



# International Seminar and Workshop on Public Health Action

## "Building Healthy Community"

Semarang, December 1-2, 2015

# PROCEEDINGS

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Semarang, December 1-2, 2015

# P R O C E E D I N G S

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**Faculty of Health Sciences**
**Dian Nuswantoro University**

**PROCEEDINGS**

# INTERNATIONAL SEMINAR AND WORKSHOP ON PUBLIC HEALTH ACTION
# BUILDING HEALTHY COMMUNITY

**Semarang, December 1-2, 2015**

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# PREFACE

Assalamu'alaikum Warahmatullahi Wabarakaatuh

Praise for almighty God for giving us healthy and opportunity to carry out the Seminar and Workshop on Public Health Action. This event provides forums for disseminating and exchanging multidisciplinary research results in public health action. It covers all aspects of public health sciences, such as health literacy and health promotion, health system management, disease prevention, health care, health management, health informatics system, epidemiology, environment and occupational health, epidemiology, reproductive and sexual health, others specific health theme as well. This is the appropriate forum for professionals to discuss how to transfer knowledge into action since public health is about how to make people have adequate healthy behavior. This forum also provides workshop in action research and side meeting in health literacy.

The paper presentation has solicited and gathered research submission related to all aspects of the seminar scope. All the submitted papers in proceeding were peer-reviewed by at least three international experts drawn from program committee scope. After the rigorous peer-review process, a total of 39 paper and abstract were reviewed on the basis of originality, significance, and clarity and were accepted for publication in the proceeding. The authors were from provinces in Indonesia and others countries; Thailand, Taiwan, and Korea.

The interesting ideas can be found when reading the contents of proceeding and will inspire participant to bring the theories of public health into action. The program has prepared well to favor interactions among attendance coming from different background.

We would like to sincerely thank to Rector of Dian Nuswantoro University, Dean of Faculty of Health Sciences Dian Nuswantoro University, all distinguished speakers: Prof. John Parrish-Sprowl, Ph.D, Prof. Dr. Peter WS Chang, MD, MPH, Dr. Wongsa Laohasiriwong, dr. Hartanto, M.Med,Sc, Affandy, PhD and Dr. Leo Prawirodihardjo SpOG, all participants and sponsors.

Wassalamu'alaikum Warahmatullahi Wabarakaatuh,

Committee,

**Nurjanah, SKM, M.Kes**

# WELCOME REMARK

Welcome, Selamat datang,
Assalamu'alaikum Warahmatullahi Wabarakaatuh

Welcome to the Seminar and Workshop on Public Health Action in the theme of "Building Healthy Community" in Semarang.

This Seminar initiated by Faculty of Health Sciences Dian Nuswantoro University Semarang Indonesia. I would like thank to the Committee, who have been provide time and efforts to conduct this Seminar and workshop successfully on the 1st-2nd December 2015.

The Seminar and workshop aims to reflect global health trend, public health issues, and strategies being develop to impact health improvement in communities, especially disseminate health literacy in Indonesia.

This event is designed for students, practitioners, leaders and policy maker to learn and share their knowledge and best practices to enhance the quality of life and to address major public health challenges to delivery of education, increase knowledge and research in respond to SDGs era.

I would like to thank to our honorable speakers; Prof. John Parrish-Sprowl, Ph.D (Director of Global Health Communication Center, Indiana University, USA), Prof. Dr. Peter WS Chang, MD, MPH (Asian Health Literacy Association, Taiwan), Dr. Wongsa Laohasiriwong (Khon Kaen University, Thailand), dr. Hartanto, M.Med,Sc (Provincial Team Leader Central Java USAID EMAS), Dr. Leo Prawiradiharja (JHPIEGO Indonesia), Affandy, PhD (Dian Nuswantoro University).

I hereby extend my sincerely thank to each of you to be apart to this Seminar and workshop. I wish you a pleasant stay in Semarang and have a great successful seminar and workshop.

Wassalamu'alaikum Warahmatullahi Wabarakaatuh
Thank you very much,

**Dr. dr. Sri Andarini Indreswari**
Dean of Faculty of Health Sciences
Dian Nuswantoro University

# WELCOME REMARK

Assalamu'alaikum Warahmatullahi Wabarakaatuh,

Firstly may we made our highest praise and thank Allah, The Almighty for his bless so that we are able to come joint this precious event. It gives me a great pleasure to welcome all of you to "Seminar and Workshop on Public Health Action" organized by Faculty of Health Sciences Dian Nuswantoro University.

On behalf of Dian Nuswantoro University I would like to express our sincere appreciation and heartfelt thanks to distinguished speakers Prof. John Parrish-Sprowl, Ph.D (Director of Global Health Communication Center, Indiana University, USA), Prof. Dr. Peter WS Chang, MD, MPH (Asian Health Literacy Association, Taiwan), Dr. Wongsa Laohasiriwong (Khon Kaen University, Thailand), dr. Hartanto, M.Med,Sc (Provincial Team Leader Central Java USAID EMAS), Dr. Leo Prawiradiharja (JHPIEGO Indonesia), Affandy, PhD (Dian Nuswantoro University), and all of participants as well.

Health is a very important for daily life. Without health, we cannot live productively even spend a lot of money for medical treatment. Building healthy community is very important and it needs collaboration between government, private sector, academia and community. We need to discuss it together to make it real. Dian Nuswantoro University is proud of being important part to develop public health in Indonesia through activities conducted in this event.

I am convinced that the seminar, workshop, scientific meeting and paper presentation produce valuable result for improving public health. I hope you find the seminar sessions and program materials in framing the direction of your work. I am sure that the effort made by all organizing committee will make it a definite success and valuable experience for participants.

Enjoy this Seminar and enjoy Semarang !

Wassalamu'alaikum Warahmatullahi Wabarakaatuh,

**Dr. Ir. Edi Noersasongko, M.Kom**
Rector of Dian Nuswantoro University

# AGENDA of SEMINAR AND WORKSHOP
# ON PUBLIC HEALTH ACTION
## 1-2 December 2015

| **Pre Seminar, 1 December 2015<br>Dian Nuswantoro University, Jl. Imam Bonjol 205-207 Semarang** | | | | |
|---|---|---|---|---|
| Time | **Side Meeting<br>Health Literacy**<br>(Meeting Room G1) | | **Workshop 1**<br>How to run Action Research<br>(Meeting Room H1) | |
| 07.30-09.00 | Registration | | | |
| 09.00-12.00 | ▪ Improving health literacy; who have to take actions<br>▪ Introducing Diabetes Literacy Program | Speaker:<br>Prof. Dr. Peter WS Chang, MD, MPH<br>Participants:<br>Deans, Health office, research board | Workshop | Prof. John Parrish-Sprowl, Ph.D |
| 12.00-13.00 | Lunch | | | |
| 13.00-15.00 | Fieltrip RSUD Tugurejo (invitation only) | | | |
| 18.30-21.00 | **Welcome Dinner<br>Rector, Deans, Speakers, Committee** | | | |
| **Seminar "Building Healthy Community" 2 December 2015<br>Venue: Grasia Convention Hall, Jl. Guntur 7 - 9 Gajahmungkur SEMARANG** | | | | |
| 07.30-08.00 | Registration | | | |
| 08.00-09.00 | Opening<br>▪ E-gamelan<br>▪ Indonesia Raya<br>▪ Welcome remarks<br>▪ Opening speech<br>▪ Praying<br>▪ Photo Session : Rector, Vice Rectors, Deans, Speakers, Committee | | Nurjanah, SKM, M.Kes<br>Rector of UDINUS (Dr. Edi Noersasongko, M.Kom<br>Suharyo, SKM, M.Kes | |
| 09.00-09.15 | Coffee break | | | |
| **Session 1 (Moderator : Eti Rimawati, SKM, M.Kes )** | | | | |
| 09.15-09.35 | Building healthy policy | | Dr. Wongsa Laohasiriwong<br>(Khon Kaen University) | |
| 09.35-09.55 | Health literacy as a important determinant of health | | Prof. Dr. Peter WS Chang, MD, MPH<br>(Asian Health Literacy Association) | |
| 09.55-10.15 | IT supporting healthy community | | Affandy, Ph.D (Dian Nuswantoro University | |
| 10.15-10.45 | Q & A | | | |
| 10.50-11.00 | Dance for life | | | |
| **Session 2 (Moderator : Dr. dr. Sri Andarini Indreswari, M.Kes** | | | | |
| 11.00-11.20 | Communicating healthy behavior | | Prof. John Parrish-Sprowl, Ph.D (GHCC, Indiana University) | |
| 11.20-11.40 | The role of EMAS to empower community in reducing child and maternal death | | dr. Hartanto, M.Med,Sc (Provincial Team Leader Central Java USAID EMAS) | |
| 11.40-12.00 | Family planning challenges in BPJS Era | | Dr. Leo Prawiradiharja (JHPIEGO) | |
| 12.00-12.20 | Q & A | | | |
| 12.30-12.40 | Announcement for parallel session | | | |
| 12.40-13.30 | Lunch | | | |
| 13.30-15.30 | Parallel scientific presentation | | | |

| | | |
|---|---|---|
| **Parallel A<br>(Moderator: Maryani Setyowati, SKM, M.Kes,<br>Notulen: Sri Handayani, SKM, M.Kes; Retno Astuti S., SS, MM)** | | |
| 13.00-13.15 | Enny Rachmani | Is health literacy equal with e-health literacy scale among leprosy staff at Pekalongan District's Public Health Center, Indonesia |
| 13.15-13.30 | Almas Awanis | The Relationship between Knowledge, Attitude and Action of Parent bout Gross Motor Stimulation to The Ability Walk of Children |
| 13.30-13.45 | Andi Anwar | Analysis of Public Health Degree on The Archipelago/Island Comunities Derawan Island Regency Districts Berau |
| 13.45-14.00 | Fia Aprianti dan Budiman | Related Knowledge and Attitude about Women Children Family Conscious Nutrition (KADARZI) with Nutritional Status of Children in The Gekbrong Village Gekbrong District 2015 |
| 14.00-14.15 | Supat Assana | Educational Stress and Depression among High School Students in the Northeast of Thailand |
| 14.15-14.30 | Sukanya Kansin | Child rearing practices for children at their first year of life: finding from the Prospective Cohort Study of Thai Children |
| 14.30-14.45 | Heru Subaris K | Level of Mother's Knowledge and Attitude about Healthy and Clean Life Behavior (PHBS) within Sick Building Syndrome in Permanent House of Dusun Karangkendal, Umbulharjo, Cangkringan, Sleman, Yogyakarta |
| 14.45-15.00 | Swanny Trikayanti | A Study on Inhalation of Air Pollutant Material and Mouth Breathing Correlation On Mouth Breathing And Life Expactancy |
| 15.00-15.15 | Nurjanah, Lakhmudien | Perception of UDINUS Student about Pictorial Health Warning (PHWs) on Cigarette Pack |
| **Parallel B<br>(Moderator: Kismi Mubarokah, SKM, M.Kes,<br>Notulen: Dr. MGC Yuantari, SKM, MKes; Vilda Ana V, SGz, MGz)** | | |
| 13.00-13.15 | Sarah Astari and Sutopo Patria Jati | Analysis of Stakeholders Partnership in Prevention and Traffic Accidents Control (Indonesia Orderly United towards Safety Number 1 in Semarang Year 2015) |
| 13.15-13.30 | Ratna Setyaningrum | The Correlation between Age, Tenure, and Height with Musculoskeletal Disorders Complaint (Observational Study among Brick Craftsman in Lok Buntar Village Sungai Tabuk District) |
| 13.30-13.45 | Anita Dewi Prahastuti Sujono | Occupational Safety and Health on Tourism Sector Toward Asean Economic Community |
| 13.45-14.00 | Rani Imran | Macroergonomics for Integrated Public Health and Safety |
| 14.00-14.15 | Evi Widowati | Needs Analysis Of Fire Management System in Campus |
| 14.15-14.30 | Ida Wahyuni | The Influence of Work Posture to The Musculoskeletal Disorder On Loundry Workers in Tembalang Region |
| 14.30-14.45 | Ratih Pramitasari | Association between Ergonomic Risk Factors and Work-Related Musculoskeletal Disorders in Beverage Factory Workers, Indonesia. |
| 14.45-15.00 | Ratna Dian Kurniawati | Relationship Between Heat Pressure With Changes in Blood Pressure On Workers in The PTPN VIII CIATER SUBANG YEAR 2015 |
| 15.00-15.15 | Paricha Nippanon | Factors Associated with Quality of Life of Rubber Farmers in Northeast Thailand |
| 15.15-15.30 | MG Catur Yuantari | Behavior of melon farmers in using personal protective equipment as a protection effort of pesticide poisoning |

| | | |
|---|---|---|
| **Parallel C<br>(Moderator: Nurjanah, SKM, M.Kes,<br>Notulen: Eni Mahawati, SKM, M.Kes, Dyah Ernawati, SKp, M.Kes, Ns** | | |
| 13.00-13.15 | Rudi Fakhriadi | Factors Associated with Infectious Disease Acute Respiratory Infections (ARI) to Children in The Area Work of Bukit Hindu Palangkaraya Public Health Center |
| 13.15-13.30 | Mutalazimah | Thyroid Function Disorder and Quality of Life on Childbearing Women in Endemic Areas of Iodine Deficiency |
| 13.30-13.45 | Kusuma Estu Werdani | Factors Associated with the Hypertensions in Young Adulthood in Puskesmas Sibela Surakarta |
| 13.45-14.00 | Mr. Atthawit Singsalasang | Income, education, geographic disparities and hypertension in Thailand: Results from the National Socioeconomic Survey |
| 14.00-14.15 | Amornrat Luenam | Socioeconomics disparitiesand chronic respiratory diseases in Thailand: the National Socioeconomics Survey. |
| 14.15-14.30 | Chalobon Treesak | Impact of Socioeconomics Disparities on Cardiovascular Diseases in Thai Population: The National Socioeconomics Study |
| 14.30-14.45 | Kritkantorn Suwannaphant | Influences of Socioeconomic Determinants on Diabetes Mellitus: TheNational Socioeconomics Survey, 2012 |
| 14.45-15.00 | Dian Nurmayanti | The Difference of Stroke Non Hemorrhagic Patients on Length of Stay and Cost of Treatment Before and After Clinical Pathway Implementation at Panti Rapih Hospital |
| 15.00-15.15 | Anisa Catur Wijayanti | Relationship Between Personal Hygiene , Toilet Conditions of family and The Information Received with The Incidence of Typhoid Fever in Puskesmas Nogosari Boyolali |
| 15.15-15.30 | Heri Sugiarto | Developing Wall Clocks as Health Promotion Media for Housewife Target in The Prevention of Dengue Hemorrhagic Fever (DHF) in Indramayu |
| **Parallel D<br>(Moderator Eti Rimawati, SKM, M.Kes,<br>Notulen: Suharyo, SKM, M.Kes, Silvia Anjani, SKM)** | | |
| 13.00-13.15 | Nita Pujianti | The Impact of Implementation UDD System to Pass Care Patient Satisfaction in Jogja International Hospital |
| 13.15-13.30 | Feby Erawantini | Implementation Of Electronic Medical Record in Clinical Education of State Polytechnic of Jember |
| 13.30-13.45 | Husaini | Sstudents' Knowledge Difference Before and After Giving SD Information on The Behavior of Clean and Healthy Living |
| 13.45-14.00 | Hadi Siswanto | Environment Health as a Strategic Action for Wellbeing |
| 14.00-14.15 | Arip Ambulan Panjaitan | Consistency in The Use Of Condoms On People Living with HIV/AIDS in District Sintang |
| 14.15-14.30 | Husaini | Related Knowledge and Attitude towards Women Booster Immunization Toddlers Health Work in Sungai Ulin 2015 |
| 14.30-14.45 | Sri Handayani | Knowledge of Toddlers' Mother on Reproductive Health in Mijen District of Semarang City |
| 14.45-15.00 | Arip Ambulan Panjaitan | Behavior Of Female Sex Workers (FSW) in Prevention STIs and HIV/AIDS in District Sintang |
| 15.00-15.15 | Sri Setyati | Policy Strategy In Terms Of Increasing Reproductive Health In Barito Kuala District |
| 15.15-15.30 | Vilda Ana Veria Setyawati | Effect of Nutritional Education on Nutritional Knowledge of Elementary Student |
| 15.30-16.00 | Award & Closing | Dean of Faculty of Health Sciences Dian Nuswantoro University |

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# SPEAKERS

## 1. John Parrish-Sprowl, Ph.D

Department of Communication Studies
Indiana University-Purdue University Indianapolis
Cavanaugh Hall 126,
425 N. University Blvd.
Indianapolis, Indiana 46202-5140
Office: (317) 278-3145  Fax: (317) 278-1025

**ACADEMIC POSITIONS**

**Current**

- **Professor**, Department of Communication Studies (2000-)
- **Director**, Global Health Communication Center (2006-)
- **Adjunct Faculty**, Women's Studies
- **Member of the Faculty**, University College
- **Member of the Faculty**, Russian & Eastern European Institute

**Current Professional Affiliations**

- **Associate**, CMM Institute
- **Research Associate**, Center for Intercultural New Media Research
- **Member**, National Communication Association (Past Chair, Applied Communication **Division (twice)**, NCA Legislative Council (twice), frequent paper reviewer)
- **Member**, Center for Intercultural Dialogue
- **Member**, Health Systems Global
- **WHO Roster of Experts**, Social and Behavioral Change

**Previous Academic Positions**

- **Chair and Professor**, Department of Communication Studies, Indiana University-Purdue University Indianapolis (2000-2005)
- **Chair and Associate Professor**, Department of Communication,
- Indiana University Purdue University Fort Wayne (1995-2000)
- **Visiting Professor**, Institute of Sociology, University of Wroclaw, Wroclaw Poland
- **Visiting Professor**, Institute of Economics and Social Science, Wroclaw Technical **University, Wroclaw**, Poland (both Poland visiting positions, 1993)

**Expert Witness**

- Served as an expert witness on communication for the states of Arizona, Florida, Oklahoma, Texas, and Washington in their lawsuits against the tobacco industry.

## 2. Professor Peter Wushou Chang, MD, MPH, ScD, FRCP

**Education**

- M.D., Department of Medicine, National Yangming Medical College (1977-1984)
- M.P.H., Master of Public Health, occupational health major, Department of Environmental and Occupational Health, Harvard University, School of Public Health (1987-1988)
- Sc.D., Laboratory of Radiobiology, Department of Cancer Biology, Harvard University, School of Public Health (1988-1992)

**Professional/ academic appointments and experiences**

- Director-General, Bureau of International Corporation, Ministry of Health, Taiwan (Aug., 2004-Aug. 2007)
- Advisor, Committee of International Affairs, Taiwan Medical Association (TMA; Oct 2004～)
- Advisor, Committee of International Affairs, Formosa Medical Association (FMA; Aug., 2005)Board,
- Advisor to Taiwan Ministry of Health on EU and BelgiumAffairs in Brussels (Aug.,2007～Aug. 2009)
- Co-coordinator, European Commission, Framework Program 7 (FP7), Health National Contact Point (Health NCP), (2009.11～ )
- FRCP, FPH (Fellow in Public Health), Royal College of Physician (April, 2011～)
- Vice Dean, College of Public Health and Nutrition, Taipei Medical University (Sep.2011～)
- Visiting Professor, BogdanVogaUniversity, Cluj-Napoca, Romania (Sep., 2011～)
- Editorial Board, Education Studies (Oct., 2011 )
- Delegate to the Confederation of Medical Associations in Asia and Oceania, CMAAO, 2009 (Bali), 2011 (Taipei).
- Board, New Taipei City Asian Educational, Scientific, and Cultural Organization (AESCO; Dec. 2014～)
- Committee, National Scholarship 2015, Ministry of Education (Jan. 1, 2015 ～)
- Advisor, visiting professor, Kazakhstan National Medical University, Almaty (June 2014～)
- Committee member, Low carbon sustainable living environment, Environmental Protection Administration (EPA), Jan. 2014-Dec 2014.
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# FACTORS ASSOCIATED WITH INFECTIOUS DISEASE ACUTE RESPIRATORY INFECTIONS (ARI) TO CHILDREN IN THE AREA WORK OF BUKIT HINDU PALANGKARAYA PUBLIC HEALTH CENTER

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**Abstract**

ARI is the first sequence of infectious diseases and one of the originators malnutrition and infant mortality in developing countries that caused by several factors. This study is to analyze the factors associated with respiratory disease in infants in the area work of Bukit Hindu Palangkaraya Public Health Center.

This research is observational analytic approach using a case-control approach, sampling techniques using a purposive sampling technique which consists of 30 respondent samples of cases and 30 controls.

The results of case respondents showed that the percentage of male infants 57% and female 43%, the mother's last education was elementary school 17%, junior high school 13%, senior high school 43% and college/diploma 27%, 77% in normal nutritional status and 23% was not, presence of family members' working habit by 83% and 17% was not, 100 % was normal birth weight and as much as 77% of cases were not exclusively breastfeed and 17% was exclusively breastfeed. The results of chi-square test found that the family members' smoking habits associated with the incidence of ARI in infants with p-value <0,05 with OR = 3.824 and CI = 95%, while for nutritional status, low birth weight and exclusive breastfeeding does not have a significant association with disease ARI in infants.

**Keywords:** ARI, nutritional status, smoking habits, LBW, exclusive breastfeeding

## A. Introduction

ARI has long occupied the first place in the order of infectious diseases and is one of the originators of malnutrition and infant mortality in developing countries. Data WHO states that 10-15% of infant mortality in developed countries and 27% of infant mortality in developing countries are caused by ARI, especially pneumonia[(1,2)].

The incidence of respiratory disease in Indonesia is still high, especially in young children, cases of illness each year reaches 260,000 children under five. ARI is also one of the main causes of patient visits to health facilities is as much as 40% - 60% of visits for treatment in health centers and 15% - 30% of visits for treatment in the outpatient and inpatient hospital. Based on data from Indonesia Demographic and Health Survey (IDHS) 2002-2003, the prevalence of acute respiratory infection in infants less than one year in Indonesia as much as 7.6%[(3)].

Based on the results of several studies, there are several factors related to the incidence of respiratory disease in infants include nutritional status, low birth weight babies, exclusive breastfeeding, and the smoking habits of family members in the house. Poor nutritional status causing children vulnerable to infectious diseases. Low birth weight babies have a growth and maturation of the organ and the tool - the tool body is not perfect, resulting in low birth weight babies often become infected one ARI. Breast milk contains colostrum immunity and can prevent respiratory disease in infants, toddlers who are not exclusively breastfed ARI

more susceptible than children who were exclusively breastfed. Smoking habits of family members can lead to exposure to cigarette smoke. Smoke more cigarettes smoked, the increased exposure to cigarette smoke can cause respiratory disease in infants [4,5].

Palangkaraya city is one of the cities in Central Borneo which has a number of high incidence of respiratory disease. ARI is the first order of 10 diseases in Palangkaraya. One health center in the city of Palangkaraya with the highest number toddlers ISPA is Bukit Hindu Public Health Center. Based on data obtained from Bukit Hindu Palangkaraya public health center, obtained information that in 2010 the prevalence of ARI aged 0-11 months 3.36% and the age of 1-2 years by 3.09% from 3243 toddler [6]. Based on the preliminary survey conducted in the Bukit Hindu Palangkaraya public health center note that the scope of exclusive breastfeeding in infants is still low at 6.3% and there are still many children under five nutritional status below the red line (BGM) is as much as 8% toddlers [10], so we need research to prove the relationship between the nutritional status of children, LBW, exclusive breastfeeding, and smoking habits of family members with the incidence of respiratory disease in infants in Bukit Hindu Palangkaraya public health center.

The general objective of this research is to prove the factors associated with the incidence of respiratory disease in infants in Bukit Hindu public Health Center.

**B. Method**

The design of this study was observational analytic method case control. Population case approach in this research is all infants aged 10-15 months in Bukit Hindu public helath center in the period from May to August 2011. The sampling technique of the subject of research conducted by accidental sampling which meets inclusion criteria for the sample cases. Samples taken in case of a toddler who went to the Bukit Hindu Public Health Center, and recorded in the register book ARI program taken as a minimum of 30

The instrument used in this study is a questionnaire used to gather data about the factors associated with the incidence of acute respiratory infection in infants, KMS is used to determine the weight of the baby at birth, Babyscale to weigh toddlers.

The independent variable in this study is the nutritional status of children, LBW, exclusive breastfeeding, family habit of smoking. The dependent variable in this study was the incidence of acute respiratory infection in infants. Analysis of data using statistical test Chi-Square with $\alpha = 0.05$

Table1. Bivariat analisis ARI risk factor

| No | Variable | ARI | | Non-ARI | | p-value |
|---|---|---|---|---|---|---|
| | | n | % | n | % | |
| 1 | Nutritional status | | | | | |
| | Normal | 7 | 30,4 | 1 | 3 | 0,052 |
| | Abnormal | 23 | 76,6 | 29 | 96,7 | |
| 2 | Family habit of smoking | | | | | |
| | Smoke | 25 | 83,3 | 17 | 56,7 | 0,049 |
| | Don't smoke | 5 | 16,7 | 13 | 43,3 | |
| 3 | LBW | | | | | |
| | LBW | 0 | 0 | 0 | 0 | - |
| | Normal | 30 | 100 | 30 | 100 | |
| 4 | Exclusive breastfeeding | | | | | |
| | Yes | 23 | 76,6 | 19 | 63,3 | 0,398 |
| | Non | 7 | 30,4 | 11 | 36,7 | |

**C. Result and discussion**

Table 1 shows the results obtained fisher exact test p-value = 0.052 (p> 0.05). This shows that there is no significant relationship between the nutritional status of children with respiratory disease incidence. Respiratory disease in infants is not only caused by one factor but it can also come from other factors, such as behavioral factors, neighborhoods that are less healthy and less maternal knowledge about ARI.

Behavioral factors that may be a risk factor for respiratory infection in infants is the behavior of a family member or a mother who gives additional food such as snacks or snack. Snacks or snacks given to children under five mother can make toddlers allergies or inflammation in the respiratory tract. Snacks snacks contain preservatives are added in order to extend shelf life. Likewise synthetic sweetener that is often encountered in snacks, sweet taste and can cause reception sharpen your sense of taste to sweet taste. Artificial sweeteners are often used is cyclamate and saccharin. Giving excessive cyclamate or saccharin causes strep throat. Because the ingredients are so toddlers can suffer respiratory infection. Habits of mothers who are too often provide snacks to their children can also lead to inflammation of the throat in infants [7,8].

Table 1 shows the results of the analysis obtained by chi square test p-value = 0.049 (p <0.05). This means there is a significant relationship between smoking and the incidence of respiratory disease. The research result is reinforced by research Hidayat in 2006 that the family who smoke, statistically the chances of her having ARI 2-fold compared with children from families who do not smoke. Addition of other studies found that episodes of ARI increased 2-fold as a result of parental smoking. Research Peat et al in the Cleveland Clinic Journal of Medicine in 2005 also states that children whose parents smoke have a 2 times greater chance of infection respiratory infection than children whose parents did not smoke[9,10].

Cigarette smoke contains thousands of toxic chemicals and substances that can cause cancer (carcinogens). Even hazardous substances and toxins in cigarettes not only cause health problems in people who smoke, but also to the people around him who do not smoke, mostly infants, children and mothers who are forced to be passive smokers because the father or their husbands smoked at home. Whereas passive smokers have a higher risk of suffering from respiratory infection. This is because as much as 25 percent of the harmful substances contained in cigarettes into the body of active smokers, while 75 percent are circulating in the air that enters the body at risk the people around them (passive smoking)[9,11].

Cigarette smoke may impair the ability of alveolar macrophages to kill bacteria, a process known as phagocytosis. The study of cigarette smoke extract also showed that extracts of cigarette smoke also affects alveolar macrophage process. In addition, there are also studies that tested the cells were exposed to cigarette smoke extract with glucocorticoids, anti-inflammatory commonly used to treat respiratory conditions. The results show that the drug does not guarantee the recovery of barrier alveolar macrophage phagocytosis induced by cigarette smoke[9].

Smoke cigarettes smoked, either by active smokers and passive smokers will lead to impaired cilia function, increases mucus volume, humoral antigen modified, as well as the quantitative and qualitative changes in cellular components occurs. Some changes in the defense mechanism will not return to normal before free from exposure to secondhand smoke. Cigarette smoke causes cilia movement is interrupted, then when the virus as an antigen into the respiratory tract, cilia located on the surface of the airways that is supposed to move upward push toward pharing virus or with a catch by laryngeal spasm reflex, reflex will fail. Then the virus will further damage the epithelial lining and mucosal lining of the respiratory tract. Irritation of the virus on the second layer causes dry cough. Damage to structures lining the walls of the airways cause an increase in mucus gland activity which is widely available on the airway walls, resulting in a discharge that exceeds the

normal mucosa. Excessive stimulation fluid that cause the symptoms of cough[9].

Based on this study can also be known levels of exposure to cigarette smoke are received every day by people with respiratory infections, there are 5 infants not exposed to cigarette, 14 toddlers get exposure to light cigarettes, 5 children receive exposure to cigarette medium and 6 children receive exposure to heavy smoking. The results showed that exposure to cigarette even in light exposure remains a risk to the health of infants.

Based on Table 1 shows that all respondents there are cases and controls who had low birth weight infants, so it can not continue to bivariate analysis and graphs can be assumed based on LBW variables in this study did not affect the incidence of ARI in Puskesmas Bukit Hindu Palangkaraya. Toddlers who at birth have a normal body weight can still be infected with respiratory disease that is not a risk factor for low birth weight in Bukit Hindu Palangkaraya Public Health Center. ARI can be caused by other factors such as environmental factors, knowledge and work with parents. Although not conducted research on these factors but these factors can influence the occurrence of ARI[12].

According to the table 1 in the case group and the control are still many children who are not exclusively breastfed. Results of the chi-square test analysis was obtained p-value = 0.398. This means there is no significant relationship between exclusive breastfeeding with the incidence of respiratory disease. These findings are consistent with research conducted by Irshad Ahmad, Najma Shaheen, Sabir Khan stating that there is no significant relationship between exclusive breastfeeding with the incidence of acute respiratory infection in infants. This can be due to the protection of breastfeeding only contribute to the first few months since the baby was born[13,14].

## D. Conclusion

Based on the research that has been carried out, it can be concluded that there is a relationship between smoking habits of family members with ARI, and there is no significant relationship between nutritional status, low birth weight, and exclusive breastfeeding with ARI.

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# THE IMPACT OF IMPLEMENTATION UDD SYSTEM TO PASS CARE PATIENT SATISFACTION IN JOGJA INTERNATIONAL HOSPITAL

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**Abstract**

Unit Dose Dispensing (UDD) system is medicine distribution system on hospital is a system the dispensing method of pharmaceutical form to patient packed in single dose, for one use during therapeutic. Distribution system was also implemented inside of pharmaceutical service in Jogja International Hospital (JIH). Naswir saying (2000) implementation inside of UDD system influenced many factor side of input, process and output, identification result be able to improve the distribution system to optimum. Value of quality service to patient inside of customer satisfaction (patient) to use Survey Servqual, this survey have two part is perception and expectation patient. From 3 dimension quality use of this research: responsiveness, assurance and emphaty. In the hope identification result be able to aid improve quality of pharmaceutical service was also implemented UDD system. To estimate impact of the implementation UDD system to pass care patient satisfaction in Jogja International Hospital .

This research was a research of retrospectif and prospectif analytic with *case study* design. Analytic data obtained as data qualitative and data quantitative. Subject in research is pass care patients, pharmacists and nurses.

Generally value of implemented UDD system be a good function, although side of input, process and output each part importance to improve. All patient were not significant value (P=0,242>0,05). But for patient satisfaction showed there were significant gap (P=0,000<0,05) between perception and expectation, although from result test scala of likert to obtain value 70-90% patient feel satisfied enough to implemented UDD in JIH. Highest gap score in every dimension quality analytic to improve and optimum service is: service of dispensing quickly and exactly with medicine information service from pharmacist; high experience safe feel to patient of dispensing direct from pharmacist; and good attention from pharmacist beside give of pharmaceutical service during therapeutic.

Generally implemented UDD on dispensary pass care JIH be a good function, but significant gap on each quality dimention to be still from analytic result patient satisfaction. To increase patient satisfaction to be means is to give of medicine information complete and detail, time of medicine present beginning than usually and visit to patient at first day care.

**Keywords**: UDD system, patient satisfaction, hospital

## A. Introduction

Service a hospital is an integral part of the system service oriented to patient care, the provision of the quality, including service pharmacy clinics, is affordable for all walks of life. One of the main task of the pharmacy is to distribute supplies pharmaceutical to units of service in the hospital.(1)

One of the distribution of medicine at the hospital, it is unit Dose. Dispensing (UDD) which is a distributed system with the way the provision. Pharmacy oral medications and injection given to patients in the form of dosage. Single and handed over to a use for treatment. It took place. The UDD have some advantage when. Compared with the distribution of other, among others : patients receiving services from the

installation of a fully in accordance with the needs, patients pay for medicine is consumed, a system of the drug in doubles so that reduce errors. Drug delivery, an increase in control and monitoring. The use of drugs as a whole by the installation of the pharmacy[2]

It is said Naswir[3] in the implementation of the system UDD be influenced by many factors in terms of input, process and outputnya. The factors that influences is : the completeness of support from the hospital in the form of the Decree, the structure of the UDD and procedures, the completeness of equipment available, the number and types of people that are needed, financing, the presence or absence of systems and procedures are efficient, time service, the frequency of delivery, payment system, acceptance or support officers, including doctors, nurses, and assistant pharmacists, accuracy, the dose, time of, the possibility of a residual or waste, large numbers of patients who feel Ihelped by the system UDD, the number of missing drugs, the frequency of occurrence of mistakes as well as income the hospital. From the identification of the factors mentioned above, can be an attempt repairs in managerial for the implementation of the system UDD.

Satisfaction of the patient is very important in the implementation of the health care, One way to measure the quality of service is by measuring the level of patient satisfaction. Model Servqual (service quality), which was developed by Parasuraman. Et al (1994) to assess the quality of service in accordance with the dimensions of quality. Service. Survey Servqual have two parts those are expectations and perception of customers. Hope and perception is comprised of five dimensions of quality, namely :. 1) The evidence directly, 2) Mainstay, 3) The response, 4) Social Security, and 5) Empathy. Hope and perception can form the satisfaction. Satisfaction. It's compatibility between the perception of services received or to be expected[4]

Jogja International Hospital (JIH) is a private hospital located in Sleman, Yogyakarta Special Region. In the distribution of drugs to inpatients, JIH using the system UDD as a method of distribution of drugs for live-in patients who are based on commitment to run a clinic. The observation in JIH there is a means to assess the satisfaction of inpatients with a questionnaire given to patients or patient's family when the patient going, But the contents of questionnaires only to the extent of patient satisfaction in the service provided is already good enough or less without digging deeper into whether expectations and perception of patients to services provided, Regarding the implementation of distributed system UDD it should have this can help improve communication between patients with the pharmacy because of the interactions that be done more frequently when compared with the distribution of the other, That's what needs to be done research to assess the impact of the implementation of the system UDD to the satisfaction of inpatients in JIH. Further research will be able to identify the hope and desire of patients to services kefarmasian in JIH, so it can help improve the quality of service.

**B. Method**

This type of research is research analytic descriptive with a case study. The analysis of data to be done in quantitative and qualitative. Analysis the applicability of the method of this document and questionnaire be done to identify the application of the system UDD in JIH and its impact on customer satisfaction by looking at the gap between perception. And hopefully inpatients to services kefarmasian in JIH of the implementation of the system UDD. The analysis a qualitative with the method of in-depth interviews conducted to supplement what can be achieved through the quantitative[5]

Analysis of data on the applicability to the manual on the likert on a questionnaire patient satisfaction, followed by the statistics to measure the gap analysis of expectations and perception of the patient,As well as the questionnaire on the application of UDD good for pasien/keluarga the patient, assistant pharmacist and nurses. Analysis of data on the qualitative, by making transcripts, the results of interviews, used as supporting data.

He subject of this research is the patient's stay in JIH in Februari-Maret, 2010 which would be of the respondents, The subject of research is divided into three groups : the patient from the treatment room paediatric, obsgyn, and general (in addition to the patient the care paediatric and obsgyn), with the number of proportion from each of the treatment room, It's each group of 32 people. The subject of this research also involves the pharmaceuticals, head of a hospitalization and assistant pharmacists (AA) who served in a hospitalization, as well as the head of the ward inpatient and nurses who served in the care inpatient care.

Variables are free on this research is the application of UDD of the input (the structure of the UDD, procedures, equipment, human resources), measured by observation through the examination documents as well as equipped with an interview, the (prosedur/alur UDD, communication officers of pharmacy with a patient and other health), Measured with observation through the examination documents as well as equipped with interviews and output (support health workers, the support of patient/ the patient family, precise drug delivery, the possibility of a residual), measured by observation through the examination documents as well as equipped with an interview, dependent variables are the patient's satisfaction with three dimensions is measured, namely : the response, guarantees and empathy, measured by counting a score of questionnaires given to patient/ the patient family with 26 statements prepared using the scale of Likert that has been filled by pasien/keluarga the patient, questionnaires contains the statement that is favorable and choose one of five options the answer, which is in a statement the perception is very well be given a score of 5 and not be good to give a score of 1, and in a statement the hope is very important given a score of 5 and doesn't matter given a score of 1.

The number of the score at least to all the items the statement is 1 x 96 = 96, and scores the most is 5 x 96 = 480. So a score ranging from 96-480.

## C. Result and discussion

### 1. Description The characteristic of The subject of research

Most subjects are women (84,375 %), women are using health facilities than pria6. With the age group the biggest 21-40 years (77,083 %),

Table 1. Try a questionnaire to assess the implementation of the UDD by inpatients.

| No | Statement | x ± % A | x ± % B | x ± % C |
|---|---|---|---|---|
| 1 | The implementation of the way the provision of drugs by the pharmacy to you - your family when a stay in JIH. | 3 ± 79 | 4 ± 84 | 4 ± 81 |
| 2 | The effect of the implementation of the procedures for granting the drug by the pharmacy to you - your family when a stay in JIH to patient comfort during treatment. | 3 ± 79 | 4 ± 83 | 4 ± 82 |
| 3 | The effect of the implementation of the procedures for granting the drug by the pharmacy to you - your family when a stay in JIH of the benefits that dirasakan/didapatkan the patient during treatment. | 3 ± 78 | 4 ± 85 | 4 ± 81 |
| 4 | The effect of the implementation of the procedures for granting the drug by the pharmacy to you - your family when a stay in JIH of the benefits that dirasakan/didapatkan the patient during treatment. | 4 ± 80 | 4 ± 84 | 4 ± 80 |

Source: data primary processed
Description :
- score of 5 = very good, 4 = good, 3 = good enough, 2 = not good, and 1 = not good.
- x = a score of the average value of ; % = percentage ; A = the Paediatric ; B = group Obsgyn ; C = general groups.

and educational background of the Akademi/Perguruan of (61,458 %), for the highest in the private sector (52,083 %), with the location of shelter (home address.) the most part on the Sleman, and Bantul (90,625 %), as well as the treatment of the largest in the VIP or VVIP (34,375 %).

