Indian Journal of Public Health Research & Development

EXECUTIVE EDITOR

Prof Vidya Surwade
Prof Dept of Community Medicine SIMS, Hapur

INTERNATIONAL EDITORIAL ADVISORY BOARD

1. Dr. Abdul Rashid Khan (Associate Professor)
   Department of Public Health Medicine, Penang Medical College, Penang, Malaysia
2. Dr. V Kumar (Consulting Physician)
   Mount View Hospital, Las Vegas, USA
3. Basheer A. Al-Sum (Associate Professor)
   Botany and Microbiology Deptt, College of Science, King Saud University, Riyadh, Saudi Arabia
4. Dr. Ch Vijay Kumar (Associate Professor)
   Public Health and Community Medicine, University of Buraaini, Oman
5. Dr. VMC Ramaswamy (Senior Lecturer)
   Department of Pathology, International Medical University, Bukit Jall, Kuala Lumpur
6. Kartavya J. Vyas (Clinical Researcher)
   Department of Deployment Health Research, Naval Health Research Center, San Diego, CA (USA)
7. Prof. PK Pokharel (Community Medicine)
   BP Koirala Institute of Health Sciences, Nepal

NATIONAL EDITORIAL ADVISORY BOARD

5. Prof. Samarendra Mahapatro (Pediatrician)
   Hi-Tech Medical College, Bhubaneswar, Odisha
6. Dr. Abhiruchi Galhotra (Additional Professor) Community and Family Medicine, All India Institute of Medical Sciences, Raipur
7. Prof. Deepti Pruthvi (Pathologist) SS Institute of Medical Sciences & Research Center, Davangere, Karnataka
8. Prof. G S Meena (Director Professor)
   Maulana Azad Medical College, New Delhi
9. Prof. Pradeep Khanna (Community Medicine)
   Post Graduate Institute of Medical Sciences, Rohtak, Haryana
10. Dr. Sunil Mehra (Paediatrician & Executive Director)
    MAMTA Health Institute of Mother & Child, New Delhi
11. Dr Shailendra Handu, Associate Professor, Phurma, DM (Pharma, PGI Chandigarh)
12. Dr. A.C. Dharwal: Directorate of National Vector Borne Disease Control Programme, Dte. DGHS, Ministry of Health Services, Govt. of India, Delhi

Print ISSN: 0976-0245-Electronic-ISSN: 0976-5506, Frequency: Quarterly (Four issues per volume)

Indian Journal of Public Health Research & Development is a double blind peer reviewed international journal. It deals with all aspects of Public Health including Community Medicine, Public Health, Epidemiology, Occupational Health, Environmental Hazards, Clinical Research, and Public Health Laws and covers all medical specialties concerned with research and development for the masses. The journal strongly encourages reports of research carried out within Indian continent and South East Asia.

The journal has been assigned International Standards Serial Number (ISSN) and is indexed with Index Copernicus (Poland). It is also brought to notice that the journal is being covered by many international databases. The journal is covered by EBSCO (USA), Embase, EMCare & Scopus database. The journal is now part of DST, CSIR, and UGC consortia.

Website: www.ijphrd.com

©All right reserved. The views and opinions expressed are of the authors and not of the Indian Journal of Public Health Research & Development. The journal does not guarantee directly or indirectly the quality or efficacy of any product or service featured in the advertisement in the journal, which are purely commercial.

Editor

Dr. R.K. Sharma
Institute of Medico-legal Publications
501, Manisha Building, 75-76, Nehru Place, New Delhi-110019

Printed, published and owned by

Dr. R.K. Sharma
Institute of Medico-legal Publications
501, Manisha Building, 75-76, Nehru Place, New Delhi-110019

