

ISSN-0976-0245 (Print) • ISSN-0976-5506 (Electronic)

Volume 8

Number 4

October-December 2017



Indian Journal of Public Health Research & Development

An International Journal

SCOPUS IJPHRD CITATION SCORE

Indian Journal of Public Health Research and Development
Scopus coverage years: from 2010 to 2016 Publisher:
R.K. Sharma, Institute of Medico-Legal Publications
ISSN:0976-0245E-ISSN: 0976-5506 Subject area: Medicine:
Public Health, Environmental and Occupational Health
Cite Score 2015-0.02
SJR 2015-0.105
SNIP 2015-0.034



Website:

www.ijphrd.com

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** B. Md Jagar Din, (*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,**
Botany and Microbiology Dept, College of Science, King Saud University,
Riyadh, Saudi Arabia
4. **Dr. Ch Vijay Kumar** (*Associate Professor*)
Public Health and Community Medicine, University of Buraimi, Oman
5. **Dr. VMC Ramaswamy** (*Senior Lecturer*)
Department of Pathology, International Medical University, Bukit Jalil, 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 SCIENTIFIC COMMITTEE

1. **Dr. Anju Ade** (*Associate Professor*)
Navodaya Medical College, Raichur, Karnataka
2. **Dr. E. Venkata Rao** (*Associate Professor*) Community Medicine,
Institute of Medical Sciences & SUM Hospital, Bhubaneswar, Orissa.
3. **Dr. Amit K. Singh** (*Associate Professor*) Community Medicine,
VCSG Govt. Medical College, Srinagar – Garhwal, Uttarakhand
4. **Dr. R G Viveki** (*Associate Professor*) Community Medicine,
Belgaum Institute of Medical Sciences, Belgaum, Karnataka
5. **Dr. Santosh Kumar Mulage** (*Assistant Professor*)
Anatomy, Raichur Institute of Medical Sciences Raichur(RIMS), Karnataka
6. **Dr. Gouri Ku. Padhy** (*Associate Professor*) Community and Family
Medicine, All India Institute of Medical Sciences, Raipur
7. **Dr. Ritu Goyal** (*Associate Professor*)
Anaesthesia, Sarswathi Institute of Medical Sciences, Panchsheel Nagar
8. **Dr. Anand Kalaskar** (*Associate Professor*)
Microbiology, Prathima Institute of Medical Sciences, AP
9. **Dr. Md. Amirul Hassan** (*Associate Professor*)
Community Medicine, Government Medical College, Ambedkar Nagar, UP
10. **Dr. N. Girish** (*Associate Professor*) Microbiology, VIMS&RC, Bangalore
11. **Dr. BR Hungund** (*Associate Professor*) Pathology, JNMC, Belgaum.
12. **Dr. Sartaj Ahmad** (Assistant Professor),
Medical Sociology, Department of Community Medicine, Swami Vivekananda Subharti
University, Meerut, Uttar Pradesh, India
13. **Dr Sumeeta Soni** (Associate Professor)
Microbiology Department, B.J. Medical College, Ahmedabad, Gujarat, India

NATIONAL EDITORIAL ADVISORY BOARD

1. **Prof. Sushanta Kumar Mishra** (Community Medicine)
GSL Medical College – Rajahmundry, Karnataka
2. **Prof. D.K. Srivastava** (*Medical Biochemistry*)
Jamia Hamdard Medical College, New Delhi
3. **Prof. M Sriharibabu** (*General Medicine*) GSL Medical College, Rajahmundry,
Andhra Pradesh
4. **Prof. Pankaj Datta** (*Principal & Prosthodontist*)
Indraprastha Dental College, Ghaziabad

NATIONAL EDITORIAL ADVISORY BOARD

5. **Prof. Samarendra Mahapatro** (*Pediatrician*)
Hi-Tech Medical College, Bhubaneswar, Orissa
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*, Phrma, DM (Pharma, PGI
Chandigarh)
12. **Dr. A.C. Dhariwal**: *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



Indian Journal of Public Health Research & Development

www.ijphrd.com

Contents

Volume 8 Number 4

October-December 2017

1. Detention, Nepotism and Truancy as Predictors of Workplace Deviance in 01
Service Organizations: India's Experience
Sainath Malisetty, K Vasanthi Kumari
2. A Comparative Study of Satisfaction of Midwives and Mothers of Adherence to Patient Rights 07
Maryam Soheily, Akram Peyman, Beheshteh Tabarsy
3. Indian Diabetes Risk Score for Screening of Undiagnosed Diabetes 13
Individuals of Eluru City, Andhra Pradesh, India
Chandrasekhar Vallepalli, K Chandra Sekhar, U Vijaya Kumar, P G Deotale
4. Awareness and Predictors of PCOD Among Undergraduate Students 18
CAnn Mary Nelson, Lekha Viswanath, Anju Philip T
5. The Effectiveness of Mindfulness on the Reduction of Anxiety 23
and Depression of Divorced Women
Yasamin Hojatifar, Mina Hosein Zadeh, Fariborz Dortaj
6. A Study on Clinical Profile and Trend in Suicide Attempters in Psychiatry Consultation 28
D Naveen Kumar
7. "A Study of Organo-phosphorous Compound Poisoning with Reference to 33
Blood Sugar and Pseudocholinesterase Levels"
Nithinkumar S Kadakol, Sunilkumar S Biradar, Smitha M, Mallikarjun KBiradar
8. Prevalence of Intestinal Parasitic Infections in School Going Children in 37
Rural Areas of Hapur District, UP, India
KamyaVerma, Krati R Varshney, Sanjeev Dimri, S P Garg
9. Study of Osteoporosis in Women of Malwa Region of Punjab 41
Veerendra Choudhary
10. The Effectiveness of Mindfulness-Based Group Therapy on Reducing Internet 44
Addiction and Increasing the General Health of Adolescent Girls
Nasrin Rahimi Shadbad
11. Role of Social Support and Coping Styles in Mental Health of Women Who Apply for Divorce 49
Farhad Asghari, Hajar Ramazannia