The pharmacy involved in this study as many as six people, the five women and one man, between the ages of 20-26 years, the work in JIH it more than 1 year and all educational background in the SMF, for the job kefarmasian the hospital it's better than graduates AMF (Academy - the pharmacy) and SMF, The nurse who took part in this study as many as 10 people, it's all women age between 23-32 years, with the work in JIH the two < a year and other ≥ a year, is only one person with the education of undergraduate Nursing while other D3 Nurse.

**2. The Measurement Instruments Research**

**a. Questionnaire for Patients Inpatient.**

The questionnaire of 96 pasien/keluarga the patient in table 1 were analyzed statistically using One-Way Anova7 to see the perception of three groups to the application UDD in JIH. the results p=0,242 (p > 0, 05) means that from three groups of this study contend the same to the application UDD in the service of the pharmaceutical JIH with a score of the average value of good.

Satisfaction is a compatibility between expectations and perceptions about the services, satisfaction scores the compatibility between expectations and perception of the customer will be services pelayanan8. The patient satisfaction (See table 2) be processed by the method of Paired Sample T-Test (p<0, 05). Results of analysis of statistics on the " A (paediatric), B (obsgyn) and C (commonly).The value of the (p) equal value, namely p=0,000 of the value of the (p=0,000<0, 05) it means there are differences in meaning between perception and expectations of patients in each group. This shows that there are still patients who have not satisfied with the quality of care, especially in the implementation of the UDD that has been implemented in the pharmaceutical dispensary inpatient care.

From every dimension of the quality of analysis, the gap with the highest, to know what things that can be fixed in order to maximize the implementation of the UDD. Assessment of perceptions and expectations of patients as well as the gap between perception and expectations based on the quality in its entirety can be seen in table 1 below.

In table 2 below, patient satisfaction gap the highest in the dimension of the response regarding the provision of drugs in the immediate and appropriate accompanied by complete information by the pharmaceutical (0,614), followed by the dimension of empathy about a good attention from the pharmacy for patients treated (0,604) and on the dimensions of security about a sense of security a higher perceived by patients to the drugs provided by the pharmacy.

It is in line with the research Nurjanah Similarly, in the study which said the dimensions of the response the biggest in the quality of service.

From the results of the final gap in the study this in the value of 0,156-0,614 means service pharmaceutical related to the implementation of the UDD to be seen from the questionnaire on the patient stated that the company has been pretty good in the service provided. by the dimension of the quality of used to being analyzed and know what are the things that can be improved to optimize the application of UDD.

Data is also supported on the results of the likert in table 3 below, mean the percentage for each statement either on a questionnaire for the application of the UDD and a questionnaire the satisfaction of the patient is in the range of 374-443 with a value of a percentage above 80 % for the implementation of the UDD and 70-90 % to the satisfaction of patients. One company was enough to satisfy its customers when the customer satisfaction over 60%[11].

The test results on the Likert in table 3 also shows there is a different score between their hopes (423-443) and perception (374-428) the patient. The high expectations than the

perception of indicating the persistence of patients who have not satisfied with the implementation of the UDD.

**b. Kuesioner to Officer the pharmacy and the nurse.**

The statistical analysis using the independent of the sample t-test[7] between the pharmaceutical and nurses to assess the difference of opinion about the application of UDD in the service of the pharmacy in JIH. The value of the 0,089 and 0,068 means. > 0, 5 which means no significant differences between the pharmaceutical and nurses about his opinion in the implementation of the UDD, also supported the results of the Likert in table 4 below. Is that mean the percentage for each statement on a questionnaire the assessment of the implementation of the UDD by the pharmaceutical in the range of 17-24 (the maximum 30) and nurses are on the range of 35-43 (the maximum 50) with a value of a percentage between the two groups on 56-86 %.

The difference in scores of test results on, among the pharmaceutical (17-24) and nurses (35-43), indicating the difference in perception between the two of the implementation of the UDD, even though the results of the analysis of statistical difference is not meaningful significant or can be said to be the perception of both almost the same.

**3. The application of UDD**

**a. Input**

The results of the input include : the (SK), the structure of the UDD, procedures UDD, equipment and human resources, summarized in table 5 below.

Decree (SK) about the application of UDD in service pharmacy in JIH is not in writing, but it is listed in and strategic plans JIH in point Clinical Pharmacy, since the beginning, JIH to stand (2007) and supported by the board of directors. One of the forms of real implementation of the pharmaceutical clinical service pharmacy is realized by choosing the system UDD as a method of distribution of drugs for patients hospitalized in JIH. It is in contrast to the research Naswir3, according to him to the hospital the government it will be good if the application UDD be intensified with the support of the decree of the board of directors.

In JIH the structure of the UDD to be structurally there is no different, with the results of research Naswir3, which states that the presence of the structure of the UDD can be a factor driving force in its application, The daily routine can generally done well by the pharmacy, but there is still his patient complaints about the delay time of the drug as well as the lack of information that is given to patients and lead to the dissatisfaction of patients on the dimensions of the response, one of them caused by the absence of a business log and a clearly each individual, The lack of cooperation in doing the job caused the officers did not have its good in performance and productivity[10].

The procedure still (sop) UDD in JIH there have been, and in general its implementation is in conformity with the contents of the sops the implementation of the UDD in accordance with the sop, a contributing factor in the implementation of the UDD.

The latter, support in the implementation of the UDD in JIH in terms of quantity and type for the time is quite adequate. The equipment in terms of input according to Al-Assaf (2009), categorized as a source of the needed power and interact with other parts and to support the smooth process of activities and outputs produced.

From the standpoint of human resources, there are eight people AA (6 women, two men) the background of education SMF is headed by a Pharmacist is assisted by one Pharmacist, in terms of education are quite supportive, ideally 30 patients treated by one Pharmacist.

When there's an increasing number of patients more than the usual (over 70 patients hospitalized every day), the pharmacy doesn't look so hard to perform their duties. It became one of the causes of the value of the questionnaire the pharmacy is lower than with the nurse about his response to the implementation of the UDD the time being, In general the nurse thought UDD help reduce the

workload of it while pharmacy argued the opposite. It also affects the dissatisfaction of patients on the dimensions of the response, which is due to limited number of the pharmacy, so not all patients get drug information are complete. Drug information is very influential in reducing the number of drug misuse.

The addition of the number of pharmaceutical, of course, is required when the number of patients continues to rise, the division of tasks that can obviously facilitate the implementation of the UDD. In addition to the details of the tasks and work that is obvious to the pharmacy. Translator Training is also needed to improve skills and knowledge of the pharmacy. Education plays an important role in improving the quality and of pharmaceuticals, training is needed to get an insight, knowledge and skills in the pharmaceutical field hospital.

**b. Process**

The results of the process include : prosedur/alur UDD, communications officer for pharmaceutical, summarized in table 6 below.

Procedur UDD in general are in accordance with should always be made and has been running well and smoothly even though there are some sections that is not the same. Lack of drug information received by patients to be one factor in the cause of the dissatisfaction of patients on the dimensions of the response of the provision of the immediate and appropriate accompanied by drug information are complete. The full of drugs that comes to making the patient feel safer in the use of drugs and this will affect the level of patient satisfaction of the dimensions of security about a sense of security a higher perceived by patients. Complaints of those patients about the length of time administering the drug to be one of the causes of the dissatisfaction of patients on the dimensions of the response is because of the right time is considered very important for patients who want the problem be resolved soon and dimensions of this. The dimensions of the response is one of the fact is that with the service or the provision of services and time dispensing that is rapidly becoming one of the smooth application of the UDD. For that will need to be re-evaluated on schedule time administering the drug, so that patient complaints about delays in administering the drug can be overcome.

Communication to the pharmacy with pasien/keluarga the patient is generally done at a better every time the provision of drugs and the home. Communication with consumers (patient) to be part of the form of service to consumers.85 % of the community pharmacy in New Zealand stated that the side effects of drugs should be informed to the patient and the provision of information written in the form of etiquette with information orally in a submission to the patient's drug can increase understanding of those patients about drugs. The quality of health services related to communication and dissemination of information For this reason it is an increase in skills for officer service in communication as a strategy to prevent the occurrence of complaints related to communication.

Communication to the pharmacy with other health (nurse and midwife and doctor), as far as this well and always there is interaction and communication related to the job though it can not be denied there must be the possibility of communication miss for activities that have an impact on the job. Generally, the nurse was helped by the implementation of the UDD.

**c. Output**

The results of the output include, support health workers, the support of pasien/keluarga the patient, precise drug delivery, the possibility of drugs the rest of the summarized in table 7 below.

But the contents of questionnaires only to the extent of patient satisfaction in the service provided is already good enough or less without digging deeper into whether expectations and perception of patients to services provided. A total of 78 % nurses and assess better the implementation of the UDD in service pharmaceutical dispensary this inpatient nurse also argued the implementation of the UDD good for the convenience, security and benefits that patients get in return for treatment. The nurse also feel the benefits in defense work.

To the pharmacy, the value of the questionnaire in general enough, but these results would be important to always be improved, and one of them is by digging into what are the things that want patients to services that have been given.As many as 81 % pasien/keluarga the patient to assess both in terms of the implementation of the UDD and the effect on security, comfort and benefits are felt pasien/keluarga for the patients in care. This support is also influenced by educational background of respondents most (61, 46 %) the Academy. Regarding the implementation of distributed system UDD it should have this can help improve communication between patients with the pharmacy because of the interactions that be done more frequently when compared with the distribution of the other.

Because of the general awareness about the importance of health based on educational background that is quite tinggi18 and this is a tendency to use the facility to inpatient which baik19 of respondents in the study is the largest are in the Infirmary VIP or VVIP (34, 38 %). That's what needs to be done research to assess the impact of the implementation of the system UDD to the satisfaction of inpatients in JIH. It is impacting on the facility service who want to get during hospitalization, which is indicated in a sense of comfort that is expected to patient / patient family, one of them in the form of a good attention from the pharmacy. Further research will be able to identify the hope and desire of patients to services kefarmasian in JIH, so it can help improve the quality of service. It is related to the existence of dissatisfaction on the dimensions of the quality of empathy, which is about a good attention from the pharmacy for patients in care. In the barrel with research Fitri[10.] which in this dimension in negative in the attitude of a rush of officers when serving patients. This type of research is research analytic descriptive with a case study. The analysis of data to be done in quantitative and qualitative. In fact the customer wants to get the attention as good as of the other costumers.

Analysis the applicability of the method of this document and questionnaire be done to identify the application of the system UDD in JIH and its impact on customer satisfaction by looking at the gap between perception. The precision of a (That's right patients, just an indication of the drug, the right kind of drugs, appropriate dose of medicine, just the way the use of drugs, timely provision of drugs, appropriate rules on) and complaints, reports and monitoring20 is closely related to the process dispensing for work kefarmasian And hopefully inpatients to services kefarmasian in JIH of the implementation of the system UDD. The analysis a qualitative with the method of in-depth interviews conducted to supplement what can be achieved through the quantitative. For accuracy in administering the drug from the questionnaire to the pharmacy, on average have said that they are good enough even for precise patient on average stated, while for the nurse accuracy of the average said. Analysis of data on the applicability to the manual on the likert on a questionnaire patient satisfaction, followed by the statistics to measure the gap analysis of expectations and perception of the patient. Report and monitoring the use of drugs a patient in JIH be done by the Pharmacist, if something goes wrong by charging the incident was injured in an incident report the safety of patients in monitoring by the special. As well as the questionnaire on the application of UDD good for pasien/keluarga the patient, assistant pharmacist and nurses. Analysis of data on the qualitative, by making transcripts, the results of interviews, used as supporting data. Pharmacist to do monitoring and evaluation in the use of drugs by patients as well as all personnel involved in it should be involved in the safety of patients. The subject of this research is the patient's stay in JIH in Februari-Maret, 2010 which would be of the respondents. The study is different from the results of research Sujarwato, said the application of UDD has not been able to improve the safety of drugs, but the research Widayati said that System Distribution of Drugs The dosage unit (SDODU) with the frequency of giving drugs to patients one of the daily doses a good impact on inpatients. The subject of research is divided into three groups : the

patient from the treatment room paediatric, obsgyn, and general (in addition to the patient the care paediatric and obsgyn), with the number of proportion from each of the treatment room.Providing quality and quantity of services are much better, a decrease in the use of medicine at 87, 5 %, from before and after the implementation of SDODU. The precision of the drug in JIH can work better because of the implementation of the UDD have the provision of drugs to patients as much as three times a day. It's each group of 32 people. The subject of this research also involves the pharmaceuticals, head of a hospitalization and assistant pharmacists (AA) who served in a hospitalization, as well as the head of the ward inpatient and nurses who served in the care inpatient care. In fact the customer wants to get the attention as good as of the other costumers. Variables are free on this research is the application of UDD of the input (the structure of the UDD, procedures, equipment, human resources), measured by observation through the examination documents as well as equipped with an interview, the (prosedur/alur UDD, communication officers of pharmacy with a patient and other health). So the exactness of a more controlled. Monitoring of the exactness of a one of them can be done with the provision of information is complete to the patient, as revealed Widayati22 that the provision of information that can constantly reducing drug misuse. Measured with observation through the examination documents as well as equipped with interviews and output (support health workers, the support of patient / patient family, precise drug delivery, the possibility of a sisa/terbuang), measured by observation through the examination documents as well as equipped with an interview. The provision of information the drug also affects the quality of the response, which in this research is still felt less by patients in the provision of information is complete by the pharmacy. The drug information is to be one of the concrete manifestation of the attention of the pharmacy to patients. Variables are terikat the patient's satisfaction with three dimensions is measured, namely : the response, guarantees and empathy, measured by counting a score of questionnaires given to pasien/keluarga the patient with 26 statements prepared using the scale of Likert that has been filled by pasien/keluarga the patient. The provision of information the drug also affects the quality of the response, which in this research is still felt less by patients in the provision of information is complete by the pharmacy. The drug information is to be one of the concrete manifestation of the attention of the pharmacy to patients. Kuesioner contains the statement that is favorable and choose one of five options the answer, which is in a statement the perception is very well be given a score of 5 and not be good to give a score of 1, and in a statement the hope is very important given a score of 5 and doesn't matter given a score of 1. The number of the score at least to all the items the statement is 1 x 96 = 96, and scores the most is 5 x 96 = 480. So a score ranging from 96-480. It is the dimension of empathy. The drug information is to be one of the pharmacy in doing the job kefarmasiannya.

Most subjects are women (84,375 %), women are using health facilities than pria6. With the age group the biggest 21-40 years (77,083 %), and educational background of the Akademi/Perguruan of (61,458 %), for the highest in the private sector (52,083 %), with the location of shelter (home address.) the most part on the Sleman, and Bantul (90,625 %), as well as the treatment of the largest in the VIP or VVIP (34,375 %.) The possibility of drugs the rest, wasted in the implementation of the UDD this from the observations mainly on prescription drugs cocktail (pulveres). As many as 80 % The pharmaceutical and nurses to the questionnaire agreed that the implementation of UDD to minimize the possibility of drugs. The pharmacy involved in this study as many as six people, the five women and one man, between the ages of 20-26 years, the work in JIH it more than 1 year and all educational background in the SMF, for the job kefarmasian the hospital it's better than graduates AMF (Academy - the pharmacy) and SMF. As the results of research Sujarwato the implementation of the UDD to the management of the drug can reduce the frequency of events

on the drug from 42 to 2, 5 times and reduce the frequency of incidents of loss medication from 19, 5 to 3 times and the results of research Naswir which states that the possibility of drugs the rest, is lost, wasted a lot smaller in the implementation of the UDD. The nurse who took part in this study as many as 10 people, it's all women age between 23-32 years, with the work in JIH the two < a year and other ≥ a year, is only one person with the education of undergraduate Nursing while other D3 Nurse.

**4. Satisfaction patient**

**a. The dimension of Response**

In the dimension of the response, gap/kesenjangan highest on the items of the 2nd of service of drug delivery immediately and appropriately, accompanied by drug information provided by the pharmacy. 90 % of patients taking this very important and just 77 % of patients think this has been implemented well, this means there is still a patient has not satisfied with the provision of services regarding the provision of drug information and often the patient feels a delay in administering the drug. The research results ' in the dimension of the response, the gap the highest on the length of time patients.

The precision of a (the output) to do with the dimensions of the response of the patient wants the provision of the immediate and appropriate, service the right time is considered very important for patients because patients want to the problem be resolved soon. The pharmaceutical (63 %) of the opinion of the implementation of the UDD be helpful for timeliness of drug delivery, but there are still complaints of these patients should be addressed by changing the time a little earlier so patients can be given complete information, the provision of drug information orally with the drug is to improve the observance of the patient.

The research is the same as the research result from Sandjaja19 that Gap in the response of the highest in the " A (paediatric), this happens because often the pharmacy did not meet with patients. The syrup that is generally a choice sediaan the drug for children delivered through pneumatic tube system or handed over by a nurse after being given the drug by the pharmacy, so that complaints and obstacles in the use of drugs are often not known by the pharmacy. In fact the quality of service is closely related to the smooth communication between providers of services and receiving services.

Tied with a variable the communication between the pharmaceutical and patients (the process) with the result pretty auspiciously, then this needs to be evaluated and still have to be improved. To do this, of course necessary to improve skills, such as the holding of training related to an increase in the way good communication, and an increase in the skill of a foreign language for the pharmacy. Education and skills needed in improving the quality of human resources.

**b. The dimensions of security**

In the dimension of security gap in the items the 6th of a sense of security that is higher for patients to drugs that directly given by the pharmaceutical side of the exactness of the provision of medicine, medicine doesn't expire as well as drug side effects, means the patient feel normal when the drugs is a pharmacy in fact with the pharmacist who provided the drug directly to patients. It is hoped that patients feel safer using drugs during hospitalization because of medication provided by officers who are experts in the field. The gap is due to lack of communication between the pharmacy with a patient (the process) and most patients don't know and can not distinguish the pharmaceutical and nurses, even though between the two had been distinguished by using the uniform is different but was not equipped with identity in the form of ID card. This is identified from a lot of patients to ask the researchers when filling out questionnaires.

**c. The dimension of empathy**

Gap highest on the items in a statement to the 9th (- 0,604) in the dimension of empathy about a good attention by the pharmaceutical in providing services for care, this means the patient has not satisfied with the service provided on the item, namely patients assessed that the attitude of the pharmaceutical fine in

providing services. In fact, 92 % of patients taking this very important and new 80 % of patients who feel this has been implemented well. The results of this percentage is closely related to the lack of support from the pasien/keluarga the patient about the application of UDD (the output). But in a matter of statistics there is still a gap between perception and expectations of patients enough attention. here it seems not only on the hospitality of the officers are in this case the pharmacy already considered friendly by patients during the service as well as from the observations of the observations of the researchers.

**D. Conclusion**

**1. The application of the system UDD in a hospitalization JIH in terms of :**

**A. Input :** strategic plans JIH in point clinical pharmacy as well as the structure of the department of pharmaceutical support of the implementation of the UDD ; there are procedures UDD ; equipment is adequate ; human resources quite proportionate to date.

06:14 ID-EN Translator The daily routine can generally done well by the pharmacy, but there is still his patient complaints about the delay time of the drug as well as the lack of information that is given to patients and lead to the dissatisfaction of patients on the dimensions of the response, one of them caused by the absence of a business log and a clearly each individual.

**B. The process :** procedur/alur UDD, in general to fruition ; communication to the pharmacy with pasien/keluarga the patient, in general quite well ; communication to the pharmacy with health workers, in general, has been running smoothly.

**C. Output :** support health workers, very good (78 %) ; support pasien/keluarga the patient, very good (81 %) ; accuracy of medicine in general have improved ; the possibility of drugs the rest, in the implementation of the UDD can be minimized.

**2. Satisfaction of patients, the gap by the dimensions of quality :**

A. The dimensions of Response: about the medication immediately and appropriately, accompanied by drug information provided by the pharmacy, 90 % of patients consider service is very important. In connection with the variable human resources, communications officer for pharmaceutical with pasien/keluarga the patient and precise medication.

B. The dimensions of security, of a sense of security that is higher for patients to drugs that directly given by the pharmacy, 90 % of patients taking this as a guarantee and it is very important. In connection with the variables the procedure remained the UDD, prosedur/alur UDD, communications officer for pharmaceutical with pasien/keluarga the patient and precise medication

C. The dimensions of Empathy, about a good attention by the pharmaceutical in providing services for care, 92 % of patients taking this very important. In connection with the variables of communication to the pharmacy with pasien/keluarga the patients and support pasien/keluarga the patient.

In general the implementation of the UDD in a hospitalization JIH is going well, those communications the pharmaceutical & pasien/keluarga the patient (process). be a point to the improvement of quality in order to maximize the implementation of the UDD in JIH.

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# ANALYSIS OF STAKEHOLDERS PARTNERSHIP IN PREVENTION AND TRAFFIC ACCIDENTS CONTROL (INDONESIA ORDERLY UNITED TOWARDS SAFETY NUMBER 1) IN SEMARANG YEAR 2015

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**Abstract**

Act Number 22, year 2009 on Road Traffic and Road Transportation of the Republic of Indonesia and Presidential Instruction Number 4, year 2013 on the program of Decade of Action for Road Safety In the mandated General Plan Of National Road Safety. Traffic accidents are stiil high accordingly and yet the implementation of cross-sector partnerships in Semarang. This research aims to analyze a partnership stakeholders in prevention and control of traffic accidents (Indonesia Orderly United Towards safety Number 1) in Semarang City. This research is a qualitative research with descriptive approach. Data were collected by indepth interview. The main informants are Semarang Regional Planning Agency, Highways Departement, Departement of Transportation Communication and Information, Semarang Traffic Unit and Departement of Health. . The result Showed that the role of each institution are inconformity with the general plan of national road safety but there are some intitution who have not played an active role in running this RUNK . Partnership forms of this partnership is Linier Colaborative Partnership in which partner has the same power and focusing on the achievement of goal, vision and mission in partnership. Based on the research of the most inhibiting obstacles in establishing partnership are the communication and coordination, Lack of Participation and Public Realtion and Media. Suggestion in this research is to improve coordination and communication by holding a formal meeting between partners and establish an Integrated Emergancy Management System for the health sector

**Keywords** : Partnership, Stakeholder, Road Safety

## A. Introduction

Traffic accidents are a public health problem that affects all sectors of life. The incident and mortality has increased and make greater attention to the incidence of accidents. The health impacts of traffic accidents include physical and psychological health of the rider. Other impacting on economic losses, such as the costs of hospital care, disability, death and damage to other materials such as vehicles. Traffic accidents are often result in disability. Disability is cause trauma in. Therefore, traffic accidents a public health problem that is not only to medical aid to the victims but also the mental health of the victims and their families. The bigger Health problem is a lot of traffic accidents leading to death. It becomes critical to public health in the context of its prevention of traffic accidents.[1] According to the Ministry of Health Decree 116 / Menkes / SK / VIII / 2003 on guidelines for the implementation of the system epidemiological surveillance health, traffic accidents is one of the priority target of countermeasures non-communicable diseases, and therefore efforts to address immediately to minimize the occurrence of accidents. Because of that traffic accidents become an important issue for public health because it affects the health of many people and everyone who drive risk of traffic accidents.[2]

Traffic accidents are one of which caused by traffic congestion. Traffic accidents are one of the 8 causes of death in the world and is the cause of death of young people aged 15-29 years.

More than one million people, approximately 1.24 million people in the world die each year due to traffic accidents. WHO also reported that the highest death rate from the traffic is in the middle-income countries, especially in Africa. And more than three-quarters of all deaths due to traffic accidents occured in men who are still young. [3]

Trends in the number of deaths from traffic in Indonesia is increasing every year. Starting from the year 2005 amounted to 11,000 people per year, in 2006 amounted to 15,000 people per year, in 2007 amounted to 16,000 people per year, in 2008 and 2009 increased by 20,000 people per year. For 2010 and 2011 rose to 30,000 people per year. [3]

In the last two years, traffic accidents in Indonesia by the World Health Organization (WHO) considered to be the third biggest killer after coronary heart disease and tuberculosis. According to the data from WHO in 2011, as many as 67 percent of the victims of traffic accidents are in the productive age ie 22-50 years.[4] An accident number in Indonesia increased since 2007-2011. In 2010 the number of accidents were 66.488 and an escalated in 2011 at the amount of 108.696 accidents with 31195 amount of death, and 144230 in case of injuries. According to the data from the National Police in 2009, the group with the highest traffic accident victims is ranged from 16-25 years (25%) [5]

Traffic accidents are also a major cause of death. The mortality rate caused by traffic accident in Central Java in 2011 was killed 2.7 per 100,000 population. As for the year 2012 fell to 0.91 per 100,000 population. Then increases again in 2013 in the amount of 0.95 per 100,000 population in the province of Central Java. [6], [7], [8]

One of the city in Central Java province with level of traffic accidents is high is Semarang. Semarang city has ranked highest in the terms of accident between all the city of Central Java since 2011 to 2013. [9]. According to the data from Unity Polwiltabes Semarang, The Total incidence of traffic accidents in the city of Semarang in 2011 amounted to 484 events and increased in 2012 as many as 1049 events. In 2013 a decline to be 957 events. Despite the decreasement in the number of accidents, there are some increasement in the number of victims who died in 2011, namely by 62 victims died, in 2012 as many as 176 victims died, and in 2013 as many as 196 victims died. [10]

In an effort to prevent traffic accidents, the Government has issued various policies related to traffic safety effort. One of them is Act No. 22 of 2009 which contains about traffic and road transport. According to the law there are some articles related to the prevention of traffic accidents and traffic safety. One of them is contained in Article 200 is to establish and maintain and Article 226. [2]

In Central Java Governent Regulation No. 8 of 2013 on the Implementation of Transportation in Central Java province mentioned in article 38 that the empowerment of management and traffic engineering include providing direction, guidance, counseling, training and technical assistance. And in article 106 is mentioned in the context of efforts to increase the safety assurance of traffic and transport road covering one program activities of traffic safety and road transport that consists of how to drive safely (Safety Riding), forum traffic (Traffic Board), Campaign Safety traffic, traffic park, a driving school, traffic safety Global Partnership (Global Road safety partnertship). [11]

From both of rules, there is rules that govern support in the prevention of traffic accidents. One form of safety in traffic is orderly traffic campaign with the slogan " Indonesia orderly united towards safety No. 1". Traffic safety campaign is a humanitarian movement that involves all agencies and stakeholders in the field of traffic as well as the community and society ". [12]

In the implementation of the third phase of this policy, there are a wide range of cross-sector partnership that is of agency that also play an important role in bringing about traffic safety. And for the basis of the mandate of Article 203 in Act Number 22 Year 2009 Plan for Public Safety Road (RUNK). The preparation of this approach road have 5 (five) pillars of road safety which aims to provide guidance / guidance for policy

makers in order to plan and implement road safety management are coordinated and aligned.

Preliminary survey results with one member in Satlantas Polrestabes is part Dikyasa Semarang and Central Java Police Dirlantas, the campaign "Indonesi Orderly United Towards Safety No. 1" said that coordination has so far been carried out between the partners, but there has been no activity together for the prevention of traffic accidents and have not been yet evaluated so far how his runs this partnership in RUNK.

Judging from the amount of traffic accidents in the city of Semarang is still high and some constraints in partnership. The absence of a formal meeting of the five pillars in the prevention of traffic accidents partnership has also become one of the obstacles that exist in this partnership so that there should be research on partnership in the prevention of traffic accidents due to traffic accidents caused many casualties that result in disability or death. Thus becoming one of the problems of public health to prevent traffic accidents.

## B. Method

This type of research used in this research is descriptive qualitative research

Subjects of this study amounts to 5 people as key informants, namely staff Infrastructure Planning Bappeda, Section Head of Survey and Measurement Department of Highways, Staff Section Traffic Dishubkominfo, staff Dikmas Satlantas Polrestabes, and Chief Yankes Health Department where the interviews will be conducted against them for later analyzed on an analysis of stakeholder partnerships in prevention and control of traffic. Informant triangulation amounted to 4 persons namely Cooperation Ditlantas Head of Central Java Police, Section Chief P2 of Central Java Province Health Office, Staff Section UKR Central Java Health Office and the Community. Data collection study in-depth interviws conducted with relevant stakeholders in the partnership RUNK Road. The data is then performed to obtain the inference of a general and comprehensive overview of the research subjects in accordance with the purpose of research.

## C. Result and discussion

### Role

What role is the duty and the main tasks of each pillar. The results showed that the role of Bappeda Semarang is instrumental in planning road safety is coordinating the development and planning in road safety. Highways Agency plays a role in maintaining and improving road infrastructure is to ensure safety in terms of road construction. The Transportation Departement of Communication and Informatic plays a role in coaching and supervision of the operation of vehicles on the road and a physical nature, namely the provision of traffic signs. Traffic Polrestabes Semarang role in fostering community in efforts prventif in safety education. And the Health Department play a role in the efforts to prepare a treatment emergency system

In this road partnership each agency already know their respective roles in the traffic safety effort . But for sector planning has not been done by the Agency for coordinating with other pillars, so RUNK has not gone completely.

### Partnership Form

Partnership is the type of partnership form of partnership prevention and control of road safety in accordance with RUNK. There are 3 forms of partnership according to Sulistiyani that is Subordinate Union of Partnership, Linear Union of Partnership and Linier Collaborative of Partnership. [13]

In the prevention and mitigation partnership of traffic accidents is in accordance with the partnership proposed by Sulistiyani that partnerships are developed based on the principle of organizational life that is Linear Collaborative Partnership. In the context of this partnership which not distinguish the amount of volume, legal status or the power of the parties that partner. Which became the main pressure is the vision and mission complementary to one another.

**Barriers Potential**

**Goal Setting and Decision Making**

Objectives and decision-making is a destination in prevention and control of the partnership and how the current Decision making is democratic or dominate.

Based on this research, the purpose and decision-making are same. This is a form of elaboration of traffic safety to prevent accidents and reduce fatalities have occurred when the victim of an accident involving several sectors for faster handling. The purpose of this partnership is clear, since according to McQuaid, lack of clear goals often cited as the main cause of failure of the partnership. [14]

**Coordination and Communication**

Coordination and communication is a form of coordination and communication within the organization as a partnership if the overlap, duplication and how barriers in coordination and communication.

The results showed coordination and communication have not been fully carried by all the pillars. Coordination should be done by Bappeda as the leading sector of the five pillars of this RUNK, but Bappeda has not planning for special handling of accidents or encourage the implementation of coordination between stakeholders and the achievement of sectoral partnership as it is listed in Pillar 1

According to the theory of problems potential and limitations of partnership that may occur according to McQuaid is derived from the organization . Difficulties in prevention and mitigation partnership of traffic accidents include the busyness of each agency and priorities which have not, so sometimes the coordination and communication are still missing. [14 ] it is also consistent with studies conducted by Sukron Amin, Fathurahman and Zainal Hidayat stated that the problem of time becomes a limiting factor in the coordination. [15]

**Credit For Activities**

Partnership activities is there any rivalry between the institution and its partners, and how exercising their prevention and control programs and policies of traffic accidents

The results showed reduction activities are some already in accordance with the policies contained in RUNK, that is policy in the first 5 years is to apply the guarantee against casualty losses due to accidents, establishing procedures for strict entitlements driving for drivers who ably and skillfully, guaranteeing each vehicles on the road meet safety standards through periodic testing and test types, reducing the risk of casualties and the severity of accidents caused by road infrastructure. However, there are some who do not fit as improve harmonization in the information, communication, coordination and cooperation among stakeholders, Doing redefinition of matters relating to the accident and draw up procedures for the handling of accidents, Developing integrated emergency respons service for handling the victims and providing one access code.

**Assumption of Leadership**

Assuming leadership is how the leadership activities of each stakeholder is affecting the partnership in terms of leadership in the prevention and mitigation of traffic accidents.

From the results of research on the assumption of the leadership, all the informants explained all leaders support this partnership because the goals were very nice so that support and cooperation of all sectors whose role will be stronger in the run partnership. This is consistent with what is written in the mission of the National Road Safety Plan (RUNK) that is the empowerment of the role of government, business and society to explore resources in order to increase national security.

In accordance with the limited partnership potential problems raised by McQuaid is handling differences in assumptions or power from a different organization or individual in partnership greatly affect the success of the partnership. [14]

**Stakeholders Differences**

Stakeholders difference is the difference of each stakeholder in terms of philosophy,

organizational structure, financial rules and service areas in prevention and mitigation partnership of traffic accidents.

From the results of research on the differences of stakeholders from each of the leaders in institutions that there are no differences in philosophy or view of each stakeholder in each agency about prevention and mitigation partnership of traffic accidents. All of them have the same view because it has the same goal in preventive measures for the prevention of traffic accidents and for prevention efforts to reduce the fatality victims, so that the severity of traffic accident victims is not too severe. This is in accordance with the McQuaid theory where the potential that can obstruct the course of the partnership is that if there are significant differences in terms of philosophy.

**Lack of Participation**

Participation Rate is the rate of participation in prevention and mitigation partnership of traffic accidents as well as barriers to participation.

From the research there are some pillars that have not fully participated because not many coordinate widely and there is no evaluation so far. This corresponds to a problem potential that occurs when at least the participation of each stakeholder that can affect an increase in partnerships. According to McQuaid there are various difficulties when the government seeks to engage in a variety of sectors in delivering the policy, if the stakeholders shortage of professional, organizational or financial ability to contribute

**Public Relation and Media**

Is the public acceptance or of the public's attention in prevention and mitigation partnership of traffic accidents.

Is the public acceptance or of the public's attention in prevention and mitigation partnership of traffic accidents.

**D. Conclusion**

1. The role of each stakeholders, namely :
   a. Bappeda Semarang role in road safety plan that is coordinated planning and development in road construction or effort related to road safety.
   b. Highways Department Semarang role in maintaining and improving road infrastructure, namely the construction of roads to ensure safety in terms of road construction.
   c. Department of Communication and Information Semarang has two roles that are non-physical in coaching and supervision of the operation of vehicles on the road to maintain traffic order. While the physical nature in the provision of traffic signs to meet road safety standards.
   d. Traffic Polrestabes Semarang role in fostering community in preventive measures through safety programs are made. While to prevention is to identify traffic accident that occurred
   e. Semarang Health Departement was instrumental in efforts to control and coordinate with the hospital for emergency service.
2. Partnership Form

   Prevention and mitigation Partnership of traffic accidents in the city of Semarang belong to the kind of partnership Linear Collaborative Partnership which in this partnership does not distinguish between the amount of volume, legal status or the power of the parties that partner. Which becomes pressure is vision, mission and goals are achieved.
3. Barriers Potential
   a. Goals setting and Decision Making

      The purpose of the partnership is to undertake preventive measures and reduce the fatality victims of traffic accident. This is in accordance with the objectives in RUNK
   b. Coordination and Communication

      Coordination and communication among agencies that have been intensely

conducted by the Department of Highways, Traffic Polrestabes, Semarang Departement of Transportation, Communication and Informatics While kooordinasi and communication is still not widely carried out by Bappeda, while Bappeda is the leading sector of this RUNK.

c. Credit For Activities

Each agency in this partnership has been doing its own program, but there are some agency that have not made specifically for running RUNK Road namely Bappeda and Semarang Department of Health. This is because RUNK has not been a priority and it takes a strong commitment from the authorities to realize traffic safety efforts with this RUNK.

d. Assumption of Leadership

Stakeholders in each agency have the same assumptions and support this partnership that is support and cooperation of all sectors that contribute the partnership will be more fluent in their implementation.

e. Stakehoder Differences

In prevention and mitigation partnership of traffic accidents, according to the study there was no difference in philosophies or views between the partnering agencies. Because it has the same goal in preventive efforts to prevent and reduce the fatality victims.

f. Lack of Participation

Participation among several partners who are already well established because all sectors are mutually reinforcing and have good aim. However, there are still some that participation has not been fully carried out, namely the handling of post-accident because of the lack SPGDT specifically for crash

g. Public Relation and Media

Society is very excited with the programs prevention of traffic accidents but still lacking in practice road safety. For the prevention of traffic accidents are still many people who do not know the procedures for claiming to Jasa Raharja, this is because many people who do not report to the police station when the accident occurred and did not know the procedure for claiming the event of an accident

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# THE CORRELATION BETWEEN KNOWLEDGE AND ATTITUDETOWARDSCHILD BOOSTER IMMUNIZATIONATPUBLIC HEALTH CENTER (PHC) OF SUNGAI ULIN BANJARBARU

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**Abstract**

One of the indicators of the successfull immunization program is the achievement of Universal Child Immunization (UCI). Indonesia has been hit the target UCI, where at least 80% of children in each village have acquired complete basic immunization before the age of one year, but there are still many children in Indonesia who have not been given boosterimmunization or repeated immunization in children under age of 3.

This study was conducted to determine the correlation between mothers' knowledge and attitudes to childbooster immunizationat Public Health Center (PHC) of Sungai Ulin Banjarbaru South Kalimantan Province in 2015.

The study wasobservational analytic method with the cross sectional approach. The study population was all the mothers who have children aged 18-36 months who are in the working area of Public Health Center (PHC)of Sungai Ulin. The samples were 86 people which were taken by sampling technique intentional.

The result showed the knowledge of mothers towards child Booster immunization who have a good understanding is 11 respondents (12.8%), and pretty well is 52 respondents (60.5%), while for less understanding is 23 respondents (26.7%). Mothers' attitude toward child Booster immunization has received the majority of positive attitude as many as 64 respondents (74.4%), and who have a negative attitude is as many as 22 respondents (25.6%). Based on the results of the Chi Square test, it was found that there is a significant correlation between knowledgein chil Booster immunization of the mothers with p-value = 0.000. In the mother's attitude towardsin childBooster immunization p-value= 0.000. There is correlation between the mothers' knowledge in childbooster immunization and the attitude of the mother to child booster immunization.

We hope that mothers can improve knowledge and attitudes about the importance of Booster immunization so that mothers can bring their children to public health services.

**Keywords** : Knowledge, Attitude, Child Booster Immunization

## A. Introduction

Infant Mortality Rate (IMR) is the number of people who die before reaching the age of 1 year which is expressed in 1,000 live births in the same year. Infancy is a condition that is vulnerable both to morbidity and mortality. Infant Mortality Rate (IMR) is the number of children who die before reaching the age of 5 years are expressed as numbers per 1,000 live births.