Published at

Institute of Medico-legal Publications
501, Manisha Building, 75-76, Nehru Place, New Delhi-110019
<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Oral Versus Intravenous Iron for Treatment of Iron Deficiency Anaemia in Pregnancy: A Randomized Controlled Trial</td>
<td>Monika Dalal, Ritu Goyal, Smriti Nanda, Pushpa Dahiya, Krishna Dahiya, Shikha Madan</td>
<td>01</td>
</tr>
<tr>
<td>2</td>
<td>Effectiveness of Educational Intervention on Quality of Life of Patients with Type 2 Diabetes Mellitus</td>
<td>Sindhu L, B JayaKumar</td>
<td>07</td>
</tr>
<tr>
<td>3</td>
<td>A Study to Assess Stigma and Discrimination Associated with Tuberculosis in 18 Year and above Patients Attending CHC Hapur</td>
<td>P N Bhise, Akhilesh Kumar Malhotra, Sandhya Nirmal Bhise</td>
<td>13</td>
</tr>
<tr>
<td>4</td>
<td>Histopathological Review of Dermatological Disorders with a Keynote to Granulomatous Lesions: A Retrospective Study</td>
<td>Ankit Singh, Amit Kumar Nirmal, Prapti Gupta, Jay Kant Jha</td>
<td>18</td>
</tr>
<tr>
<td>5</td>
<td>Leadership Style Correlation with the Occurrence of Unsafe Act Fabrication Employees Pt. BSB Gresik</td>
<td>Fardiansyah, Rachmat, Prasetya, T.A.E, Ardyanto, D, Notobroto, H B</td>
<td>23</td>
</tr>
<tr>
<td>6</td>
<td>Relationship between Underweight and Academic Achievement among Middle School Children</td>
<td>Neha Bansal</td>
<td>28</td>
</tr>
<tr>
<td>7</td>
<td>A Cost Analysis of Different Brands of Anticonvulsant Drugs Available in India</td>
<td>Ananda Lakshmi, B Krishna Prasanth, Sadgunottama Goud Kamparaj</td>
<td>32</td>
</tr>
<tr>
<td>8</td>
<td>Knowledge and Life Style Practices of Individuals with Pre-Hypertension</td>
<td>Keerthi S Nair, Bony M Sunny, Sneha M Y</td>
<td>37</td>
</tr>
<tr>
<td>9</td>
<td>A Study of Self-Perceived Need for Management Training among Interns at a Government Medical College in Karnataka</td>
<td>Manjunatha S N, Chandrakumar S G, Revathi Devi ML, Shekar MA, Krishna Murthy, Prashantha B</td>
<td>44</td>
</tr>
<tr>
<td>10</td>
<td>A Correlational Study on Assertiveness and Self Esteem of Undergraduate Students of a Selected College of Nursing, Ernakulam</td>
<td>Sreedevi P A, Aswathy B L, Neethumol Roy</td>
<td>49</td>
</tr>
<tr>
<td>11</td>
<td>Qualitative Study on What Makes a Primary Health Center Gets Utilized, in Belgaum District North Karnataka India</td>
<td>Devika Pandurang Jeeragyal, Sasidhar M, K R John, Archana A M</td>
<td>56</td>
</tr>
<tr>
<td>12</td>
<td>An Awareness Survey on Safe Sexual Practice among First Year Medical Students</td>
<td>Samir Chattopadhyay, Arvind K Shukla, Salki Matta, Nandini Sethi, Neha Rani</td>
<td>61</td>
</tr>
</tbody>
</table>
13. Prevention of Catheter Associated Urinary Tract Infection (CAUTI) .............................................................. 68
   Manu Acha Roy, Nisha Philip, Deepa Fulwadiya, Shruti Dhabade

14. Smoked Tobacco Prevalance, Knowledge of Hazards and Motivation to Quit among Smokers in Suburban Mumbai .................................................................................................................................................... 74
   Tyagi Rahul, Hande Vivek, Singhal Anuj

15. Menstrual Gymnastics on Beta Endorphins Hormone Levels and Intensity of Pain in Premenstrual Syndrome ......................................................................................................................................................... 80
   Sri Sumarni, Nur Khafidhoh, Umaroh, Munayaroch, Ismi Rajiani

16. Streamlining Laboratory Work Flow Using Lean Concepts: An Exploratory Study ........................................ 86
   Shweta R Naik, G V Khyathi, A C Lokesh

17. Development and Assessment of Feasibility of a Prototype Android Application in Management of Dysphagia ........................................................................................................................................................ 92
   Shmiruthy Ranjan, Vijay Kumar K V

18. Bacterial Load and Contamination of Indian Currency Note: Isolation and Transferability Studies of Multi-Drug Resistant Bacteria .................................................................................................................................................. 97
   Prasanth Manohar, Thamaraiselvan Shanthini, Priyanka Goswami, Munia S, Haimanti M, Ashok J Tamhanka, Nachimuthu Ramesh

19. Prescription Audit of Outpatient Departments of a Tertiary Care Hospital in Maharashtra ....................... 103
   Anil Pandit, Jyoti Joshi, Amrita Vaidya

20. Differences in the Influence of the Quality of Life to Marital Satisfaction in Women Early Marriage and Not Early Marriage ................................................................................................................................................ 108
   Nur Laily, Nia Kania, Adenan, Bahrul Ilmi, Lenie Marlinae

21. Diagnostic Accuracy of Procalcitonin as a Marker of Gram-Negative Bacteremia on Sepsis and Septic Shock Patients in Intensive Care Unit (ICU) ................................................................. 113
   Syafri K Arif, Abdul Wahab, Syafruddin Gaus, Muh R Ahmad, Christa E Damongilala

22. Factors of Skipping Breakfast and Association between Skipping Breakfast and Academic Achievement of Nursing Students ............................................................................................................................................ 118
   Pratiti Haldar, Baby S Nayak, Yashodha Satish

23. A Study to Assess Knowledge, Attitude and Practices Regarding Tuberculosis among 18 Year and above Patients Attending CHC Hapur .................................................................................................. 125
   Akhilesh Kumar Malhotra, P N Bhise, Sandhya Nirmal Bhise

24. Role of Fine Needle Aspiration Cytology in the Diagnosis of Skin and Superficial Soft Tissue Lesions: A Study of 255 Cases ........................................................................................................................................................ 131
   Ankit Singh, Amit Kumar Nirmal, Jay Kant Jha

   Ramkumar A

26. Study of Compliance of Surgical & Medical ICUs to the Process of Preventing Needle Stick Injuries & Blood/Body Fluid Exposures ............................................................................................................................................... 140
   A P Pandit, Bhairavee Samant, Vidhi Jain

27. E-Recruitment through Job Portals and Social Media Network: Challenges & Opportunities .................. 143
   Ramkumar A
28. The Study on Thyroid Status among Newborns in Gautam Budha Nagar District in India ........................................ 149
   Chandra Prakash Sharma, Widhi Dubey, Suryakant Nagtilak