II

12. Fine Needle Aspiration Cytology as A Diagnostic Procedure in Head and Neck Swellings in Rural Population of Hapur Region (U.P.), India 54
Amit Kumar Nirmal, Harsimrat Singh, Payal Vadehra, Jay Kant Jha
13. Effect of Aggression Management and Violence Prevention Training Program Among Nurses Working in Psychiatric and Emergency Setting-A Mixed Method Protocol 58
Binil V, Christopher Sudhakar, Supriya Hegde
14. The Relationship Between Marital Intimacy and Quality of Life 63
Sara Naddaf, Alireza Heidari
15. Fine Needle Aspiration of Follicular Lesions of the Thyroid: Cytohistologic Correlation and Accuracy at Hapur Region 68
Amit Kumar Nirmal, Harsimrat Singh, Jay Kant Jha
16. Factors Associated with Malnutrition Among Under-Five Children in Migrant Population of Udupi District 73
Ameeka Shereen Lobo, Binu Margaret E, Twinkle Dan Pothiyil
17. Predicting Marital Disaffection based on Marital Conflict and Attachment Styles 79
Yasamin Hojatifar, Mina Hosein Zadeh, Abolghasem Noori
18. Decompression Illness Among Fishermen Divers in Tanjung Papuma Beach, Jember Regency, Indonesia 84
Ana Islamiyah Syamila, Tjipto Suwandi, Arief Wibowo
19. Usage of Teaching Aids in A Medical College- Students Perceptions 89
Suwarnna Madhukumar, Sudeepa D, Pavithra M B
20. Orthopedic Treatment Results of Fully Edentulous Patients by Overdenture Supported by Endosseous Implants and Complete Dentures (Comparative Study) 94
Egor E Olesov, Semen A Zaslavskii, Maria M Pozharitskaya, Natalya F Beresten, Narine A Uzunyan, Victoria R Shashmurina
21. The Effect of Gymnastic Exercises on Motor Skills in Autistic Children 99
Azadeh Zamani, Rasoul Hemayat Talab, Mahmoud Sheikh, Farnaz Torabi
22. A Study of Psycho-social Factors Associated with Nocturnal Enuresis in Children Between 6-10 Years of Age & Factors Affecting the Outcome of Behaviour Therapy 104
Pankaj Mittal, Mayank Rawat, Nikhil Raghav, Alka Agarwal
23. Maternal Preconception Body Mass Index and Gestational Weight Gain: A Prospective Cohort Study Potentially to Prevent Low Birth Weight 110
Andi Imam Arundhana, Asry Dwi Muqni, Abdul Razak Thaha, Veni Hadju, Nurhaedar Jafar
24. Microwave Breast Cancer Screening for Women Welfare 115
P Hamsagayathri, P Sampath

25. Stress Among Clinical Resident Doctors of Odisha: A Multi-Centric Mixed Methodology Study	122
<i>J S Kshatri, S Das, P Kar, S K Agarwal, R M Tripathy</i>	
26. An assessment of The Stress Levelsof Students Entering Medical School in Indonesia	127
<i>HardismanDasman, Amelyanis</i>	
27. Can Hypocalcaemia Predict Adverse Outcome in Malaria?- preliminary	132
Data From Tertiary Care Centre in Western India <i>Ravindranath Sahay, Kavita S Joshi</i>	
28. Amniotic Fluid Index - A Valuable Screening Test for Predicting Fetal	136
Distress and Perinatal Outcome <i>Harpreet Kaur, Sarvjit Kaur, Balpreet Kaur</i>	
29. Store AmbianceInfluence on ConsumerImpulsive Buying Behavior	140
towardsApparel:S-O-R Model <i>K Bharathi, S Sudha</i>	
30. The Relationship Between Benzene Vapor's Exposure and Immunoglobulin A	145
Among Shoes Worker in the Village of Tambak OSO Wilangun Surabaya <i>Herlina Novita Hasyim, Abdul Rohim Tualeka, Noeroel Widajati</i>	
31. Perceived Emotional Stress and Pre-Eclampsia: A Case-control Study	151
<i>Anirudh K Menon, Praveen N Kumar, Kanchana Nagendra</i>	
32. "Effectiveness of Reiki Therapy on Dysmenorrhoea Among Adolescent Girls"	155
<i>Ananya Das, Anusuya V Prabhu, Pratibha</i>	
33. Visual Acuity of Dentists Under Simulated Clinical Conditions - A Cross-sectional Study	161
<i>Shikha, Kundabala Mala, Ramya Shenoy, Neeta Shetty</i>	
34. The Social and Health Problems of People Living with HIV/AIDS in Lucknow Uttar Pradesh	166
<i>ArjitKumar</i>	
35. Comparative Post Irrigation Evaluation of Calcium Loss and its	172
Effect on Microhardness of Radicular Dentin <i>Manak Khosla, Kundabala Mala, Ramya Shenoy</i>	
36. Assess the Vision Related Quality of Life in Patients After	178
Corneal Transplantation in AIMS, Kochi <i>Linda Varghese, Manju Mohan M</i>	
37. Construct Validity and Reliability of Jefferson Scale of Empathy-health	184
Care Provider (Student version) Among Final Year, Interns and Post-graduate Students of a Dental College in India <i>Kuldeep Singh Shekhawat, Arunima Chauhan, S Sakthi Devi, Simi Kunjumon</i>	

