis was conducted **of nine observational studies (2015–2025; total N = 16,628) that assessed** UPF or processed food intake in children under five and **reported** anthropometric outcomes. Studies included five prospective cohorts, one multicenter cohort, and three cross-sectional designs. Owing to heterogeneity in exposure definitions and outcomes, results were narratively synthesised. Study quality was appraised based on design, dietary assessment, and confounding control.

**Results:** Eight of nine studies reported positive associations between higher UPF consumption in early life and increased adiposity or risk of rapid weight gain. Effect estimates were modest (adjusted ORs/RRs  $\approx$  1.1–1.3) but consistent across cohorts, showing small yet clinically relevant increases in BMI-for-age z-scores among high-UPF consumers. Key limitations included variability in UPF definitions, dietary assessment, and incomplete **adjustment for confounders**.

**Conclusions:** Evidence indicates that early UPF exposure is associated with increased adiposity and rapid weight gain in young children. Incorporating evidence-based nutrition guidance that discourages UPF consumption into maternal and child health programs may support sustainable obesity prevention and long-term disease reduction.

**Keywords:** chronic disease; obesity; preschool age; ultra-processed food

## **External Determinants of Adolescent Sexual Behavior among Islamic Boarding School Students in Bali**

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### **ABSTRACT**

**Background:** Risky sexual behavior among adolescents is a significant concern in sexual health, particularly in religious settings such as Islamic boarding schools. Although religious education has been intensively implemented, external factors can influence the formation of sexual behavior in adolescents.

**Objectives:** This study aims to analyze the influence of external factors, including parental supervision, peer influence, and access to information, on adolescent sexual behavior in Islamic boarding schools in the Bali region.

**Methods:** This study employed a quantitative, cross-sectional design. A total of 127 students, with varying lengths of stay at the Islamic boarding schools and an age range of 15-19 years, from two Islamic boarding schools in Bali were selected using a total sampling technique. Data were collected using a structured questionnaire that had been tested for validity and reliability. The variables used in the study included the dependent variable, external factors, consisting of access to information, parental supervision, and peer influence. The independent variable is sexual behavior, with three categories: normal, moderate, and severe. Data analysis was performed using frequency distributions, crosstabulations, and multinomial logistic regression, with the non-risk category as the reference.

**Results:** The results showed that access to information and peer influence significantly influenced high-risk sexual behavior, with a p-value <0.05. Adolescents with negative access to information were 6.7 times more likely (OR=6.711; CI95%=1.797-25.065) to engage in high-risk sexual behavior, while those with negative peer influence were 14.8 times more likely (OR=14.838; CI95%=1.238-177.883).

**Conclusions:** Access to information and peer influence are key determinants of high-risk sexual behavior among adolescents in Islamic boarding schools in Bali. Preventive efforts should focus on strengthening appropriate literacy and on developing peer educators.

**Keywords:** adolescents; behavior; *external factors*; *Islamic boarding schools*; *sexual*

## Proximate Composition, Dietary Fibre, and Inulin Content of Purple Yam (*Dioscorea Alata* L) at Various Processing Methods

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### ABSTRACT

**Background:** Purple yams are one of the tubers in Indonesia characterized by their purple colour and larger size compared to other tubers. It has potential as a rice substitute due to its high carbohydrate content, but it is still uncommon to be utilized. Heat processing of purple yams may alter their nutritional content and bioactive compounds. Therefore, this research aimed to analyse the nutritional content of purple yams at various processing methods.

**Objectives:** Therefore, this research aimed to analyse the nutritional content of purple yams at various processing methods

**Methods:** This research used a completely randomized design across three heat-processing methods: steaming, boiling, and pressure cooking. After peeling and cleaning, tubers were cut into pieces and heated for 12 minutes per heating cycle. Proximate content of fat, protein, moisture, and ash was analyzed using Soxhlet, micro-Kjeldahl, thermogravimetry, and dry methods, respectively, according to AOAC, while carbohydrate was calculated by difference. Dietary fiber was investigated by the enzymatic method, and inulin was analyzed by spectrophotometry.