29. The Prevalence of Restless Leg Syndrome in Iraqi Multiple Sclerosis Patients ........................................... 155
   Sajid I Al-Hussainy, Aqeel K Hatem

30. Factors affecting the Performance of Members Team Preparation Accreditation of Public Health Center
   (Study at Public Health Center in Kotawaringin Timur District) ................................................................. 161
   Nurul Fatimah Apriliani, Edi Har toyo, Lenie Marlinae, Husaini, Bahrul Ilmi

   Sheela S, Venkataraja U Athal, Rajashekhar B, Balakrishnan R

32. Clinical and Radiographic Comparison of Conventional and Minimal Invasive Method of Cavity Preparation
   in Mandibular Molars ..................................................................................................................................... 170
   Sonali Sharma, Mithra N Hegde, Vandana Sadananda

33. Diabetes Mellitus Type 2 - A Predictor of Metabolic Syndrome in Urban Population of North India .......... 176
   Manoj Kumar Sharma, Sonali Pandey, Suryakant Nagtilak

34. The Impacts of Goods and Services Tax (GST) on Middle Income Earners in India .................................. 182
   Ch. Bala Nageswara Rao, B Neeraja

35. The Impact of Scenario Planning on Organizational Sustainability in Healthcare Private Sector .................. 188
   Hamad Karem Hadrawi

36. Detection of Bacterial Causes of Psoriasis and Determination of Some Immunological Aspects in Patients
   ....................................................................................................................................................................... 194
   Zainab Nasser Nabat

37. Assessment of Knowledge, Attitude and Practices about Rabies in Urban Slums of Amritsar City (Punjab),
   India ............................................................................................................................................................... 199
   Kanwal Preet Kaur Gill, Priyanka Devgun

38. Faeces Waste Treatment Design in Household with Narrow Land Area ......................................................... 205
   Marluk, Demes Nurmayanti, Ferry Kriswandana, Heru Santoso Wahito Nugroho

39. Risk Factors at Home on Acute Respiratory Infection (ARI) Incidence in Children Under Five in Sapuli
   Island, South Sulawesi ................................................................................................................................... 210
   Mulyadi, Heru Santoso Wahito Nugroho

40. Relation between Underutilization of Antenatal Care and Birth Outcome ................................................... 215
   Bushra M Majeed, Ruqiya S Tawfeek, Nabila K Yaaqoub

41. Bacteriological Profile of Wound Infections in MRSA and ESBL Detection in E.Coli & Klebsiella .......... 220
   Suresh P, P Vamsimuni Krishna, V Praveen Kumar, Sreenivasulu Reddy

42. The Risk Factors of Hepatitis B in Pregnant Woman in Banjarmasin on August – October Period 2017 .... 224
   Melani, Zairin Noor Helmi, Husaini, Roselina Panghyangani, Eko Suhartono

43. Investment Decision Factors Influencing the Share Market Investors in Chennai City ................................ 229
   V Venkatragavan, M Chandran

44. An Assessment of Rural Health Care Facilities and Infrastructural Gaps in Alipurduar District,
   West Bengal, India ................................................................................................................................................ 233
   Barnali Biswas, Piyal Basu Roy
45. Work Place Violence Against Nursing Staff Working in Emergency Departments at General Hospitals in Basra City ................................................................. 239
   Samira Muhammed Ebrahim, Sajjad Salim Issa

46. Implementation E-Health System on Use Behavior Customer based on Unified Theory of Acceptance and Use of Technology (Utaut) ................................................................. 245
   Farouk Ilmid Davik, Nurus Sa’idah, Muhammad Ardian C.L, Djazuly Chalidyanto

47. Nurses Practice Concerning Postoperative Clean Wound Dressing .................................................. 251
   Abdulkareem Salman Khudhair

48. The Role of Moringa Oleifera Leaves Against Oxidative Stress and Chronic Inflammation: A Review .... 257
   Kusmiyati, Soedjajadi Keman, Muhammad Amin Suwargo, Heru Santoso Wahito Nugroho

49. Exploration on Adolescent Knowledge Related Metabolic Syndrome (METS) ........................................ 263
   Nurhaedar Jafar, Rahayu Indriasari, Aminuddin Syam, Yessy Kurniati

50. Qualitative Study; Knowledge, Arv Access, and Adherence among People Living with HIV in Bulukumba
    District, South Sulawesi ......................................................................................................................... 267
    Suswani A, Arsunan AA, Amiruddin R, Syafar M, Yurniati

51. Parental Involvement, Academic Performance and Mental Wellbeing of Selected Pre- University Students of
    Udupi District ....................................................................................................................................... 273
    Rochelle Jane Dsa, Blessy Prabha Valsaraj, Renjulal Yesodaran
52. Triple Band Monopole Frequency Reconfigurable Antenna for Wireless Medical Applications .......... 279
   G Jyothsna Devi, U Ramya, B T P Madhav

53. Fractal Shaped Concentric Ring Structured Reconfigurable Monopole antenna with DGS for GPS, GSM, WLAN and ISM Band Medical Applications ................................................................. 285
   M Monika, Sk Rajiya, B T P Madhav

54. Triple Band Defected Ground Structure F-Shaped Monopole Antenna for Medical Band Applications ...... 290
   Raghava Yathiraju, P Pardhasaradhi, B T P Madhav