IV

38. Comparison of Diet Quality of Low and Middle Income Adolescents in Delhi, India	193
<i>Arushi Jain, Pulkit Mathur</i>	
39. Prevalence of Depression Among Elderly People in the Place of their Residency,	199
in the Urban Field Practice Area of Navodaya Medical College, Raichur	
<i>Kusuma, Bheemayya Badesab, Sunil, Kurre Bhaskar</i>	
40. To Study the Reasons Given by Mothers of Under 5 for not Attending the Pulse Polio	204
Immunisation at Sultanpalya UHTC of Dr. B R Ambedkar Medical College, Bangalore	
<i>Margaret Menzil, Ashoojit Kaur Anand</i>	
41. An Explorative study of Operationalizing Mission Indradhanush: Experiences	208
from Rural Health Training Centre - Sampaje	
<i>Narayana Holla V, Sharanya Kaniambady, Bhavani L</i>	
42. Evaluation of Vaginal Ph as a Screening Tool for Bacterial Vaginosis and Impact	214
of Screening and Treating for Bacterial Vaginosis on Preterm Births	
<i>Achla Batra, Rekha Bharti, Preeti Sainia, Garima Kapoor, Karishma Thariani,</i>	
<i>Sumathi Muralidhar, Abha Aggarwal, Aruna Batra</i>	
43. Impact of Brief Educational Intervention Among Medical Students on	220
Knowledge Regarding Tobacco and Alcohol use Disorders	
<i>George P Jacob, Muralidhar M Kulkarni, Vibha SP, Sravan Kumar Reddy T,</i>	
<i>Samir Kumar Praharaj, Thippeswamy V, Sanjeev Kumar M</i>	
44. Perception of Health-care Personnel Regarding Noise and Attitudes	225
Regarding Implementation of Music in the Neonatal Intensive Care Unit	
<i>Sonia R.B D'Souza, Pratibha Kamath, Sweety J Fernandes, Judith A Noronha,</i>	
<i>Sushmitha Karkada, Shobha Kamath, Leslie E Lewis</i>	
45. Ecological Balance and Air Pollution on Environment: A Threat to Humanity	231
<i>Hiranmaya Nanda, Chinmaya Kumar Mohapatra</i>	
46. Effect of Proper Irrigation and Sterilization of used Equipment in Endoscopic	236
Operations on Awareness and Performance of Operation Room	
<i>Maryam Karami, Nooshin Abbasi Abyaneh</i>	
47. Analysis of Factors Related to the Occurrence of Near Miss Accident	241
<i>Rizki Wibisono, Noeroel Widajati, Oedojo Soedirham</i>	
48. Spectrum of Rheumatological Disorders In Children From	246
A Tertiary Care Hospital In Bhubaneswar, Odisha	
<i>Natabar Swain, Prasanta Padhan, Sibabratna Patnaik</i>	