Achievement IMR 32 in the year 2012 is less encouraging than the Ministry of Health Republic Indonesia strategic plan targets to be achieved, namely 24 in 2014 year also MDG target of 23 per 1,000 live births in 2015. IMR decline slowed between 2003 to 2012 from 35 to 32 per 1,000 live birth, all babie access need to key interventions such as exclusive breastfeeding or basic immunization, while based research (Riskesdas) 2010 year coverage amounted to 15%

exclusive breastfeeding, DPT-HB3 immunization by 62% and measles immunization 74%. While IMR fairly sharp downward trend between 1991 and 2003, namely from 97 per 1,000 live births to 46 per 1,000 live births. Various factors can cause a decrease in IMR including support for increased access to health care include improved access to health care toddler and an increase in basic immunization coverage .[1]

South Kalimantan Province alone IMR 2005 year ranks 5th highest in Indonesia at 41 per 1,000 live births. However, the mortality rate of newborns (neonatal) which in 2007 year was 39 per 1,000 live births (IDHS, 2007) which shows the figure is still above the national average, while in 2012 year based on the census conducted BPS in 2010 year reached 44 per 1,000 live births (Indonesia Health Profile, 2012).[2]

One indicator of the success of the immunization program is the achievement of Universal Child Immunization (UCI). WHO and UNICEF define indicator immunization coverage is 90% nationally and 80% in all districts. At 1990 year, Indonesia has reached a target UCI, where at least 80% of infants in each village has to get fully immunized before the age of one year, but there are still many children in Indonesia who have not been Booster immunized / repetition under the age of 3 years (MoH-RI, 2005).[3] Based on the recommendations of the SAGE (Strategic Advisory Group Of Expert On Immunnization) and based on the review of the Regional Review Meeting on Immunization WHO / SEARO in New Delhi and Indonesian Technical Advisory Group or Immunization (ITAGI) by 2010, the administration of Hib combined with DPT-HB into DPT-HB-Hib (pentavalent) to reduce the number of injections infants and need to be integrated into national immunization programs to reduce morbidity, disability and infant and child mortality due to pneumonia and meningitis so as to achieve the MDG's 4th "IMR 24 / 1,000 live births in 2015 years ".

Based on the profile Banjarbaru Health Department there are 8 Public Health Centers (PHC) under the auspices of the Banjarbaru Health Department wherein Five Basic immunization coverage Complete (LIL) for babies under one year which includes HB0, + Polio1 BCG, DPT-HB-Hib 1 + Polio 2, DPT- HB-Hib 2 + 3 Polio, DPT-HB-Hib 3 + 4 Polio and measles has reached the target according to the standard UCI 80%

Banjarbaru Health Department South Kalimantan Province immunization start programs continued called booster immunization in Infants under three years in May 2014 simultaneously in 8 Public Health Centers (PHC) that exist in the work area Banjarbaru consisting of PHC Banjarbaru at South Banjarbaru, Sungai Ulin, Sungai Besar, Cempaka, Landasan Ulin, Guntung Payung, North Banjarbaru and Liang Anggang.

Immunization booster in toddlers is giving two immunization (DPT-HB-Hib4 at the age of 18 months and measles 2 at the age of 24 months) immunization continued on schedule for children under 3 years, booster immunization useful to strengthen protection for longer against diseases dangerous, Target booster immunization in children expected Banjarbaru health department in 2014 was 80% with a target amount as much as 6.726 toddlers, but it turns out of 8 public health centers that exist in the Banjarbaru in May to December 2014 for DPT-HB- Hib 4 only reached 34.42% and 21.86% Measles 2 achieve this due to the child booster immunization program is still new so there are still many people who do not know.

Booster immunization data in child (DPT-HB-Hib 4 + Measles 2) of the month of May to December of 2014, the achievement of each health center in the Banjarbaru is PHC South Banjarbaru (30.0% + 23.3%) Total 53.3 %. Sungai Besar (17.9% + 4.9%) Total 22.8%. Cempaka (50.6% + 30.7%) Total 81.3%. Landasan Ulin (42.8% + 27.7%) Total 70.5%. Guntung Payung (22.7% + 15.9%) Total 38.6%. North Banjarbaru (28.6% + 15.3%) Total 43.9%. Liang Anggang (57.3% + 43.8%) Total 101.1% and Sungai Ulin (25.5% + 13.3%) Total 38.8%.

From the research by Abu Baker Ibrahim Lebur in Taif Saudi Arabia in 2013 with the title of the knowledge and attitudes of parents towards immunization showed as many as 731 parents who have a good knowledge and a

positive attitude on several aspects related to immunization, but the gap in both domains tend to be influential.

Completeness of immunization status can be influenced by knowledge, education and information obtained by the mother and the mother's attitude in bringing her child to the place of Public Health Care (PHC) to be immunized. Based on the above background research on " Related Knowledge and Attitude towards Child Booster Immunization Public Health Center (PHC) Sungai Ulin Banjarbaru"

**B. Methods**

The study design was observational analytic with cross sectional method is identifying / studying the relationship between maternal attitude toward in children Booster immunization. The research location is PHC Sungai Ulin at Banjarbaru South Kalimantan Province by 2015.

The population in study are all mothers with children aged 18-36 months who are in PHC Sungai Ulin totaling 577 people in 2014. The sample in this study were mothers of children aged 18-36 months who are in the PHC Sungai Ulin in April-May 2015.

The sampling technique was done by purposive sampling is a sampling technique that is based on the consideration or a specific purpose. The sample in this study was mothers who have children aged 18-36 months in PHC Sungai Ulin which will be held in April-May 2015 were 86 respondents, with consideration to the Inclusion criteria: Children aged 18-36 months, yet get booster immunization (DPT-HB-Hib 4 and measles 2), male and female. While the Exclusion Criteria: Children aged 18-36 months who are sick. Primary data in this study is about the knowledge and attitudes of mothers of children aged 18-36 months for booster immunization in toddlers in the PHC Sungai Ulin, which are collected questionnaires.

Research variables are independent variables is the knowledge and attitudes of mothers of children aged 18-36 months against child booster immunization, while the dependent variable was all mothers who have children aged 18-36 months who visited PHC Sungai Ulin by 2015. Analysis of this study is to connect knowledge and the attitude of mothers of children aged 18-36 months against child booster immunization. Analysis technique used is the analysis of che-square statistical test with confidence level $\alpha = 0.05$.

**C. Results and Discussion**

1. **Knowledge mother against child Booster Immunization at PHC Sungai Ulin**.
   Based on the table 1 above that of the mother Knowledge Booster immunization in infants majority Both have knowledge as much as 11 respondents (12.8%), and pretty well as much as 52 respondents (60.5%) while less good by 23 respondents (26.7%) .
2. **The mother's attitude toward child booster immunization at PHC Sungai Ulin.**
   Based on the table 2 above that the mother's attitude towards attitudes child Booster immunization obtained the majority have a positive attitude as much as 64 respondents (74.4%), and having a negative attitude as much as 22 respondents (25.6%).
3. **Relationship Knowledge of Child Booster Immunization at PHC Sungai Ulin, 2015.**
   The observation of the relationship of mothers towards in children immunization Booster Knowledge in PHC Sungai Ulin 2015 of 86 respondents presented in Table 3.
   Based on Table 3 above it can be seen that a good mother knowledge with attitude giving Booster immunizations of 11 respondents (12.8%) and knowledge well enough to give a booster immunization as many as 46 respondents (53.5%) while less knowledge either by providing as much Booster immunizations 1 respondent (1.1%). Then the knowledge of the mother well enough to not give a booster immunization as much as 6 respondents (7.0%), while less knowledge either by not giving Booster immunizations were 22 respondents (25.6%). Results of statistical test by Chi-square ($\alpha = 0, 05$) p value = 0.000 which is smaller than 0.05 then Ho is rejected means that statistically there in child booster immunization against knowledge relations in PHC Sungai Ulin 2015.

Based on the results of the research showed that the mothers' knowledge in children booster immunization majority Both have knowledge as much as 11 respondents (12.8%), and pretty well as much as 52 respondents (60.5%) while less good by 23 respondents (26.7%) ,

From the above results can be seen on maternal knowledge Booster immunization is very important to raise awareness about the importance of healthy living with prevention through Booster immunization. Maternal knowledge about booster immunizations may be obtained from various sources of mass media and information media such as television, radio, print media and so on in order to make people behave in a life healthy. This is in accordance with what is stated by Notoatmodjo (2012), (4)states that knowledge also can get in a formal manner through the mass media, electronic media, and of others.

Advanced Booster immunizations (DPT-HB-Hib), and measles is aiming to further improve the immune re-formed, because at the age of 15-18 months the number of antibodies in the body start to decline. Advanced immunization for children aged 18 months (1.5 years) was given DPT-HB-Hib, where the distance of at least 12 months of his administration of DPT-HB-Hib last. While children aged 24 months (2 years) immunized against measles with a minimum requirement of 6 months from the first dose of measles. For further immunization can still be given to children aged less than 36 months. DPT-HB-Hib is a vaccine that can prevent the basis of the five diseases such as diphtheria, pertussis, tetanus, hepatitis B and Haemophylus influenzae type B (5).

Complete basic immunization accompanied by immunization Booster / amplifier is useful to provide a long and comprehensive

Table 1. Mother Knowledge frequency distribution based on child Booster immunization in PHC Sungai Ulin 2015

| No | Knowledge | Respondent | Percentage |
|---|---|---|---|
| 1 | Good | 11 | 12,8% |
| 2 | Pretty good | 52 | 60,5% |
| 3 | Not good | 23 | 26,7% |
| | Total | 86 | 100% |

Table 2. Frequency distribution by mother's attitude towards in child Booster immunization at PHC Sungai Ulin 2015

| No | Knowledge | Respondent | Percentage |
|---|---|---|---|
| 1 | Positive | 64 | 74,4% |
| 2 | Negative | 22 | 25,6% |
| | Total | 86 | 100% |

Table 3. Knowledge of the relationship of mothers towards in child Booster immunization in PHC Sungai Ulin 2015

| Knowledge | Immunization | | | | Total | | Statistical test results |
|---|---|---|---|---|---|---|---|
| | Yes | | No | | | | |
| | n | % | n | % | N | % | p=0,000 |
| Good | 11 | 12,8 | 0 | 0 | 11 | 12,8 | |
| Pretty good | 46 | 53,5 | 6 | 7,0 | 52 | 60,5 | |
| Not good | 1 | 1,1 | 22 | 25,6 | 23 | 26,7 | |
| Total | 58 | 67,4 | 28 | 32,6 | 86 | 100 | |

**Cit:** n=Sample., %=Percentage

protection against dangerous diseases that can be prevented by immunization. By providing a complete immunization schedule, the child's body is stimulated to have immunity so that the body is able to defend against the invasion of harmful diseases that can be prevented by immunization (Banjarbaru Health Department, 2014). (13)They were still sufficient knowledge and less on the benefits of booster immunization for children and when a booster immunization schedule due to lack of information from both print and electronic media as well as the lack of information from health workers on immunization Booster to mothers who have children. Knowledge is the result out and this happens after someone did sensing to a particular object. Sensing occurs through human senses, the sense of sight, hearing, smell, taste and touch. Mostly obtained through the eyes and ears. Domain knowledge is very important for the formation of action seseorag (over behavior).(6)

Influencing knowledge factors is age, education, employment, information, culture, social and economic environment. Increasing the age will be growing anyway perception and thought patterns, Till knowledge obtained is getting better. The higher one's education the easier person to receive the information, parent education is one important factor in the growth and development of children as a good education, parents can receive all the information from the outside, especially about good parenting, how to keep children's health and education. Maternal employment status can affect the child's health status. There many of difference in the child's immunization status, if in addition to housewives as well as the breadwinner (work) because as a working mother means most of the time will be taken so that its role in terms of bringing their children for immunization had to be done by others, while a mother who does not work tend to take their children for routine immunization. Mothers get new innovation through the development of technology and the mass media. Social economy will also determine the availability of a facility that is required for certain activities. The reverse reaction of individuals towards the environment and culture also affect the level of knowledge .(7)

One of the most affecting learning, media / information and the environment because of information obtained from both formal and non-formal education can influence so as to produce a change or an increase in knowledge. Lack of information about immunization Booster for causes mothers do not give a booster immunization to her toddler. It is generally caused by a lack of information on Immunization Booster. Information obtained maternal influence maternal behavior in the face of health problems children when trying to get a full basic immunization and booster immunizations. Submission of misinformation or incomplete and delivery of information overload can cause confusion among mothers to various problems, one of them on the issue of Booster Immunization.

This research was supported by Azizah (2013)(8) conducted in the PHC South Alalak in getting the results of the 66 respondents to the completeness mother Knowledge Base on Childhood immunization 1-1.5 Good Year

Table 4. Relations mother's attitude towards child immunization Booster in PHC Sungai Ulin 2015

| attitude | Imnunization | | | | Total | | Results of statistical tests |
|---|---|---|---|---|---|---|---|
| | Yes | | No | | | | |
| | n | % | N | % | n | % | p=0,000 |
| Positive | 54 | 62,8 | 10 | 11,6 | 64 | 74,4 | OR=24,300 |
| negative | 4 | 4,7 | 18 | 20,9 | 22 | 25,6 | |
| Total | 58 | 67,4 | 28 | 32,6 | 86 | 100 | |

**Cit:** n=Sample., %=Percentage

majority have knowledge of 20 respondents (30.3%) and pretty well as much as 28 respondents (42.4%), while less well as 18 respondents (27.3%), and this research was supported by Widayati (2012)(9) that the majority of respondents who have this level of knowledge was as much as 88 respondents (53%), while respondents with low knowledge as much as 34 respondents (20%). This research connect was supported by Isnaini (2013)(10), which examines the basic immunization that mothers who have children Good knowledge as much as 14 respondents (23.0%), and pretty well as much as 44 respondents (73.3%), while less well as 2 respondents (3 , 3%).

4. **Relationship Attitudes Toward Child Booster Immunization at PHC Sungai Ulin**.

The observation of the relationship of mothers towards child immunization booster knowledge in PHC Sungai Ulin 2015 of 86 respondents presented in Table 4.

Based on Table 4 above can be seen that the attitude positive mothers in providing booster immunizations of 54 respondents (62.8%) and negative mother's attitude by providing booster immunization by 4 respondents (4.7%), while the mother is positive attitude by not giving as much Booster immunizations 10 respondents (11.6%) and negative maternal attitude by not giving immunizations Booster total of 18 respondents (20.9%). Results of statistical test by Chi-square ($\alpha$ = 0, 05) p value = 0.000 which is smaller than 0.05 then Ho is statistically means no relationship Attitudes Toward child Booster immunization at PHC Sungai Ulin 2015, with the value OR = 24.300, which means women having a positive attitude will give you a chance 24.300 times in child booster immunization compared to mothers who have a negative attitude.

Based on the results of the research showed that the mother's attitude toward child Booster immunization in infants obtained the majority have a positive attitude as much as 64 respondents (74.4%), and having a negative attitude as much as 22 respondents (25.6%).

According to the researchers assumption maternal attitudes towards immunization included in the positive category this directly affects the mother's action in giving in children Booster immunization and some mothers who act negatively because mothers do not need to argue given Booster immunizations because they think their children have received complete immunization without there must be a repeat immunization and also influenced by environmental factors such as people who are influential around. Attitude is a reaction or respon were still closed from a person to a stimulation or object. Manifestations attitude can not be seen, but can only be interpreted in advance of a closed behavior. That attitude is still a closed reaction, not an open reaction or behavior open. An attitude of readiness to react to the object .[6]

Of the various manifestations of an attitude limits the attitude that can not be seen, but can only be interpreted in advance of behaviors covered. Attitude clearly shows the connotation of the suitability of a reaction to a particular stimulus. Attitude is the readiness or willingness to act. Factors, influencing attitudes towards an attitude object, among others: personal experience, Influence others that are considered important, influence of culture, media, education and religious institutions as well as emotional factors.

Research on attitudes supported by Azizah (2013) [8] conducted in the PHC South Alalak in getting the results of 66 respondents attitude towards basic immunization mother obtained the majority have a positive attitude as much as 40 respondents (60.6%), and having a negative attitude as much as 26 respondents (39.4%). This research connect with by Widayati (2012) [9]Attitudes towards basic immunization mother obtained the majority have a positive attitude as much as 19 respondents (63.3%), and having a negative attitude as much as 11 respondents (36.7%),

and research supported by Isnaini (2013) [10] showed that maternal attitudes about immunization support base by 27 respondents (45.0%), while women who do not support as many as 33 respondents (55.0%).

**D. Conclusion**

Relationship Knowledge of mothers towards child booster immunization at Public Health Center (PHC) Sungai Ulin, and there is a relationship mother's attitude towards child booster immunization at PHC Sungai Ulin with $p = 0.000$ and $\alpha = 0.05$.

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# ELEMENTARY SCHOOL STUDENTS' KNOWLEDGE DIFFERENCE BEFORE AND AFTER GETTING INFORMATION ON THE BEHAVIOR OF CLEAN AND HEALTHY LIVING

## Quasi-Experimental Studies in Melayu Elementary School, Martapura

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**Abstract**

Melayu Elementary School which is located along the Martapura river has great potential to have students who used to perform daily activities using the river water. Children who live along the river spend their time on the river. This makes them vulnerable to infection of various diseases, either directly through the skin infection when they were playing in the river and indirectly, through drinking water from the source of water from rivers where they live. One of the right solutions about this conditions is by providing then with health education to increase knowledge and awareness about health. This knowledge is especially, given to the children of school age to maintain the clean and healthy lifestyle (healthy and hygiene practices, PHBS). This research is a quantitative research using quasi-experimental approach with one group pre- and post-test design. The population of the study is 49 students, with sample of 29 respondents who were determined by using purposive sampling technique. Instruments of the research is using questionnaires. The treatment variable is the provision of health promotion information about the behavior of healthy and clean life, while the dependent variable is the knowledge of elementary school students in Melayu Elementary School .The results showed that two students (6.9%), still have less knowledge and as many as 27 students (93.1%) have a good knowledge about PHBS prior to counseling. While after the treatment, there is no students who has less knowledge or all students (100%) have a good knowledge of PHBS. Based on Wilcoxon test, it showed that there was no difference in knowledge, before and after counseling. This is because almost all of the students already have a good knowledge prior to counseling so there was no significant difference in the level of knowledge after counseling.

**Keywords** : Education, Knowledge, PHBS

## A. Introduction

The incidence of diarrhea in Banjar Regency until 2013 is still very high when compared to other districts in South Kalimantan as many as 9,920 cases. Also, it showed that there is an increase incidence of diarrhea cases in the last three years as many as 1,711 cases. In 2011, there was 8209, the year 2012 was 9,650 cases. One of the health centers which has the highest cases of diarrhea and continues to show an increase. In 2011, there was 520 cases, as many as 919 cases in 2012, and by 2013 there are as many as 1,141 cases (Profile of banjar regency health office in 2013).

Household and school could be one of the places that got threaten of the disease if it is not properly managed. Application of PHBS in the second place is an absolute necessity along with the emergence of various diseases that attack children of school age (6-10 years), which was associated with PHBS, especially hygiene and sanitation (Ministry of Health RI, 2008). Children is one of important components in public health. Healthy community for the future is determined primarily by the understanding of the attitudes

and habits of healthy life that are owned by the current generation of children. Besides, the school is seen as an institution that is prepared to increase the degree of community and teachers as its driving force (Luthviantin et al. 2011).

Based on the above description of the behavior of hygiene and sanitation, especially in children of primary school age and in relation to diseases, so it becomes very important to investigate the differences in the level of knowledge of elementary school students before and after the provision of information about the behavior of clean and healthy living in Melayu Elementary School. The purpose of this study was to analyze differences in the level of knowledge of elementary school students before and after the provision of information about the behavior of a clean and healthy living in the Melayu Elementary School.

**B. Method**

This research is using quantitative design. Quantitative approach was conducted by using pre-experimental research with the approach of one group pre-and post-test. Inclusion criteria for the selection of the sample with primary school children who are in grade one, two and three in Elementary School Malays. The selection of the sample are those who are willing to become respondents and can work and communicate well, physically and mentally healthy.

Data were analyzed by using bi-variate to know the differences in the level of knowledge of elementary school students before and after the provision of information on PHBS in Melayu Elementary School by using the Wilcoxon test with significance limit of $p \leq 0.05$.

**C. Results and Discussion**

**1. Univariate Analysis `**

In this study, the focus of research is the knowledge level of elementary school students before and after providing information about health and hygiene behavior in Melayu Elementary School. Based on a study of 29 respondents, it obtained the frequency distribution of elementary school students' knowledge level before and after the provision of information concerning hygienic behavior and healthy in Elementary School Melayu presented in Figure 1.

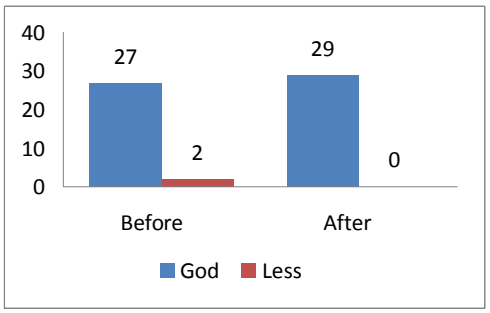


Figure 1. The frequency distribution of the Knowledge Level Students Elementary School Melayu Martapura

Based on the chart above there are two students (6.9%), who still have less knowledge and as many as 27 students (93.1%) who have a good knowledge of PHBS prior to counseling. However, after the treatment there is no students who have less knowledge or all students (100%) have a good knowledge of PHBs. It is because the material presented in the extension activities is using methods of lecture and discussion. This method is an effective way to approach the group. At a lecture and discussion, it is expected to arise behavior change process that is expected through active participation goals and exchange of experiences among the target.

**2. Bivariate Analysis**

The difference between the knowledge level of elementary school students before and after the provision of information about the behavior of a clean and healthy living in Melayu Elementary School can be seen in Table 1.

Table 1. Differences in the level of knowledge of students of Melayu Elementary School before and after counseling

| Before | After | | Sum | p-value |
|---|---|---|---|---|
| | Less | Good | | |
| **Less** | 0 | 2 | 2 | 0,157 |
| **Good** | 0 | 27 | 27 | |
| **Total** | 0 | 29 | 29 | |

Based on the table 1.1 it can be seen that the results of the analysis using Wilcoxon test p-value of 0.157. It can be concluded that there is no difference in knowledge before and after counseling. This is because almost all of the students already have a good knowledge prior to counseling so there was no significant difference in the level of knowledge after counseling.

In the course of this extension, the method used was considered appropriate, but as described by Notoatmodjo (2007) that the method of lecture and discussion emerge the behavior change process that is expected through active participation goals and exchange of experiences among the target. Target active role in the activities of this extension is the least because students feel embarrassed for asking questions related to extension materials.

Optimal behavior will influence on optimal health status as well. Optimal behavior is a whole pattern of strength, personal habits or society, whether consciously or not that led to personal or community efforts to help themselves from health problems. Patterns of behavior/habits related to promotional and preventive measures that should be on every individual or public. (Elisabeth, 2008)

School age is very sensitive to instill and healthy living habits, health status of school children will greatly affect the achievement of learning achieved. Health education through school children is very effective to change behavior and healthy habits in general. Schools play an important role in education because it immense on the influence on the psyche of the children, in addition to the family as a center of education, the school also has a function as an educational center for children's personal formation. PHBS in schools is an attempt to empower students, teachers, and the public school environment in order to know, willing, and able to practice PHBS and play an active role in creating a healthy school. (Natalina, 2009).

At Melayu Elementary School, the school's role in creating a clean and healthy student behavior is quite optimal. It can be seen from the results of observations and interviews with the principal that indicates that it has attempted to inculcate the habit of maintaining personal hygiene and the environment, among others with provide clean water and other means of support such as soap and trash sufficient, toilet schools and media promotion (posters) which is capable of supporting students to behave clean and healthy living. Here are excerpts of interviews with the principal of Melayu Elementary School.

*"yes, the school already had toilets for students and teachers. Of separate toilet nevertheless, it's there in the back ... please if you want to see."*

The school environment will determine the condition of the students at the school. Poor school environment can damage the status of the school and can further damage the health condition of the students from the dangers such as the infectious diseases which is transmitted through water. Education about personal hygiene becomes is less meaningful in the absence of drinking water and sanitation facilities. Schools can reinforce messages about personal hygiene and health by providing these facilities. This can be a good example for students and the wider community that can ultimately lead to the same facility needs in the community.

Policy regarding construction must be able to support the efforts to address gender issues and privacy. Therefore, health education-based skills are also very necessary because this approach is necessary for health education, nutrition and hygiene focused on the development of knowledge, attitudes, values and life skills (life skills) needed to act, make decisions relating to health positive and appropriate. Health is not just concerning the physical health but also the environment (environment) and psycho-social. Social and behavioral factors, unhealthy environment are not only affects the lifestyle, health and nutrition, but also hinder the opportunity to attend school. Development of attitudes related to gender (race equality of men and women) and the development of specific skills such as the face of pressure by peers is central to the skills-based health education in an effective and positive social environment. When

the students have better skills, it will ensure someone to adopt and continue to implement healthy behavior during school.

In addition, environmental management is a matter that must be implemented in order to live a healthy life. Healthy environmental conditions can support the growth of healthy behavior and can affect the physical and spiritual health and avoid negative influences that can damage health. To get used to living a clean and healthy school environment, they are influenced by several factors, namely the provision of clean water, there must be, landfills and the management as well as the availability of sewerage human or toilets in the school environment are adequate, and these are the environmental sanitation, especially the school environment.

In a smaller scale, environmental sanitation hygiene condition of schools, tend to be forgotten. Poor sanitary conditions, could significantly affect the health level of students in the school concerned.

But the availability of means of support does not fully guarantee that the students always use the facilities provided by the school. It can be seen from all students as respondents there are nine people (18.4%) who misbehave on hygiene and sanitation, especially when they are in the school environment.

PHBS implementation efforts in schools directly combine the potential parents, teachers and health workers as well as from the local health department. Teachers are directed to assist the implementation of PHBS in the framework of educational institutions. In addition, teachers are expected to encourage their children in implementing and maintain good health habits. According to Green, the teacher has the role of the child's behavior in maintaining health. Teachers can act as counselors, giving instruction, motivator, manager, and models show something good example in clean and healthy life behavior (Natalina, 2009).

## D. Conslusion

Based on the results of research there are two students (6.9%), who still have less knowledge and as many as 27 students (93.1%) who have a good knowledge about PHBS prior to counseling. While after the treatment, there is no students who have less knowledge or all students (100%) have a good knowledge of PHBs.

Based on Wilcoxon test, it showed that there was no difference in knowledge, before and after counseling. This is because almost all of the students already have a good knowledge prior to counseling so there was no significant difference in the level of knowledge after counseling.

**Suggestions**

The provision of health information through counseling should be conducted on an ongoing basis. Teachers also need to improve PHBS in schools through school sanitation activities such as promoting hand washing, improvement of facilities in schools as a means to hold the sinks and soap in order to reduce the risk of worm infection and diarrhea.

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# BEHAVIOR OF FEMALE SEX WORKERS (FSW) IN PREVENTION STIS AND HIV/AIDS IN DISTRICT SINTANG

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**Abstract**

Female Sex Workers (FSW) is one of a high risk infected population of STIs and HIV/AIDS. High rates of STIs and HIV/AIDS among FWS among others due to lack of the preventide behavior. The porpose of this study is to invesigate the determinants of the behavior of FSW in the prevention of STIs and HIV/AIDS that included age, education, marital status, family support, peer support, support pimps, support health workers, knowledge and attitudes.

This research used cross-sectional design with sample of 90 FSW. Techniques of data collection using questionaries, data analysis using univariate and bivariate analysis using chi square statistical test.

The result showed the majority of FSW in the consistent use of condoms. The variable related are age, family support, peer support support pimps, support health workers, knowledge and attitudes to the behavior of STIs and HIV/AIDS.

The improvement by health promotion program and the consistency of condom using will be more applicable effort.

**Keywords**: Behaviour, FSW, IMS and HIV/AIDS

## A. Introduction

*Millennium Development Goals* (MDG's) is development millenium with effort for meet rights basic needs human through commitment with for implement eight aim one of its development, namely the fight against epidemiologic of HIV/AIDS, malaria and disease spread other harmful health.

Sexually Transmitted Infections (STIs) is a disease transmitted through sexual intercourse. According to the *World Health Organization* (WHO), there are more than 30 types of microbes that can be transmitted through sexual contact conditions are most often found among them, namely HIV and *syphilis,* can also be transmitted from mother to children during pregnancy and pregnancy, through blood and body tissue (WHO, 2009).

STIs cases continues to increase worldwide. Data released by WHO in 2005 there were 457 million people worldwide are affected by STIs (Schmid, 2009). Since 2008, the number sufferer woman and a man is almost the same at around 1.34 per 100.000 population for women and 1.03 per 100.000 population for men (Nurhalina Afriana, 2012).

STIs is one of the causes of health problems, social and economic in many countries as well as mer upakan one entrance HIV/AIDS. The existence of STIs has exercised a great influence in the control of HIV/AIDS. At the same time, the increased incidence of resistance arising germs that cause STIs to some antimicrobials, which will add to the problem d a the treatment of STIs. On the other hand STIs is also a co-factor of HIV infection, thereby increasing cases of sexually transmitted infections could allow an increase in cases of HIV infection and AIDS (Edy Widodo, 2009).

An increased incidence of STIs and HIV/AIDS as well as the distribution of diesel uruh world can not be estimated precisely. STIs again

received great attention since the development of HIV infection and AIDS. HIV/AIDS cases in Indonesia until the September 2007 there were 16.288 cases, consisting of 5.904 cases of HIV/AIDS 10.384 with the cases of as many as 2,287 people died, while the STIs cases in 2010 in Indonesia was 48.789.954 people (Depkes RI di dalam Nurcholius dkk, 2008). STIs cases continues to increase, the phenomenon of the increase and spread of STIs cases that occur in high-risk groups such fast, one of the high-risk groups is Female Sex Workers (FSW) (Edy Widodo, 2009).

Surveilans Terpadu Biologis dan Perilaku (STBP) in 2011 by the Ministry of Health of the Republic of Indonesia showed the prevalence gonoroe or klamida on FSW Direct by 56% experienced a 10% increase from the year 2007 by 46% while in FSW Not Direct in 2011 amounted to 47% experiencing ken aikan 12% compared to 2007 which amounted to 35% (Kemenkes RI, 2011). Coverage STIs treated in all districts in Indonesia in 2005-2007 was 68.64% whereas the target of 100% SPM (Tim Field Lab, 2013).

FSW is a high-risk group given ter contact STIs in this group used to perform sexual activity with a partner who does not remain, with a very high level of mobility in the group. Although STIs is a disease caused by infectious organisms, but t ernyata in its distribution is strongly influenced by the behavior patterns and lifestyle (Yuwono, 2007).

West Kalimantan Province has a STIs cases is quite high and has increased every year. The number of cases of STIs in West Kalimantan in 2007 found as many as 2.365 cases of the number of patients treated by 99%, in 2009 as many as 2.361 cases of the case treated as much as 98%, in 2010 found as many as 2.567 cases and in 2011 the case of STIs 5773 case and in 2012 increased to 6419 cases mostly are women.

Sintang District STIs patients is quite high, according to data on the clinic STIs Health Center Sungai Durian Sintang in 2012 recorded 113 cases of STIs in 119 FSW, in 2013 there were 58 cases of STIs are affordable at 90 FSW and January-March 2014 there were 24 cases of STIs in 97 FSW in Merano which houses the largest population of existing FSW. Decrease in STIs cases in the last two years due to the FSW terd a number ta in 2013 is reduced and at the time of inspection in the field STIs FSW concerned does not wish to be examined. STIs incidence occurs in over 50% of FSW. This is a concern which is quite serious and alarming because FSW is a high-r isk for contracting and transmitting STIs.

**B. Method**

This study used *cross sectional* design and was conducted in June-July 2014 Sintang through a quantitative approach. The population in this study are all FSW in Complex Merano 90 people. The sample is determined using the method of total sampling with a sample obtained 90 FSW. As kriteris inclusion, namely the FSW located in Merano location, not being sick, and willing to become respondents by filling informed consent.

The research instrument used in the form of a questionnaire sheet. Data analysis was performed using univariate analysis to explain or describe the independent variables. Bivariate analysis using chi square test d ith the value of $\alpha = 0.05$ with statistical computer program used to explain the relationship between the independent variable and the dependent variable.

**C. Result and discussion**

**Limitation od the study**

This study uses a cross-sectional design, which all variables ati silent when research takes place so that the study was limited to explaining the relationship between the two variables and can not explain the causal relationship, and not control confounding factors. Gave a briefing on the contents of the questionnaire respondents, cover a n knowledge is still lacking, the amount of still lacking, the respondents gave a neutral stance makes centralized assessment, and the possibility of respondents are not honest in answering personal nature.

The results showed the majority of FSW consistent in using condoms. This is caused by the ability of negotiating and bargaining FSW weak with respect to the economic dependence

of the respondents to the customer. The variables associated are age, family support, peer support, support pimps, support health workers, knowledge behaviors and attitudes with STIs and HIV/AIDS.

The results showed there is a significant relationship between age and behavioral prevention of STIs and HIV/AIDS with a p-value (0.007). According t through Home Visits Health Belief Model (HBM) there are four factors that affect a person in preventive measures, namely: susceptibility, severity, barrier and the perceived benefits. These four factors are influenced by demographic factors (age, gender and rear r lata), socio-psychological factors (personality and social pressures) and structural variables (knowledge and experience on health issues).

Respondents younger behavior STIs prevention and HIV/AIDS due to several factors s eperi knowledge and experience gained fewer than old age. The results showed there is a significant relationship between family support with behavioral prevention of STIs and HIV/AIDS with a p-value (0.003). The research result shows me there is a significant relationship between friends with behavioral support STIs and HIV/AIDS with a p-value (0.049).

The results showed there is a significant relationship between pimps with behavioral support prevention of STIs and HIV/AIDS with a p-value (0.001). This, in line with previous research conducted by Ana Sian Sutri (2012) in a study of the FSW in Serdang Bedagai, stating that there is a significant relationship with a pimp support STIs ncegahan pe behavior. This research is also consistent with research Boediono (2011) in Semarang Argorejo states that support pimp/pimp influence the practice of condom use among FSW and customers.

Results of research conducted in Bali IAKMI to FSW in 2010, states that other factors related to ketidakkosistenan use of condoms is the relationship between FSW with pimping. In general the relationship pimps and FSW in prostitution in Bali is very short, sementa r a and only focused on the effort to make money. FSW high mobility from one location to another is one of the factors that cause relationships FSW and pimps become less tightly. FSW empowerment to refuse customers who tid a k want to wear a condom will not work well without the involvement of a pimp as owner and boss FSW location.

The results showed there is a significant relationship between knowledge and behavior of STIs and HIV/AIDS with a p-value (0.030). This is in line with the opinion of Notoatmodjo (2007), which suggests a knowledge or cognitive domains that are essential to the formation of one's actions. The depth of knowledge a person can be known through me r eka levels have started from levels know, someone just able to refer to the terms just based on what is learned or experienced. Then enter into the level of understanding, application, analysis, synthesis, and evaluation (Arip, 2013).

Knowledge is a predisposing factor crucial for shaping the behavior so that their knowledge is high then one can realize a positive action (Arip, 2013). Hopefully, by the FSW knowledge about STIs can terw intentions and a good attitude is also manifested in the practice of consciousness and behavioral intentions in the prevention of STIs.

The results showed there is a significant relationship between attitude and behavior of STIs and HIV/AIDS with a p-value (0.033). Se theoretical way according to Henry et al (2011) attitude is a reaction or response from a person who is still closed to the stimulus or object. Attitude makes a person toward or away from another person or other object, but a positive attitude or support to the values of health is not always manifested in action (Siti Fatimah, 2013).

This, in line with previous research conducted by Karim, risks in reaching (2006) in a study of the FSW in resocialization Argorejo Semarang, feel there was a significant relationship between attitude and behavior. Likewise, the study conducted by Siti Fatimah (2013) which states there is a relationship between attitudes to the behavior of preventing transmission of STIs.

**D. Conclusion**

Efforts to improve health i promos program should be more applicable and FSW consistent in using condoms.

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# CONSISTENCY IN THE USE OF CONDOMS ON PEOPLE LIVING WITH HIV/AIDS (PLWHA) IN DISTRICT SINTANG

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**Abstract**

People Living With HIV/AIDS (PLWHA) is a high-risk group. High rates of HIV/AIDS among people living with HIV is due to the low level of awareness for the use of condoms. For the prevention of AIDS, PLWHA need to be consistent in the use of condoms. The purpose of this study is to investigate the determinants of PLWHA consistency in the use condoms, which include age, occupation, education level, marital status, income, knowledge, support of friend, family support and support of health workers or counselors.

This research used cross-sectional framework with sample of 125 PLWHA. Techniques of data collection using questionaries, data analysis using univariate and bivariate analysis using chi square statistical test.

The results showed that the majority of PLWHA has been inconsistent in the use of condoms. Variable related to age, accupation, level of education, knowledge, any support families and support health workers.

The improvement by health promotion program and the consistency of condom using will be more applicable effort.

**Keywords**: PLWHA, Consistency, Condom

## A. Introduction

AIDS stands for Acquired Immune Deficiency Syndrome Acquired means a collection of symptoms caused by lack or weakness of the immune system caused by HIV or Human Immunodeficiency Virus. In Indonesia, HIV/AIDS was first discovered in the province of Bali in 1987 and until 2014 has spread in 386 districts/cities in all provinces in Indonesia. The cumulative number of people living with HIV from 1987 to September 2014 as many as 150.296 people, while the total cumulative AIDS cases as many as 55.799 people.

The number of HIV infections in West Kalimantan were reported in 2012 as many as 607, mostly obtained from the VCT in hospitals. Cases of AIDS as many as 797 cases more than in 2011 (521 cases) where the case was obtained from hospital VCT reports, routine reports of AIDS districts/municipalities and the Department of Health District/City. An increase in AIDS cases is due to the effort of finding or searching the case increasingly intense shifts through VCT in hospitals d an outreach effort by the NGO P eduli AIDS in high-risk groups. HIV/AIDS is an iceberg phenomenon, meaning that the reported cases only a small part in the community. The number of deaths due to AIDS in Kalimantan West in 2012 as many as 149 cases. Tendency *(trend)* of cases of HIV and AIDS in West Kalimantan always increase every year. The number of new cases of HIV/AIDS is the highest in the city of Pontianak (81/110 cases), the number of deaths due to AIDS Highest in Pontianak as many as 18 cases.

Number of HIV cases in the discovery of Sintang District in 2013 which amounted to 430 cases (17.3%). The above data is the data of HIV cases found Sintang report VCT clinics, so that not han yes Sintang District residents but also outside of Sintang. While data for cases of HIV in 2013 Sintang district just 174 people, with the

condition of 75 people already on the stage of AIDS. During the years 2010-2013 the age group 25-49 years old pal ing of HIV infections with a total of 1.122 cases. By mapping the distribution can be known HIV cases during 2011-2013 Sintang already spread throughout the district, according to the District of the highest HIV cases are distri tan Sintang as many as 46 cases. In 2013 the number of AIDS cases in the District Sintang as many as 75 cases of death from AIDS in 2013 as many as seven people. The cumulative number of HIV cases from 1998 to 2013 as many as four 14 cases. Map the spread of AIDS in kasu s Sintang District in 2013 almost all districts in Sintang. memili districts ki AIDS cases as high as the District Sepauk, Sintang, Tebelian River, and the Dark Permai.

Early drug discovery tiretroviral (ARV) in 1996 led to a revolution in the treatment of people with HIV/AIDS (PLWHA) in developed countries. Although not able to cure the disease but dramatically ARV therapy to reduce mortality and morbidity, menin gkatkan cauldron bag life of PLHIV, as well as improving people's expectations, so at this time of HIV/AIDS has been accepted as a disease that can be controlled and no longer considered a dread disease, Figures deaths *(Case Fatality* Rate) due to AIDS in Indonesia since 2004 tended to decrease from 13.86% to 1.67% in 2013.