55. Circular Slotted Reconfigurable Antenna for Wireless Medical Band and X-Band Satellite Communication Applications ........................................................................................................................................ 296
   SK Rajiya, M Monika, B T P Madhav

56. Tristrip Monopole Antenna with Split Ring Resonators for ISM Band Biomedical Applications ............ 301
   M Sujatha, B T P Madhav, V Prakhya, B Akhila, N Gowatham, S Mozammil, M Venkateswara Rao

57. A CPW fed Dual Band Notched UWB Antenna for Wireless Medical Applications ........................ 306
   K Phani Srinivas, Habibulla Khan, B T P Madhav

58. Frequency Switchable Monopole Antenna for Multi Band Wireless Medical Applications ................. 311
   U Ramya, G Jyothsna Devi, B T P Madhav

   SK Hasane Ahammad, V Rajesh

60. Trapezoidal Notch Band Frequency and Polarization Reconfigurable antenna for Medical and Wireless Communication Applications ................................................................. 324
   B Siva Prasad, P Mallikarjuna Rao, B T P Madhav

61. Sierpinski Meta Fractal Monopole Antenna with Defected Ground Structure for Medical and Satellite Communication Applications ................................................................. 329
   S Ram Kumar, M V S Prasad
62. Determinants of Malnutrition in Children Under Five Years in Developing Countries: A Systematic Review .......................... 333
   Tasnim Tasnim

63. The Effect of Blood Lead Levels on Malondialdehyde as an Indicator of Oxidative Stress in Workers of Gas Station in Sleman ................................................................. 339
   Noviati, Brian Klopfleisch

64. Analysis Chemical Compound of Pokea (Batissa Violacea Celebensis Martens 1897) The Origin of Konawe Regency Southeast Sulawesi ................................................................. 345
   Sri Anggarini Rasyid, Maria Bintang, Bambang P Priosoeryanto, Ratna Umi Nurlila, Ridwan Adi Surya

65. Geographically Weighted Regression (GWR) Approach in the Modeling of Malnutrition and the Influencing Factors in Muna Regency ................................................................. 351
   Fitri Rachmillah Fadmi, Sri Mulyani, La Djabo Buton

66. The Effect of Technical and Functional of Health Service Quality Toward the Image of Faisal Islamic Hospital ................................................................. 357
   Alwy Arifin, Nisrina Nursakinah, Darmawansyah, Saifuddin Sirajuddin, Dian Saputra Marzuki

67. Model Development of Clinical Learning with Outcome Present Test Method Peer Learning and Application in Medical Surgical Nursing Stase for the Student of Nurse in Stikes Mandala Waluya ................................................................. 362
   Asbath Said, Islaeli, Sartini Risky, Ari Novitasari, Dwi Wulandari, Dewi sari Pratiwi

68. Spatial and Temporal Epidemiological Study of Smear Positive Tuberculosis in Kendari, Southeast Sulawesi, Indonesia ................................................................. 367
   Titi Saparina, Rachmawati, Lodes Hadju, Muhammad Guntur Nangi, Muhammad Isrul

69. Analysis of Quality of Life among Patients with Diabetes Mellitus in Elderly People in Wua Wua Health Centre ................................................................. 373
   Rahmawati, Titi Saparina, Ridia Utami Kasih, La Djabo Buton, Sri Mulyani

70. Legal Protection for Independent Midwife for Using Ultrasonography in Wonosobo Regency ................................................................. 379
   Toto Surianto S, Dwi Erna Widayanti

71. The Relation between Knowledge, Stress and Salt Consumption with Incidence of Hypertension in Elderly Woman Out Patients in General Hospital of Bahteramas Southeast Sulwesi Province ................................................................. 385
   La Djabo Buton, Fitri Rachmillah Fadmi, Rahmawati, Sri Mulyani, Noviati
72. Differences Knowledge Prevention and Treatment of Diarrhea with Role Play Methods in School Age Children ................................................................. 390
   **Islaeli, Ari Nofitasari, Asbath Said, Dewi Sari Pratiwi, Ruslan**

73. Influence of Back Massage Method to Intensity of Inpartus Active Phase Pain in the Delivery Room of Kendari City Hospital ................................................................. 394
   **Dewi Sari Pratiwi, Ari novitasari, Islaeli, Asbath said, Yulli Fety, Sri Mulyani**

74. Knowledge and Attitude of Primary School Teacher on the Practice of Selected Food Students Containing Additional Hazardous Foodstuffs in Sdn 01 Poasia Kota Kendari ................................................................. 399
   **Ari Nofitasari, and Islaeli, Dewi Sari Pratiwi, Asbath Said, Sartini Risky, Sari Arie Lestari**

75. Hold Relax Technique and Oral Glucosamine are Effective on Decreasing Pain, Joint Stiffness, Functional Limitation and Serum Level of Comp in People with Osteoarthritis ................................................................. 403
   **Djohan Aras, Mochammad Hatta, Andi Asadul Islam, Syafri Kamsul Arif**

76. Analysis of 24-Hour Postpone Time of Newborn Umbilical Cord Clamp to Baby Weight Elevation Newborn in Kendari, Southeast Sulawesi, Indonesia ................................................................. 408
   **Rosmiati Pakkan, Sartini Risky, Adriyani**