49. Fetal Outcome in Gestational Diabetes Mellitus	253
<i>Madhu Raj, Rajni Agarwal</i>	
50. Maternal Factors Affecting the Birth Weight of a New Born a Case Control Study	258
<i>Sandhya varsha D, Padmaja R Walvekar, M D Mallapur</i>	
51. Premarital Sex Among Rural Adolescents in North India: A School Based Study	262
<i>Vinod Chayal, Pardeep Khanna, Ramesh Verma</i>	
52. Epidemiological Characteristics of Dengue Cases Reported in District Amritsar in Year 2015	267
<i>S L Mahajan, P Devgun</i>	
53. Epidemiological Characteristics of Dengue Cases Reported in District Amritsar in Year 2015	271
<i>S L Mahajan, P Devgun</i>	
54. An Increasing Health Concern in Women- A Cross Sectional Study	275
<i>Revati, Ranjan, Mehendale, B S Garg</i>	
55. Knowledge and Awareness about Tuberculosis in a Tertiary Care Hospital of North India	279
<i>HM Kansal, Saurabh Srivastava, DheerendraKuber, Ashutosh Niranjana</i>	
56. Prevalence of Rotavirus Diarrhea in Children of Perak, Malaysia	285
<i>Nurul Ain Binti Mohd Salim, Durgadas Govind Naik, Maher D Fuad Fuad</i>	
57. Prevalence on the Occurrence of Computer Vision Syndrome to VDT	291
Operator in Bank Surabaya, Indonesia	
<i>Riana Alfi Hasanah, Tjipto Suwandi, Arief Wibowo</i>	
58. Symptom Analysis of Patients with Impaired Renal Function in the Critical	296
Care Units of Selected Tertiary Care Hospital of Udupi District, Karnataka State	
<i>Daisy Josphine Lobo</i>	
59. Bacteriological Profile and Antimicrobial Susceptibility Pattern Among	301
Critically Ill Patients; A Cross Sectional Study	
<i>Sheetal Raj M, Damodar Shenoy, Archith Boloor</i>	
60. Root Resorption in Orthodontics: A Recent Update	307
<i>Mithun K, Harshitha V, AshithM V, Naveen Kumar, Anil Kumar</i>	
61. Exploring Employee Creativity As A Driver to Empower	313
Employees in Hospitality Industry	
<i>Mithun K, Harshitha V, AshithM V, Naveen Kumar, Anil Kumar</i>	

VI

62. A Study of Supine Vs. Prone Positioning on Responses of Preterm Infants on Ventilator Support- A Randomized Controlled Trial Protocol <i>Sonia R B D'Souza, Leslie Edward Lewis, Laveena D'Souza</i>	319
63. Quantification of Weight and Duration of Schoolbag Carriage Based on Socioeconomic Status and its Correlation with Occurrence of Pain Among Urban Children of West Bengal, India <i>Bibaswan Basu, Koumi Dutta, Ruchira Mukherjee, Romana Barman, Devashish Sen</i>	324
64. Forming Local Support System (LSS) Model As Agent of Change Behavior of Clean and Healthy Household in Riverbanks of Banjar Regency <i>Fauzie Rahman, Dian Rosadi, Anggun Wulandari, Dewi Muti Sari, Farida Asyha T</i>	329
65. Stakeholders' Misbehavior Conduct in HIV/AIDS Mitigations in the Era of Indonesian Decentralization and Democracy <i>Husaini, Maman Saputra, Ismi Rajiani</i>	335
66. Evaluation of Waste Water Treatment Toward Physical, Chemical, and Biological Parameters in WWTP Basirih Banjarmasin, Indonesi <i>Husaini, Muhammad Khairiyandi Rosyadi, Nita Pujianti, Ratna Setyaningrum, Fauzie Rahman, Maman Saputra</i>	340
67. Bridging Healthcare with Wellness Tourism in India <i>Shalini P</i>	345
68. Falls At Home: A Community Based Study on Awareness and Prevention Among Adults <i>George P Jacob, Chythra R Rao, Asha Kamath, Vandita Pahwa, Jaun Zeb</i>	351
69. Potential Health Risks Among Oncology Staff Nurses of Selected Hospitals Due to Antineoplastic Drug Exposure <i>Sweta Kumari, Daisy Josphine Lobo, Leena Sequira</i>	358
70. Correlates of Quality of Life Patients with Cirrhosis of Liver Admitted in Selected Hospitals of Udupi Taluk, Karnataka <i>Jijomon PP, DasyJosphine Lobo, Flavia Castelino</i>	362
71. Hair Care Product Usage Purposes and Brand Predilection of Male Consumers <i>P Jagadeesan, P Balaji</i>	367
72. Effectiveness of Human Resource Practices and its Impact on Organisational Commitment Among it Employees in Chennai City <i>P Jagadeesan, R Elavarasan</i>	372
73. Comparative Study on Effect of Misoprostol and Oxytocin in the Active Management of Third Stage of Labor in A Tertiary Hospital in Manipur, India <i>Rajib Roy, Manisha Vernekar</i>	376
74. Assessment of Pulmonary Health Status Among Stone Quarry Workers At Kashipur, Silchar, Assam <i>DibakarDey, Sanjeev Kumar, Supriyo Chakraborty</i>	382
75. Service Recovery- An Opportunity To Enhance Shipper's Loyalty In Ocean Freight Forwarding <i>S Subhashinia1, S Preetha2</i>	387

Detention, Nepotism and Truancy as Predictors of Workplace Deviance in Service Organizations: India's Experience

Sainath Malisetty¹, K Vasanthi Kumari²

¹Research Scholar, Department of Management, VELS University, Chennai,

²HOD, Asst. Professor, GTM College, Guddiyatam

ABSTRACT

Objective: This study reconnoiters influence of Detention, Nepotism, and Truancy on workplace deviance of Service Organization employees with aim of ascertaining their relative and combined contributions.

Analysis: A descriptive survey analysis design was adopted for study. Using Proportionate sampling technique, a cluster of 600 respondents was selected for study. Four standardized instruments were used for information assortment. Using Pearson Product Moment Correlation Statistics and regression analysis, hypotheses generated for study were tested at 0.05 alpha (α) levels.