Situation report Progression of HIV/AIDS in Indonesia until September 2011 showed the number of people living with HIV who receive antiretroviral therapy as many as 22.843 of the 33 provinces d's 300 districts / cities, the ratio of men and women 3: 1, and the highest percentage in the age group of 20- 29 years. The cumulative number of people living with HIV who are eligible ARV Sintang in 2013 amounted to 2,095 persons. The cumulative number of people living with HIV are breathing h antiretrovirals Sintang until the year 2013 as many as 1.873 people. The percentage of people living with HIV who get the services CST at 90.97%.

At first, poor health in people with HIV/AIDS can prevent them from sexual activity. With the perbai further health through ART, sexual desire reappeared and people with HIV/AIDS, is involved in sex. At this time the life expectancy of people with HIV/AIDS is almost the same as people who are HIV-negative.

Expanding access pa da *Anti Retroviral Therapy* (ART) and the increase in the number of people living longer with HIV form a potential source of infection. If people living with HIV do not consistently practice safer sexual behavior, they can Menem patkan themselves at risk of sexually transmitted infections (STIs), HIV infection of other species, and put others at risk for HIV infection.

**B. Method**

This study was an observational analytic study with a quantitative approach. P Endeka quantitative tan used to provide a picture of the factors associated with risky sexual practices in people with HIV/AIDS.

Explanation of the relationship between the variable-independent variable on the dependent variable ukan sealed with hypothesis testing, as well as the approach to the time of data collection using cross sectional design *(cross-sectional)* where data related independent variables and the dependent variable will be collected at the same time.

Population dijadik early as the subject of this study is that patients with HIV/AIDS were recorded accessing ART in ART clinics in hospitals Sintang with the criteria of exclusion: patients aged 18 years and over at the time of data collection, ready for downloading so research respondents , diagnosed with HIV at least three months, had been sexually active in the past year and have visited the ART clinic at least twice. The total sample of 74 respondents.

**C. Result and discussion**

The results showed the majority of people living with HIV has been inconsistent in the use of condoms. This is caused by the ability to negotiate and PLWHA strong bargaining position in relation to the respondents' economic dependence on customers. Variables associated is Varia b el-related age, occupation, level of education, knowledge, family support and

support of health workers with PLWHA consistency in the use of condoms.

The results showed there is a significant relationship between age and k onsistensi PLWHA in the use of condoms with a p-value (0.007). According to the theory *Health Belief Model* (HBM) there are four factors that affect a person in preventive measures, namely: the vulnerability, severity, barriers and perceived benefits. These four factors are influenced by demographic factors (age, gender and background), socio-psychological factors (personality and social pressures) and structural variables (knowledge and experience on health issues).

Respondents younger me had behavioral STI and HIV/AIDS due to several factors are like the knowledge and experience gained fewer than old age. The results showed there is a significant relationship between Odh A job consistency in condom use with a p-value (0.003). The results showed there is a significant relationship between the level of education with the consistency of condom use by people living with HIV in the p-value (0.049).

The results showed there is a significant relationship between knowledge and consistency of condom use by people living with HIV in the p-value (0.030). This is in line with the opinion of Notoatmodjo (2007), which suggests a knowledge or cognitive domains that are essential to the formation of one's actions. The depth of knowledge a person can be known through their levels ranging from levels know, someone just able to refer to the terms just based on what is learned or experienced. Then go to the level of understanding, application, analysis, synthesis, and evaluation (Arip, 2013).

Knowledge is a predisposing factor crucial for shaping the behavior so that their knowledge is high then one can realize a tinda the positive (Arip, 2013). Hopefully, by the PLWHA knowledge about STIs and HIV/AIDS can be realized a good attitude and is also manifested in the practice of consciousness and behavioral intentions in the prevention of STIs and HIV/AIDS.

Ukkan menunj research results are a significant relationship between the attitude of the people living with HIV consistency in the use of condoms with a p-value (0.033). Theoretically according to Henry et al (2011) attitude is a reaction or response from a person who is still closed to the stimulus or object. Attitude makes a person toward or away from another person or other object, but a positive attitude or supportive of health values are not always materialize in action (Siti Fatimah, 2013).

## D. Conclusion

Efforts to improve health romosi p program should be more applicable and PLWHA consistent in using condoms.

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# THYROID FUNCTION DISORDER AND QUALITY OF LIFE ON CHILDBEARING WOMEN IN ENDEMIC AREAS OF IODINE DEFICIENCY

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**Abstract**

Indonesia has not been free from iodine deficiency, new problems that occur in endemic areas of iodine deficiency is the presence of iodine excessive. Both deficiency and excessive of iodine can result in thyroid dysfunction. Impaired thyroid function is manifest broadly on biopsychosocial aspects, which is detrimental especially for childbearing women, as a determinant of survival and quality of life for future generations.

Participants included 50 childbearing women who living in endemic areas such as in subdistrict Cangkringan Sleman, Yogyakarta and Selo Boyolali, Central Java. We measured two thyroid hormones, TSH and FT4 and we also administered biopsychosocial test by iodine disorder questionnaire (IDQ). We then described result of biochemical measurement with result of biopsychosocial test, and explained the mechanism of the thyroid disorder and quality of life changes.

Based on the measurement of TSH and FT4, found childbearing women who suffer subclinical hypothyroidism 2%, subclinical hyperthyroidism 26% and euthyroid 76%. Biopsychosocial characteristics that represented quality of life can be described from hypothyroid subjects is visible goiter, puffy face, dry skin, fatigue, decreased concentration, menorrhagia, easily upset, depressed, apathetic and withdrawn. Meanwhile, the varying percentage of subjects with subclinical hyperthyroidism showed signs and symptoms include a palpable goiter, heat intolerance, exophthalmos, tiredness, pritibial edema, muscle weakness, delicated skin, poor memory, decreased concentration, menstrual disorders, anxiety, sleep disturbances, irritability, decreased motivation and decreased social activity.

Thyroid function disorder caused qualityof life changes on childbearing women in endemic area of iodine deficiency .

**Keywords:** thyroid function disorder, quality of life, childbearing women

## A. Introduction

Due to iodine deficiency disorders (IDD) is one of the serious public health problem, because a very large impact on the survival and quality of human resources. The cause of IDD is inadequate intake of iodine in the body, known as iodine deficiency disorder (IDD) [(1,2).] Indonesia make IDD as one of the major nutritional problems, as some 42 million people living in IDD endemic areas, 10 million suffer from goiter and 750 thousand suffer cretins. The survey results across Indonesia showed an increased prevalence of total goitre rate (TGR) of 9.8% in 1998, increased to of 11.1% in 2003 [(3)].

Iodine deficiency is closely related to geographical factors, such as mountainous regions humus layer of soil as the persistence of iodine is not there, due to continuous soil erosion, eroded by the floods, lava, tropical rain on sloping lands, calcareous soil and water-soluble iodine is brought up to the estuary and the sea, the burning forest also cause lost the iodine. Some geographical conditions led to a state of the soil, water and food ingredients

contain less iodine. An area that has a characteristic that reduces the iodine content in soil is known as endemic areas of IDD [4].

The endemic areas of IDD at risk of iodine deficiency causes in all age groups, ranging from fetal, neonatal, children, adolescents, adults and elderly. The impact of iodine deficiency include a very wide spectrum, such as: miscarriage, stillbirth, congenital malformations, perinatal mortality, infant mortality, cretins, goiter, hypothyroidism, decreased IQ, impaired mental function, impaired muscle function, stunted growth and iodine induced hyperthyroidism or IIH [5].

New problems that occur in endemic areas of IDD is the presence of excess iodine, as a result of iodine deficiency elimination program of universal salt iodization (USI) and iodiol supplementation within a relatively at along time [6,7]. It's not different from iodine deficiency, iodine excess also have several risks to health, such as lead thyroiditis, hyperthyroidism, hypothyroidism, goiter and the effects of IIH with various manifestations, such as increased heart rate, weight loss, excessive sweating and tremors. IIH is also an increased risk of autoimmune thyroid disease (AITD) [6,7].

Several studies have found cases of excess iodine in endemic areas, such as Alsayed et al. (2008) found 54.8% of women in Egypt have excess iodine and correlated with subclinical hypothyroidism [8]. Mutalazimah and Asyanti (2010), found 10% cases of excess iodine on elementary school children in the Cangkringan Sleman, Yogyakarta, Indonesia [9]. Henjum et al. (2010) showed results that are very extreme, which found 84% of children in endemic areas Saharawi Algeria have excess iodine [7]. Hermann et al. (2004) and Lamfon (2008) also found a tendency for subclinical hyperthyroidism, which is a decrease in serum thyroid stimulating hormone (TSH) in subjects in endemic areas of iodine deficiency, while levels of free T4 (FT4) or the hormone thyroxine is still in normal threshold [10,11].

Various problems related to iodine and thyroid dysfunction in women, there was 4-10 times more frequently than in men, particularly in childbearing women of [6,11,12]. Without early warning for screen of childbearing women who suffer from iodine deficiency, would pose a risk pregnancy associated with fetal death, with a prevalence of up to 79%. In addition, an increase in congenital hypothyroidism, cretinism, mental retardation, impaired psychomotor development, and decreased intelligence in children, up to 4 to 7 point [13,14].

The recent study of the effects of iodine deficiency and excess have been widespread, not only the impact on biological aspects (clinical and physical), but also on the psychosocial aspect is related to the condition of iodine metabolism disorder. Thus, the signs and symptoms caused by iodine deficiency and excess, is the result of the interaction of biological, psychological and social, or well known as the biopsychosocial model approach. Biopsychosocial model states that health, illness and disease is the result of the interaction between biological, psychological and social differences between the pathophysiological mechanisms that cause disease and one's perception of health and its consequences, called diseases [15,16].

Biopsychosocial model also explains psychological and social effects of disease risk, prevention, treatment compliance, morbidity, quality of life and survival. Biopsychosocial model of the iodine disorder, based on a variety of signs and symptoms of iodine deficiency and excess that manifests on the biological aspects, which are related to the physical, clinical and psychological aspect, which is related to psychological conditions, and social aspects, which are related to the interaction individuals with social environmental [17].

Biopsychosocial approach is based on several studies that found an association between the results of clinical examination, psychological and biochemical test results in children and adults who suffer from a deficiency. Iodine and hypothyroidism. Including among others, found 28% of children in Cangkringan Sleman, Yogyakarta, Indonesia with low iodine status, it has also impaired the biological and psychosocial status. Thus there is a significant relationship

between status of iodine in urine and biological-psychosocial status on children [9].

Brown et al. (2005) found several domains of the biopsychosocial model associated with hypothyroidism, namely: biological aspects, including the central nervous system (CNS), musculoskeletal, cardiovascular, gastrointestinal, eye-ear-nose-throat (EENT), genito urinary, general and radiology; psychological aspects, including mood and stress disorder with various symptoms of depression such as sleep disturbances, decreased activity, lack of energy, decreased concentration, appetite disorders and other psychological disorders, such as easy to panic, anxiety, depression, phobias, irritability and irritability; and social aspects, including low self-esteem, easily come into conflict with others, less able to understand others, to limit interaction with the other persons [12,15]. This study to identify any cases of thyroid dysfunction, either due to iodine deficiency or excess by measuring levels of TSH and FT4 and explore biopsychosocial characteristics related to the impact of thyroid dysfunction, on childbearing women in endemic areas of iodine deficiency. In addition, this study also discusses the pathophysiological mechanisms of biopsychosocial characteristic caused by thyroid dysfunction.

**B. Method**

The study is a descriptive study, with the target population is women childbearing aged 20-35 years, who live in endemic areas of iodine deficiency. Source population is of reproductive age women aged 20-35 years in Cangkringan Sleman, Yogyakarta and Selo Boyolali, Central Java, Indonesia. Fifty participants, drawn by simple random sampling technique. Identification of thyroid dysfunction, whether caused by iodine deficiency or excess, by performing measurements of thyroid hormones, TSH and FT4, using the ELISA method performed at the Laboratory of Clinical Pathology of Sardjito hospital in Yogyakarta. Meanwhile, the biopsychosocial characteristics as a result of thyroid dysfunction, measured using a iodine disorder questionnaire that had design before, that containing items that represent the signs and symptoms domains of biological and psychosocial, which are referred from the results of a literature review. Data analysis was done by presenting a descriptive. Furthermore thoroughly reviewed by the theories and previous research results, through various mechanisms underlying the association of thyroid function disorders and biopsychosocial changes.

**C. Result and discussion**

Measurement of TSH and FT4 levels in all women, as an indicator for the presence of thyroid dysfunction, showed an average yield of 1.10 ± 1.02 TSH μU / l, while the average levels of FT4 of 0.85 ± 0.271 ng / dl. This study found there are three criteria for thyroid dysfunction in childbearing women, the majority of the normal thyroid function (euthyroid) of 72%, subclinical hypothyroidism 2% and subclinical hyperthyroidism 26%. Quality of life characteristics as a result of thyroid dysfunction are explored in this study, the domain of each item is represented by the signs and symptoms of thyroid dysfunction is the manifestation of biological and psychosocial aspects.

There are at least three main reasons for TSH be a good indicator for detecting disorders of thyroid function, namely the log-linear inverse relationship between TSH and FT4 concentrations. Almost all cases of hypothyroidism and hyperthyroidism are commonly encountered in medical practice of diseases caused by primary (thyroid gland), so associated with the thyroid hormone that stimulates the activity of TSH. A further reason, tests for TSH immunometric test is highly sensitive and specific, with a sensitivity and specificity higher than 99% [17].

Interpretation of the serum TSH levels, usually defined by the normal reference interval of about 0.4 to 4.0 μU / l, while the normal reference intervals for FT4 levels ranged from 0.7 to 2.1 ng/dl [18]. Iodine deficiency that occurs in the long length will increase the levels of TSH, but the production of the hormone thyroxine in normal levels constant, the condition is known

as subclinical hypothyroidism. Conversely, if the TSH level decreased but the production of normal levels of the hormone thyroxine, referred to as subclinical hyperthyroidism. If the two conditions FT4 levels are too low and too high, then it is referred to as clinically hypothyroidism and hyperthyroidism [15, 19].

This study found a case of hypothyroid subjects with subclinical, ie, with normal TSH levels exceeding the limit, though not so extreme (4.90 μU/l). Meanwhile, on 13 subjects (26%) with subclinical hyperthyroidism (TSH <0.4 μU/l), a total of 8 subjects showed very low levels of TSH (<0.004 μU/l). The discovery of subclinical hyperthyroid subjects by 26% this reinforces some research on the phenomenon of excess iodine which affects the trend of decreased levels of TSH in subjects in endemic areas of deficiency yodium [8,12]. Even Hermann et al. (2004), found that extreme numbers, the incidence of excess iodine in school children reached 84% [10].

Iodine deficiency is a major cause of hypothyroidism and hyperthyroidism, with the largest percentage of their respective 30.9% and 19.3%, compared the other causes [11]. Hypothyroidism occurs as the first functional consequences of iodine deficiency, through enhancing iodida by the thyroid's absorption of the trans-membrane proteins is mediated through the sodium iodide symporter (NIS). Iodida absorption is increased, most probably accompanied by, and as a result of an increase in serum TSH [19]. Iodine deficiency can also cause hyperthyroidism, iodine-induced hyperthyroidism via mechanisms, such as iodine supplementation in endemic areas are not monitored well, excess iodine as antithyroid drug therapy, the excesses of drugs that contain high levels of iodine such as amiodarone and expectorant including glycerol and organidin, contrast media such as tomography or arteriography, drinking water with excess iodine, the use of antiseptics in food and beverage industry, especially dairy products, food and beverage industry with raw materials rich in iodine such as seaweed or the iodine fortification [20].

Excess of iodine as a cause of hypothyroidism is much explained by the mechanism of the Wolff-Chaikoff effect, namely an excessive amount of iodine in the thyroid gland to iodine deficiency condition, it will inhibit thyroid hormone synthesis. As an adaptation of Wolff-Chaikoff effect, which increases the concentration of iodine intratiroid, causing decreased thyroid iodida trapping, then lower and lower intratiroid iodida NIS mRNA and protein expression. Iodine excess also decreases the release of T4 and T3 from the thyroid, with a slightly decreased levels of T4 and T3 and TSH increased compensation. In contrast, excess iodine as a cause of hyperthyroidism is explained through the mechanism of thyroid autoimmunity through JOD Basedow effect. Autoimmune thyroid disease occurs because the body produces antibodies that works similarly to TSH, which is able to stimulate the TSH receptor (thyrotropin receptor antibody = Trab) to produce T4 (thyroxine) and T3 (triiodothyronine) is excessive, so the impact hipertiroidisme [19,20,21].

Related to the biopsychosocial aspects, thyroid dysfunction has many underlying pathophysiological mechanisms, of any signs and symptoms that accompany. Hypothyroidism due to iodine deficiency causes goiter, because the absolute decision iodida reduced and decreased levels of iodine in the thyroid. Below the critical level of iodine intake, an increase iodide clearance, to maintain a normal absolute uptake by the thyroid iodida. Consequences for organic iodine in thyroid levels remain within normal limits, the onset of goitre. Goitre also arise in cases of hyperthyroidism, basically due to the activity of the thyroid gland in secreting excess thyroid hormone. Can occur due to excessive iodine intake or because of the increased metabolism of all nutrients have an impact on increased glomerular filtration rate (GFR), thereby increasing the iodine that comes out through the kidneys. This condition will reduce the iodine in the plasma, leading to compensation in the thyroid gland to make ends meet by increasing the activity of thyroid hormone, causing goitre [19].

Subjects with hypothyroidism showed a swollen face (face puffiness), due to a decrease in metabolism of carbohydrates and protein, leading to increased water binding glycosaminoglycans and increased transcapillary escape of albumin (increased extravascular albumin), but it decreased GFR, creatinine clearance will decrease so that there was edema . On the subject of hyperthyroidism, the edema that occurs in the lower legs (pretibial edema), caused by increased thyroid hormone increases the glycosaminoglycan deposits, thereby increasing the osmotic pressure and increase the accumulation of fluids, especially in the low extremities [(22)]. Dry and scaly skin, and felt very cold in hypothyroid subjects, as a result of a decreased metabolism and skin vasoconstriction. Dryness of the skin due to reduced secretion of the sweat glands and sebase. Changes in the characteristics of the skin is caused also by an increase in the number of glycosaminoglycan, as a result of the catabolism of mucopolysaccharide and collagen by skin fibroblasts. While the symptoms are very soft skin and always wet on the subject of hyperthyroidism, caused by an increase in the amount of compensation hypothalamic sweat to lower body temperature because of the increased heat production caused by an increase in basal metabolic rate (BMR) [(22)].

Tiredness complaints, in hypothyroidism is caused by a decrease in mitochondrial oxidative metabolism, as reflected in an increase in the ratio of inorganic phosphate to ATP in the muscle at rest and a sharp decline in phosphocreatine in active muscle. Reduction of calcium ATPases also appear to explain one of the most obvious clinical manifestations of hypothyroidism, namely: the slow relaxation of deep tendon reflexes, myalgia, muscle weakness, stiffness, cramps, fatigue, arthralgias, joint stiffness, joint effusion and bone, pseudogout, as well as carpal tunnel syndrome[(22).]

Fatigue that occurs in hyperthyroidism, caused an increase in metabolism that lead to rapid energy consumption, thereby decreasing energy sources quickly. In addition to increasing metabolism, the increased heat production, stimulate perspiration and dehydration, so prone to fatigue. The increased heat production in hyperthyroid subjects, will also increase body temperature, making it more sensitive or heat intolerance.

Menstrual disorders arising in hypothyroid subjects, characterized by the amount of blood that comes out and or longer menstrual periods (menorrhagia), due to low activity of the thyroid hormone that causes interference with the pituitary-ovarian axis hypotalamic, causing an imbalance in estrogen and progesterone, as compensation on this imbalance there was heavy bleeding in the endometrium. Hyperthyroid subjects also experienced menstrual disorder, characterized by the least amount of menstrual blood or menstrual irregularities, which can happen 2 or 3 months (hipomenore and amenorrhea). Generally the cause of amenorrhea is primary ovarian failure (hypergonadotropic hypogonad), which can occur due to decreasing levels of TSH, which causes hypertyroxinemia thereby increasing the gonadotropin releasing hormone (GnRH). Meanwhile, complaints of sexual libido loss in hyperthyroid subjects, in addition to the imbalance of sex hormones, are also explained by a mechanism of anxiety [(23)].

Decrease in concentration and memory in hypothyroid subjects, through the mechanism of decrease in basal metabolism which causes a decrease in oxygen consumption, thereby reducing the synthesis of neurotransmitters and reduce cytokines release in the brain. The state will lose neuromodulator and disrupt production processes associated with neurochemical, neuroendocrine, neuroimmune, and behavioral change, which affects the psychological conditions including cognitive abilities, such as decreased concentration and memory. Cognitive impairment in hyperthyroid subjects such as difficulty concentrating and forgetfulness, it is caused by a decrease in thyroid releasing hormone (TRH), which leads to increased synthesis and release of acetylcholine, thereby disrupting the brain function [(24).]

Muscle weakness experienced on hyperthyroid subjects, starting from the increased metabolism due to an increase in thyroid hormone activity, then an increase in protein

breakdown and reduce the capacity function in sceletal muscle contraction. Muscle weakness is often caused subjects to lose motivation and reluctant to interact with the surrounding environment, as well as trying to reduce their daily activities [(22)]. Hyperthyroid subjects with exofthalmos, caused by the presence of edema and fatty infiltration of the dystrophy causes the muscles outside the eye, causing progressive protrusion of eyeball. Another mechanism associated with autoantibodies that cause autoimmune reactions and cause infiltration of lymphocytes, mast cells and plasma cells, which further inflammation and retro orbita tissue swelling [(25)].

Psychosocial symptoms in hypothyroid subjects, such as easily upset, depressed, dispirited, apathetic and limited interaction, caused by a mechanism related to the biological aspects of hypothyroidism to depression, a series of processes associated with CSF CCK-4, which is cholecystokinine peptides in cerebrospinal fluid and triptophan (serotonin precursor), which decreased the levels are increasing levels of TSH. Depression is also associated with low serotonergic (5-HT) in the brain, resulting from a disruption in thyroid-pituitary hypotalamic axis [(15)].

Anxiety experienced by the subject of hyperthyroidism, can be explained through a mechanism that makes the proliferation of adrenergic receptors of target cells more sensitive to catecholamines, thereby increasing the components that create anxiety. In addition, the increase in thyroid hormone increases the activity of the CNS, stimulates the sympathetic nerves and epinephrine and cortisol to increased the anxiety [(15)]. Not much different, the mechanism of the hyperthyroid subjects are easily angered, caused by excessive thyroid gland activity will spur the proliferation of β-adrenergic receptors, and enhance the effects of catecholamines so that the subject is relaxed and more sensitive. In the meantime, sleep disturbances experienced by the subject of hyperthyroidism, occurs through the mechanism of increased metabolism, oxygen consumption rapidly, increased cardiac output, feeling excited, and less relaxation, so difficulty to sleep. Another mechanism of sleep disturbance is increased production of heat and sweat that cause restlessness and wake up frequently when sleeping (26).

**D. Conclusion**

Based on the levels of TSH and FT4, thyroid dysfunction on childbearing women in endemic areas of iodine deficiency, can be categorized by 2% subclinical hypothyroidism, subclinical hyperthyroidism 26% and euthyroid 76%. Thus it can be found the fact that there is a tendency of cases of subclinical hyperthyroidism in endemic areas of iodine deficiency. This study found a variety of signs and symptoms that includes biopsychosocial aspects, as the impact of thyroid dysfunction that could explain the interaction, through the mechanisms of interaction between biological and psychosocial aspects that represented of quality of life.

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# NEEDS ANALYSIS OF FIRE MANAGEMENT SYSTEM IN CAMPUS (CASE STUDY IN SPORT SCIENCE FACULTY, SEMARANG STATE UNIVERSITY)

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**Abstract**

Fires can occur anywhere, including in the workplace. Faculty of Sport Science, State University of Semarang, consists of 4 main buildings, namely building as Dean building (F1), F2 as the lecture building, F3 as the Multipurpose Building, library and lecture and F4 as laboratory building exercise and health. In the building F1, F2 and F3 are potential fire hazards caused by the material combustible fuel (such as paper, wood and plastic), the heat source coming from an open flame (the kitchen stove) and electrical installations which may experience a surge as well of course there is oxygen in the room. These three factors are part of the fire triangle.

The study design used is descriptive comparative case study research design. This study used a comparative descriptive research design for this study with the primary objective to create a picture or a description of a situation objectively and compare the real conditions in the field with the various rules relating to fire management systems.

From this study it can be concluded that in the Faculty of Sport Science only has a fire protection system of passive compliance with the standards because the major components of building structures in accordance with the standards of material quality level I, while at other points all not in accordance with the standards that are used, these points are: planning (emergency warning systems, evacuation management systems, emergency communications, medical teams, termination procedures and the security operations); organization (the role of fire officers, fire fighter team, fire prevention coordinator unit, a fire prevention OSH expert); Evacuation means (exits, emergency stairs, emergency lighting, directional and emergency signs, corridors, point gather); Active fire protection systems; inspection and supervision; and training.

Advice given include: forming an emergency response team at the Faculty of Sport Sciences or emergency response team (ERT) which will handle all aspects of safety in the Faculty of Sport Sciences, prepare ERT became operational teams which there is consist a fire fighter team also, giving capacity building to ERT team designated safety related aspects of either theoretically also practically and certifications in OSH aspects, hereinafter designated ERT team to construct a system of prevention and control of fire hazards in the Faculty of Sport Sciences comprehensively.

**Keywords :** fire, management, prevention.

## A. Introduction

Aspects of Occupational Health and Safety (OSH) is generally considered a low priority in a government agency. In the sector of government agencies, there are many sources of potential hazards that can lead to accidents, including a fire hazard. Fire contains a good variety of potential dangers to humans, property and the environment. Fire is an uncontrolled incident, that can cause material and soul losses also the environment damage (Ramli, 2010:16).

The Central Bureau of Statistics Central Java (2013), explains that the number of fires in Central Java from 2010 to 2013 intend to a fluctuating rise. In 2010 a fire occurred 758 cases, in 2011 a fire occurred 1,282 cases, 1,800 cases occurred in 2012 and 2013 fires occurred 1,586 cases of fire. While the number of cases of fires in the city of Semarang from 2011 to 2013

the number is a fluctuating increase (Semarang City Fire Department, 2013). In 2011, a fire occurred 214 cases, 255 cases in 2012, in 2013 occurred 211 cases.

In the Journal of the NFPA Fire Analysis and Research said that the fire cases in the building of houses and buildings of homes in the United States from 2006 to 2010, US Fire Department expects a 5230 fire incidents with a total of 220 victims. Of the total 5230 fire cases, 3140 cases of fires (60%) occurred in the building in addition to the home, while 2090 cases of fires (40%) occurred in the house. Of the total 3140 cases of fires in buildings other than houses, as many as 1225 cases (39%) caused by a welding torch, a total of 1319 cases (42%) were caused by scissors torch, as many as 345 cases (11%) due to the burner, and as many as 251 cases (8%) are caused by soldering equipment (Evarts, 2012: 1).

Official data from the United States National Fire Protection Association (US NFPA), published in 2008 describes losses resulting from catastrophic fires. From an average of 350,000 times the catastrophic fires in residential areas and offices that occur in a year, 15,300 times the incidence of fires in high-rise buildings across the United States with an average of 60 died, 930 were injured and 52 million dollars losses burned catastrophic fires in that high rise buildings (Arief S, Endo W.K., 2008).

Fires also occurred in Indonesia, including of building a college campus, there are at least data about fires at two campuses in Jakarta. The first on campus Perbanas in the Kuningan area although no fatalities have been devouring the seventh floor. Archive room, meeting room and study room burned. In 2001, seminars and research room in the building Dean Faculty of Engineering University of Indonesia, Depok messy due to fires. Although there were no casualties but the incident has disrupted the operation of the campus. Both known to be caused by an electrical problem in the electrical installation (Arief S, Endo WK, 2008). Fires also take place on the campus of University of Indonesia in Depok on January 7, 2014, resulting in Building C FISIP burn and scorch sociology book collection of about 3,000 pieces (Ferdinand Waskita, Tribunnews.com, 2014). Later fires also happen on Polytechnic Ujung Pandang, Makassar.Kebakaran occurred on March 22, 2015, there were no casualties. (Imran Samsad, Tribunnews.com, 2015).

Fires can occur anywhere, including in the workplace. Faculty of Sport Science, Semarang State University, consists of 4 main buildings, namely building as Dean F1, F2 as the lecture building, F3 as the Multipurpose Building, library and lecture and F4 as laboratory building for exercise and health. In the building F1, F2 and F3 are potential fire hazards caused by the material combustible fuel (such as paper, wood and plastic), the heat source coming from an open flame (the kitchen stove) and electrical installations which may cause friction as well of course there is oxygen in the room. These three factors are part of the fire triangle. According to the theory of the fire triangle, a fire occurred due to three factors, namely fuel, heat source, oxygen (Ramli, 2010: 16). While the building F4, besides having the same potential by building fires F1, F2 and F3, F4 on the building there is an additional source of fire danger in the form of chemicals such as alcohol and methanol are flammable and potentially cause an explosion.

According to Law No. 1 1970 Article 3 of the Safety, noted that the work required to prevent, reduce and extinguish the fire. To prevent fires management must controlled any potential of fire. Management of potential fire hazard is not enough just to provide fire-fighting equipment to extinguish the fire or do exercises that are conducted regularly, but requires a well-planned program in a system. Therefore, the fire must be properly managed and planned to implement a fire management system in accordance with applicable regulations. Fire management system is a concerted effort to manage the risk of fire through the planning, implementation, monitoring and follow-up (Ramli, 2010:140). From that background made the Occupational Safety and Health department on Semarang State University propose the research proposals Needs analysis of fire management system in campus (Case study in Sport Science Faculty, Semarang State University).

1. Formulation of the problem
   Based on this background, it can be formulated problem in this research is: needs analysis of fire management system in campus (Case study in Sport Science Faculty, Semarang State University)."
2. Research purposes
   The aim of this study is to describe the needs in the application of fire management system for prevention of fires in campus (Case study in Sport Science Faculty, Semarang State University).
3. Benefits of research
   This research could provide theoretical benefits that can enrich the scientific field of Public Health, especially the Occupational Safety and Health (OSH) department at the Semarang State University. On the other hand provide the opportunity for students to participate actively involved in OSH research between lecturer and college student.
4. Theoretical Overview
   Fire is an uncontrolled event, that can cause material and soul losses, also cause the environment damage (Ramli, 2010:16). Meanwhile, according to Anizar, fire is an event that is very fast and not desired (Anizar, 2012:14).
   1) Causes Fire

   Fires can be caused by human factors and technical factors (Ramli, 2010: 6). According Anizar (2012: 24) the cause of the fire caused by two factors, namely human error/unsafe action and unsafe condition. Unsafe action occurred because of human negligence and lack of professionalism in work. While unsafe condition is more directed to the object and the environment from human work that is unsafe or equipment that does not meet the standards. According to B. Boedi Rijanto (2011: 83) there are 7 factors that are able to trigger the cause of the fire are: electrical equipment, smoke, friction, open fire, spontaneous ignition, domesticity home (housekeeping), and air is explosive.

   2) Triangle Fire

   According Anizar (2012:22), Fire is an exothermic chemical reaction accompanied by heat generation or heat, light (flame), fumes, gases, and the burning material. The combustion reaction requires three elements, namely the fuel as a material or substance which is wholly or partly undergo chemical and physical changes when it burns, heat early as the energy levels of the material to burn at temperatures of fuel (the lowest temperature when the substance started to burn), and oxygen as a chemical element burner.

   Fires can occur due to three factors which are forming elements that fuel fire (fuel), the heat source (heat), and oxygen. The third element is known as the Triangle Fire theory. Without any one of these elements, the fire could not occur (Ramli, 2010:16).

**B. Method**

This research uses descriptive research design with a comparative case study research design. This research uses descriptive research design comparative because this study with the primary objective to create a picture or a description of a situation objectively and compare the real conditions in the field with the various rules relating to the system of fire management, the goal of this research is to understand something behind the phenomena to obtain something new insight (Anselm Strauss & Juliet corbin, 2009:4). Also to create a picture of the situation or event (Nazir, 2009:55). Using a case study design because the design is used to analyze an event/certain cases that occur in the community.

**C. Results and Discussion**

From interviews and observations that have been made it can be seen that faculty has only a passive fire protection system in accordance with the standards because the major components of building structures made of brick and iron frame (material quality level I); cover layer materials for the building is cement; material columns/beams made of bricks and cement, brick roofs of tile, flooring and stairs of brick, cement and ceramic (material quality level I); floors and stairs are made of brick, cement

and ceramics and the distance between buildings of approximately 5-10 meters.

But in general the faculty has not have fire prevention and control system that is comprehensive, and standards were:

1. Planning {emergency warning systems, evacuation management system (for example: evacuator team, SOP evacuation, evacuation maps, exit directions, and a assembly point), emergency communications, medical teams, discontinued operations and the security procedures}.

   In the absence of a comprehensive emergency warning system it is possible to turn up to a fire and casualties or material because there is no system that can identify potential fire, preventing fire to overcome the danger of fire. Emergency warning is done by shouting, and even then made spontaneously from residents who do not clear SOPs and command system.

   On the other hand the communication is done with outside agencies only use the phone, it does not conform with the standards because if people only use a mobile phone they have very high possibility of failure of communication such as: on"busy" mode, low batarey, lagging or other reasons, too unavailability number relevant agencies on the mobile phone. Emergency communications so desperately need special communication tool with special teams and SOPs
2. Organizational (fire fighter officers, fire fighter team, coordinator of fire fighting, OSH fire prevention expert).

   In sport science faculty have not formed organizations or units of fire-fighting which include: the fire fighter officers, fire fighter team, coordinator of fire fighting, OSH fire prevention expert) at faculty, so there is no division of roles during a fire.

   In the absence of fire-fighting organization or unit in case of fire disaster then it is possible will appear casualties and significant material losses due to the lack of personnel who will perform fire fighting and rescue the occupants.
3. Evacuation means {means of rescue: the exit, emergency stairs, emergency lighting, directional and emergency signs, maps, corridors, assembly point}.

   The absence of evacuation system makes building occupants will potentially become victims because besides they do not know the evacuation routes, they also do not know what should they do, where they would get together and who will ensure there are personnel who will help rescue their souls including calculating the occupants in assembly point for make sure there are no occupants remain inside the building.

   On the other hand the absence of evacuation facilities such as: emergency exits, emergency stairs emergency lighting, directions and maps of evacuation make high probability of fatalities because of the high complication factor for the occupants to get out of the building in a relatively short time.
4. Fire protection system{active protection system}.

   In sport science faculty has not had an active fire protection in the form: alarms, fire extinguishers, hydrants and sprinkler. Fire extinguisher available in the laboratory it is only for instructional materials not as active protection efforts. In the absence of active protection system fire then certainly there are no adequate facilities that can be used internally at faculty to extinguish a fire, so if fire happen could potentially lead disaster at faculty remember faculty has some potential danger of causing a fire for example: materials fuels (such as: paper, wood, furniture, etc.), oxygen is definitely available naturally, and heat (derived from: an open fire/stove, electrical or heating chemicals in a laboratory that has a low level on their flash point).
5. Inspection and supervision

   In the Faculty of Sport Science is not done check/inspections and maintenance on all components of the fire protection system and means rescue periodically so that nobody can be certain that the personnel responsive and capable of performing rescue and fire fighting, or make sure the facilities

and infrastructure that exist today is it still worth used or not.

6. Drilling

   In the Faculty of Sport Science there has been no fire prevention exercise program or simulation (drill) systematically and periodically. So if there is a fire disaster no personnel capable of performing rescue efforts outage or occupants because they are not trained intensively. Similarly, the inhabitants of buildings, they have not trained to perform self-rescue efforts in the fire disasters because they do not know both theoretically and practically related things to do during a fire disaster occurred.

## D. Conclusion

In the study entitled "**Needs analysis of fire management system in campus (Case study in Sport Science Faculty, Semarang State University)"** can be concluded that faculty has only had a passive fire protection system as a major component structure building in accordance with the standards of material quality level I, while on other points such as:

1. Planning (emergency warning systems, evacuation management systems, emergency communications, medical teams, discontinued operations and the security procedures);
2. Organization (fire fighter officers, fire fighter team, coordinator of fire fighting, OSH fire prevention expert);
3. Means of Evacuation (exits, emergency stairs, emergency lighting, directional and emergency signs, corridors, assembly point);
4. Active Fire Protection Systems;
5. Inspection and supervision;
6. Training/drilling.

All of them have not meet the standards used, among others: Kepmen PU No.02/KPTS/1985; Permenaker No.Per 04/Men/1980; Kepmen PU 02/KPTS/ 1980; Kepmenaker 04/1986; Kepmenaker 186/Men/1999; Kepmen PU 10/KPTS/2000; SNI-03-1746-2000; Permen PU 26/Prt/M/2008; NFPA 10, 13, 14, 72; OSHA because in general, faculty does not have fire prevention and control system as the requirements.

**Recommendations**

Advice can be given in the study entitled "**Needs analysis of fire management system in campus (Case study in Sport Science Faculty, Semarang State University)"**, among others:

1. Formed emergency response teams as the first step, because the emergency response team (ERT) will handle all aspects of safety aspects in the faculty.
2. Develop ERT be operational teams which has high capacity as a fire fighter team.
3. Provide capacity building to the ERT team designated safety related aspects of either theoretically or practically and certifications in OSH.
4. Designated ERT further develop systems of prevention and control of fire hazards in faculty comprehensively manner in accordance with the standards, among others: Kepmen PU No.02/KPTS/1985; Permenaker No.Per 04/Men/1980; Kepmen PU 02/KPTS/ 1980; Kepmenaker 04/1986; Kepmenaker 186/Men/1999; Kepmen PU 10/KPTS/2000; SNI-03-1746-2000; Permen PU 26/Prt/M/2008; NFPA 10, 13, 14, 72; OSHA. Prepared system includes:
   a. Planning (emergency warning system, evacuation management systems, emergency communications, medical teams, discontinued operations and the security procedures);
   b. Organization (fire fighter officers, fire fighter team, coordinator of fire fighting, OSH fire prevention expert);
   c. Means of evacuation (exits, emergency stairs, emergency lighting, directional and emergency signs, corridors, assembly point);
   d. Active fire protection systems;
   e. Inspection and supervision;
   f. Training/drilling.

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# IMPLEMENTATION OF ELECTRONIC MEDICAL RECORD IN CLINICAL EDUCATION OF STATE POLYTECHNIC OF JEMBER

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**Abstract**

Implementation manually of medical records in clinical education of state Polytechnic of Jember takes retrieval for long time because papers often difficult to find moreover missing. Consequently, it hindering the patients get service. Attempts to overcome these problems are implementation electronic medical record that is developed according to users need.