77. Risk Factor of Rheumatoid Arthritis among Elderly in UPT Panti Werdha Mojopahit Mojokerto District Indonesia ................................................................................................. 412
   **Abdul Muhith, M.H. Saputra, Arief Fardiansyah, Lady Andani**

78. Protease Potency Assay of Indigenous Proteolytic Bacteria in the Collagen Isolation Process from Snakehead Fish Scale (Channa striata) ................................................................. 417
   **Sugireng, Widodo, Suharjono**

79. Related Factors Increased Obesity Prevalence in Adult Women in Denpasar City, Bali ................................................................. 422
   **Ni Komang Wiardani, I Putu Gede Adiatmika, Dyah Pradnya Paramita D, Ketut Tirtayasa**

80. The Determinants of the Geographical Distribution and Transmission of 16S rRNA of M.leprae in Endemic Areas, Indonesia ................................................................................................. 429
   **Andi Rizki Amelia, Ridwan Amiruddin, Andi Arsunan Arsin, Burhanuddin Bahar, Mochammad Hatta**

81. Behavioral Mercury Exposure of People in Artisanal and Small-Scale Gold Mining Site Area at Lebaksitu Village, 2017 ................................................................................................. 433
   **Astri Getriana, Umar Fahmi Achmadi, Citra Hati Leometa**

82. Effectiveness of Household Insecticides to Reduce Aedes Aegypti Mosquitoes Infestation : A Community Survey in Yogyakarta, Indonesia ................................................................................................. 439
   **Dyah Widiastuti, Tri Isnani, Sunaryo, Sivi Pramatama Mars Wijayanti**

83. The Threat of Lymphatic filariasis Elimination Failure in Pasaman Barat District, West Sumatra Province ................................................................................................. 446
   **Bina Ikawati, Tri Wijayanti, Jastal**

84. Spatio-Temporal Factors Related to Dengue Hemorrhagic Fever in Makassar City, 2010 – 2014 ................................................................. 452
   **Hasanuddin Ishak, Anwar Mallongi, Isra Wahid, Imam Bachtiar**
85. The Use of Owner House ID Card to Increase Effectiveness of Monitoring Larva Visit by Jumantik ........ 457
Mochammad Choirul Hadi, Ni Made Marwati, I Gusti Ayu Made Aryasih, Dewa Ayu Agustini Posmaningsih, I Nyoman Sujaya, Anwar Mallongi

86. Administration of Tempehethanol Extract on Prenatal Until Weaning Period Inhibit the Ovary Follicles Developing of Little Wistar Rats ........................................................................................................ 462
Ni Nyoman Budiani, Ni Ketut Somoyani, Gusti Ayu Marhaeni, Gusti Kompiang Sriasih, Luh Putu Sri Erawati, Anwar Mallongi

87. Combination of Vimentin, E-Cadherin, CD44 and CD24 Expression as Predictor Model of Anthracycline Base Neoadjuvant Chemotherapy Response to Stage IIIB Luminal Breast Cancer ................................................. 468
Bachtiar M Budianto, Bambang Pardjianto, Edy Mustofa, Setyawati Soeharto, Solimun

88. Comparison of Tumor Growth in Mice Balb/C Induced Breast Cancer Cells Injected with Corticosteroids and Black Seed Oil Extract .................................................................................................................. 474
Andi Asadul Islam, Itzar Chaidir Islam, Muhammad Faruk, Prihantono Prihantono

89. Hemorrhoidectomy using Hemorrhoidal Artery Ligation and Rectoanal Repair (HAL-RAR) Technique to Reduce Level of Pain Perceived by Patients Postoperative .................................................. 480
Warsinggih, Prihantono

90. Characteristics of Multi-drug Resistant Tuberculosis (MDR-TB) Patients in Medan City in 2015-2016 ...... 484
Syarifah, Erna Mutiara, Sri Novita
91. An Investigation in Learning English Language by Students of Sudanese University A Case Study of Tertiary Level Khartoum Locality ........................................................................................................... 490
   Sangita Babu, Mahassin Osman Mohmmed Gibreel

92. Design of Mixed Radix-2, 3 & 4 based SDF-MDC FFT for OFDM Application ........................................ 501
   K Periyarselvam, G Saravanakumar, M Anand

93. Second Order Sliding Mode Control of Three Phase Four Switch VSI Fed Fault Reconfigurable Sensor Less PMSM Drive .................................................................................................................... 507
   Ashok Kumar R, Balaji K

94. An Investigation of English Spelling Achievement among Second Level Saudi Students at King Khalid University ........................................................................................................................................ 517
   Mahassin Osman Mohmmed Gibreel, Sangita Babu

95. PFB^+ Tree For Big Data Memory Management System ............................................................................ 531
   K Santhi, T Chellatamilan T, B Valarmathi

96. A Bipolar-Pulse Voltage Method For Junction Temperature Measurement of Sporadic Current LED .......... 539
   K Thanigai Arul

97. Skin Cancer - Computer Aided Diagnosis by Feature Analysis and Machine Learning: A Survey ............. 544
   S P Maniraj, P Sardar Maran

98. Utilization of Information Technology in Teaching English Literature Christalin Janet ............................. 550
   Christalin Janet

99. Knowledge Management Utilized to Developing College English Teaching Group ................................. 554
   K Manigandan