**Results:** Different cooking methods yielded different proximate compositions. The highest moisture content was obtained from boiling, while the highest protein retention was obtained from steaming. Pressure cooking resulted in highest fat content and energy. In general, boiling, steaming, and pressure cooking resulted in soluble, insoluble, and total dietary fibre of 2.3 – 2.4 %, 3.3 – 3.8%, and 5.6 – 6.2% on a dry basis, respectively.

**Conclusions:** . Steaming is the recommended cooking method for the highest dietary fibre and inulin content.

**Keywords:** cooking methods; dietary fiber; inulin; purple yam.

# The Association Between Birth Weight and Appropriate Weight Gain in Infants in Imogiri District, Yogyakarta

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## ABSTRACT

**Background:** The Indonesian Nutrition Status Survey (SSGI) reveals that the prevalence of underweight toddlers in Indonesia is 13.9%. Underweight toddlers are at risk of weight faltering, particularly if they have a history of low birth weight (LBW). According to data from Dinas Kesehatan Daerah Istimewa Yogyakarta in 2023, the prevalence of LBW among newborns was 7.72%, which is higher than the national prevalence rate of 3.9%. Infants who do not undergo appropriate weight gain may be at risk of weight faltering.

**Objectives:** This study explores whether there is an association between birth weight and appropriate weight gain in infants.

**Methods:** A retrospective cross-sectional study was conducted among 163 infants aged 6-12 months. Data were collected using validated questionnaires, a growth chart, and caregiver interviews in May-June 2025. Data were analyzed with a chi-square test. Appropriate weight gain is measured by the accumulation of minimum weight gain in the Kartu Menuju Sehat (KMS) from birth to 6 months.

**Results:** There was a significant association between birth weight ( $p<0.001$ ; OR=3.81; 95%CI:1.63-8.93) and the number of children ( $p=0.045$ ; OR=1.88; 95%CI: 0,96-3,66) with appropriate weight gain. LBW infants are 3,81 times more likely, and infants who have siblings are 1,88 times more likely, to be at risk of not achieving proper weight gain. However, there was no significant association between expenditure on food and appropriate weight gain ( $p=0.337$ ; OR=0.88; 95% CI: 0,48-1,65), and between exclusive breastfeeding and appropriate weight gain ( $p=0.411$ ; OR=1.27; 95% CI: 0,59-2,75).

**Conclusions:** Birth weight and number of children may affect weight gain, particularly in LBW infants. Growth chart monitoring and adequate nutrition intake are necessary to prevent weight faltering.

**KEYWORDS:** *appropriate weight gain; infant; low birth weight; underweight; weight faltering*

## Formulation and Optimization of Fenofibrate Solid Lipid Nanoparticle-Based Gel for Enhanced Controlled Release and Transdermal Bioavailability

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### ABSTRACT

**Background:** Fenofibrate, a lipid-lowering drug, exhibits poor aqueous solubility and limited oral bioavailability, resulting in inconsistent therapeutic responses. In this study, a solid lipid nanoparticle (SLN)-based delivery system was developed to enhance the transdermal delivery of fenofibrate, thereby improving its solubility, sustaining drug release, and increasing bioavailability via skin permeation. SLNs have emerged as a promising nanocarrier system owing to their ability to encapsulate drugs within a lipid matrix and provide controlled release through nanoscale dispersion.

**Objectives:** This study aimed to optimize the formulation of fenofibrate-loaded SLNs, incorporate them into a gel base, and evaluate their release and transdermal permeation using Franz diffusion cells.

**Methods:** Fenofibrate-loaded SLNs were prepared using the hot homogenization-ultrasonication method, followed by optimization of lipid type, surfactant concentration, and process parameters. The optimized formulation was evaluated for particle size, polydispersity index (PDI), zeta potential, and entrapment efficiency. The SLN gel was prepared using an appropriate gelling base and tested for *in vitro* drug release and skin permeation over 24 hours using Franz diffusion cells.