Findings: From this study, highlights are as follows:

1. Detention, Nepotism, and Truancy were found to ownconjointly contributed to employees' deviance conduct in service based organizations of India.
2. Also, nepotism was found to be foremost potent predictor of employees' deviance conduct.

Novelty: Its entreated that managers should not favor any employee, however, acknowledge and reward diligence supported job performance.

Keywords: *Detention, Nepotism, Truancy, Workplace Deviance, Service Organization Employees.*

INTRODUCTION

Employees are devices through which organizations will accomplish their objectives. Therefore, employees' association with their organization is significant since it will decide advancement of workplace deviance¹. Conduct is called Deviant when "an individual or gathering of individuals damages organization's traditions, methods or inner controls, imperiling prosperity of organization or its natives"². Deviant conduct speaks to acts bestowed by hierarchical people that have or are expected to own impact of harming associates, directors or organization itself³.

Recent researches created enthusiasm for investigation of workplace deviance since its regular among employees and what is more poses very

troublesome problems for organizations^{4,5}. It was accounted for that 33% to 78% of all employees have occupied with one form of deviance conduct or other⁶. Therefore this study expects to seek out impact of Detention, Nepotism, and Truancy on deviance conduct of service organization employees in India.

DETENTION

Detention has been portrayed as "arriving late to work or leaving early"⁷. Coming late to work can be frightful to organization. When people don't show up on time, they are at risk of Detention. Detention is connected with exchanged off definitive efficiency which oppositely impacts creation. Diverse pros may endeavor to mimic late employees by coming to work late themselves if not particularly controlled by organization.

Maternal Preconception Body Mass Index and Gestational Weight Gain: A Prospective Cohort Study Potentially to Prevent Low Birth Weight

Asry Dwi Muqni¹, Andi Imam Arundhana², Abdul Razak Thaha¹, Veni Hadju¹, Nurhaedar Jafar¹

¹Nutrition Department at Faculty, ²Food and Nutrition Research and Development Center, Faculty of Public Health of Hasanuddin University, Indonesia

ABSTRACT

Pregnant is the most critical period of growth and development change. Low and high birth weight infant would be having in the future the risk of many health problems. Adequate gestational weight gain (GWG) based on preconception body mass index (BMI) is important for optimal birth weight infants. This study aimed to 1) assess the relationship between preconception BMI and total GWG; 2) calculate proportion of mother who does not meet weight gain recommendation. The longitudinal prospective study conducted from February 2013 to June 2014. The total 37 preconception women enrolled as samples and only 18 samples can be measured for GWG in 3rd trimester. Exclusion criteria were: 1) no data weighing for more than 3 months, 2) no records of first day of last menstrual period (LMP), and 3) miscarriage. Data of GWG compared to weight gain recommendations based on preconception BMI issued by Institute of Medicine. Collected data were analyzed by using STATA v.11. T-test was used to analyze the mean differences of BMI among groups then regression analysis was operated to assess the RR of GWG and nutritional status. We found no significant associations between preconception BMI and GWG ($p > 0.05$). Based on maternal nutritional status at preconception, the highest risk not reaching GWG recommendation were in underweight women in 3rd trimester (RR=1.43 [95%CI: 1.00-2.06]) ($p < 0.05$). The lower nutritional status the higher total GWG even most of maternal did not meet IOM recommendation. Therefore, underweight maternal be required to be treated properly to avoid adverse pregnant outcomes.

Keywords: *Weight Gain, Preconception, Gestational, BMI, Trimester*

INTRODUCTION

Nutrition factor of maternal plays important role for health status and quality of life both mothers and their foetus. It also influences the quality of life of their children in the future¹. Underweight in adolescent girl increase the risk of many health problems such lack of foetal nutrient intake, low birth weight (LBW), intrauterine growth retardation, and the risk of neonatal mortality². Nutrition problems of maternal and child which has short term impact such as mortality, morbidity and defect, also has long term impact which

influence in the later life, intellectual, productivity, and reproductive cycle as well as the cardiovascular and other metabolic diseases³.

Birth weight is used as an indicator to predict the growth and survival of infants in addition to the nutritional status and health of the infant. In Indonesia, the latest data showed the prevalence of LBW in 2013 about 10.2%. In addition, the proportion of large birth weight (>4000 g) in Indonesia as much as 4.8% are also at risk⁴, since it might be associated with increased cesarean childbirth, bleeding, and other complications in the mother⁵. The weight gain is the major causes of low and high birth weight⁶.

Other studies also show that low gestational weight gain increases the risk of pregnancy outcome such as LBW, premature birth and cesarean delivery as well as other pregnancy complications that can lead to

Corresponding author:

Andi Imam Arundhana

Perintis Kemerdekaan KM 10 Street, Nutrition Department 2nd Floor, Faculty of Public Health Building, Hasanuddin University, Indonesia
E-mail: author(s):andiimam.arundhana@gmail.com

maternal and infant mortality, especially in underweight women during preconception^{7,8}. A study in Albania stated that women who do not meet weight gain recommendation are more likely to deliver prematurely than those who reached the healthy gestational weight gain⁹.