100. Study of Eddy Current in Litz Wire Using Integral Equation ................................................................. 557
    Paulraj Jayasimman

101. Differential Quadrature Method Using Obtained Poisson Equations ...................................................... 560
    G Genitha

102. Far-Field Distribution of High Power Laser Beam ..................................................................................... 563
    M Suresh Kumar
<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>103</td>
<td>Dynamic Model For Gathering Target Estimation Using Graph Theory</td>
<td>C Periyasamy</td>
<td>566</td>
</tr>
<tr>
<td>104</td>
<td>Sequential Quadratic Programming Optimization Method Used Cutting-Stock Problem</td>
<td>M Sudha</td>
<td>570</td>
</tr>
<tr>
<td>105</td>
<td>Algorithm for the Solution of ODE and PDE using Genetic Programming And Automatic Differentiation</td>
<td>S Meher Taj</td>
<td>574</td>
</tr>
<tr>
<td>106</td>
<td>Analyze the Probability Function Using Random Distribution Control Method in Nonlinear System</td>
<td>I Paul Raj Jayasimman</td>
<td>579</td>
</tr>
<tr>
<td>107</td>
<td>Fatigue Analysis of Stiffened Plates Based on Accumulative Plastic Strain Model</td>
<td>M Sudha</td>
<td>582</td>
</tr>
<tr>
<td>108</td>
<td>Transmission Line Applications Using with 2-D Numerical Inverse Laplace Transforms</td>
<td>C Periyasamy</td>
<td>586</td>
</tr>
<tr>
<td>109</td>
<td>GPS Signal Anti-Jamming Assisted with Probability Statistics based on Frequency-Space Domain</td>
<td>P Palanichamy</td>
<td>590</td>
</tr>
<tr>
<td>110</td>
<td>Micromachined Flow Impactor for Spectrometer</td>
<td>K Thanigai Arul</td>
<td>595</td>
</tr>
<tr>
<td>111</td>
<td>Photovoltaic Module’s Physics: An Eight-Parameter Adaptive Model for the Single Diode Equivalent Circuit</td>
<td>Suresh Kumar</td>
<td>600</td>
</tr>
<tr>
<td>112</td>
<td>Piezoelectric Microgenerator based Fabrication of Polymer Substrate with PPE, IDE and ME</td>
<td>K Rajesh</td>
<td>605</td>
</tr>
</tbody>
</table>
Administration of Tempehethanol Extract on Prenatal Until Weaning Period Inhibit the Ovary Follicles Developing of Little Wistar Rats

Ni Nyoman Budiani\textsuperscript{1}, Ni Ketut Somoyani\textsuperscript{1}, Gusti Ayu Marhaeni\textsuperscript{1}, Gusti Kompiang Sriasih\textsuperscript{1}, Luh Putu Sri Erawati\textsuperscript{1}, Anwar Mallongi\textsuperscript{2}

\textsuperscript{1}Lecturers of Midwifery Department, Health Polytechnic, Indonesia Ministry of Health Denpasar Bali, Indonesia, \textsuperscript{2}Professor of Environmental Health Department, Faculty of Public Health, Hasanuddin University, Makassar

ABSTRACT

**Background and objective:** soybean tempeh contains isoflavones that are able to bind to estrogen receptors, so they have estrogenic properties. This study aims to prove that the administration of tempeh soybean extract during periods of perception can inhibit the formation of ovarian follicles. **Method:** posttest only control group design, using female rats aged 12-13 weeks with BB 150 g, a research site in Udayana University’s integrated laboratory. **Result:** the results showed that there were significant differences in the mean number of follicles in the three groups, namely primordial, primary, secondary was p <0.01; atretic follicles was p <0.05. **Conclusion:** the administration of ethanol extract of tempeh during the perimenopause period can inhibit the formation of primordial follicles, primary follicles, and secondary follicles. High doses can increase the average number of atretic follicles.

**Keywords:** ethanol extract tempeh, perimenopause period, ovarian follicles

INTRODUCTION

Infertility is a failure of couples gets pregnant after sexual intercourse routinely without contraception for 12 months. Basic Health Research data 2013 found 43.2% married couples do not use contraception because they want children\textsuperscript{1}. World Health Organization (WHO) estimates that 10-15% of couples in the world experience infertile\textsuperscript{2}. The cause of infertility due to ovulation disorders of 27%, and 25% due to spermatozoa disorders\textsuperscript{3}.

Ovulatory disorders can occur because of the lack of proper follicles to be recruited and selected so that the follicle is ready for ovulation is also less likely to be absent. Problems with follicular development may occur during the period of perception, ie before, during, and after conception. This period as a critical period is sensitive to exposure or events that interfere with the physiology of cells, tissues or organs\textsuperscript{4}.

The primordial germ cells in the fetus, arrive in the gonads and undergo sexual differentiation at 4-6 weeks gestation. Ovum differentiation requires the activity of the Y-group sex genes (SRY) to promote ovarian development by suppressing Sox9. The germ cells in the ovaries experience mitosis rapidly so that the amount of oogonia multiplies. Oogonia is converted into a primary oocyte followed by meiosis as well as the development of its wrapping cells to form a primordial follicle and then develop into primary follicles to preovulatory follicles\textsuperscript{2,5}.