**Results:** The optimized SLN formulation exhibited a particle size of  $182.4 \pm 3.1$  nm, a PDI of  $0.268 \pm 0.012$ , a zeta potential of  $-28.7 \pm 1.6$  mV, and an entrapment efficiency of  $88.9 \pm 2.4\%$ . Incorporation of SLNs into the gel base significantly enhanced cumulative drug permeation—approximately 3.8-fold higher than the conventional fenofibrate gel—and demonstrated a sustained release profile consistent with non-Fickian diffusion kinetics.

**Conclusions:** The optimized SLN-based gel effectively improved fenofibrate release and skin permeation, indicating its potential as a promising nanocarrier system for controlled release and enhanced transdermal bioavailability of poorly soluble drugs.

**Keywords:** controlled release; fenofibrate; formulation optimization; Franz diffusion; solid lipid nanoparticles.

## Drivers of Ultra-Processed Food Consumption for Infant and Young Child Feeding: A Mixed-Methods Study in an Indonesia Urban Area

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### ABSTRACT

**Background:** The increasing consumption of ultra-processed foods (UPFs) among infants and young children has emerged as a significant public health concern in Indonesia, driven by rapid urbanization. Early exposure to UPF during complementary feeding may impair dietary quality and increase the risk of adverse health outcomes in children.

**Objectives:** This study used a mixed-methods approach to determine the drivers of UPF consumption in complementary feeding in an urban area.

**Methods:** A quantitative survey assessed UPF consumption using the NOVA classification, and multivariate logistic regression identified associated sociodemographic factors. A purposive subsample of mothers participated in in-depth interviews to explore contextual and behavioral drivers, which were analyzed thematically using the PRECEDE-PROCEED framework.

**Results:** Overall, 46.3% of children had high UPF consumption on complementary feeding. Children whose mothers worked outside the home (AOR = 2.29; 95% CI: 2.11–3.37), lived in low-income households (AOR = 1.85; 95% CI: 1.38–2.91), or were cared for by non-maternal caregivers (AOR = 1.45; 95% CI: 1.21–2.99) had significantly higher odds of UPF intake. Mothers perceived UPFs as factory-made foods containing preservatives but considered them acceptable in moderation. Frequent use was driven by environmental factors (availability and convenience), economic factors (affordability), and behavioral factors (family permissiveness, children's taste preferences, and soothing practices).

**Conclusions:** UPF consumption during complementary feeding was influenced by economic, behavioral, and environmental factors. Strengthening maternal nutrition education and improving the affordability and availability of nutritious foods are essential to reduce UPF exposure during complementary feeding.

**Keywords:** children; complementary feeding; infant and young child feeding; Nova classification; ultra-processed food

## **Factors Associated with Dietary Diversity Among Toddlers Aged 12-59 Months in Gunungkidul, Indonesia**

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### **ABSTRACT**

**Background:** Dietary diversity is a crucial determinant of child nutrition and is closely linked to stunting risk. Despite national efforts, Indonesia's stunting prevalence remains high at 19.8%. Gunungkidul Regency has the highest prevalence in Yogyakarta Province, reaching 19.7%.

**Objectives:** This study aimed to identify factors associated with the dietary diversity of children aged 12-59 months in Gunungkidul Regency.

**Methods:** This analytical cross-sectional study involved 105 toddlers aged 12-59 months selected through purposive sampling. Dietary diversity was measured using the Individual Dietary Diversity Score (IDDS), with adequate diversity defined as consuming  $\geq 5$  of 8 food groups for ages 12-23 months and  $\geq 6$  of 9 groups for ages 24-59 months in the past 24 hours. Data were analyzed using Chi-square and logistic regression tests.

**Results:** Bivariate analysis revealed significant associations between dietary diversity and children's age ( $r=0.458$ ;  $p=0.000$ ), mother's education ( $r=0.305$ ;  $p=0.008$ ), and family income ( $r=0.319$ ;  $p=0.005$ ). Multivariate analysis identified the child's age as the most dominant factor. Toddlers aged 12-23 months were 5.9 times more likely to have low dietary diversity compared to those aged 24-59 months (95% CI: 1.22-28.83).