Focus group discussion with 5 doctors had been agreement to implementation electronic health records. Preparing infrastructure and system design to developed system. Efficiency: the median time of service with electronic medical record is 12 minutes, while the paper medical records is 10 minutes. Implementation electronic medical records can also reduce administrative cost. Effectiveness: The median completeness electronic medical records is 85,71%, while the paper medical records only 75% minutes. Clinical decision support system comes in the form of drugs allergy interaction. Users satisfied with the content, accuracy, format, relevance and ease of using electronic medical records. The key successful implementation of electronic medical records is socio-technical factors

Implementation electronic medical records has been proved in administrative costs efficiency, but adoption it in the beginning has not been efficient for time of service. Completeness of patient's records with electronic medical records is better. Clinical decision support systems such as drugs interaction are effectively support to health care and improve patient safety. Overall users are satisfied with implementation electronic medical records. Sosio-technical aspect's is the key successful implementation of electronic medical records

**Keywords**: Electronic medical records, Implementation, Action research

## A. Introduction

Health care services with resources and activities are very complex. They seek to give consumer expectations about health care. The Greatest hope consumer to health care is get well after being treated. But no one is perfect including medical activities in health care. They are such as fault diagnosis, prescribing more standard or excessive doses that ensue serious or fatal result for patiens (Dublin, 2008).

According to House of Common Health Committee Patient Safety Sixth Report of Session 2008–09 Volume I stated that in London 10% patients were hospitalized had medical error but there can be avoided, tens of thousands of patients suffered huge losses every year [2]. The previous findings of the IOM report (Institute for Medicine's) in 1999, the death from Medical error reached 98,000, a loss of between $ 17-29 million and the highest Contributor was Medical error [(3).]

[(4)] said that Medical error was not a strange thing in the medical world. In the United States in one year at least 183 thousand cases of deaths due to medical errors, in Indonesia the figure may be better because there were no reports or studies about it.

Efforts to reduce medical errors are complete medical records, correctly and punctual. Paper-based is not enough. Medical record that is required is a simple of retrieved so it can be used as a tool to support clinical decisions in this case, enforcement of diagnosis and therapy, avoiding

the occurrence of allergic reactions, drug delivery and therapy duplication as opposed to the previous history of the patient. It is a challenge for physicians to use the technology as a solution, so it can help physicians manage clinical information for make optimal decisions that ultimately can be reduce medical errors [5].

**B. Method**

Design of this research had used action research in clinical education of state Polytechnic of Jember started from June to December 2014.

Subjects of focus group discussion on diagnosing action were users of electronic medical records in this case 5 doctors clinical education of state Polytechnic of Jember. While the Planning Action subject of study only involves 2 doctors. Polyclinic Polytechnic of Jember. Assessment of completeness of medical record file number of 68 files. Phase evaluating action focus group discussion II study subject were 2 doctors, a nurse and an assistant pharmacist. Evaluation of electronic medical records performed on 171 patient's record.

Efficiency and effectiveness of medical record before and after implementation electronic health records had been evaluated by statistic descriptive while user's satisfaction had been evaluated by qualitative study.

**C. Result and discussion**

Focus group discussion with 5 doctors had been agreement to implementation electronic health records. Preparing infrastructure and system design to developed system.

Efficiency: the median time of service with electronic medical record is 12 minutes, while the paper medical record is 10 minutes. Because users had not been accustomed to used the system. As previous research that had been conducted at five primary health care in America [6] that adopting electronic health records by physicians need more time to provide health care of patients than when using paper medical records. Implementation of electronic medical records has complicated process and took time for users to be familiar with the systems [7]. Implementation electronic medical records can also reduce administrative cost.

Effectiveness: Data more complete by electronic medical record than medical records manually, especially social data. The median completeness electronic medical records is 85,71%, while the paper medical records only 75% minutes. Clinical decision support system comes in the form of drugs allergy interaction. Users satisfied with the content, accuracy, format, relevance and ease of using electronic medical records. The key successful implementation of electronic medical records is socio-technical factors. That are clearly of business process, the doctors support the change towards electronic medical records, the full support of the management, good planning and strength skill [8].

The Benefits obtained after the migration to electronic medical records are integration of multiple sources of data, collecting data at the point of care and supporting physicians for decision-making. The expectation of migration to electronic medical records can improve patient safety in this case, the electronic medical records including clinical decision support systems, drugs allergy interaction. That can improve quality health services, the services that humane, quickly, responsive, empathetic and friendly [9]. When that are happen, so increase customer satisfaction.

**D. Conclusion**

Implementation electronic medical records have been proved in administrative costs efficiency, but adoption it in the beginning has not been efficient for the time of service. Completeness of patient's records with electronic medical records is better. Clinical decision support systems such as drugs interaction are effectively support to health care and improve patient safety. Overall users are satisfied with implementation electronic medical records. Socio-technical aspect is the key of successful implementation of electronic medical records.

The next evaluation is costs and benefits analysis (tangible and intangible) of the implementation of electronic medical records, so

it can always motivate staff, physicians and management to make electronic medical records.

Redesigning doctor's room need for ensures add hardware was not expected to interfere with the service.

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# ANALYSIS OF PUBLIC HEALTH DEGREE ON THE ARCHIPELAGO ISLAND COMMUNITIES IN DERAWAN ISLAND REGENCY DISTRICTS BERAU

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**Abstract**

Public health issues are influenced by various factor (multiple causal), therefore the problem should be solved comprehensively. The Public health programs/activities/efforts directly or indirectly intended for disease prevention (preventive), health promotion (promotive), treatment (curative) and health recovery (rehabilitative). The coastal region is a region that is administratively far from downtown allowing the occurrence of health problems caused by limited access and infrastructure due to geographical conditions consisting of a group of islands separated by the sea. The objective of this research/study was to obtain data and information on the health status for preparation and implementation of appropriate and sustainable health programs.

This study is a survey that is directly observing the condition and the health problems found in coastal communities of derawan island including 100 samples by using simple randomized sample.

The survey and observation of 100 heads of households show that, the results show that (75%) archipelago community in the district of derawan island have problems managing household waste, (78,8%) lack of health insurance ownership, and (68%) had the smoking behaviour inside the house.

This study concluded that the archipelago communities in the district of derawan island have problems in the environmental health aspects, especially in waste management, administrative and health policy aspects especially in health insurance ownership and the health behavior aspects that shows high rates of smoking inside the house.

**Keywords** : Public health degree, health promotion, environmental health, administration and health policy, health insurance

## A. Introduction

Public health s mutlicausal problem, then the solution must be multidisiplinary. All activities either directly or indirectly intended for disease prevention (preventive), health promotion (promotive), treatment (curative) and health recovery (rehabilitative) is a public health efforts.

Public health efforts required a cooperation between the public and health workers by preventing disease and health recovery efforts. Supporting factors in improving health is a state of socio-economic, environmental health, maternal and child health, clean water, nutrition, health and safety, health promotion and reproductive health.

Public health efforts can be achieved if the government and the community work together to make prevention efforts by taking into account factors that have a contribution to the emergence of a variety of health problems, it is necessary for supporting data that will give a general overview of health problems in the region. Therefore it takes the efforts of public health degree assessment of coastal region which is a region that is administratively distant city center allows the health problems caused by the access and inadequate infrastructure, especially the coastal areas that are separated from the cluster of small islands.

**B. Method**

The type of this research is observational with data collection on the health status of a particular community as well as the incidence of the disease for use in formulating hypotheses for further research. This study is a survey that is directly observing the state and health problems in the community and supported by secondary data collection in the island of Berau.

**C. Results and Discussion**

Based on the survey results at Derawan Island, Berau Regency, East Kalimantan with 100 respondents were interviewed. Results showed 86% of society illustrates that knowledge is still limited perception of sound that a "healthy" has the sense not sick. Indicator of clean and healthy behaviors, within the scope of births assisted by skilled health personnel still have 11% of the mothers delivered not with the help of medical personnel. Surely it can be seen from the figure there are groups of mothers delivered with no assistance of trained medical tenga. Thus the group choose a risk or threat of safety and health

Tabel 1. Recapitulation Health Problems

| No. | Pillars of Public Health | Indicators of Public Health Problem | Frequency | (%) |
|---|---|---|---|---|
| 1. | Health Education and Behavioral Sciences | Perception of Health (limited to no pain) | 86 | 86,00 |
| 2. | Behavior Clean and Healthy | 1) Labor is not helped by non-medical personnel | 11 | 11,00 |
| | | 2) Scope of exclusive breastfeeding | 24 | 24,00 |
| | | 3) The water quality is not good | 7 | 7,00 |
| | | 4) Consumption of vegetables and fruit | 47 | 47,00 |
| | | 5) The presence of a smoker in the family | 61 | 61,00 |
| 3. | Administration Health Policy | 1) Ownership social security or health insurance | 23 | 23,00 |
| 4. | Epidemiology | 1) Degenerative non-communicable diseases | 44 | 44,00 |
| | | 2) Family members who are sick prone children | 25 | 38,50 |
| | | 3) The condition of a sick family member is ill or recovering from illness yet | 14 | 21,50 |
| 5. | Health and Safety | 1) Knowledge of respondents to the occupational risk to health | 24 | 28,30 |
| | | 2) Use of Personal Protective Equipment at work | 41 | 58,30 |
| 6. | Nutrition Family | 1) How to use iodized salt when cooking with sows while cooking | 81 | 81,00 |
| | | 2) How to cultivate vegetables washed in freshly cooked pieces | 28 | 28% |
| 8. | Health of both mother and child | 1) Don't check the pregnancy to health care | 15 | 16.6 |
| | | 2) Workers who help persalinanan (shaman) | 8 | 8,00 |
| | | 3) Coverage of exclusive breastfeeding 0-6 months | 24 | 24,00 |
| | | 4) Provision of colostrum (first milk yellowish liquid) | 18 | 18,00 |
| | | 5) Mother gave birth at home | 56 | 64,37 |
| 9. | Environmental Health | 1) The water quality is not good | 7 | 7,00 |
| | | 2) Disposal of waste water / sewage into any place | 29 | 29,00 |
| | | 3) Trash open | 33 | 33,00 |
| | | 4) Abolish the garbage by burning in the area around the house | 75 | 75,00 |
| | | 5) Destroying waste by burying | 20 | 20,00 |

of the mother and child at birth process. In the scope of exclusive breastfeeding, the data obtained from the interviews that the scope of exclusive breastfeeding is still at 24%. Respondents who did not breastfeed exclusively of around 14%. There are also respondents who expressed forget what has been breastfed exclusively or by 33% .For exclusive breastfeeding coverage needs to be improved further with efforts promotive of health workers. Given the importance of creating a healthy generation and smart for human resource development in the future.

Within the scope of the use of clean water for domestic use, that almost entirely been using clean water with a good-quality which amounted to 93%. Only 7% remaining that meet water needs with water that is less feasible. Good water quality obtained from clean water sources such as wells, PAM, or from rivers that could be easily accessed by the public.

At handwashing habits majority of respondents 92% have implemented a good way of washing hands with water and soap. There are also washing their hands with water does not flow using soap (6%), and only use running water only (2%). Later in the family latrine ownership of 100% of respondents indicated that 99% of respondents have household toilets in private, only 1% who do not have a toilet and riding in public toilets around. Subdistrict community latrine ownership on the island Derawan sufficiently showed that people no longer throw feces at random so as to pollute the environment.

The results showed that for the needs of people on the island Derawan of 100 respondents surveyed, 47% still consume rice and side dishes, as well as vegetables. 41% are already consuming foods with added fruit daily menu and another 12 percent had added milk consumption in daily food consumption to nutrition. Furthermore, the presence of smokers in the family of 100 respondents by 61% with smoking habits diverse. There are smoked in the house by 6.5%, out of the house by 10%, and those who smoke in any place 83.5%. And still very much of a smoker who has not been able to avoid the smoking habit that can threaten the health of other family members.

On indicators of health policy administration, only 23% of respondents who reported having health insurance, such as BPJS independent, civil or military, beneficiaries or private contributions. Low ownership of health insurance shows that public awareness to have health insurance is still low. In fact, if we look at the usefulness of health insurance as a guarantor of fulfillment of current costs come without pain that can be predictable bias will be very important and deserves to be prioritized.

On epidemiological indicators, there is a 17% had suffered from infectious diseases to spread diarrhea 5%, 2% of dengue fever, tuberculosis 1%, and Upper Respiratory Tract Infection 13%. For infectious diseases, much less as compared to the incidence of non-communicable diseases. And the most susceptible to the disease in the head of the family are the children and then the mother and father. This is due to the vulnerability of children to environmental conditions and which is relatively low immunity than adults. Infectious diseases suffered by residents districts Derawan when seen from the disease is still very high vulnerability where as many as four people experiencing the death of 17 patients. While treatment efforts more dominant society come to the clinic because Derawan island communities rely heavily on them when the cure rate will be faster pain during treatment or medication in the clinic. Based on the results of the survey in the district of the island Derawan there are 44% of people suffering from the disease is not transmitted from a total of 100 respondents for non-communicable diseases that are hazardous (hypertension, cholesterol, decreased eyesight, archercleorosis, heart disease and diabetes). For most diseases ever suffered by the respondents included in other diseases such as headache / migraine, pain in the bones, and blood is low. Amount obtained was 44%, most of the respondents suffered from more than one, and some have been suffering all these diseases.

**D. Conclusion**

Based on research conducted on 100 respondents were interviewed, it can be concluded as follows:

1. Indicators PKIP, healthy perception of pain is not only limited to 86%.
2. Indicator Behavior Clean and Healthy covering births assisted by skilled health personnel 89%, coverage of 24% exclusive breastfeeding, use of clean water for household needs 93%, 100% of them simply washing hands with running water without soap, 99% of respondents have their own latrines, 41% of respondents had been industrious fruit and vegetable consumption, 61% of smokers in the family where 55 of them were still smoking in the house and any place.
3. Indicators of Health Policy Administration with regard to the ownership of social security or health insurance about 23%.
4. Indicators of occupational health and safety risks of respondents who know his work by 61%, the use of personal protective equipment (PPE) which is used by 44%.
5. Family Nutrition indicators most respondents perceived that healthy food is a healthy food by 85%, the use of iodized salt covers 100% of respondents.
6. Indicators of maternal and child health, prenatal care has been carried out and covers 73% of the 90 respondents mother, pregnancy tests done at the midwife (27%) and health centers (49%), labor is done in the home by 63%, 89% percent of births assisted by medical personnel, 18% of mothers give colostrum to the baby after delivery, breastfeeding infants coverage 24%.
7. Environmental health: sources of clean water from wells 59%, 93% kulaitas good clean water, drinking water treatment with boiled 68%, water supply means 97% good, 99% latrine ownership with swan neck latrine 97% and watertight septic tank 65%, 18% trash untreated and 33% open, 75% of domestic waste was burned and buried in a hole 20%.

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# DEVELOPING WALL CLOCKS AS HEALTH PROMOTION MEDIA FOR HOUSEWIFE TARGET IN THE PREVENTION OF DENGUE HEMORRHAGIC FEVER (DHF) IN INDRAMAYU

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**Abstract**

Up to 2012, Larva-Free Numbers Dengue (ABJ) in Indonesia was still low, as well as in Indramayu , which is still below the target, which has only reached 80 % of the target of 95 % . ABJ target achievement done by the efforts of The Eradication of DHF Mosquito Breeding Place (PSN - DBD). Housewife role in doing PSN-DBD is very important. Health promotion media could encourage housewife in doing PSN - DBD. The aim of this study was to develop clocks as a health promotion media to target housewives in the DHF prevention in Indramayu .

This type of research was action research. The population in this study were housewives. For developing wall clocks, purposive sampling was taken by certain criteria of 10 housewives, the data collected and analyzed using qualitative analysis. For testing clocks product sample, sample numbers of 30 housewives were taken, data were collected and analyzed by using quantitative descriptive analysis.

This research has produced a wall clock with shapes, images, text, color, sound reminder ( alarm) in accordance with the character of housewives. The trial results of wall clocks as health media promotion for DHF prevention, suggested that there were differences in the housewives PSN-DBD action and differences also in the presence of dengue mosquito larvae in water storages in the home and surounding enviroments before and after the test sample product media. Larger samples and longer duration of intervention needed to test the effectiveness this media.

**Keywords:** Wall Clock, Housewife, DHF Prevention

## A. Introduction

Indramayu is one of the districts in West Java province where dengue cases in 2012 increased mortality (Case Fatality Rate) from 1.19% to 3.42%. The high prevalence of dengue can not be separated from the high risk factors of transmission in the community like Larva-Free Numbers Dengue (ABJ) was still below 95%, ie 84.38% of homes by 2012 which was free of Aedes sp larvae (Dinas Kesehatan Indramayu, 2013) [(1)]. In an effort to control mosquito larvae, the activities carried out are The Eradication of DHF Mosquito Breeding Place (PSN-DBD), which includes: draining water tanks, closing water reservoir, burying wastes which become mosquito breeding, and sprinkled laravasida (abate) commonly known as (3M Plus). If the activity is performing well, then the potential dengue transmission will be reduced significantly. But seen from the data, numbers of PSN-DBD community participation in activities is still low. Its proven by the achievement of the ABJ was still less than the target indicators of the success of PSN-DBD which should reach at least 95% (MOH Director General P2M & PL, 2005).[(2)] PSN-DBD in Indramayu still be activities that are difficult to implement, even though public health education activities carried out on an ongoing basis by health official office. If people do bad PSN (3M plus) in everyday life, people will be at risk of 8.13 times greater risk of dengue disease and vice versa if people apply good PSN (3M plus) recurring then the number of larvae will be reduced, so that the practice of PSN (3M plus) have a strong correlation with the number of larvae (Widagdo et al, 2008) [(3)]. For the success of

PSN-DBD within the scope of the family needed awareness of the housewives, as a housewife became a member of the family that plays a major role in keeping the housee and the environment clean. Many factors can influence the behavior of housewives in conducting PSN-DBD. According to the theory Precede-Proceed from Lawrence Green [(4)], factors that influence health behavior consists of 3 factors which include: Predisposing Factors (in people who behave), Enabling (of an enabling environment), and Reinforcing (others are pushing to behave), Enabling factors related to PSN-DBD is media exposure counseling. Machfoed and Suryani (2009) [(5)] stated that in order to support the knowledge and attitude toward PSN-DBD needed media exposure extension which functions as a distributor of health messages, the media is divided into three, namely: printed media, electronic media, and media exposure. Reinforcing factor in this context is the support from the social environment as well as health workers. (Purba et al, 2007) [(6)]

The target of this study were housewives who have roles in efforts to eradicate the disease, whether it concerns prevention, treatment and rehabilitation always involve women, especially housewives which is positioned as a care giver in every family. The skills of health care for families affected by the knowledge and experience of a person, a housewife who has a lot of knowledge to be more skilled than less. Thus the knowledge will influence how women treat themselves and their families associated with the disease. (Pujiyanti and Triratnawati, 2011) [(7)]

To prevent the spread of dengue need prevention efforts focused on eradication mosquito breeding place (PSN). Health promotion need to be done to target housewives, in order to actively participating in PSN. In health promotion targeting housewives, of course, has to use the media in accordance with the wishes and character of housewives. Media in accordance with housewives, and which developed in this study was a wall clock that visually adopting of posters media, but coupled with exposure to audio as a reminder (alarm).

**B. Method**

In this study, the stages of the activities carried out starting from the permitting process of research devoted to the relevant parties, the next data collection both primary data and secondary data. The location study was conducted in Indramayu district, which includes 3 area of the Village, the Village of Terusan, Pabean Udik, and Karangsong. The implementation of the research was conducted from February to October 2015 .

This research type was an action action research [(8)], which was making health promotion media in the form of a wall clock. The study began with the making of wall clock design, then do the pretest design, focus group discussions and interviews on target housewives. In addition, by conducting interviews also with the stakeholders which include the Head of Health Official, Head of Health Promotion Official. DHF Prevention Program Holder of Public Health Center. Opinion from health promotion media expert also requested (expert reviewed). The research followed by improvement (revision). Creating a final design and then followed by manufacturing of product samples, and testing samples of media products. The phase in making wall clock as a health promotion media adopted P-Process Theory.[(9)]

The data analysis research conducted with qualitative analysis to the process of making media and quantitative analysis of the trial test of sample product media. Informants in this study were housewives selected purposively, Focus Group Discussion (FGD) and participants indepth interviewed conducted to pre-test media design drawn as many as 10 people a housewife from the village of Terusan. For testing purposes the media, taken a sample of 30 housewives, selected purposively from 3 Village, the Terusan Village, Pabean Udik Village, and Karangsong Village, it's sample taken 10 housewives with criteria between the ages of 18-50 years, lowest educated is elementary school, not working, and willing to become respondents.

**C. Results and Discussion**

Preliminary wall clock design that has been made was done by implementing FGD pre-test, the informant was the housewife who qualify as many as 10 people. This was in accordance with the terms for the acquisition of the good results of poses FGD was between 8-12 respondents. In addition to pretest the media, was also carried out in the form of expert review by health promotion media expert.

To pre-test the housewife target questions include: sound reminder alarms ( audio), color, text, placement, photos/images, shape, suggestions for improvement of the look and sound of wall clocks.

The results obtained from test (pretest) design made to informants housewife In the aspect of the sound wall clock, housewives prefer a voice message was a call to implement hygiene behaviors. The following were informant statements:

*"...it's time for cleaning, it's like that Sir,...using alarm, Sir...(I1)"*
*"...It's like an alarm, said its time for cleaning...(I2)"*

From the statement of the housewives , it is known that the prevention of transmission of dengue fever is strongly associated with efforts to clean up the home environment. So that the housewives can choos wall clock reminded to implement environmental hygiene behaviors.

In addition to the message contains a call to carry out hygiene behaviors, also need to be praised from the others. These were informant statement:

*"...For being encouraged, we need to be praised first* (laugh) *(I3)*"
*"...mother who loves their family...(14)"*

From the statements of informants

note that praise/recognition is a tribute to them will make them more eager to carry out dengue prevention measures. So that the audio sound wall clock should contain words of praise to the housewife. As in Maslow's theory states that the recognition/award is one of the human needs that must be met. Abraham Maslow et al [(10)] Rahmawati suggests that basically human beings have basic needs where the basic needs that consists of physiological needs (hunger and thirst), safety needs (to feel safe and protected, away from the dangers), need for love and belonging (affiliated with the others, received, have), need for appreciation (achievement, competence, and get support and recognition), need for self-actualization (cognitive needs, know, understand, and explore). (Herzberg, 1966) [(11)] . From the sound wall clock that contains an invitation, the housewife wanted that they need words to make them feel proud and recognized role, this was in accordance with the level of psychological needs: the need for an award.

In the aspect of time or when the clock sounding, the informant chose the morning at 6 am, and the afternoon at 16.00, following was an excerpt answers from respondents :

*"...at 6 a.m. school children having breakfast....the father also...so at that time we are gathering....(15)"*
*"...at 4 p.m. ...yes.. I stay at my home (I6)"*

Rosalinda, et al (2007) [(12)] revealed that time is something that is important in human life, time is also an opportunity that is used to perform various activities. The process of perception can be obtained from the hearing, seeing and feeling with such a perception is the process of how stimuli (stimulus) was selected, organized and interpreted (Triyono Elfina et al ,2014). [(13)].Kardes Elfina et al (2014) [(14)] stated that an advertising message repetition time, could have an effect on changes in knowledge, attitudes, and behaviors of the target. So that a same information that continues repeated will eventually make remembering the message. Researchers found that optimal repetition limit are three times, the so-called three- hit theory (Schiffman and Kanuk Elfina et al, 2014). [(15)] This is similar to the model used in using wall clock in this study, the message playback only twice, 06:00 a.m. and 16:00 p.m.. In accordance with

the timing given by the informant. In the case of the current selection when the clock should ringing and gave them mesaages, housewife chose during the morning and afternoon, which at that time the housewives gathered with their families and not being to have activities outside the home. So that they could be exposed properly by the information of the wall clock. Related to whose voice that informant want to hear deliverying the mesagge. The housewives prefer children and gentlemen voices. These were the informan statement:

*"....prefering voice of children... being encouraged if listening children voice, Sir ...(I5)"*
*".....for me prefering sound of gentlemen voice ....(17)"*

From the opinion of the informant can be seen that housewives liked the sounds that represent their family to be included as voice alarm clock.

In the aspect of color for a wall clock, informants liked bright colors, the following are informan statement:

*"...I prefer red color for brightness (I8)"*
*"....blue, blue is bright...(I10)"*

Hurlbert [16] from the University of Newcastle stated that most women in their 20s prefer a combination of red and blue, color games are widely applied in the design of both the product design, interiors, fashion and so on. Color selection is a subjective thing. In general there are some colors that have a universal effect, for example, the red color is known as a warm color and is known to evoke emotions and influence the psychological effect for the observer and wearer. The use of an appropriate color will give the impression of joy and use the right colors not only make beautiful and have an effect on psychological, but there are also economic benefits (Moekijat, 2002). [17]. From the color of choice of informants, it is understandable that the informants were all women choose bright colors. So that in making design revisions will combine bright colors on the display wall clock. It also includes a choice of colors for the font will also be using the dominance of red and blue, to give spirit to housewives in preventing dengue.

In the aspect of the image in the clock design, the informant felt it was pretty good, but felt still less encouragement for housewife to implement PSN DBD, the following are informan statement:

*"....enough...that is enough...(I5)"*
*"...Im spirited...if I have... (I5)"*

Picture is an important thing that could support the message content to be captured well by the target media health promotion. So the media wall clock is also equipped with a display image/picture messages to be easily understood by the target and visually display media become more attractive. In this case the clock serves as a visual medium. Audio-visual media is media that convey messages through the senses of sight and hearing can stimulate thoughts, feelings, attention and willingness (Muthmainnah, 2013) [18]. In this study, coupled between the visual with the audio, so that the message delivered to more easily captured by the target. According Hujair Sanaki AH et al (2012) [19] audio-visual has several advantages, namely audio visual has a special attraction that can be a trigger or motivate learners to learn, increase endurance memory or retention of learning objects are studied and portable or easily distributed.

In the aspect of the placement of a wall clock, the informant chose the second place of installation that was on the wall and near the television, so that can always be visible, these were informan statement:

*"....on the wall near television, so we can always see the clock outomatically...(I8)"*
*"....that's better lookslike...near the television, ...will be frequently seen although the clock only alarming 2 times per day...(17)"*

This is in accordance with Amalia ( 2013) [20], which stated that the success of communications

media supported by several factors such as the placement or how the media can increase feeling interested and understanding of the audience. Visual media closer to the audience or target is one way to increase the success of communication. The placement of health promotion media, in this case the clock in a place easily seen by the target housewives to foster the desire to follow the message. The sense of sight and hearing should be facilitated in reaching the target position or location health promotion media, so it could be attracted the attention. (Iversen et al . 2007) [21]

In the aspect of the form of clocks, the informant chose the form of a rectangular box, because the shape of the perceived unique and different from the wall clock in general, the following were informan statement:

*"...for me the...rectangular shape...*
*...round shape is too usual...(I3)"*
*"...rectangular is unique shape...(18)"*

From that opinion of the informant could be understood that the housewives want the display of wall clock will be different from the clock that has been used to obtain on the market.

Based on input from one health promotion media expert, there were several input to revise the design: Message tagline should provide motivation to encourage housewives conducting PSN-DBD. PSN-DBD information (3M Plus) should be given a picture/photograph in order to facilitate the goal of understanding the information. Sound/voice messages, must be audible intonation, and not too fast. This media regarding his time as distinctive character, so that the information need to enter a time when the dengue mosquito bites, facilitating targeted to avoid mosquito bites.

After getting feed back from the pretest design, the wall clock undergone several changes in both the color, the contents of the message, picture, or voices. Based on the feed back from the pretest, wall clock design changes are includes:

**The wall clock visual appearance:**

Improved theme was to motivate housewives in order to implement preventive behavior to implement 3M Plus. Housewives not merely be given information about how to implement 3M, but also reminded and motivated to carry both visual and audio .

Shape wall clock, tailored to what is preferred by the target, namely, a rectangular-shaped box, which was then refined with the ergonomic curved edge list.

Place/location of installation of the wall clock is inside the house, which allows it to be placed on a wall or near a television. So that the wall clock design allows it to be installed on the wall or stand on a table . The dominant color of the wall clock use of bright colors, the basic color display face was white, then to the side and rear body color was blue.

Writing messages conveyed in visual wall clocks include the main message ( tagline), namely: "Mama 3M Plus, Family's Hero", was used to give a sense of pride housewives (target) that they has a major role in preventing the family from DHF infection. That tagline sentence was given a red color, so it had contrast against the background color. The color red is psychologically give a description of the spirit or struggle. Tagline was positioned uppermost on the visual display wall clock, and using font type Arial, which made it easier to read for the target. The size of the more than 20 point. With the hope of getting to make the target easier to read and easier to remember.

The other suggestion was the text that contains information about precautions against mosquito bites, which reads : "Beware of Dengue Mosquito Bite" with a red color that contrasts with the background color white. Underneath there was a written explanation of a mosquito bite " 6-9 am " and " 3-5 pm " in blue color. The position of this paper aligned with the position of digital clocks, which shows the importance of understanding a mosquito bites, in order to avoid it.

The next sentence was "Do 3M Plus", followed in succession underneath the tagline with variations of colors highlight to clarify the

content of the 3M Plus are: Cleaning nad Draining Bath, Covering Water Reservoir, Recycling Used Goods, Using Larvicides, Checking Mosquitos Larvae.

There was a space 3R photos (3.5 x 5 inch) to insert family photos, the windshield of the photo space, there are the words "DHF Free, Healthy Families" The size of a wall clock 25 cm long and 18 cm wide.

The final design visual wall clock could be showed as in the picture below:


Figure 1. Final Design Wall Clock

**The final design sounds alarm clocks:**

Gentlemen voice: "Come on Mom!.. did 3M Plus, as evidence of that you love your Family"

Children voice: "Come on Mom! ... Do 3M Plus as a proof that you love your family"

Women voice: "Let's go Mom, check the larvae and do 3M in home and surrounding environment, thanks"

The final design of the wall clock was then made into a media product samples. Wall clock product samples, tested in three villages, namely: Terusan, Karangsong, Pabean Udik, involving 30 housewives with 10 housewives distribution per village. Intervention trials using clocks as health promotion media carried out with a duration of one week (7 days) per respondent. The data comparison was the presence of mosquito larvae at the water reservoir area in the home, surounding environment and housewives PSN- DBD (3M) activity before and after exposure.

**Data Analysis Results from Trial Implementation Media (Clocks)**

Based on the monitoring of the presence of larvae of Aedes sp . Before and after the media exposure clocks, obtained the following results:

Table 1. Comparison of presence of dengue mosquito larvae before (Pre ) and already (Post) Exposure Wall Clock (n = 30 respondents) .

| No | Type and Number Water Storage | (+)Larvae (Pre) | | (-) Larvae (Post) | |
|---|---|---|---|---|---|
| | | Freq. | % | Freq. | % |
| 1. | Bathroom Water Reservoirs (20) | 15 | 75 | 5 | 25 |
| 2. | Home water reservoirs (17) | 10 | 58,8 | 3 | 17,6 |
| 3. | Flower Vase (2) | 1 | 50 | - | 0 |
| 4. | Waste Water Bin from Dispenser (4) | 2 | 50 | - | 0 |
| 5. | Gutter (16) | 9 | 56,2 | 6 | 37,5 |
| 6. | Waste bucket (2) | 1 | 50 | 1 | 50 |
| 7. | Waste bottles (5) | 2 | 40 | - | 0 |
| 8. | Waste cans (3) | 1 | 33,3 | - | 0 |
| | Total | 41 | | 15 | |

Based on the analysis of the survey the presence of larvae of Aedes sp home respondents showed both before and after exposure clocks, almost all types of Water Reservoirs (Tempat Penampungan Air/TPA) positive for Aedes sp, the total amount of TPA positive larvae before exposure at the clock as much as 41, but after exposure clocks TPA positive number of larvae decreased to 15. With the details of as many as 41 TPA are positive presence of larvae of Aedes sp before exposure bathroom water reservoir as many as 15 (75%) positive mosquito larvae, home water reservoir by 10 (58.8%) positive mosquito, flower vases 1 ( 50%) positive mosquito larvae, water waste bin dispenser 2 (50%) positive mosquito larvae, gutter as much as 9 (56.2%) positive mosquito larvae, waste bucket 1 (50%) positive mosquito larvae, waste bottles of 2 (40%) positive larvae, waste cans as much as 1 (33.3%) positive mosquito larvae. After being exposured to the wall clock TPA positive number Aedes sp were reduced to 15 positive mosquito larvae. Bathroom water reservoir that there were presence of larvae after being exposured to wall clock was 5 (25%) positive mosquito larvae, home water reservoir 3 (17.3%) positive mosquito larvae, gutter 6

(37.5%) positive larvae, and waste buckets numbered 1 (50%) positive mosquito larvae. Based on the data it could be concluded after being exposured to the clock there were decrease in the presence of larvae of Aedes sp at each water storage place.

**PSN-DBD Housewives Behavior Analysis before and after Exposure Wall Clock**

Based on the results of behavioral data collection through questionnaires before and after the clock media exposure obtained the following results:

**Table 2.** Analysis of PSN-DBD Housewives Activity Before (Pre) and After (Post) Exposure Wall Clock (n = 30 respondents)

| No | Activity | Before (Pre) | | After (Post) | |
|---|---|---|---|---|---|
| | | Freq. | % | Freq. | % |
| 1. | Conducting PSN-DBD (3M) | 19 | 63,3 | 27 | 90 |
| a. | Cleaning & Drying Bathroom Water Storage | 13 | 43,3 | 20 | 66,7 |
| b. | Recycling of Used Goods | 12 | 40 | 9 | 30 |
| c. | Covering Water Reservoirs | 16 | 53,3 | 22 | 73,3 |
| d. | Using of larvacida (abate) | 4 | 13,3 | 2 | 6,7 |
| e. | Checking Larvae in the Water Reservoir | 7 | 23,3 | 17 | 56,7 |
| f. | Burying waste goods | 2 | 6,7 | 1 | 3,3 |

Based on the results of the questionnaire after the analysis, obtained a description of the respondents were implementing PSN-DBD activity before exposure to a wall clock as much as 19 (63.3%) of respondents, cleaning and draining bathroom water reservoir as much as 13 (43.3%) of respondents, recycling of used goods as many as 12 (40 %) of respondents, covering the water reservoirs as many as 16 (53.3%), using larvacida (abate) 4 (13.3%), checking larvae 7 (23.3%), burying waste goods 2 (6,7%). After the exposure of the wall clock found an increase of 27 (90%) of respondents who did PSN-DBD, cleaning and draining bathroom water reservoir as much as 20 (66.7%), recycling used goods as much as 9 (30%), covering water reservoir as much as 22 (73.3%), using larvacida 2 (6.7%), checking larvae 17 (56.7%), burying waste goods as much as 1 (3.3%) of respondents.

From the table it could be showed there was an increase in PSN-DBD housewives activity after being exposured by wall clock. It is indicated that wall clock could be influence awarness housewives to do activity preventing DHF.

**D. Conclusion**

1. Health promotion media were developed to target housewives in the prevention of dengue fever was in the form of a wall clock, which the message of dengue prevention could be viewed and heard by housewives. This media is consistent with the characteristics of housewives who need a reminder to be able to carry out the PSN DBD (3M) well. This wall clock has a rectangular shape, with bright colors, and an alarm sound reminder that contain messages for implementing PSN-DBD.
2. Themed of wall clock developed related to a very large housewives role in preventing the spread of dengue fever in the family. Media was developed by considering the character, tastes, desires of housewives. Once exposed by this wall clock, expected housewives become motivated to regularly and sustainably implement the PSN DBD (3M). So that the dengue mosquito couldn't breed, the number of larvae is reduced, and the transmission (morbidity) DBD decreased. This wall clock mounted in the living room, could be wall or positioned on a table near the television, so easily viewed and heard its message by housewives.
3. The result of wall clock trial test, there were difference numbers the presence of dengue mosquito larvae between before and after exposure to them. The presence number of larva in water reservoirs at the time of observation after exposure decreased compared to before exposure. Based on activity PSN-DBD (3M) data comparison before and after exposure wall clock, there were increased activities of housewives of the percentage, especially in the activities of the cleaning and draining bathroom water reservoir, covering home water reservoirs,

and checking the larvae. Further research will be needed with a larger sample size and longer duration of exposure to assess the effectiveness of this wall clock media in enhancing the role of the housewives implementing DHF prevention.

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# RELATIONSHIP BETWEEN ERSONAL HYGIENE, TOILET CONDITIONS OF FAMILY AND THE INFORMATION RECEIVED WITH THE INCIDENCE OF TYPHOID FEVER IN PUSKESMAS NOGOSARI BOYOLALI

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**Abstract**

Typhoid fever is a disease caused by infection with the bacterium Salmonella typhi, the disease is still a public health problem, especially in developing countries. The purpose of this study was to analyze the relationship between personal hygiene, conditions of household toilets and information received with the incidence of typhoid fever in Puskesmas Nogosari Boyolali.

This type of research is observational research with case control design. Population of cases in this study were all patients with typhoid fever in January-December 2014, while population control is not the typhoid fever patients. Selection of the sample in the case group of 35 people and control as many as 35 people were done using Fixed Disease Sampling techniques while using a Chi Square test.

Results of this study indicate that there is a relationship between the habit of washing hands after defecation (p = 0.008; OR = 3.750; 95% CI = 1.383 to 10.169), the habit of washing hands before eating (p = 0.030; OR = 2.909; 95% CI = 1.093 to 7.739), eating habits outside the home (p = 0.039; OR = 3.000; 95% CI = 1.034 to 8.702), the received information with the incidence of typhoid fever (p = 0.007; OR = 4.008; 95% CI = 1.428 to 11.247) and there is no relationship between the habit of washing raw food that will be eaten immediately (p = 0.225), family latrine condition (0.220) with the incidence of typhoid fever in Puskesmas Nogosari Boyolali.

**Keywords** : Personal hygiene, toilet condition, Information, Typhoid Fever

## A. Introduction

Typhoid fever is an acute infection of the digestive tract caused by *Salmonella typhi*. According to the World Health Organization (WHO) in 2000 there were 21.5 million cases of typhoid fever world wide, 200,000 of them died of the disease with the Case Fatality Rate (CFR) 0.9%. Based on the WHO report in 2003 there were approximately 17 million cases of typhoid fever 600,000 of them die every year (WHO, 2003). In 2014 an estimated 21 million cases of typhoid fever 200,000 of them die each year world wide (WHO, 2014).

Typhoid fever is an endemic disease in Indonesia. Data in 2010 showed that cases of typhoid fever was ranked three of the ten types of illness in hospitalized patients in hospitals through out Indonesia. Total cases of typhoid fever reached 41.081 people composed of 19.706 men, 21.375 women and 274 patient shave died. Case fatality rate (CFR) of typhoid feverin 2010 a mounted to 0.67% (Ministry of Health RI, 2011). Based on the Report of the Basic Health Research (2008), in the province of Central Java in 2007 patients with typhoid fever there is a prevalence of 1.6%, and scattered through out the County/ City with a range of 0.2 to 3.5%. The highest prevalence of typhoid reported from Wonosobo and Pemalang by 3%.