The recruitment of oocytes into primordial follicles is triggered by germ cells apoptosis, which begins at 13.5 post-coitus days in rate, due to decreased levels of estrogen and progesterone in pregnancy\textsuperscript{6,7}. In addition to estrogen and progesterone hormone levels, genistein administration of 50 mg/kg BW/day for five days in 1 day-old rats also inhibits oocyte nest break and recruitment of primordial follicles\textsuperscript{8}.

A large number of stimulated follicles grows and subsequently develops atresia, causing fewer primordial follicle reserves\textsuperscript{9}. The process of apoptosis is controlled
by various cell signals, such as hormones, growth factors, nitric oxide and cytokine. Other factors such as nutrient intake and free radicals. Pregnancy increases oxidative stress due to high metabolic activity, characterized by increased placental lipid peroxide and decreased expression of antioxidant enzymes. Soybean tempeh is one of the foods that have been consumed for generations. Soybean tempe contains protein, carbohydrates, fats, vitamins, minerals, and fiber. In addition, it contains isoflavones consisting of daidzein, genistein, and glycine. The hydroxyl group possessing isoflavones is antioxidant. Genistein and Daidzein can be transferred to the fetal body. The compound is also found in the stomach of infants after suckling on its mother who gets soy isoflavones. This study aims to prove that, giving ethanol extract of tempeh able to influence the formation of primordial follicles, primary follicles and atresia follicles.

**MATERIALS AND METHOD**

**Animal**

Female Wistar rats aged 12-13 weeks, healthy, selected as many as 18 tails with an average body weight of 150 grams. Wistar male rats aged 16-18 weeks selected 9 tails with an average weight of 190 g. The mice were obtained from the UNUD Integrated Biomedical Laboratory. Material enclosure is a plastic box, measuring 40 cm x 15 cm x 10 cm. Each cage is equipped with a feeding and drinking place that is cleaned and replenished daily. The condition of the cage is kept clean, dry, good air circulation, stable room temperature, and calm atmosphere.

Acclimatization is done for one week, the rats are given adjust to the light-dark cycle, covering 12 hours of light: 12 h dark. Rats were given refill drinking water in ad libitum, and standard feed 12-20 g per day. If anyone is sick, the mouse is removed from the study sample, then treated.

**Chemical material**

The soybean tempeh made by researchers from the local soybean varieties of Wilis, fermented for 48 hours. The tempe was extracted using 96% Ethanol and then the Freezy dryer was done. Every 100 g tempeh yields 4 grams of viscous extract, containing 1.04 mg / g of Genistein tested using thin layer chromatography (KLT) -Spektrofotodensitometri. The extract also contains Phenol 70.25 mg per 100 g GAE (Gallic Acid Equivalent), antioxidant 152.31 mg / L GAEAC (Gallic Acid Equivalent antioxidant capacity). Each 100 g of wet weight, containing 1.53 g water content, 0.22 g of ash, 1.94 g protein, 80.43 g fat, and 15.89 g of carbohydrate.

**Research design**

Female rats were randomized after acclimation, divided into 3 groups, ie control (C) given aquadest 0.3 mL; treatment 1 (T1) was given extract of tempeh 0.1 g/kg BW/day; treatment 2 (T2) was given tempe extract 5 g/kg BW/day. Each group numbered 6 tails. Treatment is administered orally via sonde, daily from 9:00 to 10:00 AM. Determination of dosage refers to the study of Lofamia et al (2014). Treatment duration is about 56 days, covering 14 days before mating, about 21 days during pregnancy until the pup is born, and 21 days during breastfeeding.

Dam rats mated, in one cage placed 1 male versus 2 females. The dam rat was found pregnant after a vaginal plug (+) was found. Pregnant rats returned to their respective enclosures until weaning. Male rats are kept in one stable with their dam and pups siblings. The rats were separated from their dams by age 21, randomly selected each of 2 females and males little rats per dam. The females were examined for this study, while the males were used for other studies. Selected little rats, euthanasia with cervical dislocation method. Surgery to take the ovaries of female little rats, followed by histopathological examination.

**Gonadal tissue preparation**

The ovaries taken from the little female rats were fixed in a 10% formalin solution. The fixed tissue is processed, with the Meyer hematoxylin-eosin (HE) staining. Preparation done according to standard in a laboratory of pathobiology Faculty of Veterinary Medicine of Udayana University.

**Sample histological observation**

Observations Primordial follicles, primary follicles, and follicular atresia were performed using the Olympus BX 51 brand microscope, the number of cells counted at 5 fields of view. The observations were conducted in the pathobiology laboratory of the Faculty of Veterinary Medicine of Udayana University.

**Statistical analysis**
Statistical analysis includes descriptive analysis. Comparative analysis using Independent t-test, ANOVA, after all data has the normal distribution. Data analysis using computer assistance, using 95% confidence level (p <0.05).

RESULTS

A total of 18 rats were observed, but drop out 3 tail, that is each group of 1 tail. In group K, the mother rages and wounds her child; T1, sick mother; T2, the mother refused to breastfeed. The number of female children observed per parent is 2 little rats (10 little rats each group).

Comparison of the number of Primordial Follicles, Primary Follicles, Secondary Follicles, and Atretic Follicles

![Figure 1. Mean of Primordial Follicles, Primary Follicles, Secondary Follicles, Atretic Follicles](image)

Figure 1 shows that the average number of primordial follicles, primary follicles and secondary follicles was lower in the treatment group (T1 and T2) versus control (C), while the number of follicular atresia lower in group C than treatment. To know the differences between the three groups and the differences between groups, One Way Anova analysis was performed. The results of the analysis are presented in table 1 below.