**Conclusions:** Dietary diversity among toddlers is significantly influenced by the child's age, maternal education, and family income, with the most dominant factor being the child's age. Nutrition education and family economic empowerment programs should be prioritized, especially for children under two years of age, to improve dietary diversity and prevent stunting.

**Keywords:** *dietary diversity; family income; mother's education; nutrient intake; toddlers*

## Picky Eating Among Indonesian Preschoolers: Associations with Feeding Practices, Caregiver Type, Health, and Nutritional Status

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### ABSTRACT

**Background:** Picky eating is a common feeding behavior problem in preschool children that may affect nutrient intake, growth, and health outcomes. Various factors, including parental feeding practices, caregiver type, and child health conditions, may influence picky eating behavior. However, evidence from Indonesia remains limited.

**Objective:** This study aimed to examine the associations among picky eating, feeding practices, caregiver type, health conditions (infection history and constipation), and nutritional status among Indonesian preschool children.

**Methods:** A cross-sectional survey was conducted among 344 parents of children aged 3–6 years across western, central, and eastern Indonesia. Data were collected using online questionnaires, including the *Child Eating Behavior Questionnaire* (CEBQ) and the *Comprehensive Feeding Practices Questionnaire* (CFPQ), along with child health and anthropometric information. Nutritional status was assessed using the WHO AnthroPlus software. Data were analyzed using chi-square and Kruskal–Wallis tests.

**Results:** The prevalence of picky eating was 52.6%. Most children were cared for by parents (68.3%), had good nutritional status (93.6%), and had no recent infection (53.8%). No significant associations were found between picky eating and feeding practices ( $p=0.130$ ), caregiver type ( $p>0.05$ ), infection history ( $p=0.371$ ), or nutritional status ( $p=0.851$ ).

**Conclusion:** Picky eating was prevalent among Indonesian preschoolers but was not significantly associated with feeding practices, caregiver type, infection history, or nutritional status. These findings highlight the need for longitudinal research to explore the dynamic nature of picky eating and its long-term implications for child health.

**Keywords:** caregiver type; feeding practices; health; nutritional status; picky eating

## **Healthy Eating Index (HEI) and Its Predictors in Indonesian Adult Women**

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### **ABSTRACT**

**Introduction:** Significant changes in eating habits and lifestyles have led to a global obesity pandemic, followed by a growing burden of NCDs. This fact has raised awareness of obesity prevention. Understanding diet quality and the nutritional factors contributing to obesity is crucial, and this can be assessed using a single tool, the 2015 Healthy Eating Index (HEI).

**Objective:** This thesis aims to compare HEI-2015 scores between obese and normal-weight Indonesian reproductive-age adult women (18-39 years) and to assess possible predictors of HEI-2015.

**Methods:** A cross-sectional study involved 50 normal-weight women and 50 obese women. The difference in the HEI-2015 score between obese and normal-weight individuals was assessed using an independent-samples t-test. Multiple linear regression analyses were performed on all independent variables to identify predictors of the HEI score.

**Results & Discussion:** Overall, the mean HEI-2015 score was higher in the normal weight group (49.2), although it was not statistically significantly different from the obese group (48.0; p-value = 0.442), both of which indicate poor diets. Multiple linear regression analysis of possible determinants of the HEI-2015 score demonstrated that, regardless of BMI group, only occupation and energy intake adequacy showed a relatively strong negative association with the HEI-2015 score (p-value=0.003). This suggests that women who earn their own income and have fulfilled their energy requirements (or even exceeded them) tend to have lower HEI-2015 scores.

**Conclusion:** There was no significant difference in the HEI-2015 score between normal-weight women and obese women. Occupation and energy intake adequacy were independent predictors negatively associated with the HEI-2015 score.

**Keywords:** adult women; diet quality; eating index; healthy; obesity

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