Based on data from the Integrated Surveillance-Based Health Center (New Cases) in Boyolali Health Service (2013), in Boyolali incidence of typhoid fever of 828 cases (0.8%) per 100,000 population (Boyolali Health Service, 2013).

Based on data from typhoid fever of Puskesmas Nogosari Boyolali (2014), known to a rise in cases of typhoid fever in 2011 there were 179 cases (0.3%), in 2012 there were 309 cases (0.5%), in 2013 there were 410 cases (0.7%) and in 2014 there were cases of as many as 231 cases (0.4%).

Based on the preliminary survey conducted in Puskesmas Nogosari the result that the condition of the toilet facilities that are eligible for 60%, the habit of washing hands with soap before eating 40%, the habit of eating outside the home 70%, the habit of washing hands with soap after defecation by 30%, the habit of washing raw food that will be eaten immediately by 40%, received information about typhoid fever by 20% and has never been a study of typhoid fever in the working area of Puskesmas Nogosari. Based on the above problems researchers interested in conducting research on "The Relationship Between Personal hygiene, Family Lavatori Conditions and Information Received With the Incident of Typhoid Fever in Puskesmas Nogosari Boyolali". The purpose of this study was to determine the relationship between personal hygiene, family lavatory condition and information received with the incidence of typhoid fever in Puskesmas Nogosari Boyolali.

**B. Methods**

This study uses an observational research study type the case-control approach that is analytical research (Notoatmodjo, 2010). This study research subjects into two groups, namely the case and control groups. The study was conducted in May-June 2015 in Puskesmas Nogosari Boyolali with District of the Village are Ketitang, Guliand Tegal Giri. The population in this study are all the people in Puskesmas Nogosari Boyolali. The sample in this study are obtained a sample of 35 respondents. At the controls of the group amounted to 35 and the case group totaled 35, bringing the total of all respondents be numbered 70 respondents. Sampling technique used in this research is by using Fixed Disease Sampling (Gerstmanin Murti, 2013).

Bivariate analysis is used to determine the relationship between each independent variable in personal hygiene, conditions of latrines, the information received, the dependent variable is a incidence of typhoid fever and to know the results of OR by statistical test Chi-Square. Data was analyzed using computer software with a significant level $\alpha=0.05$ (95% confidence level).

**C. Results and Disscution**

**a. Respondents Characteristics**

1. **Respondents Age**
   Based on Table 1, note that the average age in the cases group, namely 39.06 ±22.21 and the average age in the control group, which is 38.86 ±16.78.
2. Respondents Gender
   Distribution characteristics of respondents by sex for cases and controls most female. In the case of groups of as many as 23 people (65.7%), and the control group as many as18 people (51.5%).
3. Respondents Education
   Distribution characteristics of respondents based education for elementary school groups most cases as many as 11 people (31.4%) and in the control group most junior high school graduation as many as 15 people (42.9%).

**b. Analysis Bivariat**

1. The relationship between the habit of washing hands after defecation With the Incident of Typhoid Fever
   Based on the results of Chi Square test in table 4, it is known that there is a relationship between the habit of washing their hands after defecation with the incidence of typhoid fever ($p = 0.008$), with a value of Phi Cramer's V is 0,316 which showed that the level of closeness of the relationship between independent variables and weakly dependent variable (0.200 to 0.399). Value OR = 3.750 (95% CI = 1.383 to 10.169) so that it can be interpreted that a person who does the habit of washing hands after defecation unfavorable risk by 4 times to experiencethe incident of typhoid fever.
2. The relationship between Hand Wash Before Eating Habits With the incidentof Typhoid Fever

Based on the results of Chi Square test in table 4, it is known that there is a relationship between the habit of washing hands before eating with the incidence of typhoid fever (p = 0.030), with a value of Phi Cramer's V is 0.259 which indicates that the degree of closeness of the relationship between independent variables and the dependent variable are weak (0.200 to 0.399). Value OR = 2.909 (95% CI = 1.093 to 7.739) so it can be interpreted that the person who does the habit of washing hands before eating unfavorable risk for 3 times to experience the incidentof typhoid fever.

3. The relationship between habits Eating out Home With the incident of Typhoid Fever
   Based on the results of Chi Square test in table 4, it is known that there is a relationship between eating habits outside the home with the incidence of typhoid fever (p = 0.039), with a value of Phi Cramer's V is 0.246 which indicates that the degree of closeness of the relationship between independent variables and the dependent variable are weak (0.200 to 0.399). Value OR = 3.000 (95% CI = 1.034 to 8.702) so it can be interpreted that the person doing the eating habits outside the home at risk for 3 times to experience the incidentof typhoid fever.
4. The relationship between Raw Material Washing Habits That Will eat Directly Withthe incident of Typhoid Fever
   Based on the Chi Square test results in table 4, it is known that there is no relationship between the habit of washing raw food that will be eaten directly with the incidence of typhoid fever (p = 0.225). Respondents who make a habit of washing raw food that will be eaten directly with both categories of case group and control more than doing the habit of washing raw food that will be eaten directly with unfavorable category.
5. The relationship between Family Latrine condition withthe incident ofTyphoid Fever
   Based on the Chi Square test results in table 4, it is known that there is no correlation between the condition of the family latrine with the incidence of typhoid fever (p = 0.220). Respondents with family latrine conditions that qualify the case group and the control over much of the family latrine conditions that do not qualify.

Table 1. Descriptive Statistics calculation Average Age Group

| **Group** | **N** | **Minimum** | **Maksimum** | ***Mean*** | ***SD*** |
|---|---|---|---|---|---|
| **Cases** | 35 | 4 | 79 | 39,06 | 22,21 |
| **Control** | 35 | 17 | 77 | 38,86 | 16,78 |

Table 2. Frequency Distribution of Respondents by Gender

| **Gender** | **Cases** | | **Control** | |
|---|---|---|---|---|
| | **(n)** | **(%)** | **(n)** | **(%)** |
| Male | 12 | 34,3 | 17 | 48,6 |
| Female | 23 | 65,7 | 18 | 51,4 |
| **Total** | 35 | 100 | 35 | 100 |

Table 3. Frequency Distribution of Respondents According to Education

| **Education** | **Cases** | | **Control** | |
|---|---|---|---|---|
| | **(n)** | **(%)** | **(n)** | **(%)** |
| Yet School | 2 | 5,7 | 0 | 0 |
| No School | 7 | 20 | 4 | 11,4 |
| Elementary School | 11 | 31,4 | 7 | 20 |
| Junior High School | 9 | 25,7 | 15 | 42,9 |
| Senior High School | 4 | 11,4 | 7 | 20 |
| College | 2 | 5,7 | 2 | 3,7 |
| **Total** | 35 | 100 | 35 | 100 |

6. Relationship between the information received with the incident of Typhoid Fever
   Based on the results of Chi Square test in table 4, it is known that there is a relationship between the information received by the incidence of typhoid fever (p = 0.007), with a value of Phi Cramer's V is 0.323 which indicates that the degree of closeness of the relationship between independent variables and the dependent variable are weak ( 0.200 to 0.399). Value OR = 4.008 (95% CI = 1428-11247) so it can be interpreted that a person who does not get information about the risk of typhoid fever by 4 times to experience the incidence of typhoid fever.

**a. Relationship Between the habit of washing hands after defecation with the incident of Typhoid Fever**

Based on the results of statistical analysis concluded that there is a relationship between the habit of washing their hands after defecation with the incidence of typhoid fever in the region of Puskesmas Nogosari (p = 0.008 <0.05). Value Phi Cramer's V is 0,316 which showed that the level of closeness of the relationship between independent variables and the dependent variable is weak (0.200 to 0.399). OR values were obtained in the amount of 3.750 (95% CI = 1.383 to 10.169) so that it can be interpreted that someone hand washing after defecation with unfavorable category 4 times the risk of experiencing incidence of typhoid fever. According Fathonah (2005), declare that dirty or contaminated hands can transfer bacteria or viral pathogens from the body, stool or any other source to the food. Therefore hand hygiene by washing hands should receive high priority, although it is often overlooked washing with

Table 4. Results of Analysis Variables Bivariate relationship with the incident of Typhoid Fever in Puskesmas Nogosari Boyolali 2015

| Variable | Cases | | Control | | P *Value* | Phi Cramer's V | OR | 95%CI |
|---|---|---|---|---|---|---|---|---|
| | (n) | (%) | (n) | (%) | | | | |
| **The Habit of Washing Hands after Defecation** | | | | | | | | |
| Not Good | 25 | 71,4 | 14 | 40 | | | | |
| Good | 10 | 28,6 | 21 | 60 | 0,008 | 0,316 | 3,750 | 1,383-10,169 |
| Total | 35 | 100 | 35 | 100 | | | | |
| **The Habits Hand Wash Before Eating** | | | | | | | | |
| Not Good | 24 | 68,6 | 15 | 42,9 | | | | |
| Good | 11 | 31,4 | 20 | 57,1 | 0,030 | 0,259 | 2,909 | 1,093-7,739 |
| Total | 35 | 100 | 35 | 100 | | | | |
| **The Habits Eating out Home** | | | | | | | | |
| Yes | 15 | 42,9 | 7 | 20 | | | | |
| No | 20 | 57,1 | 28 | 80 | 0,039 | 0,246 | 3,000 | 1,034-8,702 |
| Total | 35 | 100 | 35 | 100 | | | | |
| **Raw Material Washing Habits that Will Eat Directly** | | | | | | | | |
| Not Good | 24 | 68,6 | 15 | 42,9 | | | | |
| Good | 11 | 31,4 | 20 | 57,1 | 0,225 | 0,145 | 1,810 | 0,691-4,740 |
| Total | 35 | 100 | 35 | 100 | | | | |
| **Kondisi Jamban Keluarga** | | | | | | | | |
| Not Qualify | 16 | 45,7 | 11 | 31,4 | | | | |
| Qualify | 19 | 54,3 | 24 | 68,6 | 0,220 | 0,147 | 1,837 | 0,693-4,873 |
| Total | 35 | 100 | 35 | 100 | | | | |
| **Information Received** | | | | | | | | |
| No | 27 | 77,1 | 16 | 45,7 | | | | |
| Yes | 8 | 22,9 | 19 | 54,3 | 0,007 | 0,323 | 4,008 | 1,428-11,247 |
| Total | 35 | 100 | 35 | 100 | | | | |

soap as a cleanser, rubbing and rinsing with running water will wash away dirt particles which contains microorganisms.

According to the theory advanced by Arisman (2008), that the culture of proper hand washing is the most important activity. Each hand is used to hold food, the hands must be clean. Hands need to be washed because of the thousands of microorganisms, both normal flora or contamination, the sticking place and easily switch to food untouched. Washing correctly has proven successful to reduce the incidence of contamination and outbreaks.

Health efforts should be made that the provision of knowledge or information to the public in a way to educate the public about the importance of hygienic behavior and healthy especially personal hygiene which aims to enable communities to carry out personal hygiene includes washing hands properly in order to prevent the occurrence of fever and to enable the health center to activate PHBS program so as to reduce the incidence of typhoid fever as low as possible. We know that personal hygiene includes washing hands after defecation is one of the factors the occurrence of typhoid fever that personal hygiene should be done well, toxicity Proper hand washing must be cultivated because one transmission of *Salmonella typhi bacteria* through the fingers or nails.

Each hand is used to hold food, then it must have clean hands, the hands need to be washed because of the thousands of microorganisms, both normal flora or contamination, the sticking place and easily switch to food untouched. Washing correctly has proven successful to reduce the incidence of contamination and outbreaks (Arisman, 2008).

How to perform proper hand according Proverawati and Rahmawati (2012), is as follows:

1. Wash your hands with running water and use soap. No need to be a special antibacterial soap, but preferably liquid soap.
2. Rub hands for at least 15-20 seconds.
3. Clean the wrist, back of hands, between fingers and fingernails.
4. Rinse hands well under running water.
5. Dry with a clean towel or other dryer.
6. Use a tissue/towel as a barrier when turning off the water tap.

**b. Relationship Between Eating Habits Wash Hands Before with the incident of Typhoid Fever**

Based on the test results of statistical analysis concluded that there is a relationship between the habit of washing hands before eating with the incidence of typhoid fever in the region of Puskesmas Nogosari ($p = 0.030 < 0.05$). Value Phi Cramer's V is 0.259 which indicates that the degree of closeness of the relationship between independent variables and the dependent variable is weak (0.200 to 0.399). OR values were obtained in the amount of 2.909 (95% CI = 1.093 to 7.739) so it can be interpreted that a person whose habit of washing hands before meals with unfavorable category 3 times the risk of experiencing incidence of typhoid fever.

**c. Relationship between Eating Habits Outside the house with the incident of Typhoid Fever**

Based on the results of statistical analysis concluded that there is a relationship between eating habits outside the home with the incidence of typhoid fever in the region of Puskesmas Nogosari ($p = 0.039 < 0.05$). Value Phi Cramer's V is 0.246 which indicates that the degree of closeness of the relationship between independent variables and the dependent variable is weak (0.200 to 0.399). OR value obtained is equal to 3,000 (95% CI = 1.034 to 8.702) so it can be interpreted that someone who ate three times outside the home at risk of experiencing incidence of typhoid fever.

According Addin (2009), which states that the transmission of typhoid fever can happen anywhere and anytime, usually occurs through the consumption of food outside the home or in public places, if food or beverages consumed less clean. Can also be caused by food that is served by a typhoid patient less to maintain cleanliness while cooking. Can also be caused by food that is served by a typhoid patient latent (hidden) less maintain cleanliness while cooking. A person can carry the germs of typhoid in the digestive tract without pain, this is called latent patients. Patients can transmit typhus disease is to many

people, especially if he works in serving food for many people as a cook in a restaurant.

Health measures that must be done is to provide knowledge to the community by way of outreach to the community about controlling the incidence of typhoid fever. One that is not used to eating at food stalls are less assured of cleanliness and provide counseling to traders in order to always maintain the cleanliness of the merchandise. Both of washing tools, materials and through the provision of food,

**d. The relationship between Raw Material Washing Habits That Will eaten Direct with the incident of Typhoid Fever**

Based on the results of statistical analysis concluded that there was no relationship between the habit of washing of food to be eaten directly with the incidence of typhoid fever in the region of Puskesmas Nogosari (p = 0.225> 0.05).

From the results of the study most of the respondents in the control group had the habit of washing raw food that will be eaten directly with both categories as many as 23 people (65.7%), while in the case group as many as 18 people (51.4%). This causes the habit of washing raw food that will be eaten directly in this study is not a risk factor for the incidence of typhoid fever in Puskesmas Nogosari Boyolali.

**e. The relationship between the Family Lavatory condition with the incident of Typhoid Fever**

Based on the results of statistical analysis concluded that there was no relatioship between the Family Lavatori condition with incidence of typhoid fever in the region of Puskesmas Nogosari (p = 0.220> 0.05).

Based on the results of research in the field most of the respondents who have qualified latrine condition contained in the control group as many as 24 people (58.6%) and who do not qualify as many as 11 people (31.4%). Whereas in the case group as many as 19 people (54.3%), this causes the conditions of family latrines in this study is not a risk factor for the incidence of typhoid fever in Puskesmas Nogosari Boyolali.

**f. The relationship between the information received with the incident of Typhoid Fever**

Based on the results of statistical analysis concluded that there is a relationship between information received with the incidence of typhoid fever in the region of Puskesmas Nogosari (p = 0.007 <0.05). With the value of Phi Cramer's V is 0.323 which indicates that the degree of closeness of the relationship between independent variables and the dependent variable is weak (0.200 to 0.399). OR values were obtained in the amount of 4.008 (95% CI = 1.428 to 11.247) so that it can be interpreted that a person who does not get information about 4 times the risk of typhoid fever experiencing incidence of typhoid fever.

In this research, it is known that the number of respondents who received information about typhoid fever greater in the control group compared with the group of cases, where as in the control group as many as 19 people (54.3%) of which 2 (5.7%) of the book, 3 people (8.6%) from a neighbor, 1 (2.9%) from the gathering of mothers and 13 persons (37.1%) of health care workers. Whereas in the case of group 8 (22.9%) of which 2 (5.7%) from a neighbor, and 6 (17.1%) of health care workers

Information is one very important factor in preventing the incidence of typhoid fever, someone who never get information about typhoid fever, so they never know how to prevent the occurrence of typhoid fever so that they are susceptible incidence of typhoid fever. According Timmreck (2003), a person who has a high level of knowledge will be oriented on the preventive action or can be said to be more aware of health issues and have a good health status. Efforts need to do is to provide information and knowledge to the community by way of extension to all the good people suffering from typhoid fever and are not suffering from typhoid fever, so that the whole community can control typhoid fever incident.

## D. Conclusions

1. There is a relationship between the habit of washing their hands after defecation with the incidence of typhoid fever (p = 0.008; OR = 3.750; 95% CI = 1.383 to 10.169).
2. There is a relationship between the habit of washing before eating with the incidence of

typhoid fever (p = 0.030; OR = 2.909; 95% CI = 1.093 to 7.739).

3. There is a relationship between eating habits outside the home with the incidence of typhoid fever (p = 0.039; OR = 3.000; 95% CI = 1.034 to 8.702).
4. No association between the habit of washing raw food that will be eaten directly with the incidence of typhoid fever (p = 0.225).
5. There is a relationship between the condition of the family latrine with the incidence of typhoid fever (p = 0.220).
6. There is a relationship between the information received with the incidence of typhoid fever (p = 0.007; OR = 4.008; 95% CI = 1.428 to 11.247).

**Recommendation**

1. For the Community
   For the community in order to increase individual hiegine especially with good hand washing habits and creating good environmental sanitation so as to carry out prevention and eradication of typhoid fever in the community.
2. In particular, the health center for PuskesmasNogosari
   Health workers are expected to continue to provide promotive and preventive one of them may be counseling to all people either suffering or not suffering from typhoid fever in order to control typhoid fever and to provide education to the community, especially in the food trade in order to keep it clean so that the transmission of typhoid fever can be prevented. As well as to improve knowledge and information about typhoid fever is expected to improve personal hygiene and environmental sanitation to reduce the risk of transmission of typhoid fever.
3. For other researchers
   Researchers further in order to carry out further research on other factors such as (knowledge, attitude, action, diet, clean water source, family history of typhoid and individual characteristics) associated with the incidence of typhoid fever.

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# LEVEL OF MOTHER'S KNOWLEDGE AND ATTITUDE ABOUT HEALTHY AND CLEAN LIFE BEHAVIOR (PHBS) WITHIN SICK BUILDING SYNDROME IN PERMANENT HOUSE OF DUSUN KARANGKENDAL, UMBULHARJO, CANGKRINGAN, SLEMAN, YOGYAKARTA

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**Abstract**

Health is the right of every human being. One of the factors that affect person's health is behavior. Unhealthy behaviors caused environmental conditions became unhealthy that could make health disorders appear. Karangkendal hamlet, Umbulharjo, Cangkringan, Sleman, Yogyakarta was an area that used as residential fixed for eruptions victims of Mount Merapi. Low levels of education made mother's level of knowledge and attitude about Healthy and Clean Life Behavior (PHBS) became not good and caused problem for the family such as is sick building syndrome. This research was aimed to study the correlation between the mother's level of knowledge and attitude about Healthy and Clean Life Behavior with the incidence of sick building syndrome in the residential fixed Karangkendal Hamlet, Umbulharjo, Cangkringan, Sleman, Yogyakarta.

The type of this research was a cross-sectional with survey approach. The sample was 41 mothers. The independent variable in this research was the mother's level of knowledge and attitude about Healthy and Clean Behavior and the dependent variable in this research was the incidence of sick building syndrome in the residential fixed Karangkendal Hamlet, Umbulharjo, Cangkringan, Sleman, Yogyakarta.

Data were analyzed descriptively and analytically. Analytically with SPSS 17 for Windows to test Chi - Square using 95% as confidence level, obtained p value (0,031) < 0,050 for the level of knowledge with the incidence of sick building syndrome and p value (0,048 or 0,050) = 0,050 for attitudes with the incidence of sick building, so it could be concluded that there was a correlation between the level of knowledge about Healthy and Clean Life Behavior (PHBS) with the incidence of sick building syndrome and there was no correlation between attitudes about PHBS with the incidence of sick building syndrome in residential fixed Karangkendal Hamlet, Umbulharjo, Cangkringan, Sleman, Yogyakarta.

**Keywords** : Knowledge Level, Attitude, Health and Clean Life Behavior, Sick Building Syndrome

## A. Introduction

A denizen house or building as a group could cause, prevent, ignoring, or fix health problems in its own group.Behavior the inhabitants not only cause health problems, but also prevent health problems and become resources a health problems.Unhealthy behaviour causes the around of life become healthy also.The longer time someone spent inside the unhealthy building, theemergence risk of an impairment of health is increasing.[1]

One of the health problems appears is sick building syndrome as the effect of unhealthy buildings. The primary caused of this syndrome is difficult for determined. But the caused of that pertaining to bad air quality indoor. The syndrome can be caused by pollution which is derived from materials building, furniture inside the home and electronic equipment, ungood

ventilation, biology pollution, ungood maintanance and cleanliness home, unqualified physical environment and psychological factors.[2]

The occupants of a building will be decreased concentration, low motivation, depression, respiratory disorders, allergies, eye irritation and skin irritation.[3]A complaint was usually not too violent, but fairly annoying and influencing someone.[4]Health conditions could improve after the people is not in the building.

Merapi eruption disaster ofNovember, 26th2010 caused the damage to the settlementsector, as many as 2.682 houses in Sleman district, Yogyakarta were destroyed and heaped up volcanic material, while 174 house in the province of Central Java had damaged heavy.In addition,cold flood lava occurred and made 341 houses in Sleman, Yogyakarta and 746 houses in the province of Central Java broken and ruined heavy.Through Public Reconstruction Rehabilitation program and settlement based community, *Kementerian Pekerjaan Umum Direktorat Jenderal Cipta Karya*conducted rehabilitation and reconstruction after disaster by helping the victims in building their house back.[5]

Karangkendal hamlet, Umbulharjo, Cangkringan, Sleman, Yogyakarta is one of the houses area for the victims ofMerapi eruption and coldflood lava.Permanenthouses will begin inhabited in June 2012. Based on interviewed with the inhabitantsofKarangkendal halmet on June 23rdMarch 2014, residents in this region is from same hamlet namelyPelemsari hamlet.The majority of citizens work in tourist attractions lava Merapitour explosion and as farmers and only 5% of the population as a civil servants or private sector workers

Interviewed that conducted on March, 30th 2014 with five mothers obtained information that two people having a family member who have smoking habit, whether it doesinsideand outside the house.Three people do organic waste management by hoarded the rubbish on vacant land because they feel disgust with the appearance of the maggots on the composter when composting process.At one permanent house therethat observed having page with plastic trash littered everywhere.This condition showed that a lack of knowledge and attitudes owned by the mother cause the concious in applying PHBS also lacking.

Interview on disease complaints experienced during the last three months were headache, cold, fever, skin irritation or allergy. Discomfortfeeling such as trauma and fear experienced by two people, while nausea experienced by one. Complaints that occurs considered only lightly, often mother just buy medicine in a stall and never do prevent the disease appearance such as PHBS.

Based on these problems, then the researcher need to do assessment deeper on the level of knowledge and attitude of mother about clean and healthy behaviors (PHBS) relation to the sick building syndrome in dwelling remain Karangkendal hamlet, Umbulharjo, Cangkringan, Sleman, Yogyakarta

## B. Method

The research is survey research using design study cross sectional, the result will be analyzed a sort of descriptive set and analytic. The population of the research is all mother who lives in dwelling remain Karangkendal hamlet, Umbulharjo, Cangkringan, Sleman, totaling 82. Sample used as much as 41 mother with random sampling technique. An instrument used in research is a questionnaire. Analysis of data used consisting of univariat (frequency distribution in order to data of measurement on the knowledge and attitudes about PHBS mother) and bivariat (whether there were relations between two variables using statistical tests chi-square with trust degrees of 95%).

## C. Result and discussion

### Univariat Analysis

Based on table 1 it can be seen that the majority of mother in Karangkendal is 20 people (48,78%) having a level knowledge of PHBS in the category of enough. This was caused by a low level of education. The level of education affect the ability a person in catch information given to them. Residents who have not use house read optimally are also one factor causing the lack of information owned.

Table 1. A frequency distribution in the level of knowledge PHBS mother in Karangkendal hamlet, Umbulharjo, Cangkringan, Sleman, Yogyakarta year 2014

| Category | Frequency | Persentage (%) |
|---|---|---|
| Good | 16 | 39,02 |
| Enough | 20 | 48,78 |
| Less | 5 | 12,20 |
| Total | 41 | 100,00 |

Table 2. A frequency distribution in the level of attitudePHBS mother in *Hunta* Karangkendal hamlet, Umbulharjo, Cangkringan, Sleman, Yogyakarta year 2014

| Category | Frequency | Persentage (%) |
|---|---|---|
| Good | 20 | 48,78 |
| Enough | 21 | 51,22 |
| Less | 0 | 0,00 |
| Total | 41 | 100,00 |

Table 2 it can be seen that the majority of mother with 21 people (51,22%) have attitude about PHBS in the category of enough, while in the category of less as many as 0 people (0,00%). This indicates that mother have attitude about PHBS in the category of enough.

Table 3. A frequency distribution in the level of SBS Kick in Karangkendal hamlet, Umbulharjo, Cangkringan, Sleman, Yogyakarta year 2014

| SBS Kick | Frequency | Persentage (%) |
|---|---|---|
| Yes | 37 | 90,24 |
| No | 4 | 9,76 |
| Total | 41 | 100,00 |

Based on table 3 it can be seen that most families represented by mother for every family, with 37 families (90,24%) undergoing SBS complaints.

Based on table 4 it can be seen that the majority of the inhabitants of the *huntap* who was represented by mother for every family as many as 33 families (80,49%) complain headache, while complaints the least truth is queasiness, only 1 family (2,44%).

**Bivariat Analysis**

From a research has done so it can be seen the relationship between the knowledge and a housewife about clean and healthy behaviors (PHBS) relation to the sick building syndrome in dwelling remain Karangkendal hamlet, Umbulharjo, Cangkringan, Sleman, Yogyakarta is as follows:

Table 5. Relations level knowledge mother about PHBS with a sick building syndrome in *huntap* Karangkendal hamlet, Umbulharjo, Cangkringan, Sleman, Yogyakarta 2014

| Level of Knowledge | SBS Kick | |
|---|---|---|
| | Yes | No |
| Good | 12 | 4 |
| Enough | 20 | 0 |
| Less | 5 | 0 |
| **Sig. (2-tailed)** | **0,031** | |

Based on statistical analysis using chi - square showing that the p or sig ( 2-tailed ) is 0,031.This means the p smaller than 0,050 and showed that *Ha* received or meaningful is relation between the level of knowledge of mother about clean and healthy behaviors (PHBS) in the sick building syndrome in dwelling remain Karangkendal hamlet, Umbulharjo, Cangkringan, Sleman, Yogyakarta.

One of the factors that influences the level of knowledge is the education level of mothers.As many as 53,66 % of mother's education in Karangkendal *huntap*, Umbulharjo, Cangkringan, Sleman, Yogyakarta have only until the level of elementary school.The level of education is one factor that influences the level of knowledge as well as someone strongly influence the behavior of health of a person.Low education is causing family to be poor in identified the problem and take the decision to solve the problem.[1]In addition, others factors affect a lack of the level of knowledge mother in Karangkendal *is* also caused by access to information about general health that is difficult. The distance Karangkendal area with a bookstore and library is far, that causes people difficult add information about health.The provision of the reading house in the area of Karangkendal not

yet used optimally by the citizens. This can be seen from the absence of activities citizens in readinghouse during the research doing.People awareness to use the internet in increasing their knowledge also is weak, residents by low education even do not understand with functions and how to use the internet.

The descriptive analysis showed that 53,66 % mother in Karangkendal *huntap*, Umbulharjo, Cangkringan, Sleman, Yogyakarta have a job as farmers.The job makes them use most of the power to do the work of the fields, and oftentimes it is already being in a so she would have homework however they can.A mother who works as farmers completely different with a housewife in doing some house duties, as cleaning house and managing the furniture in the house.Mother of a profession only as a housewife will have time and effort enough to keep charge her house, so that it can be created the house clean, healthy, and able to minimize the contaminant that can cause the sick building syndrome.

The application of PHBS in a family to improve healththe member of family so that members of family to be not easily getting sick.[6]The application of PHBS also it can prevent the sick building syndrome.Sick building syndrome occurred as a result of the pollution which frominside and outside of a building that causes air quality in occupancy for the worse.[4]The application of PHBS in sphere family to be one of efforts to prevent sick building syndrome, as by PHBS of contaminants in the house can be minimize and avoided.

While the types complaints sick building syndrome the most experienced by the inhabitants of respondents are impaired neurotoxic with 33 families (80,49%). Neurotoxicdisorder the most complain about the are headache.The headache can induced in chemical vapors of furniture and from building materials who pollutes room.[7]The rate and conditions ventilation also affect the appearance of complaints sick building syndrome in the inhabitants of the house.[8]Ventilation in this area rare cleared causes the dust accumulate on ventilation, in addition found permanent house with ventilation and the roof part in having cobwebs.This showed that the inhabitants of the permanent house especially mothers have not realized that the conditions ventilation can influence the appearance of complaints sick building syndrome in the inhabitants of the permanent house.The ventilation position that is tall and difficult to reach cause mother rarely clean the ventilation.

A dusty ventilation condition can disrupt exchange air and increase the dust in a room, in addition awareness of residents to open the window dwelling that is weak can cause dust or pollutants of in space not be absent into an environment.The inhabitants will exposed by dust in cot andit can be caused respiratory disorders as shortness of breath and taste heavy in the chest.The use of the asbestosroof also will weaken air quality indoor because asbestosfibers in the sand.The bad air quality as a result of these pollutants in space cause respiratory disorders and irritation on the nose, this is

Table 4. A frequency distribution in the type of SBS KickKarangkendal hamlet, Umbulharjo, Cangkringan, Sleman, Yogyakarta year 2014

| Type of SBS Kick | Frequency | Persentage (%) |
|---|---|---|
| Irritation of the mucous membrane ( the eyes grievous, red, and watery ) | 3 | 7,32 |
| Skin irritation (itchy skin and allergic) | 12 | 29,27 |
| Have a cold | 29 | 70,73 |
| Fever | 30 | 73,17 |
| Neurotoxic Disorder (headache, easy tired, easily offended, have trouble sleeping, and difficult to concentrate) | 33 | 80,49 |
| Gastroduodenal Disorder (nausea, appetite down, and diarrhea) | 1 | 2,44 |
| Irritation the nose (the itch in a nose) | 29 | 70,73 |

proven by the mother complaining about respiratory disorders of 7.32 % and irritation the nose of 70,73 % .

A profession mother as farmers or traders to the location of work being in Kinahrejo which is quite far from the location this permanent house force mothers have to go through the road that often used by the truck carrying sand.It could be one of the causes of eye irritation, skin irritation, and respiratory disorders upon the mother, since it is often exposed to dust when will work and going home after from working.The condition of the house who are not clean and dusty air as well as exchange irregular also became one of the causes of complaint eye irritation, irritation of the skin, and respiratory disorders, so as not only a factor of outer be the cause of the an impairment of health but also a factor of the house can lead to the emergence of an impairment of health.

Table 6. Relations mother attitude about PHBS with a sick building syndrome in *huntap* hamlet Karangkendal, Umbulharjo, Cangkringan, Sleman, Yogyakarta 2014

| Attitude | SBS Kick | |
|---|---|---|
| | Yes | No |
| Good | 16 | 4 |
| Enough | 21 | 0 |
| Less | 0 | 0 |
| **Sig. (2-tailed)** | **0,048** | |

Based on the results of statistical tests by using chi-square showing that the p or sig (2-tailed) is 0,048 rounded be 0,050.This means p value equal to 0,050 and shows that Ho received or there was no a correlation between mother attitude about the clean and healthy living (PHBS) with a sick building syndrome in dwelling fixed hamlet Karangkendal, Umbulharjo, Cangkringan, Sleman, Yogyakarta .

An attitude had no relationship meaningful by the application of PHBS.[9]it can be happens because some factors that influences attitude mother as personal experience, the influence of others, the influence of culture, mass media, educational institutions and religion, as well as the emotional.[10]

The complaints sick building syndrome for the can be caused by there are not yet the mother's creation of interest in realizing attitude about PHBS in a real action.The number of PMKS also affect the cleanliness and health in house so that it can contribute to complaints sick building syndrome in its inhabitants.This is in accordance with research that density occupancy influential to events sick building syndrome in a family.[11]

Mother's attitudeabout PHBS if not supported by consciousness of other family members to PHBS or attitude PHBS, it isnot be separated the condition dwelling that healthy. PHBS cannot be done without any of consciousness of all members of a family.[6]

The better of person attitude of PHBS, hence it is more possible to act the PHBBS well.This is evidenced by the results of the analysis the data indicate that there has been 9,76 % of mothers in Karangkendalhave the attitude of PHBS in the category of good which do not undergo complaints sick building syndrome.There were not complaints sick building syndrome is caused by because the mothers know about PHBS has been realized in the form of a real action as trying to keep occupancy to stay clean and avoide the polluter by cleaning occupancy every day, prohibit a member of the family to be smoked in occupancy, clean the yard, clean air ventilation, and clean up privy every day.It is based on research that attitude a good mother against PHBS had an impact on their home cleanliness.[12]

Mother has a big role in regulating and creating the conditions in the house and life a member of her family at home, hence motherattitude in PHBS it would affect of health care a member of a family members.Mother also have a role to teach her family to accustom behave clean and healthy living, as guard personal health and maintain cleanliness houses and neighborhood .

## D. Conclusion

There is relationship between knowledge mothers about clean and healthy behaviors (PHBS) with the sick building syndrome on inhabitant of Karangkendal hamlet, Umbulharjo, Cangkringan,

Sleman, Yogyakarta (a value p = 0,031). But, there was no relation between the attitude of mothers about clean and healthy behaviors (PHBS) with the sick building syndrome on inhabitant of Karangkendal hamlet, Umbulharjo, Cangkringan, Sleman, Yogyakarta (a value p = 0,048 rounded become 0,050).

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# RELATED KNOWLEDGE AND ATTITUDE ABOUT WOMEN CHILDREN FAMILY CONSCIOUS NUTRITION (KADARZI) WITH NUTRITIONAL STATUS OF CHILDREN IN THE VILLAGE GEKBRONG DISTRICT GEKBRONG 2015

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**Abstract**

Approximately 54% of deaths of infants and children caused by malnutrition. In addition to causing deaths, malnutrition in infants and toddlers also cause brain growth is not optimal, intelligence and mental disorders, as well as reduce the potential for education. One of the programs of the Minister of Health in improving the health of the community is through the family aware of nutrition. Knowledge and attitudes of mothers about Kadarzi expected to help decrease the prevalence of malnutrition among children under five.

This study aims to determine the relationship between knowledge and attitudes of mothers about Family Literacy Nutrition (Kadarzi) the nutritional status of children in the village of the District Gekbrong Gekbrong Year 2015 correlational research method with cross-sectional approach. A population of 795 people, with a sample of 89 respondents taken with proportionate stratified random sampling technique sampling. Collecting data using questionnaires and measuring devices nutritional status of children. Analysis of the data in the form of descriptive data analysis (univariate) and Chi-square test (bivariate).

Based on the results of the study showed that nearly half of the toddler's mother to have enough knowledge about Kadarzi (46.1%), largely from Mother toddlers have a positive attitude about Kadarzi (51.7%), almost all toddlers have good nutritional status ( 88.8%), there is a correlation between the respondents' knowledge with the nutritional status of children (pvalue = 0.014 <0.05), there is a correlation between the attitudes of respondents to the nutritional status of children (pvalue = 0.033 <0.05), and there is a correlation between the knowledge of the respondent with respondents' attitudes about Family Literacy Nutrition (Kadarzi) (pvalue = 0.017 <0.05).

Suggested for health workers to carry out an integrated extension of the Family Literacy Nutrition (Kadarzi) to mothers especially reserved for mothers who have children with malnutrition status.

**Keywords:** Knowledge, Attitude, Kadarzi, Nutritional Status

## A. Introduction

Health is one of the pillars that greatly affect the quality of human life. In line with the development paradigm of development has been defined direction of health development policy, set out in the Medium Term Development Plan (Plan) 2004-2009 Health. In the health care system more emphasis on preventive measures, promotion, empowerment of families and communities in the health field. One form of community empowerment efforts in the health sector is to increase people's nutrition, especially children under five (Depkes RI, 2006).

In developing countries, including Indonesia nutritional problem is still a major public health problem and is the cause of death of infants and toddlers. Results of research conducted in Depok by the Director of Community Nutrition Department of Health Hernawati (2002) mentions that about 54% of deaths of infants

and children caused by malnutrition. The rest is caused by the attack of various diseases including diarrhea, acute respiratory infections (ARI) and measles. In addition to causing deaths, malnutrition in infants and toddlers also cause brain growth is not optimal, disturbance of intelligence and mental, as well as lower educational potential because it is triggered by a factor of poor nutrition due to lack of food availability level, household or parenting wrong and infectious diseases (Nency & Arifin, 2005).

Based on data from the Moon recapitulation Weighing Toddlers (BPB) in Cianjur in 2014 from 186 171 infants were weighed, were experiencing very poor nutrition is obtained as 1.297 (0.70), and those with a lack of nutrition as much as 12 489 (6.71%). Of the 45 health centers in the district of Cianjur, Gekbrong health center is one of the least number of underweight children is pretty much that is, infants who weighed in 2014 there were as many as 5,050, which is experiencing a severe lack of nutrition by 70 (1.39%), while the lack of nutrition as much as 664 ( 13.15%). Gekbrong PHC consists of 8 villages, and rural villages Gekbrong the greatest incidence of nutrition lack of nutrition is very less ie 1,01% and while the lack of nutrition at 20.38% (Profile Cianjur, 2015).

According to research in Notoatmodjo Rogers (2011), states that if the admission of new behavior or adoption of behaviors through a process based on the knowledge and a positive attitude then the behavior will be lasting (long lasting). Conversely, if the behavior is not based on knowledge and awareness will not last long (Notoatmodjo, 2011).

One of the programs of the Minister of Health in improving the health of the community is through the family aware of nutrition. Based on MOH (2007) family aware of nutrition characterized by the ability of the family to meet the food for all family members, maintain the health of the environment, prevent infectious diseases, provide care for nutrition and health, as well as the behavior of the family was able to take advantage of income, food distribution in the family , monitor growth and development, providing help early nutritional disorder problems and obtain health services.

Based on the above, the authors are interested in doing a study entitled: "The Relationship of Knowledge and Attitudes About Family Literacy Mother Toddler Nutrition (Kadarzi) With Toddler Nutritional Status In the village Gekbrong Gekbrong District of the Year 2015".

**B. Method**

The method of this research is correlational (correlation / association) using design approach cross-sectional study with the aim to see the correlation or relationship between variables thought to relate that to the independent variables (knowledge and attitudes of the respondents about Kadarzi) with the dependent variable (nutritional status toddler).