Table 1. Difference Count of Primordial Follicles, Primary Follicles, Secondary Follicles, and Atretic Follicles

<table>
<thead>
<tr>
<th>Follicles</th>
<th>Between Group</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primordial</td>
<td>C-T1</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>C-T2</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>T1-T2</td>
<td>0.000**</td>
</tr>
<tr>
<td>Primary</td>
<td>C-T1</td>
<td>0.002**</td>
</tr>
<tr>
<td></td>
<td>C-T2</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>T1-T2</td>
<td>0.171</td>
</tr>
<tr>
<td>Secondary</td>
<td>C-T1</td>
<td>0.023*</td>
</tr>
<tr>
<td></td>
<td>C-T2</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>T1-T2</td>
<td>0.064</td>
</tr>
<tr>
<td>Atretic</td>
<td>C-T1</td>
<td>0.632</td>
</tr>
<tr>
<td></td>
<td>C-T2</td>
<td>0.013*</td>
</tr>
<tr>
<td></td>
<td>T1-T2</td>
<td>0.038*</td>
</tr>
</tbody>
</table>

C= control group; T1 = treatment 1 group given ethanol extract of tempeh 0.1 g / kgBB / day; T2 = treatment 2 group, given ethanol extract tempeh 5 g / kgBB / day.* p value <0.05 which means there is a significant difference mean the number of follicles between the two groups. **p value <0.01 which means there is a significant difference mean the number of follicles between the two groups.

Table 2 shows that the comparison of the number of primordial follicles, primary follicles, and secondary follicles between groups of C with T1 and group C with T2 is significantly different. The comparison of primordial follicular and follicular atresia between T1 and T2 groups was significantly different, while the mean of primary and secondary follicles did not differ. Comparison of mean of follicular atresia between group C with T2 and T1 with T2 was significantly different, whereas C with T1 was not different.
DISCUSSION

In this study, there appears to be a inhibit of recruitment of primordial follicles which causes the number of follicles to be less than the number of primordial follicles of control group of little rats. In this study, tempeh ethanol extract given containing isoflavones (genistein 1.04 mg/g extract) and flavonoids may cause estrogen levels remain high until late pregnancy and postpartum, so as to inhibit the breaking of the oocyte nest. In addition, the antioxidant properties of isoflavones may also be capable of inhibiting germ cell apoptosis. Both of these events (inhibit of oocyte nest breakdown and apoptosis) lead to the recruitment of primordial follicles to be inhibited as well, resulting in the number of primordial follicles becoming slight.

The results of this study are in line with the opinion, that the effect of genistein exposure on ovarian development of little rats, is unfavorable. At birth, rats have large oocyte nests, and during the first week of life, these oocyte nests dissociate into individual oocytes surrounded by granulosa cells. This process of ovarian differentiation requires decreased estrogen and progesterone postpartum. Neonatal treatment with estrogens such as 17β-estradiol and genistein interferes with this process.\textsuperscript{6,7,17} Giving genistein injection 50 mg/kg BW/day for five days in 1 day-old rats inhibited
the breakdown of the oocyte nest and the recruitment of primordial follicles. Administration of genistein subcutaneous injections of 50 mg/kg BW/day for three days in 18-21 day-old rats caused the number of primordial follicles and fewer primary follicles than the control group.

Primary follicles are a further development of primordial follicles characterized by the change of pregranulosa cells into granulosa surrounding the oocyte. Under the influence of growth factors and other factors, primary follicles develop into secondary follicles, characterized by oocytes surrounded by several layers of granulosa cells. Once the primordial follicle is formed, the oocyte begins to meiosis. Oocytes develop through meiosis I to the diplotene stage of prophase.

The number of follicles of atresia was highest in the high-dose treatment group (T2). The number of follicular atresia in the group was significantly different with the low-dose treatment group and the control group. The results of this study support the finding that the administration of subcutaneous genistein increases the number of follicular atresia in large follicles and small follicles. Giving 100 mg of soy isoflavone/kg BW/day increases the number of cells in the antral follicle having atresia in mice. Increased incidence of atresia may be associated with increased apoptosis in the follicle due to low levels of FSH. Isoflavone administration may increase serum estradiol levels. This may provide negative feedback to the pituitary so that FSH levels become low and inhibit the expression of FSH receptors. This phenomenon occurs because of increased levels of protein factor apoptosis caspase3, FAS, BAX, combined decreased levels of protein factor antiapoptosis BcL2.

This study is consistent with the findings of Budiani et al., that the administration of Genistein during the periconception period results in inhibition of Leydig cell, sertoli and spermatogonia cells formation in male little rats.

**CONCLUSION**

This Study conclude that the formation of primordial, primary, and secondary follicles is inhibited in Wistar rats who received exposure to tempehethanol extract (high and low doses) since the preconception period. However, follicular formation of atresia is triggered by high doses.

**Conflict of Interest:** All author declare that there is no any conflict of interest within this research and publication including the financial agency.

**Ethics:** The research ethics from committee of Udayana University Medical Faculty / Sanglah Bali General Hospital.

**REFERENCES**