Excess pregnancy weight gain in those with higher BMI was associated with increased the risk of macrosomia birth, high risk of fetal death in line with increasing gestational age, and risk of placental dysfunction¹⁰. Many evidence confirmed clearly that the body mass index (BMI) before pregnancy is an independent predictor of many adverse pregnancy outcomes through its effect on gestational weight gain⁹.

AIMS AND OBJECTIVES

The study aims to

- 1) Assess the relationship between preconception BMI and weight gain during pregnancy.
- 2) Calculate proportion of mother who does not meet weight gain recommendation

MATERIALS AND METHOD

This study was *part of a larger* research “The Effect of Periconceptional Multi Micronutrient Supplementation in Preventing Maternal DNA Damage in Makassar”. Current research was longitudinal prospective study which was conducted in four subdistricts (Ujung Tanah, Biringkanaya, Bontoala and Tallo) from February 2013 to June 2014. From total 207 of population, 37 samples met inclusion criteria (recorded as samples enrolled previously in larger study). Exclusion criteria were no data weighing for more than 3 months, no records of first day of last menstrual period (LMP), and miscarriage. Drop out criteria was settle in a new place during the study. At the end of the study, only 18 samples can be measured for for GWG in 3rd trimester.

Data characteristics of respondents consisting of level of education, employment status, and the number of family members. Weight, height, and MUAC before pregnancy was measured to determine the preconception body mass index (BMI). Data on menstrual history and LMP of respondent were also observed. Weight measurement is performed each month at the health center (Puskesmas) during pregnancy. The data then is used to calculate the rate of increase of gestational weight and to predict the total gestational weight gain. Furthermore, these GWG data compared to the weight gain recommendations based

on preconceptional BMI issued by Institute of Medicine.

Collected data was processed and analyzed by using STATA v.11 (StataCorp). T-test was used to analyze the mean differences of BMI among groups then linear regression analysis was operated to assess the rate and total of gestational weight gain.

FINDINGS

Table 1 shows the characteristic of respondent. Most of the respondent aged 20 to 30 years old (78.4%), high education (37.8%), from middle income level (43.2%), and underweight before pregnancy (16.2%). Table 2 indicates the association between preconception BMI and gestational weight gain based on the trimester period. In the 1st trimester, for underweight BMI, weight gain was equal for all level of gestational weight gain. No significant difference between weight gain status and nutritional status in 1st trimester among groups (p=0.31). Begitu pula untuk 2nd trimester and 3rd trimester (p=0.53, p=0.49, respectively).

Table 1. Characteristic of respondent

Characteristic	n=37	%
Age		
<20 yo	4	10,8
20-30 yo	29	78,4
>30 yo	4	10,8
Education		
Elementary School	6	16,2
Junior High School	7	18,9
Senior High School	14	37,8
Diploma	5	13,5
University	5	13,5
Employment		
Unemployment	1	2,7
Entrepreneur	4	10,8
Civil servant	4	10,8
Private employer	3	8,1
Housewife	23	62,2
Others	2	5,4
Income		
Low	9	24,3
Middle	16	43,2
High	12	32,4
Nutritional Status		
Underweight	6	16,2
Normal	27	73,0
Overweight	4	10,8
Chronic energi deficiency status		
No	27	73,0
Yes	10	27,0

Table 2. Association of nutritional status before pregnancy and gestational weight gain

Nutritional Status	Gestational weight gain			n (%)	p
	Lown (%)	Middlen (%)	Highn (%)		
1st trimester (n=37)					
Underweight	2 (33,3)	2 (33,3)	2 (33,3)	6 (16,2)	0,311
Normal	17 (63,0)	8 (29,6)	2 (7,4)	27 (73,0)	
Overweight	2 (50,0)	2 (50,0)	0 (0)	4 (10,8)	
Total (n)	21 (56,8)	12 (32,4)	4 (10,8)	37 (100)	
mean±SD (kg)	1,18±1,54	1,33±1,58	2,39±2,28	1,18±1,51	
2nd trimester (n=25)					
Underweight	3 (75,0)	0 (0)	1 (25,0)	4 (16,0)	0,537
Normal	8 (40,0)	5 (25,0)	7 (35,0)	20 (80,0)	
Overweight	1 (100)	0 (0)	0 (0)	1 (4,0)	
Total (n)	12 (48,0)	5 (20,0)	8 (32,0)	25(100)	
mean±SD (Kg)	2,93±2,13	3,36±2,08	3,68±2,13	3,44±2,20	
3rd Trimester (n=18)					
Underweight	1 (50,0)	1 (50,0)	0 (0)	2 (11,1)	0,490
Normal	3 (20,0)	3 (20,0)	9 (60,0)	15 (83,3)	
Overweight	0 (0)	0 (0)	1 (100,0)	1 (5,6)	
Total (n)	4 (22,2)	4 (22,2)	10 (55,6)	18 (100)	
mean±SD (kg)	4,69±2,60	5,02±2,27	5,58±2,56	5,57±2,41	

Total weight gain during pregnancy based on preconception BMI is shown in Table 3 (n=18). In underweight status, the gestational weight gain was equal to less and sufficiency compare to recommendation (50%). In line result with the normal status in which 46.7% meet recommendation whereas 13.3% respondent were in excessive gestational weight

gain status. The mean of total weight gain during pregnancy in underweight status was higher than normal and overweight status (12,65±3,32, 10,81±3,82, 7,9±0, respectively). There was no difference significantly among groups for the total of gestational weight gain based on preconception pregnancy. Only 1 respondent has overweight status before pregnancy.