The study population was all the mothers who have children who live in rural areas Gekbrong District of Gekbrong 2015 as many as 795 people with a total sample of 89 respondents. Techniques withdrawal of the respondents in this study is using proportionate stratified random sampling technique,

This study using univariate and bivariate analyzes. Univariate analysis done is to describe the knowledge and attitudes of mothers about Family Literacy Nutrition (Kadarzi), as well as the nutritional status of children. While the bivariate analysis performed by the statistical test Chi-square with significance alpha (5%) and confidance interval (95%), namely to determine the relationship between knowledge and attitudes of mothers about Family Literacy Nutrition (Kadarzi) the nutritional status of children in the village Gekbrong Subdistrict Gekbrong year 2015. This research has been conducted in the village of the District Gekbrong Gekbrong in April-June 2015.

## C. Results And Discussion

### 1. Research

Table 1. Frequency Distribution of Respondents Knowledge About the Family Literacy Nutrition (Kadarzi)

| Knowledge | F | % |
|---|---|---|
| Less than | 21 | 23,6 |
| Enough | 41 | 46,1 |
| Both | 27 | 30,3 |
| Total | 89 | 100 |

Table 2. Frequency Distribution of Respondents Attitudes About Nutrition Aware Family (Kadarzi)

| Attitude | F | % |
|---|---|---|
| Negative | 43 | 48,3 |
| Positive | 46 | 51,7 |
| Total | 89 | 100 |

Table 3. Frequency Distribution Toddler Nutritional Status in the Village Gekbrong 2015

| Nutritional Status | F | % |
|---|---|---|
| Nutrition Less | 10 | 11,2 |
| Good Nutrition | 79 | 88,8 |
| Total | 89 | 100 |

### 2. Discussion

Based on the Table 1 results of research on the respondents' knowledge of Family Literacy Nutrition (Kadarzi) found that nearly half (46.1%) of respondents have sufficient knowledge of as many as 41 people, and a small proportion (23.6%) of respondents have knowledge less as many as 21 people. In table 2 the respondents' attitudes about Family Literacy Nutrition (Kadarzi) found that the majority (51.7%) of respondents have a positive attitude as many as 46 people, and almost half (48.3%) of respondents have a negative attitude that is as much 43. In table 3 the results of research on the nutritional status of children was found that almost all (88.8%) of respondents have a good nutritional status as many as 79 people and a small proportion (11.2%) of respondents have a poor nutritional status of as many as 10 people.

Based on Table 4 the results of research on the relationship between knowledge of mothers on Family Literacy Nutrition (Kadarzi) the nutritional status of children showed that most of the respondents were knowledgeable about having a good nutritional status (71.4%), almost all respondents were knowledgeable enough have a good nutritional status (92.7%), and almost all respondents who are knowledgeable both have good nutritional status (96.3%). Based on the test results of chi-square statistics in Table 4 of the relationship between knowledge of mothers on Family Literacy Nutrition (Kadarzi) the nutritional status of children showed that pvalue = 0.014 <0.05 $\alpha$ can be concluded that Ho is rejected, it means that there is a relationship between knowledge of mothers about Family Literacy Nutrition (Kadarzi) the nutritional status of children in the village of the District Gekbrong Gekbrong 2015.

Based on Table 5 the results of research on the relationship between attitudes mothers about Family Literacy Nutrition (Kadarzi) the nutritional status of children was found that almost all respondents have a negative attitude good status toddler GII (81.4%), and almost all respondents who behave positive have good nutritional status (95.7%).

Based on the test results of chi-square statistics in Table 5 on the relationship between attitudes mothers about Family Literacy Nutrition (Kadarzi) the nutritional status of children showed that pvalue = 0.033 <0.05 $\alpha$ can be concluded that Ho is rejected, it means that there is a relationship between the attitude of mothers about Family Literacy Nutrition (Kadarzi) the nutritional status of children in the village of the District Gekbrong Gekbrong Year 2015. Then the obtained value on CI OR = 5.029 95% (1.003 to 25.203) means that respondents have a negative attitude are more at risk 5,029 times the baby suffered poor nutritional status compared with respondents who had a negative attitude.

From the results of research conducted by researchers and supported by the results of previous studies that the attitude of mothers on Family Literacy Nutrition (Kadarzi) can be related to the nutritional status of children under five. Mothers who have a positive attitude about Family Literacy Nutrition (Kadarzi) tend to have children with good nutritional status. Instead

mothers who have a negative attitude about Family Literacy Nutrition (Kadarzi) then the risk of having children with the nutritional status of children is lacking. Then the risks for mothers who have a negative attitude about Family Literacy Nutrition (Kadarzi) is a baby will experience malnutrition by 5,029 times compared with mothers who have a positive attitude about Family Literacy Nutrition (Kadarzi).

Based on table 6 the results of research on the relationship between knowledge and attitude of mothers on Family Literacy Nutrition (Kadarzi) found that the majority of respondents were less knowledgeable having a negative attitude (52.4%), the majority of respondents were knowledgeable enough to have an attitude negative (61.0%), and most of the respondents who are knowledgeable both have a positive attitude (74.1%). The result of the chi-square statistic in Table 6 on the relationship between knowledge and attitude of mothers on Family Literacy Nutrition (Kadarzi) obtained that pvalue $= 0.017 < 0.05\ \alpha$ can be concluded that Ho is rejected, it means that there is a relationship between knowledge and attitudes on mothers Family Literacy Nutrition (Kadarzi) in the village of the District Gekbrong Gekbrong 2015.

From the research and supported the results of previous research and Notoatmodjo his opinion, that knowledge one can relate to a person's attitude. It is also of course applies to the knowledge of mothers on Family Literacy Nutrition (Kadarzi) can be related to the attitude

Table 4. Frequency Distribution Relationship Between Knowledge About the Family Literacy Mother Toddler Nutrition (Kadarzi) With Toddler Nutritional Status in the Village Gekbrong 2015

| Knowledge Respondents | Toddler Nutritional Status | | | | Total | | P Value |
|---|---|---|---|---|---|---|---|
| | Not good | | Good | | | | |
| | F | F | F | % | F | % | |
| Less than | 6 | 28,6 | 15 | 71,4 | 21 | 100 | |
| Enough | 3 | 7,3 | 38 | 92,7 | 41 | 100 | 0,014 |
| Both | 1 | 3,7 | 26 | 96,3 | 27 | 100 | |
| Total | 10 | 11,2 | 79 | 88,8 | 89 | 100 | |

Table 5. Frequency Distribution Relationship Between Mother Toddler Attitude About Family Literacy Nutrition (Kadarzi) With Toddler Nutritional Status in the Village District of Gekbrong Gekbrong 2015

| Attitude Respondents | Toddler Nutritional Status | | | | Total | | P Value | OR (95%) |
|---|---|---|---|---|---|---|---|---|
| | Not good | | Good | | | | | |
| | F | % | F | % | F | % | | |
| Negative | 8 | 18,6 | 35 | 81,4 | 41 | 100 | 0,033 | 5,029 |
| Positive | 2 | 4,3 | 44 | 95,7 | 27 | 100 | | (1,003-25,203) |
| Total | 10 | 11,2 | 79 | 88,8 | 89 | 100 | | |

Table 6. Relationship Between Frequency Distribution of Respondents With Attitude Respondents Knowledge About the Family Literacy Nutrition (Kadarzi) In the village of the District Gekbrong Gekbrong 2015

| Knowledge Respondents | Attitudes of Respondents | | | | Total | | P Value |
|---|---|---|---|---|---|---|---|
| | Negative | | Positive | | | | |
| | F | % | F | % | F | % | |
| Less than | 11 | 52,4 | 10 | 47,6 | 21 | 100 | |
| Enough | 25 | 61,0 | 16 | 39,0 | 41 | 100 | 0,017 |
| Both | 7 | 25,9 | 20 | 74,1 | 27 | 100 | |
| Total | 43 | 48,3 | 46 | 51,7 | 89 | 100 | |

of mothers on Family Literacy Nutrition (Kadarzi). From the results of research conducted in the village Gekbrong Gekbrong District of Cianjur Regency in 2015 is seen that women who have a good knowledge tends to have a positive attitude, whereas mothers who had less knowledge both likely to have a negative attitude.

**D. Conclusions**

1. Conclusions: Almost half of the toddler's mother to have enough knowledge about the Family Literacy Nutrition (Kadarzi) as much as 46.1%. Most of Mrs. toddlers have a positive attitude about Family Literacy Nutrition (Kadarzi) as much as 51.7%. Almost all toddlers have good nutritional status as much as 88.8%. There is a relationship between the respondents' knowledge with the nutritional status of children (pvalue = 0.014 <0.05). There is a relationship between the attitudes of respondents to the nutritional status of children (pvalue = 0.033 <0.05). There is a relationship between knowledge of respondents with attitudes of respondents on Family Literacy Nutrition (Kadarzi) (pvalue = 0.017 <0.05).
2. Recommended: For health workers at Puskesmas Gekbrong to conduct an integrated extension of the Family Literacy Nutrition (Kadarzi) to mothers especially reserved for mothers who have children with malnutrition status. The extension is expected to be able to increase the knowledge and attitude of mothers on Family Literacy Nutrition (Kadarzi). So with a good knowledge and attitude of the mother may have behavior Nutrition Aware Family (Kadarzi) is also good, and the behavior of Kadarzi incidence of malnutrition in children under five could be prevented.

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# POLICY STRATEGY IN TERMS OF INCREASING REPRODUCTIVE HEALTH SERVICES IN BARITO KUALA DISTRICT

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**Abstract**

Barito Kuala District is one of the underdeveloped districts in Indonesia where many problems one of which is health. High rates of maternal and infant mortality is strongly influenced by the mother's health, especially their reproductive health age. The aim of this study was to examine the policy strategy of local government in improving reproductive health services.

The method used is descriptive analytic depth interviews between policy makers and implementers. As well as reviewing the data in the relevant agencies.

The results showed that the strategy of the local government in improving reproductive health services is the fulfillment of one of them with additional health and equalization village midwife. The main medical personnel met is midwife where one midwife for each village. As for other areas of government policy that supports these efforts is to require village midwife in collaboration with the nearby village midwife in making aid delivery.

The strategy of collaboration between midwives and midwives nearby villages as well as by traditional birth attendants (TBA) is done to address the case of emergency reproductive health services one of which aid delivery, as well as efforts to improve the behavior of the public culture that went to the medical personnel such as midwives. In addition, to assist midwives in areas that are geographically difficult to affordable. The conclusion that the efforts to improve reproductive health care effort is with the addition of midwife and pattern of good collaboration between midwives and TBAs

**Keywords**: Reproductive Health, Barito Kuala, midwife

## A. Introduction

Development of the health sector to be one factor that gets more attention from the government. The main purpose of the construction of the health sector is to improve community health status. With the increasing level of public health as an investment for the development of human resources socially and economically productive [(1)]. Maternal health is the thing to watch because every hour a woman dies in childbirth or due to causes related to pregnancy [(2)]. Therefore, to improve maternal health in Indonesia, the Millennium Development Goals (MDG). Maternal mortality ratio, which is estimated at about 228 per 100,000 live births, remains high at above 200 over the past decade, although it has made efforts to improve maternal health services. This contrasts with the poorer countries around Indonesia that showed a greater increase in the fifth MDG [(2)].

The maternal mortality rate (MMR) and Infant Mortality Rate (IMR) in Indonesia is still quite high compared to other ASEAN countries. Indonesian Demographic Survey (IDHS) in 2012 to provide data that MMR was 359 per 100,000 live births and IMR is 32 per 1,000 live births. More than three-quarters of all infant deaths occur within the first year of life of children and the majority of infant deaths occur in neonates period. Based on global agreements (Millennium Development Goals / MDGs 2000), is expected to decline in 2015 MMR to 102 per 100,000 live births and IMR to 23 per 1,000 live births.

Various efforts Maternal and Child Health (MCH) has been done to address the enormous differences between AKI and AKA between developed countries and in developing countries, such as Indonesia. Efforts are made to save the mother early in pregnancy to puerperium in order to make pregnancy and childbirth can be passed to the baby is born safely and in good health [(3)].

Based on the above in order to reduce maternal and infant mortality, the note is reproductive health. Reproductive health received special attention globally since the appointment of such material in the International Conference on Education and Development (International Conference on Population and Development, ICPD), in Cairo, Egypt, in 1994. [(5)]. Around 180 countries participated in the Conference. The important thing is the agreement in the conference paradigm change in the management of population and development issues of population control approach and decreased fertility / family disaster into a focused approach to reproductive health. This paradigm shift puts man into the subject, different from before that puts human beings as objects. ICPD in 1994 is in charge of the IV World Conference on Women in 1995 in Beijing, China, ICPD + 5 at Haque, in 1999, and Beijing + 5, in New York, in 2000. At the international level has been agreed upon definition Reproductive health is a state of complete physical, mental and social as a whole, not merely free of disease or infirmity in all matters relating to the reproductive system and its functions and processes. Therefore every individual has the right to set the amount of the family, when to have children, and to obtain a complete explanation of the ways of contraception, so as to choose the right way and preferred. In addition, the right to reproductive health services, such as antenatal care, labor, childbirth and care of newborns, adolescent health and others, need to be secured [(6)].

Issues of reproductive health have some coverage, which become concentrated in this paper are in terms of reproductive health services of mothers (married woman). Because the mother's reproductive health status can better reduce the maternal mortality rate. In Barito Kuala having the MDG's 2015 is a decrease in maternal mortality by the year 2015 a maximum of 102 deaths per live births (KH). In 2012, the amount of KH in the district. Barito Kuala is 5,412 KH, with 7 maternal deaths per 100,000 KH then AKI was 129.34 per 100,000 KH and is still above the target of the MDG's. So also when compared with the case of maternal mortality is 123 deaths in the province, the district Barito Kuala still quite high. Based on this study aims to examine the strategy for local government policy in improving reproductive health services.

## B. Method

The method used is descriptive analytic depth interviews among stakeholders, policy implementers, midwife, traditional birth attendants and community. As well as reviewing the data in the relevant agencies. The study was conducted in 2014 in Barito Kuala District. Barito Kuala chosen as a place to study because it is a district that is left behind and IPKM lower than other districts.

## C. Result and discussion

### Conditions Reproductive Health Services in Barito Kuala

Barito Kuala are thousands of cities Marabahan located at the west of the province of South Kalimantan with astronomical location is at 2 ° 29'50 "- 3 ° 30'18" south latitude and 114 ° 20'50 "- 114 ° 50'18" east longitude , Barito Kuala total area is 2996.96 km², or 7.99 percent of the province of South Kalimantan. Barito Kuala covering 17 districts with the largest area of the District Kuripan area of 343.5 km2 (11.46%) and the District Mandastana 339.0 km2 (11.31%). While most small territory area is the District Wanaraya with a breadth of 37.50 km2 (1.25%).

Administrative area Barito Kuala District with its capital Marabahan consists of 17 districts, 6 villages and 195 villages were divided into two regions, the northern region covering Sub Kuripan, Tabukan, Marabahan, Bakumpai, Cerbon, Rantau Badauh, Barambai, Belawang, Mandastana, Jejangkit and Wanaraya , South region of the District Alalak, Anjir Market, Anjir Muara, Tamban, Mekarsari and Tabunganen.

Barito Kuala district population in 2013 amounted to 289 995 people, made up of male and female life 145 320 144 675 inhabitants. Based on the book Barito Kuala in the figures of 2013, the growth rate pendududuk based on data from the Central Bureau of Statistics in Barito Kuala in 2012 increased by 2.65% increase over the previous year. The tendency of increase in the population growth rate will impact the various problems arising from rapid population growth such as the provision of facilities relating to the needs of the population and employment.

AKI Barito Kuala still high at 129.34 /100.000 live births in 2012 and IMR is 13.67 / 1000 live births in 2012. The high MMR and IMR can be influenced by geography, access to health services and quality of health services provided by the human resources.

The real conditions of health workers as a whole in Barito Kuala many as 498 people. Under ideal conditions according to the Minister of Health Regulation No. 75 Year 2014 excess health workers as many as 181 people. Details of real conditions and the gap consists of: General Practitioners as many as 31 people (excess of 2 people), Dentist many as 15 people (a shortage of 4 people), Nurse as many as 163 people (excess of 38 people), Midwives many as 278 people (excess of 172), Workers Public Health as many as 3 (shortage of 17 people), Electric Environmental Health as many as 20 people (excess of 1 person), Expert Technology Medical Laboratory as many as 18 people (shortage 1), Nutritionist many as 26 people (shortage of as many as 3 people), Pharmaceutical Expert as many as 22 people (excess of 3 people). Based on these data, there is an excess of midwives somewhat of minimum service standards. But if it is based on a ratio of 1: 1,052, which means a midwife serving 1,052 residents, this is still less than ideal.

**Impact existence of Midwives In the village Against Reproductive Health Services**

Based on the 1994 Cairo declaration states that the world's attention to women's reproductive health covering all aspects. It is clear that all women are entitled to reproductive health services in any case and is everywhere.

The village midwife gives enormous impact in providing reproductive health services. Because midwives are women who provide health care and it is very close to the female population. This can be one of the reproductive health services, especially in women giving birth in Barito Kuala District. In the Districts with difficult geographical reach of health workers to contribute to the incidence of maternal mortality. With limited access to emergency treatment on the lead maternity so late that contribute to maternal mortality.

**Local Government Policy Against Improving Reproductive Health Services**

Strategy by the local governments in improving reproductive health services is the fulfillment of one of them with additional health and equalization village midwife. The main medical personnel met is midwife where one midwife for each village. Policy compliance village midwife is already running, that there is a village midwife. Even the South Kalimantan provincial government also help meet the midwife. But who needs to get more attention from the local government is the problem of equitable distribution of midwives and midwife existence itself. Due to the characteristics of the district Batola that there are many remote areas, based on observations there are midwives who are not settled in the region, so it will be an obstacle in the treatment of maternal could at any time.

Attention to the quality of the resource midwife, this is important because in its work in providing reproductive health services and maternal requires skill and experience. To overcome these other areas of government policy that supports these efforts is to require midwife in the village in collaboration with the nearby village midwife in making aid delivery. The strategy of collaboration between midwives and midwives nearby villages as well as by traditional birth attendants (TBA) is done to address the case of emergency reproductive health services one of which aid delivery, as well as efforts to improve the behavior of the public culture that went to the medical personnel such as midwives. In addition, to assist midwives in

areas that are geographically difficult to affordable. Patterns of collaboration between midwives and herbalists in the District is not only at the time of delivery but also in the treatment of post-partum. To improve service quality reproduction keselhatan also necessary shaman training. Anggorodadi [7] Education provided in shaman training program is actually manifested as recognition for organizing (enforcement) health care services to institutions TBAs. Moreover, the education provided, TBAs are considered able to replace the presence of a new health facilities that are considered to improve the health of the population. Partnership is one solution to reduce maternal and infant mortality problem which primarily will benefit remote areas where access to health services is very limited.

## D. Conclusion

Strategy by the local governments in improving reproductive health services is the fulfillment of one of them with additional health and equalization midwife in the village, other areas of government policy that supports these efforts is to require village midwife in collaboration with the nearby village midwife in making aid delivery. The strategy of collaboration between midwives and midwives nearby villages as well as by traditional birth attendants (TBA) is done to address the case of emergency reproductive health services one of which aid delivery, as well as efforts to improve the behavior of the public culture that went to the medical personnel such as midwives. In addition, to assist midwives in areas that are geographically difficult to affordable.

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# IS HEALTH LITERACY EQUAL WITH E-HEALTH LITERACY AMONG LEPROSY STAFF AT PUBLIC HEALTH CENTER PEKALONGAN DISTRICT, INDONESIA

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**Abstract**

Leprosy is a neglected disease in the world but constantly become a problem in Indonesia with public health center (PHC) as assignee. PHC need ICT approach to deal with the obstacles in leprosy control program (LCP). Penetration of internet through wireless or fix cable on PHC could help to enlarge the coverage of LCP. Health staff mostly have adequate health literacy however is e-health literacy the same? This study challenge if e-health literacy score of leprosy staff is the same between health literacy categorize.

Pekalongan District has 27 PHC with 55 responsible staff on leprosy program. All of them was used as respondents. Collecting data used questioners and observation through cross sectional approach. Health literacy was measured with HLS-EU-16 (Health Literacy Survey-Europe-16 Questions), and e-health literacy used eHEALS (eHealth Literacy Scale).

Leprosy staff have 76.3% adequate health literacy and still have inadequate and problematic health literacy, 5.5% and 18.2% respectively. This study retain the null hypothesis with Sig 0.9 so that the distribution of e-heals is the same across health literacy index. It means no difference of e-health literacy scale of leprosy staff with limited health literacy and adequate health literacy. Furthermore this study reveal that leprosy staff accept internet as one of source of references.

The WHO mandatory five core competencies for caring patients with chronic conditions, one of them is information and communication technology. Leprosy staff are essential having e-health literacy as one of their competency because of the widespread use of the Internet can be used as a medium for health information.

**Keyword** : Health literacy, E-health literacy, Leprosy, Primary Health Center

## A. Introduction

Leprosy or Hansen Disease is a neglected disease in the world but still unsuccessfully control in Indonesia[1]. In 2012 Indonesia develops18,994 new cases and become the biggest third in the world [2]. Leprosy is a chronic infectious disease caused by Mycobacterium Lepraeand can be classified as a complex disease [3-5] withpublic health center (PHC) is the actor for controlling the spread of leprosy in Indonesia.

World Health Organization developed a healthcare workforce guideline especially for chronic disease consist of five competency like patients centered care, partnering, quality improvement, information and communication technology (ICT) and public health perspective. ICT skill is one of competency that healthcare staff should have to take care a chronic patients [6]. Indonesia's PHC need ICT approach to deal with the obstacles in their program especially in leprosy control program (LCP). Penetration of internet through wireless or fix cable on PHC could help them to enlarge the coverage of LCP[7, 8].

Vision of Healthy People 2020 has topic about health communication and health information technology which has

objectivesforincreasing health literacy skill and increasing internet and mobile access [9].In this era health literacy and e-health literacy are essential skill for health care staff because they should have ability to manage their health and the health of those they care forfurthermoreincreasingly using the Internet to deliver health information and services make health professionals have to develop additional skills in the understanding and use of consumer health information.

Implementation ICT is a new approach in leprosy control program especially in Indonesia and need the readiness of leprosy staff which they should be enriched with health literacy and e-health literacy [10-13]. This study will describe health literacy and e-health literacy of leprosy staff and compare e-health literacy across health literacy categorize.

## B. Method

*Participants and setting*

Pekalongan District has 27 PHC and this study interviewed 55 persons consist of Manager PHC and leprosy programmer staff and one person as district supervisor for leprosy control program.

*Data Collection*

Health literacy index was measured with HLS-EU-16 (Health Literacy Survey-Europe-16 Questions), and e-health literacy used eHEALS (eHealth Literacy Scale) and both of them used self-perceived measure with linked scale. Health literacy self-report scale start with very difficult until very easy and e-heals start from strongly disagree until strongly agree.

*Data Analyze*

Score results from HLS-EU-16were changed become index through formula $(mean - 1)x\ (^{50}/_{3})$and be categorized [14, 15]. Furthermore e-heals scale be compared across categorized of index health literacy.

## C. Result and discussion

*Result*

This study describe characteristic demographic of leprosy staff consist of age, gender, education and work experience. Leprosy staff's mean of age is 41.47 years old and mean for work experience is 14.50 years.

Table 1. Respondent characteristics.

| Variables | f | % |
|---|---|---|
| Age | | |
| < 30 years old | 5 | 9.1 |
| 31-40 years old | 18 | 32.7 |
| 41-50 years old | 30 | 54.5 |
| >50 years old | 2 | 3.6 |
| Sex | | |
| Male | 35 | 63.6 |
| Female | 20 | 36.4 |
| Education | | |
| Senior High School | 1 | 1.8 |
| Diploma | 20 | 36.4 |
| Bachelor | 27 | 49.1 |
| Master | 7 | 12.7 |
| Work Experience | | |
| 1-10 years | 23 | 41.8 |
| 10.1-20 years | 16 | 29.1 |
| 20.1-30 years | 14 | 25.5 |
| >30 years | 2 | 3.6 |

Table 1 shows that the biggest proportion of age is between 41-50 years old with 54.5%. The highest education proportion for bachelor degree is 49.1%. The biggest proportion for work experience is between 1-10 years.

Table 2 shows attitude of leprosy staff regarding internet daily activities. 29.1% access internet from home and 60% never access from workplace. More than 50% leprosy staff never used internet to access news group but 27.3% used to access online newsdaily. More than 60% ever used internet as reference materials and access health information.

Table 2. Behavior access internet of Pekalongan District's leprosy staff.

| Access internet | f | % |
|---|---|---|
| From home | | |
| Daily | 16 | 29.1 |
| Weekly | 9 | 16.4 |
| Monthly | 4 | 7.3 |
| < once a month | 15 | 27.3 |

| | | |
|---|---|---|
| Never | 11 | 20 |
| From work | | |
| Daily | 8 | 14.5 |
| Weekly | 6 | 10.9 |
| Monthly | 1 | 1.8 |
| < once a month | 7 | 12.7 |
| Never | 33 | 60 |
| Access news group | | |
| Daily | 12 | 21.8 |
| Weekly | 8 | 14.5 |
| Monthly | 3 | 5.5 |
| < once a month | 4 | 7.3 |
| Never | 28 | 50.9 |
| Access online news | | |
| Daily | 15 | 27.3 |
| Weekly | 10 | 18.2 |
| Monthly | 3 | 5.5 |
| < once a month | 9 | 16.4 |
| Never | 18 | 32.7 |
| Access reference material | | |
| Daily | 4 | 7.3 |
| Weekly | 10 | 18.2 |
| Monthly | 7 | 12.7 |
| < once a month | 14 | 25.5 |
| Never | 20 | 36.4 |
| Access health/medical information | | |
| Daily | 6 | 10.9 |
| Weekly | 8 | 14.5 |
| Monthly | 11 | 20.0 |
| < once a month | 15 | 27.3 |
| Never | 15 | 27.3 |

Table 3. Descriptive statistic of health literacy indexand e-health literacy

| **Variables** | **Value** |
|---|---|
| Health Literacy Index | |
| Mean | 38.08 |
| Maximum | 50.00 |
| Minimum | 20.83 |
| Standard Deviation | 8.22 |
| E-health Literacy Scale | |
| Mean | 38.43 |
| Maximum | 48.00 |
| Minimum | 28.00 |
| Standard Deviation | 4.16 |

Table 3 above shows health literacy index and e-heals have mean 38.8 and 38.43 respectively. Furthermore table shows that some leprosy staff have maximum health literacy index (50 score).

Table 4 below describes that more than 70% of leprosy staff have adequate health literacy and more than 60% have e-health literacy above average.

Table 4. Distribution frequency of categorize of health literacy index and e-health literacy

| **Variables** | **f** | **%** |
|---|---|---|
| Health Literacy | | |
| Inadequate | 3 | 5.5 |
| Problematic | 10 | 18.2 |
| Sufficient | 23 | 41.8 |
| Excellent | 19 | 34.5 |
| E-heals | | |
| Below average | 21 | 38.2 |
| Above average | 34 | 61.8 |

Table 5 shows that e-health literacy within the group problematic and sufficient are not much different except for inadequate and excellent.

Table 5. Cross tabulation between health literacy and e-health literacy among leprosy staff

| **Variables** | **E-heals** | |
|---|---|---|
| **Health Literacy** | **Below %** | **Above %** |
| Inadequate | 33.3 | 66.7 |
| Problematic | 50.0 | 50.0 |
| Sufficient | 43.5 | 56.5 |
| Excellent | 26.3 | 73.7 |
| Total | 38.2 | 61.8 |

Table 6. Mean of e-health literacy within health literacy groups.

| | **E-health Literacy** | |
|---|---|---|
| Health Literacy | **Mean** | **SD** |
| Inadequate | 37.33 | 4.61 |
| Problematic | 37.30 | 4.37 |
| Sufficient | 38.56 | 3.10 |
| Excellent | 39.05 | 5.19 |

Furthermore shows in table 6 that e-health literacy's mean between the health literacy groups are not much different with the highest meanis excellent group.

The result of non-parametric statistical test Kruskal-Walls turned out that no difference mean of e-health literacy within group of health literacy index which showed in table 7.

Table 7. The Hypothesis test of e-health literacy scale across the group of health literacy.

Hypothesis Test Summary

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 1 | The distribution of eheals scale is the same across categories of categorize index health literacy. | Independent-Samples Kruskal-Wallis Test | .900 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

*Discussion*

Internet has role to disseminate health information in developing countries but some lack should be handle first, one of them is e-health literacy [16]. eHealth literacy is determined by a person's presenting health issue, educational background, health status at the time of the eHealth encounter, motivation for seeking the information, and the technologies used. eHealth literacy also a complex literacy because combines six core skills (or literacies): traditional literacy, health literacy, information literacy, scientific literacy, media literacy, and computer literacy[17]. Implementation e-health also affected by infrastructure which still exist become a problem in developing countries even though already have been proofed had positive impact [18-20]. Health literacy among healthcare staff or people in health sector is commonly adequate but usually in traditional approach. Using ICT system to elevate health literacy further health outcome in developing countries should become one focus together between stakeholders like health department and ICT department [21].

## D. Conclusion

This study reveal that there is no difference e-health literacy between health literacy groups it means internet can be used as a source of health information and reference material among leprosy staff.

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# ENVIRONMETAL HEALTH AS A STRATEGIC ACTION FOR WELLBEING

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**Abstract**

The environmental health in term of physical, biological and social environment give a big contributions for wellbeing. The good and healthy environment and health are the basic rights. However, in implementing those as rights and the importance of environmental health, there is a problem. The problem is the inappropriateness between the policy and implementation on the field. The environmental health seems to be separated from the business process of health services. Conditions of environmental sanitation are still bad. The household which has a healthy house is around 50% and the sanitary latrine is less than 50%. The means of environmental health is not yet adequates.

This study is a qualitative research and using the method and analysis through literature study, documents and phenomenon and it is completed by the information from six related informants with the policy formulation, determination and implementation. The research reveals that first, from the historical perspective, human life cannot be separated from the environmental condition. From the past, it is realized that there is a relation between nature and environment and the occurrence of disease. Second, from the health perspective basic change happens which is previously oriented to disease, physical defect and weakness into productive social, mental and physical health perspectives.

This change is equivalent with the paradigm change which is from sick paradigm to healthy paradigm and the perspective change of the role of environment and environmental health. The environment is initially considered limited to its relation with the occurrence of disease. The conducted effort is aimed to prevent and break the chain of disease occurrence. It is now changed. The environmental health is not only connected to its relation with the occurrence of disease but also human rights and life quality.

Based on this study, it is important to move the environmental health into a mainstream as a strategic action in order to improve human quality from many perspectives in the policy field and in its implementation as a value, socio-cultural and ecological system in the health, education and environment sector.

**Keywords**: health, environmental health and mainstream.

## A. Introduction

In the 21st century Indonesia faces an increasingly complex health problems. The environmental health is seen as one of the important and strategic effort in health program. Health status is affected by environment1. Environmental health in Indonesia has long recognized the term of sanitation hygiene. Programs and activities carried out are focused on the activities on preventing diseases and break the chain of disease transmission. The term of sanitation hygiene is currently less known since the Sanitation Hygiene Act was withdrawn, and the issued of Law No. 23 of 1992 on Health. The Law No. 23 of 1992 and the Law No. 36 of 2009 are on Health, hygiene sanitation whih is the substance of environmental health

The threatening critical issue is the poor basic sanitary conditions. Inadequate infrastructure and concern for the environment are ruled out. Family which live in a healthy house is only about 50%, healthy excreta disposal facilities is less than 50% 2. The quality of drinking water in Indonesia is 90% classified as not potable (Riskesdas 2010). Household access to adequate sanitation by 2011 is 54.99%, and this perecntage is lower than in 2010 (55.54%). Households that reach PHBs in 2011 is about 53.89% 4

Reforms in the health fields, environmental health gets the highest priority. This is shown when the health development model launched by Healthy Paradigm models with health oriented development strategy. However Healthy Paradigm apparently experiencing a turning point. Environmental health have not touched the system of values, social and cultural community and continue to have a negative impact on the ecology. The efforts or problems are not as stated in the policy.

This study was conducted to determine and explain the development of environmental health in terms of the basic framework, the core of businesses, the policy which has been defined at the level of policy makers and the implementation of improving the quality of human life that has value in the strategic action to increase welfare.

**B. Methods**

This study is a qualitative research with method of various related literature. This study was conducted by reviewing the information obtained, a phenomenon that occurs and the views of one policy maker and implementers who are directly related to environmental health as an informant from the health sector, the environment and education through in-depth interviews. The experiment was conducted for six months in 2013

**C. Results and Discussion**

**1. Problems of Environment-linked diseases**

Environment-linked diseases are potential disease for extraordinary cases, which is followed at all times with death. Riskesdas 2007 Diarrhea is the main cause of death in infants (31.4%) and in Toddlers (25.2%), while for all age groups is the fourth (13.2%) 5. The disease is not contagious, even in relation to the environment in the sense of inseparable from environmental factors.

The circumstances and condition become the foundation of the rationale for expert in health planning who states that environment and behavior is the first determinant factor and second in the degrees of health. As well as the relationship of health, environment and disease which have been stated by Hippocrates.

**2. Framework of Environmental Health as a strategic action.**

Environmental health is one of public health activities and clearly it is expressed as the efforts to prevent diseases.

In the development of environmental health, initially it is known as the hygiene and sanitation in the effort to break the chain of disease and health disorders. Then the environmental health is regarded as science and art of the environmental health sciences. Furthermore, environmental health as a science and an art that is not only prevent diseases but also to build prosperity and create ecological balance. For the time being, environmental health is as the pilot to a science and art that stands alone. Environmental problems related to diseases and population health problems is getting bigger and heavier.

Environment Health as the efforts, science and technology, will generate a healthy environmental conditions. This can be explained, first, environmental health as an effort, which means to prevent diseases which is environmental based including personal hygiene. Environmental health is as a strategic action in preventing disease.

These efforts evolved into not only for preventing the occurrence and spread of the disease but also as part of an effort to improve the level of health in the sense of producive health. Along with a healthy view which is expressed in the Declaration of Ottawa (1986), healthy life is not a destination but a prerequisite

for wealthiness. Environmental health is viewed down to a science and technology through the assessment process theoretically and empirically. Before the microorganisms is found, the environment is considered as a direct cause of the disease, then the resulting "miasma theory" such as malaria as a disease caused by exhaled air of a contaminated area. Therefore, since the beginning environment is seen as a risk factor. As science and art, environmental health at the concept of the object of study is not only a risk factor but also as a benefit factor.

Environmental health as the basic framework found problems in a community in a state of polluted air, the provision of clean water and sanitation, management of solid waste disposal, liquid and gas, housing sanitation, food and drinks sanitation, and controling places where the proliferation of disease vectors, restructuring public places, including means of public transportation, and public sanitation is still a major problem. Instead, there is a progress that health and good and healthy environment is recognized as part of human rights, as stated in. 1945 Article 28H, paragraph (1) "Everyone has the right to live in prosperity physically and spiritually, reside and obtain a good healthy living environment and and receive medical care.

In the Act of 1945 and section 28H changes in health restrictions which is previously only associated with pain, disability and weaknesses are reflected within the limits of "Health is a state of complete physical, mental and social wellbeing and not merely the absence of diseases and infirmity. Later evolved into "Health is a source of everyday life, not merely the obyektive of living"

Indonesia has taken steps politically and strategically by adopting limitation according to the Ottawa Charter it into Law No. 23 of 1992 on Health on article 1, paragraph 1, namely that states: "Health is a state of physical, mentally and social that allows every person to live socially and economically productive"

Humans are born as an individual who has the potential and the ability to think. Their potential and the ability to think because they have brain which is equipped with different other.creatures Humans are born with 100-200 billion brain cells and every brain cell is ready to be developed and actualized according to human potential. Information and experience in the environment are continuously absorbed and arranged in the structure of knowledge and will affect on how an individual perceives the natural environment for his life. As it is stated by a psychologist that in the early human development, the baby looked as I and not I to the environment. The baby will cry when he was hungry, and immediately sleep when his need is fulfilled. Human's attitudes and views of *I and not I* would damage the environment. Humans and all living things eventually become creatures that has a view to colonize nature as biological imperialism. From the beginning, there is a view that a man is considered as a part of nature and the nature has a soul as what it is believed in animism how to treat nature. Then-oriented view to the life (biocentreisme) developes an ethics known as environmental ethics which believe d that humans are part of nature, natural resources are not unlimited and natural resources should be treated wisely, saved and cherished.

### 3. Shifting the Mindset' Core Businesses of Environmental Health

Preventing problems rather than resolve or solve a problem is in line with the first informant' view that creating clean and healthy environment is a primary task of the function and as health environmental axiology and besides it is also the task of everyone in accordance with rights and obligations, the duty of all sectors in accordance with its role. Secondly, that the understanding, attitudes and characters must be started from the education system which are formal, normal and informal ones as early as possible to include an integrated and thematic environmental education in the school based curriculum.

Environmental problems continue to reveal into more serious ones, geothermal energy is increasing due to the greenhouse effect, crop failure due to drought and a long dry hot season. Environmental health oriented prevent and

protect environment in accordance with what it is called as healthy and productive.

Environmental health nature which no boundaries will have the widespread impact, bring environmental health for the benefit of all people and all parties. The environment is a public interest that could affect the personal interests and the personal interests have a contrary impact to the public interest. Therefore, this earth is ours and our own future. Earth will be safe for allof us but it is not safe if there are among us who ruin it. It was once reminded by Mahatma Gandhi that nature had enough for everybody's need but not for everybody's greed. The old thoughts and perspective that human life and nature need to be preserved, maintained for life (Biocentric, life-centered worldview). This perspective should changed instrument systems and ways of managing or to manage life, from *antrophocentris* to *biocentris* orientation.

**4. The existence of Environmental Health Mission and the Global Agreement**

To achieve a healthy environmental, the environmental health has some intentions to (1) improve the ability of human beings to live in harmony, balance and harmony with the environment and realize the right azasinya to achieve quality of life. (2) Affect how human interaction with the environment so as to protect and improve their health. (3) Control and change environmental elements that is good for the protection and improvement of human welfare and ecological balance for today and for the next generations (biocentris), with a sustainable concept.

Those three factors must be detected quickly, intervened and cut off the chain connection or controlled so that it will be in equilibrium (balance) and no disease occur. In the Knot theory, the dynamic changes in the environment component is a potential risk for health problems. Dynamics changes in environmental components described in Knot theory stated that the first node is emission sources, knot II is free space (ambient), the node III is on contact with humans (biomarkers) and knot IV is disorder or illness

Environmental health as efforts, science and technology create conditions with the following principles, namely: (1) Clean. It can be seen from the first two aspects of mind and believe. Clean is the reflection of the faith. Scientifically, it is believed that clean is first, physically free from contaminated solids material. Second, chemically, it is free from harmful chemicals substances and third, biologically, it is free from organism in the form of micro-organisms that are harmful or as germs.