Table 3. Total gestational weight gain based on preconception BMI

BMI	Total of gestational weight gain(n=18)						mean±SD (kg)	p
	Low		Middle		High			
	n	%	n	%	N	%		
Underweight ¹	1	14,3	1	11,1	0	0	12,65±3,32	0,846
Normal ²	6	85,71	7	77,8	2	100,0	10,81±3,82	
Overweight ³	0	0	1	11,1	0	0	7,9±0	
Total	7	38,9	9	50,0	2	11,1	10,81±3,82	18 (100)

¹= recommendation GWG for underweight; low (<12,7 kg), middle (12,7-18,1 kg), high (>18,1 kg)

²= recommendation GWG for normal; low (<11,3 kg), middle (11,3-15,8 kg), high (>15,8 kg)

³= recommendation GWG for overweight; low (<6,8 kg), middle (6,8-11,3 kg), high (>11,3 kg)

Table 4. Regression analysis of nutritional status before pregnancy and GWG

BMI	1 st trimester RR (95% CI)	2 nd trimester II RR (95% CI)	3 rd trimester RR (95% CI)	Total RR (95% CI)
Underweight	1,02 (0,58-1,76)	1,20 (0,99-1,47)	1,43 (1,00-2,06)*	1,83 (0,33-9,92)
Normal	1 (ref.)	1 (ref.)	1 (ref.)	1 (ref.)
Overweight	0,47 (0,093-2,41)	-	-	-

* p= 0.049

Table 4 demonstrated the women those underweight before pregnancy were not reaching weight gain recommendation in 1st, 2nd, and 3rd trimester (RR= 1.02; 95% CI: 0.58-1.76, RR=1.20; 95% CI: 0.99-1.47, RR=1.43; 95% CI: 1.01-2.06, respectively), while RR=1.83 (95% CI: 0.33-9.92) for total gestational weight gain recommendation. Only in 3rd trimester showed result significantly the regression analysis result conducted between preconception nutritional status and GWG recommendation (p=0.049).

DISCUSSION

Current study shows that the association of nutritional status of women before pregnancy and gestational weight gain was not significant. The lower nutritional status in preconception period the more weight gain during pregnancy although not to fulfill the weight gain as recommended. In line with the previous results of other studies that also observed changes in weight gain during pregnancy according to preconception BMI. Weight gain in underweight subject was significantly higher than in normal and overweight (P <0.001)¹¹.

Actually, weight gain during pregnancy is strongly influenced by various environmental and individual factors of the mothers. A longitudinal cohort of pregnant women (N = 1100) that completed research questions about weight gain during pregnancy also shows significant result about relationship between pre-pregnancy factor and gestational weight gain¹². Other studies, A retrospective cohort study, in Peruvian pregnant women found that premature birth independently relates to the gestational weight gain and the relationship varies by pre-pregnancy BMI. Pre-pregnancy BMI and gestational weight gain were correlated inversely and also related to many factors such as parity, miscarriages, and maternal age¹³.

Furthermore, adequate maternal nutrition plays pivotal role during pregnancy especially in 1st trimester. Excessive nutrition may affect the fetal growth like shown in a study that found the obese women tended to have pre-term birth¹⁴. Similarly, in lack of nutrition, women who suffering from insufficient nutrition cannot support healthy weight gain¹⁵. Based on the theory of fetal programming, nutrition is the main factor to contribute expression of the fetal genome. In addition to, retardation of placenta and fetal growth are influenced by maternal undernutrition. These condition

absolutely increase the risk of low gestational weight gain¹⁶. Limitations of the study were no food intake control so that it could be a confounding factors. In addition to, the number of subject is small possibly affect the result.

This study conclude that the nutritional status before pregnancy, even it was not significant, affected gestational weight gain. Maternal undernutrition before pregnancy increase the risk mother have low gestational weight gain in 3rd trimester, while for maternal overweight in 1st trimester.

CONCLUSION

Although the study did not show an association between preconception BMI and gestational weight gain, but based on the results of other studies, nutritional status in preconception is need to be concerned because it affects weight gain. In current study, eventhough appeared that higher weight gain occured in the lower the nutritional status, but still did not reach the IOM recommendations. Therefore, underweight maternal be required to be treated properly to avoid adverse pregnant outcomes.

Conflict of Interest: There was no conflict of interest within this study.

Source of Funding: This research also was self funding study.

Ethical Clearance: The ethical clearance taken from ethical committee of Medical Faculty Hasanuddin Universitas.

REFERENCES

1. Butte NF, Ellis KJ, Wong WW, Hopkinson JM, Smith EO. Composition of gestational weight gain impacts maternal fat retention and infant birth weight. *Am J Obstet Gynecol*. Elsevier; 2003;189:1423–32. Available from: [http://dx.doi.org/10.1067/S0002-9378\(03\)00596-9](http://dx.doi.org/10.1067/S0002-9378(03)00596-9)
2. Bhutta ZA, Black RE. Global Maternal, Newborn, and Child Health — So Near and Yet So Far. *N Engl J Med* [Internet]. Massachusetts Medical Society; 2013;369:2226–35. Available from: <http://dx.doi.org/10.1056/NEJMra1111853>
3. Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, De Onis M, Ezzati M, Grantham-Mcgregor S, Katz J, Martorell R, et al. Maternal and

- child undernutrition and overweight in low-income and middle-income countries. *Lancet*. 2013;382:427–51.
4. MoH. Laporan Nasional Riset Kesehatan Dasar (RISKESDAS) [Internet]. 2013. Available from: [www.depkes.go.id/resources/download/general/Hasil Riskesdas 2013.pdf](http://www.depkes.go.id/resources/download/general/Hasil_Riskesdas_2013.pdf)
 5. Ng S-K, Olog A, Spinks AB, Cameron CM, Searle J, McClure RJ. Risk factors and obstetric complications of large for gestational age births with adjustments for community effects: results from a new cohort study. *BMC Public Health*. 2010;10:460.
 6. Haugen M, Brantsæter A, Winkvist A, Lissner L, Alexander J, Oftedal B, Magnus P, Meltzer H. Associations of pre-pregnancy body mass index and gestational weight gain with pregnancy outcome and postpartum weight retention: a prospective observational cohort study. *BMC Pregnancy Childbirth* [Internet]. 2014;14:201. Available from: <http://www.biomedcentral.com/1471-2393/14/201>
 7. Hauger MS, Gibbons L, Vik T, Belizán JM. Prepregnancy weight status and the risk of adverse pregnancy outcome. *Acta Obstet Gynecol Scand*. 2008;87:953–9.
 8. Han Z, Lutsiv O, Mulla S, Rosen A, Beyene J, McDonald SD. Low gestational weight gain and the risk of preterm birth and low birthweight: A systematic review and meta-analyses. *Acta Obstet Gynecol Scand*. 2011;90:935–54.
 9. Xinxo S, Bimbashi A, Z Kakarriqi E, Zaimi E. Association between maternal nutritional status of pre pregnancy, gestational weight gain and preterm birth. *Mater Sociomed* [Internet]. 2013;25:6–8. Available from: <Go to ISI>://MEDLINE:23678333\nhttp://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3650563&tool=pmcentrez&rendertype=abstract
 10. Dietz PM, Callaghan WM, Sharma AJ. High pregnancy weight gain and risk of excessive fetal growth. *Am J Obstet Gynecol* [Internet]. Elsevier; 2009;201:51.e1–51.e6. Available from: <http://dx.doi.org/10.1016/j.ajog.2009.04.051>
 11. Takamagi S, Yamabe H. Relationship between body mass index and course of pregnancy in women. 2013;5:1976–82.
 12. Brawarsky P, Stotland NE, Jackson RA, Fuentes-Afflick E, Escobar GJ, Rubashkin N, Haas JS. Pre-pregnancy and pregnancy-related factors and the risk of excessive or inadequate gestational weight gain. *Int J Gynecol Obstet* [Internet]. Elsevier; 2005;91:125–31. Available from: <http://dx.doi.org/10.1016/j.ijgo.2005.08.008>
 13. Carnero AM, Mejía CR, García PJ. Rate of gestational weight gain, pre-pregnancy body mass index and preterm birth subtypes: A retrospective cohort study from Peru. *BJOG An Int J Obstet Gynaecol*. 2012;119:924–35.
 14. Heude B, Thiébauges O, Goua V, Forhan A, Kaminski M, Foliguet B, Schweitzer M, Magnin G, Charles M-A, group the EM-CCS. Pre-pregnancy body mass index and weight gain during pregnancy: relations with gestational diabetes and hypertension, and birth outcomes. *Matern Child Health J* [Internet]. Kluwer Academic/Plenum Publishers; 2012;16:355–63. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3472402/>
 15. Samura T, Steer J, Michelis LD, Carroll L, Holland E, Perkins R. Factors Associated With Excessive Gestational Weight Gain: Review of Current Literature. *Glob Adv Health Med* [Internet]. 2016;5:87–93. Available from: <http://www.gahmj.com/doi/full/10.7453/gahmj.2015.094>\n<http://www.ncbi.nlm.nih.gov/pubmed/26937318>\nhttp://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC4756783
 16. Wu G, Bazer FW, Cudd Ta, Meininger CJ, Spencer TE. Recent Advances in Nutritional Sciences Maternal Nutrition and Fetal. *Amino Acids* [Internet]. 2004;2169–72. Available from: <http://jn.nutrition.org/content/134/9/2169.full.pdf>