(2) Cut off the chain of illnesses and diseases. Termination is done by controlling the dynamics changing of environmental components (3) Protecting and realizing a healthy environment as a human right. A healthy environment is a human right. To create this healthy environment, the aspects benefits and risks of environmental become the object and objectives of study. (4) Sustainability (sustainable). Environment as a space of life needs to be taken into account on its sustainability for human life and the whole of God's creation. Continuous efforts are made to establish and develop a value system and treatment to the environment to ensure the sustainability of life for generations. (5) Holism, multidisciplinary and integrative. The neighborhood has a very spacious room that the entire space was occupied by living creatures including all objects that are not life and alive. Environment influences on all living creatures, especially to human beings in creating their welfare both for the present and future. Living creatures are required to have the ability to adjust, harmonize with its surroundings. The environment must be viewed holistically, as a whole, because in the environment, there is an interaction, intefere and interlinked (vice versa).

Facing up to what is described above, in addition to the environmental health of vast dimensions and sectors of society are very important role. It is necessary to change the mindset, the formulation of strategies and policies, as well as comprehensive measures from various fields. The environment must be seen as holism, multidisiplner and integrative approach, have links and networks. At global and regional

levels, there has various agreements which were expressed in various declarations such as Stockholm Declaration of 1972, Rio de Janeiro in 1992. They emerged in anticipating and tackling global warming. Summit of UN Millennium in September 2000, and two years later was used as an issue in the discussion of sustainable development and the MDGs generate consensus stringing major concern on human rights, good governance, democracy, conflict prevention and peace building, encouraging soul and spirit and commitment in particular achieving a healthy environment as part of human rights, access to water, environment-linked diseases such as malaria and sustainable environmental management. Indonesia one year earlier reforms in the health sector with the launching of Healthy Paradigm development model by President BJ Habibie on March 1 1998. The health development model prioritizes the development of health promotion and disease prevention without ignoring the efforts of treatment and health recovery are pushing the concept of health oriented development. In educational environments has made school health programs.

**5. Synergy paradigm**

Healthy paradigm that proclaimed shows that in macro health all sectors must consider the impact on health, a positive contribution to the development of healthy behaviors and environments. Micro health development is more emphasis to preventive and promotive effort and not exclude curative and rehabilitative efforts.

Overview of the Indonesian community in the future in the terms of Healthy Paradigm is the community, state and nation and individuals living in an environment with healthy behaviors, health services have the ability to reach the highest declared a development vision health with the motto "Healthy Indonesia".

In view of the various groups, Healthy Paradigm is merely a term and no support to the ailing people, ignorant and poor. People's need to recover from illness quickly and is able to afford the costs. Health paradigm is at a turning point and business pain drove rapidly in line with the demanding life of almost instantaneous, available medications, specialists are available at reasonable prices. This is supported by the government program in providing free treatment to poor families (orientation treatment) because health is a human right and an investment that must be fought. While rich people wanted to enjoy a comfortable environment. Therefore, it is necessary to build the synergetic paradigm that is sintesais or integrate health care between health paradigm and the ill paradigm. Health is the effort of preventive, promotive, curative and rehabilitative mobilization of all sectors of health oriented development. This is a problem of handling from upstream to downstream (mastery).

Paradigm of post healthy paradigm builds health problem-solving vision, especially for poor people who need a helping hand quickly. Not only focused the speed and ease of service but also the need of the strategic efforts to improve health and risk prevention.

**7. Systems and Environmental Health Perspectives**

**a. Value system, Wisdom and Local Leadership**

The views on the environment, have an impact on management. First, the view that the environment / natural resources is a gift from God which is intended to humans. This view is called antrophocentries, otherwise there is the view that all God's creatures have their own instriksi value, and this view is called deep ecology. In the era of regional autonomy, those two views are determined by a value system that involves faith, trust how to view the environment as a gift of God, and the wisdom of local leadership. Local leadership can be focused on a regents / mayors, district and village chief / headman and community leaders. Regent / Mayor who takes full responsibility as leader of the people on performing the duties of local government as well as headman / village head. They carry out government duties on administrative procedures that perform public services, make arrangements, guidance and supervision towards its officials and community

empowerment together with the community leaders and the concept of value, social and cultural as Tri Hita Karana in Bali.

Local circumstances, local needs, resources of the region, aspirations and even prioritizing areas require wisdom and local leadership. Wisdom and local leadership will establish values and social ethics and environmental ethics. The era of regional autonomy in the early implementasion of leaders tend for foraging, and growing interest of individualism. The leaders are stuck and contaminated by anomie and greedely (mentality debauched) 26. Growth of local knowledge will enrich and strengthen the social diversity variations in culture, values and ethics of the people of Indonesia. Specialized in environmental health environmental ethic contributed greatly to the preservation and creation of harmony between nature and the lives of living beings. All of God's creation has a meaning and significance why it was created. As the core of this is the creation of a balance. Environmental ethics make humans learn as part of nature and treat nature wisely. Nature is not only for the present generation but also for generations to come, as Mahatma Gandhi reminded by a hundred years ago.

health management will be more efficient and the emerhence of innovation put people in positions that are important (putting people first). Policies and strategies are developed and implemented. Strong local government is able to improve and develop community empowerment (community based development) both in the determination, the formulation of policies and strategies to be taken. Setting goals, targets and indicators are measurable through the mechanism of monitoring and evaluation (self-auditing). Finally through health programs this environment can contribute to build a society that is empowered and sovereign (civil society) and synergetic attitudes and behavior expected from everyone ranging from personal higyene and responsive to the environment through the establishment of "a value system clean and healthy sustainable" or "ethical and moral environment "(environmental ethics and morale). In the era of autonomy problems is closer than fixers (problem solver), the benefits and risks more quickly felt.

**b. Social Science and Cultural Perspectives**

Basically, environmental health management is to manage the benefits and risks seen from two perspectives, the first , perspective studies of science and technology on the basis of substantive (the object of study, the method and use value). This view is based on the data and information as a basis for a decision to face risks and benefits. Both socio-cultural perspective. Second, as socio-cultural perspective is a basic understanding of the benefits and risks in a community approach. Society is not all or can not be expected to understand the risks. Moreover, the risks or effects of the environment sometimes requires proof in the dimension of time is quite long. Health management of the built environment in the process of social, value systems, ethics, and familiarization. Learning and empowerment of the people as the core of the management with the support of the management system. Local wisdom strengthen national wisdom and will realize the unity within diversity and diversity in unity.

"In the process of learning, community attitudes and perceptions will be formed and in the end to the establishment of a value system, a clean and healthy living civilizing contribute in realizing a human civilization. It is often heard the incident of public rejection of the landfill (tpa) of waste. This rejection is a result of little or no community involved in other words through the social process, so that the calculation of the benefits and risks are not understood by the community, or local people are less at getting benefits and only got the burden. It is often referred to as syndrome of "not in my backyard".

As a science, environmental health has four functions: (1) serve for the welfare of mankind, (2) as the development of a tree science and a branch of a particular science, (3) can be developed through research (by research) and (4) fraksisnya have a method, technique and the way that has been tested empirically. Appropriate technology needs to be considered

and developed. Furthermore necessary to study the state of the art - his, what, where and how much has been progress.

When it is seen from the essence of health, environmental health is a state of body, soul and socially to enable more people to live a productive life socially and economically. Environmental health is in an effort to contribute to human can be seen from the nature of the environment that conditions are around humans comprising abiotis substances and non abiotis including social environment, and environmental health as a science and art point value to human welfare.

Environmental health which is seen from the understanding that the environment is everything that was around humans including inanimate objects, living objects, real or abstract like atmosphere formed by the interaction of all these elements, then the health of the environment as the need to solve the problem. Problems consists of substances that influence and use value, as an object of study and essentially as a science and technology supporting. Environmental health is the study of factors including ecological environment that interfere with human health, and how to identify, prevent and monitor and improve quality in order to have a positive impact. Conversely, when it is seen from a human standpoint, humans live in a society, be in the neighborhood all the time and in the process of change which is the last and transcription factors. Environmental problems caused by the behavioral aspects, concern, even as the impact of the culture of life is not clean. So the environment needs to be seen and understood from the socio-cultural aspects

**c. Ecological Perspective**

Ecology as applied discipline that studies the interaction of an existing all in an environment that biotic and abiotis. Humans and the environment is part of an ecological system, the substantial environmental health factors that exist in the environment and interaction as well as the resulting conditions. Fulfillment of basic human gods into account the needs necessary concern for the environment. The principle of balance concerning the human relationship with the environment, the principle of equality in the biosphere, the merger between the principle of symbiosis and biological and non biological diversity, autonomy and cooperation by using normative force. Environmental balance needs to be maintained to ensure account the needs-god from generation to generation.

**d. Institutsional Structural Perspective**

Environmental health is a system or subsystem and part supra system or other systems. An environmental is the agent or hardwares while healthy and welfare is the software.

Various views, thoughts, and a phenomenon that has been described. It can be described as a universal development of environmental health in the context of improving the quality of human life. The description is three interrelated aspects of the systems value approach (value), the sociocultural system included in the institutional aspects and legal (strucure and fungtion), and system areas including science, space (fields) and ecology.

**e. Intellectual Platform for Action Key as strategic**

Environmental health as an attempt, science and technology is implied as a result or axiology that is the condition, as follows: (1) generating environment, encouraging changes in the orientation of diseases and health problems (paradigm ill) to the orientation of the health and well-being (health paradigm), the environment is a positive factor in human life. Analysis of environmental health issues not only from the aspect of risk / negative aspect only but also towards the benefits / positive, so that it becomes attractive as a cornerstone of human rights and business. Environmental health is at the forefront of efforts / upstream to improve the health, encourage internalization processes that shape the attitude and character of the treatment of the environment and the processes that shape externally social culture that led to the formation of culture and

civilization clean and healthy. (2) Recognized as a human right to a healthy environment, positioning the neighborhood is in the interests of all parties (the environment is everyone's business). The views and thoughts as well as the deployment of human rights (right) encourages everyone "proactive" claim and realize their human rights in addition to carrying out its obligations (obli-gate), and encourages the pattern of view of the environment as the approach of public goods and private goods. (3) Environmental management is a social process.

These views and thoughts suggests that the health of the environment is a result of the process. And product of democratization mind, science and art on the basis of knowledge and local leadership. Thoughts and views shows that environmental health awareness encourage mutual awareness in realizing the rights and interests of all parties are going well and interaction in micro level. Social processes accelerate acceptance and operating environmental health science from the simple to the advanced technology, and environmental health are part of civilizing, form a system of values, ethical and moral environment and will result in a balanced ecology. This process provides opportunities and encourages technological innovation and social form of commitment and togetherness, efforts which is made into a single unit of bussiness and likewise actualization and innovation of science and technology development is done on simple technology and appropriate are still relevant, on the basis of local knowledge brought to mainstream as the efforts of development and innovation of science and technology is more advanced. , (5) Development of human resources in the field of environmental health through the development of educational institutions and educators, environmental health (both related to population, health and environment) need to be developed and carried out as early as a process of lifelong education / life long education). Cues such as intelectual key is needed in building and addressing environmental health with the start of the system of values, social, cultural and area-spatial and ecological interlinked, consistent ranging from simple technology (appropriate) by the culture of washing hands, feet and body hygiene, basic sanitation and the next big issues in life and lifestyle.

**D. Conclusion**

Conceptually there is a development of thought. The development of environmental sanitation which is oriented on illnesses is now changed into environmental health which is oriented to welfare. The concept of environmental health is in the mainstream with the introduction of the development of Health Paradigm model and Policy on the Development with health Perspective.

In the era of regional autonomy, there are chances of environmental health management is appointed and rooted in wisdom and local leadership as the interaction between leaders, and community leaders in life to achieve a better level of welfare continuously. In the health sector it is needed to integrate environmental health in health care efforts which lead to an effort of improvement and prevention, as part of comprehensive health care. In the environmental sector, it is needed to link between the health and education which are oriented not ony to the physical condition, but also mental development set as the implementation of health oriented development. In the education sector, it needs to increase understanding on environmental health both as a science and art as well *fraksis* as its efforts, and values and benefits as the axiology. It is also accompanied by operational approach right from the start on concept, policy formulation, program and activities in the field of strategic actions which have broad impact and ongoing time dimension. Building attitudes, behavior and character which are based on social and cultural value and ecological harmony, needs to be done at an early age through formal education, non-formal and informal. Policy formulation and programming is an effort to promote environmental health into the mainstream of the upper level (elite) down to the operational level in all sectors of life as a strategic action to improve the quality of human life.

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# RELATIONSHIP BETWEEN HEAT PRESSURE WITH CHANGES IN BLOOD PRESSURE ON WORKERS IN THE PTPN VIII CIATER SUBANG YEAR 2015

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**Abstract**

Indonesia is among countries with the level of safety is low. An average of 99,000 cases of occupational accidents occur each year in Indonesia. Approximately 70% of these result in death and lifelong disability. Data from the Manpower mentioned until 2013 in Indonesia is not less than six workers died every day as a result of workplace accidents. Work environment with high temperatures can damage the health of the workforce. In the work environment of heat, regulate body temperature by the evaporation of perspiration accelerated by the widening of blood vessels which is accompanied by increased pulse rate and blood pressure, thus increasing cardiovascular load. The purpose of this study to determine whether there is a relationship between heat stress with changes in blood pressure on workers in the tea perkebuan Ciater Subang Year 2015.

The method used is observational, cross sectional approach, with a population of 75 people. Determination large sample using the formula proportions so large sample in this study was 42. Data collection techniques using primary and secondary data, namely the analysis used univariate and bivariate using Chi-Square.

The results showed: there is a relationship between heat stress with changes in blood pressure on workers in the tea plantations of production space Ciater Subang 2015. Based on the results, the expected results of this research can dijadkan reference to working with K3 hall or related agencies to create a safety program and occupational health to prevent occupational disease.

**Keywords**: Heat Pressure, Blood Pressure, NAB

## A. Introduction

Development and growth of a nation, either now or in the future certainly will not be separated from the role of industrial processes. To be able to build a workforce that is productive, healthy and quality, the need for management of Health Safety [(1).] Health and safety at work is included in a container hygiene companies working (Hiperkes). Has occupational health objectives, including the maintenance of the degree of physical, mental, and social well-being of workers in all levels of employment [(17)].

Indonesia is among countries with the level of safety is low. An average of 99,000 cases of occupational accidents occur each year in Indonesia. Approximately 70% of these result in death and lifelong disability. Data from the Manpower mentioned until 2013 in Indonesia is not less than six workers died every day as a result of workplace accidents. The figure is relatively high compared to European countries that only two people died per day due to occupational accidents [(10).]

One factor that is often physical dangers encountered by workers is heat stress. Work environment with high temperatures can damage the health of the workforce, such as heat cramps, heat exhaustion, heat stroke, and millaria [(17)].

Donoghue research and Bates on underground iron mine workers in Australia, with a range of ISBB (Indeks Suhu Basah Bola) 26.0°-28.0°C, found as many as 65 cases of acute heat exhaustion. According to Randell and Wexler, about 6 million workers in the United States exposed to heat stress with the most

reported cases of deaths occurred in construction, agriculture, forestry, fisheries, and manufacturing. Research conducted by Tawatsupa in Thailand found almost 20% of respondents experiencing heat exposure. After statistical analysis, it was found that exposure to heat has a significant relationship with the occurrence of occupational diseases[10].

According to the provisions of the legislation temperature of the workplace, in the decision of the Minister of Labour No.PER.13 / MEN / X / 2011 on Threshold Limit Values workplace physical factors, in the lowest NAB set to work space is 25$^0$C, and the highest NAB is 32,2$^0$C. Depending on the workload and working time arrangements.

Metabolic processes that interact with the heat in the environment would result in workers experience heat stress. This heat stress can be caused by the heat source as well as poor ventilation [8].

Risk factors of hypertension in workers divided into, facto a risk that cannot be controlled (major) such as heredity, gender, and age. While the risk factors that can be controlled (minor) that exercise, smoking, drinking alcohol, use of certain medications, hot environment, working life, and work attitudes are also socioeconomic class [12].

Heat stress also affects the increase in blood pressure, Increased blood pressure due to an increase in blood volume or blood vessel elasticity. Conversely, a decrease in blood volume will lower blood pressure. hot work environment, regulate body temperature by the evaporation of perspiration accelerated by the widening of blood vessels which is accompanied by increased pulse rate and blood pressure, thus increasing the burden of cardiovascular [17].

According to the results of previous studies conducted by Sugiyarto (2011) showed that there is a relationship between heat stress with increased blood pressure in the unit Weafing PT. And Lyrical Soekoharjo Surakarta.

PT PTPN VIII, abbreviated PTPN VIII is a state owned enterprise engaged in the tea plantations, rubber, quinine, cocoa, oil palm, and gutta-percha with operations in West Java. In the process of production, especially the production of tea there are several stages of the harvesting of tea plucking, withering, the grinding process, the oxidation process, and the drying process and that the last stage of packaging. In the production process there are several steps that require heating processes include wilting, drying and there is a room or warehouse to process wood heater. In this process certainly has a hot climate risk working against labor.

Based on preliminary survey of these workers work for 5 working days, on every Tuesday - Saturday. Most workers in the room dryer, wood burning withering and complained about the heat and the room temperature state of the stuffy room, it is in the causes for poorly ventilated working environment, and penghawaan.Dimana temperature in the working environment ranges between 30-35$^o$C, to room size 23.50 m2.

Based on the above, the authors were interested in doing research on "Heat Pressure Relationship With Blood Pressure Changes In Labour Prouksi In the tea plantations" Ciater Subang 2015.

Heat stress is a collection of environmental factors and physical activity can increase the amount of heat in the body. Factors - environmental factors include air temperature, radiation heat transfer, air movement, and the partial pressure of water vapor (humidity). Physical activity have contributed to the total heat stress is the activity that causes an increase in metabolic heat in the body according to the intensity of work [8].

According to OSHA (Occupational Safety and Health Administration), heat stress is when a job related to air temperature is high, radiation from heat sources, high humidity, exposure directly with objects that emit heat, or physical activity continuously which has high potential to cause heat stress [1].

From these definitions, it can be concluded that heat stress is a combination of heat exposure and the environment posed by the heat generated from human or physical activity is also called metabolic heat. Heat exposure is affected by dry air temperature, humidity, wet

climate, global temperatures and the movement of air or wind [7].

Heat transfer is the transfer of energy from one place to another because of differences in temperature at the venue. First heat is removed from the organ that produces heat through the skin into the blood circulation, and then experience the exchange of body heat to the environment [7].

**The heat balance in the Human Body**

The human body are warm-blooded, have a system to maintain body temperature to remain constant, even if the body is exposed to various levels of the temperature of the environment. To keep the body temperature is at a safe limit, the body must release or dispose of excess heat. The main process is through the blood circulation and sweating [1].

Automatic response body heat setting usually occurs when blood temperature exceeds 98.6 ° F and body temperature regulation and control is done by otak.Pengeluaran by the body sweat to cool the body but not to remove fluid from the skin through evaporation. Under conditions of high humidity, evaporation of sweat from the skin will decrease and the body's attempt to maintain body temperature at an acceptable limit will be interrupted [12].

This condition will be able to interfere with the ability of working individuals working in hot environments. With the amount of blood that flows to the outer surface of the body, will lead to a decrease in muscle activity, brain, internal organs, decreased strength, and fatigue occurs sooner. Unlike cold-blooded animals such as reptiles body temperature can go up and down depending kndisi temperature in the environment, human body temperature just changed in a very narrow range. In the human body there are various kinds of chemical reactions that are very related to body temperature [12].

If the body temperature goes up or down just a few degrees, it will hinder the process of chemical reactions in the body and will harm the human body. If the body temperature began to drop in some degree, the body will shiver, causing muscle movements of the body that can generate additional heat to help maintain body temperature. If excessive heat is generated only, the body temperature will rise and the longer the body will experience heat stress. The body temperature is more influenced by a person's physical activity. At rest an adult male weighing 154 pounds spent nearly 90 kilocalories per hour produced through metabolism. Very strenuous physical activity will produce more than 600 Kcal / hr. Heat generated through physical activity should be reduced to maintain optimal body temperature [1].

**Against Pressure Response Body Heat**

Working in a hot environment will accelerate the heart rate. Heart rate can be used to measure heat stress, because the incremental move the blood, causing reddened skin surface. The maximum speed of the heart rate is 100-120 per minute. At this speed the adults may persist in a few minutes. Hot response is different for each individual, it is associated with several factors as follows:[12].

a. Acclimatization

   Acclimatization is a physiological adaptation process that is characterized by sweating increased, decreased pulse rate, and body temperature as a result of the formation of sweat. For acclimatization to heat is characterized by a decrease in pulse rate and body temperature as a result of the formation of sweat. Acclimatization is addressed to a job and a high temperature for some time eg 2 hours. Given the formation of sweat depends on the increase in body temperature. Heat acclimatization is usually achieved after 2 weeks. By working in high temperatures alone can not produce a perfect acclimatization. WHO in 1969 suggests the existence of small differences acclimatization between men and women. Women can not beraklimatisasi well as men. This is because they have a smaller cardiovascular capacity.

b. Age

   One's resistance against heat would decline at an older age. An older person will be

slower secrete sweat because it takes a long time to restore normal body temperature after exposure to heat. One study found that 70% of all patients (Heat Stroke) are those aged over 60 years. Maximum heart rate of maximal work capacity gradually decreases with age.

c. Racial or Ethnic
At certain ethnic hot response different from other ethnic groups, for example between ethnic Arabs and ethnic differences in response to heat Eropa.Tetapi in both ethnic groups more of a difference in diet (diet)

d. Body Size
The big difference in body size will affect the body's physiological reaction to heat. Men with smaller body size can experience heat stress levels are relatively larger. This is because they have a maximum working capacity is smaller. The results showed that workers who weigh less than 50 kg in addition to having a low maximal oxygen intake but also heat-tolerant than those who have an average weight

e. Nutrient
Some nutrients will be lost because of the pressure panas.Misalnya heavy job that requires more than 500 kcal calories will potentially lose zinc from the worker's body, it interferes with the growth, development and health. Work in a hot room minimum required intake of vitamin C 250 mg / hr to the workers concerned. Someone who is ugly nutritional status will show an excessive response to heat stress, it is because the cardiovascular system unstable [8].

Blood pressure is the thrust in any direction on the entire surface covered on the inner walls of the heart and blood vessels. Blood pressure refers to the pressure experienced by the blood in the arteries when the blood pump blood by the heart to all members of the human body. Blood pressure created by taking two sizes and is usually measured as follows - 120/80 mmHg. Numbers above (120) shows the upward pressure of the arteries due to the heart beat, and is called the systolic pressure. Lower number (80) shows the pressure when the heart is at rest between pumping, and is called diastolic pressure [12].

The best time to measure blood pressure when labor is in a state of rest and sit or lie down.

Blood pressure is influenced by physical activity, which will be higher during activity and lower when it breaks. Blood pressure is also different in one day, the highest in the morning and lowest at night while sleeping. When blood pressure is known to be higher than normal in a sustainable manner, the person is said to have high blood problems (James Joyce, et al, 2008). The table below shows when it is said that you have a risk of developing high blood pressure or other health problems can be seen in Table 2.1 below:

Table 2.4. Classification Hypertension

| Tekanan Darah | Sistolik (mmHg) | Diastolik (mmHg) |
|---|---|---|
| Normal | <120 | < 80 |
| Prehipertensi | 120-139 | 80-90 |
| Hipertensi Tingkat 1 | 140-159 | 90-99 |
| Hipertensi Tingkat 2 | ≥ 160 | ≥ 100 |
| Hipertensi sistolik terisolasi | ≥ 140 | < 90 |

Source: [12]

Factors Affecting Blood Pressure According to [1] that normal blood pressure varies greatly depending on:

a. Physical activity
Physical activity and daily activities affect blood pressure higher physical activity performed blood pressure increase.

b. Emotion
Feelings of fear, anxiety, blood pressure tends to rise

c. Stress
This state of mind is also an effect on blood pressure measurements while experiencing.

d. Age
Blood pressure will tend to be higher along with increasing age. Systolic generally will increase in line with increasing age, while diastolic increases until age 55, then declines lagi.Semakin older the person the higher the systolic pressure. Usually associated with the onset of arteriosclerosis.

e. Gender
Blood pressure in women before menopause is 5-10 mmHg lower than men her age, but after menopause increases blood pressure more

f. Nutritional status (Obesity)
When has the body size, including obesity allows an increase of blood pressure. Body Mass Index of less than 17.0 are included in the category of very thin, for a BMI between 17.0 to 18.5, including 31 categories of underweight, a BMI above 18.5 to 25.0 is included in the normal category, for a BMI above 25 , 0 to 27.0 categorized as obese and for BMI over 27.0 are included in the category of very overweight or obese.

g. Drinking alcohol
Drink excessive alcohol can increase blood pressure and cause resistance to antihypertensive drugs. Several studies have shown a direct relationship between blood pressure and alcohol intake, and among them reported that the effects on blood pressure only visible if you consume alcohol about 2-3 glasses of standard size every day.

h. Smoking
Smoking is one of the habits that can affect blood pressure. In the state of blood vessels smoking in some parts of the body will be narrowed, in these circumstances it takes a higher pressure so that blood can flow to organs by a fixed amount. For the heart to pump blood more powerful, thus increasing the pressure on the blood vessels. Cigarettes smoked can lead to increased blood pressure. But cigarettes will result vasokonstruksi peripheral blood vessels and vessels in the kidneys, causing an increase in blood pressure. Smoking a daily basis will increase systolic blood pressure of 10-25 mmHg and increase heart rate 5-20 times per minute [(12).]

In addition to the above factors, there are environmental factors that can affect a person's blood pressure, among others:

1) Noise

Noise is unwanted sound, hence the noise often disturbing though to variations in the amount of interference on the type and hardness of a noise. In general, high-pitched noise is very disturbing, all the more disjointed or which come suddenly and unexpectedly. Distracting noise, so that the concentration and mental alertness decreases. Effects on the autonomic persyarafan seen as a rise in blood pressure, acceleration of heart rate, contraction of the blood vessels of the skin, rapid increases metabolism, decreased activity of the digestive tract. Noise causes fatigue, nervousness, curiosity angry, hypertension and add stress [(17).]

2) Pressure Heat

Hot work environment, regulate body temperature by evaporation keringatyang accelerated by the widening of blood vessels which is accompanied by increased pulse rate and blood pressure, thus increasing the burden of cardiovascular [(17).]

Pressure / heat exposure of the human body can lead to various health problems and death. Death is caused by various diseases caused by exposure to heat in the body. These diseases include, among others, Heat rash disease is associated with hot, humid conditions where sweat is unable to evaporate from the skin and clothing, Heat syncope is disordered induction heat can seriously dizziness and fainting due to being in a hot environment on a long time, Heat cramps are pain and spasms in the legs, arms and abdomen and a lot of sweat because of the imbalance of fluid and sodium salt during heavy physical labor in a hot environment, Heat Exhaustion caused by reduced body fluid or blood volume. Where the amount of water released as sweat in excess of drinking water during heat affected. The symptoms are sweating so much, pale skin, weakness, dizziness, nausea, breathing short and quick, dizziness, and fainting, his body temperature between 37 ° C-40 ° C, Heat Stroke is a disorder of the heat that threatens the lives of related jobs in great shape Hot and humid weather can cause coma and death. Symptoms of the disease is rapid heart rate, high body temperature 40 ° C or more, hot, dry skin and appear bluish or reddish, No sweat on the victim's body, dizziness, chills, nausea, dizziness, mental

confusion and fainting and Miliary is sweat eccrine which often occur under conditions of high heat. Miliary caused by blockage of sweat ducts, which causes leakage of eccrine sweat into the epidermis or dermis.

Another disease that usually arises is heart disease, high blood pressure, kidney disorders and psychiatric disorders. Diseases caused by exposure to heat is caused by rise / drop in body temperature. Anatara normal body temperature ranges from 37-38°C (99 - 100°).

Changes in core body temperature rise / fall 2 °C may cause interference in the body. The body temperature must be maintained in order to remain at normal temperature so that the whole organ can work normally. When changes in the body's core temperature then some organ function will be impaired.

Metabolic system of the body can naturally react to maintain the normality of body temperature as with sweating, shivering and increase / reduce blood flow to the body. Regulation of body temperature externally there are 7 factors to be controlled are: air temperature, humidity, air velocity, clothing, physical activity, heat radiation from various heat sources and the length of time of exposure to heat [(7).]

Workers who are exposed to heat in the working environment will experience the heat strain..Indikator heat strain is increased pulse rate, blood pressure, body temperature, sweating and weight loss. Exposure to heat stress on healthy individuals cause a variety of physiological reactions that are important for thermoregulation. One is an increase in blood flow through the skin. If the ambient temperature increases, the physiological effects that occur are:

a. Increased fatigue
b. Increased heart rate.
c. Increased blood pressure.
d. Reduce the activity of the digestive organs.
e. A slight increase in core temperature and a sharp increase in the temperature of the shell (skin temperature will rise from 32° to 36-37°C).
f. Increased blood flow through the skin.
g. Increase the production of sweat, which become redundant if the skin temperature reaches 34 °C or more.

Effect of heat stress can be divided into three, namely:

a. Physical
   The heat causes the liquid, solid, and gas experience expansion in all directions.
b. Chemistry
   Chemical reaction speed will increase with an increase in temperature. This can be seen in the reaction of oxidation increases with an increase in temperature. This corresponds to Van Hoff law which states that the permeability of the cell membrane will be increased in accordance with increase in temperature. On the network will increase in line with increased metabolism of chemical exchange between the body with body fluids.
c. Biological
   Biological effect of heat on the sumasi of heat effects on the physical and chemical. An increase in total white blood cells and inflammatory reaction phenomena and dilatation (widening) of blood vessels resulting in increased circulation (circulation) of blood as well as increased capillary pressure. Pressure O2 and CO2 in the blood increases while blood pH will decline [(1).]

**B. Method**

The method used is observational, cross sectional approach. Because this research is used to study the dynamics of the correlation between risk factors with effects. By way of approach, observation, or the collection of data at a time at a time [(21).]

The sample size in this study was 42, which is taken from each production space, namely the drying of as many as 14 people, withering space 17, and the combustion chamber firewood as many as 11 people.

**B. Results And Discussion**

After measurements at 42 workers in each room is a drying room, withering, and burning

firewood showed that changes in blood pressure, as follows on Tabel 4.1

Based on Table 4.1 it is known that most of as many as 32 people (76.2%) experienced changes in blood pressure after exposure to heat stress. Based on the measurement of heat stress and blood pressure to 42 workers, in each room are drying room, withering, and burning firewood hasilsebagai then get the following:

Based on Table 4.2 it is known that more than half as many as 2 (67%) the room has a heat stress is not in accordance with the NAB.

Based on Table 4.2 it is known that more than half as many as 25 (59.5%) workers who were in the room with the production of heat stress does not fit NAB.

Heat Pressure Relationship With Blood Pressure Changes In Worker At Tea factory production room ".Ciater Subang 2015.

Analyze the relationship between heat pressure with changes in blood pressure in workers exposed in the production of hot tea factory Ciater Subang 2015, using Chi-Squere which can be seen in the table below.

From table 4.3 above can be explained that most of as many as 24 (94%) of workers who work in the room with heat stress does not match the NAB experience changes in blood pressure and a fraction is 1 (4.0%) workers who were in the room with the pressure heat does

Table 4.1 Frequency Distribution of Blood Pressure Changes In Production Workers at the Tea Plantation Room Ciater Subang 2015

| No | Perubahan Tekanan Darah | Frekuensi | Persentase (%) |
|---|---|---|---|
| 1 | BERUBAH (+) | 10 | 23.8 |
| 2 | TDK BERUBAH ( -) | 32 | 76.2 |
| | Total | 42 | 100.0 |

Table 4.2 Frequency Distribution of Heat Pressure Tea plantation production room Ciater Subang Tahun 2015

| No | Tekanan Panas | Ruangan | | | F | % |
|---|---|---|---|---|---|---|
| | | pengeringan | pelayuan | Pembakaran kayu | | |
| 1 | Sesuai NAB | | $26,5^0$C | | 1 | 33 |
| 2 | Tidak Sesuai NAB | $28,6^o$ C | | $28,1^0$C | 2 | 67 |
| | Total | 1 | 1 | 1 | 3 | 100 |

Table 4.3 Frequency Distribution Workers Who Was in room Production In Tea Plantation Ciater Subang 2015

| No | Tekanan Panas | Frekuensi | Persentase (%) |
|---|---|---|---|
| 1 | Sesuai NAB | 17 | 40,5 |
| 2 | Tidak Sesuai NAB | 25 | 59,5 |
| | Total | 42 | 100.0 |

Table 4.4 Heat Pressure Relationship with Blood Pressure

| Tekanan Panas | Perubahan Tekanan Darah | | Jumlah | P.Value |
|---|---|---|---|---|
| | YA | TIDAK | | |
| Sesuai NAB | 8 (47,1%) | 9 (52,9%) | 17 (100%) | 0,00 |
| Tidak Sesuai NAB | 24 (96,0%) | 1 (4,0%) | 25 (100%) | |
| TOTAL | 32 (76,2%) | 10 (23,8%) | 42 (100%) | |

not fit NAB did not change blood pressure.

Statistical analysis showed that the P value of 0.00 $<\alpha$ (0.05), we conclude that Ho is rejected, then there is a relationship of heat stress by changes in blood pressure on workers in the tea plantations production room Ciater Subang 2015.

Heat Pressure Relationship with Blood Pressure Change After calculation using the Chi-Square, obtained pvalue value of 0.00 $<\alpha$ (0.05), thus the test results revealed Ho is rejected, then there is a relationship between heat stress with changes in blood pressure on workers in the tea factory production space Ciater Earring 2015.

Workers who are exposed to heat in the working environment will experience the heat strain. Heat strain or thermal strain effect is taken into the body at the expense of the working climate. Heat strain involves core body temperature, heart rate and sweating. Another important response is the allocation of body fluid volume, the concentration of electrolytes in the intra and extra cellular space, hormone levels, and blood pressure. Heat indicator strain is increased pulse rate, blood pressure, body temperature, sweating and weight loss. Exposure to heat stress on healthy individuals cause a variety of physiological reactions that are important for thermoregulation. One is an increase in blood flow through the skin.

Responses physiological will be apparent to workers with the climate hot work, such as increased blood pressure and pulse rate as the result of research that states that there are differences increase blood pressure significantly on labor before and after exposure to heat, which obviously would worsen the condition workers. Results of this study confirmed the existence of a previous study conducted by Agus Sugiyarto in 2011 showed that the relationship between heat stress with increased blood pressure in the unit Weafing PT. And Lyrical Soekoharjo Surakarta.

## D. Conclusions

Based on the results of research and discussion that has been presented researcher in the previous chapter, the researchers can draw some conclusions have the following:

1. There are changes in blood pressure after exposure to heat pressure on the workers in the tea plantations of production space Ciater Subang
2. More than half of workers are in the room with the production of heat stress does not fit NAB, and a small percentage of workers were in the production room which has a hot pressure space suit NAB.
3. There is a relationship between heat stress with changes in blood pressure in workers exposed in the production room hot tea plantations Ciater Subang 2015.

Suggestions for PTPN VIII Tea Factory Subang Ciater expected results of this study can be used as a reference for working with K3 institution or related agencies to make occupational health and safety programs to prevent occupational disease. As well as consideration and input to the tea plantation PTPN VIII Ciater Subang on exposure to heat the room in order to be made into comfortable as possible for the workers, for example by making more ventilation and serve drinks to the workers that are not thirsty or dehydrated.

We hope this research can be used as a reference for further research in conducting research on the relationship of heat stress with changes in blood pressure, and is also expected to further researchers can examine the variables that have not been researched by the author, including external factors, namely noise and internal factors that include age, gender, and physical activity.

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# THE INFLUENCE OF WORK POSTURE TO THE MUSCULOSKELETAL DISORDER ON LAUNDRY WORKERS IN TEMBALANG REGION

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**Abstract**

Musculoskeletal disorders is one of the injury caused by the bad of MMH (Manual Material Handling). Laundry workers are at risk for musculoskeletal disorders. The risk is indicated by their working attitude. Their position is not ergonomic. The purpose of the study is to analyze the work attitude and to describe musculoskeletal disorders of laundry workers.

This research used several laundry worker in tembalang region. The result showed that musculoskeletal disorders occur in skeletal muscle. It is the muscle of the neck, shoulders, arms, fingers, back, waist and low body muscles.

The musculoskeletal issus is dominated by low back pain. The more of work period mean the more risk of musculoskeletal disorders for the worker. Additionaly, musculoskeletal disorders influenced by the excessive stretching of working poor posture, repetitive movements, bad working attitude. Based on the research, it can be conclude that the work postures during the ironing session are in the action level 2. It is indicated that the further and the deep investigation is needed. The most common complaint is on the neck, nape of neck, right shoulder, back, right upper arm, waist, hips, forearm, wrist, and right hand.

In order to avoid musculoskeletal disorders, work posture and work tools that fit with the anthropometry of each respondent is needed. In ironing session, the workers need to use a chair with backrest. This backrest is aimed to support the back of the workers. During the ironing session, the workers need to take a break for 5 to 10 minutes. This way, the workers can relax for a while.

**Keywords:** work posture, musculoskeletal disorder, laundry worker

## A. Introduction

Workers are the capital and the main assets to support the development of industry and business. The interaction between workers, employment and production equipment can increase the risk of accidents and occupational diseases [1)]. In order to increase the productivity, the worker need to be placed in a good work environment. The environment have to fulfill the standards of health and safety. The workers need to work in complete comfort. If the requirements are not fulfilled, there will be uncomfortable of work, illness, disease and accidents. Those problems are caused by imbalance between workload with the capacity or ability of the workers.[2)]

The result of the work is influenced by a sense of comfort. A sense of comfort will spur the performance of the workers. As a result they can work optimally. For instance, the workers need to shrug their shoulders when adapting the height groundwork. This condition causes the backache.[2)]

For some of job, the worker needs the ability of manual material handling (MMH). MMH is raise up/ down, push in/ pull out, turn, hold back, and carry in the material. Sometimes, this activities cause an injury for the workers. It is widely accepted that manual handling of heavy loads has potential to cause musculoskeletal disorders. When there is a mismatch between the physical requirements of the job and the physical capacity of the worker, musculoskeletal disorders can be result. Musculoskeletal disorders is one of the injury caused by the bad of MMH.[3)] It is an injury or disorder of muscles,

nerves, tendons, ligaments, joint cartilage, or spinal discs. Deborah states that Musculoskeletal disorders can be seen as responses to overloads on the body, caused in varying degrees by unhealthy levels of physical stress in thye environment (2008:9). For example, the workers who must repeat the same motion throughout their workday, do their work in an awkward position, etc.[4)]

The numbers of study shows that low back pain is the higher complaint of musculoskeletal disorders. Based on the National Ambulatory Medical Care Surve in 1989, it was estimated that there were 19.9 million visits for low back pain. Laundry workers are at risk for musculoskeletal disorders. The risk is indicated by their working attitude. Their position is not ergonomic. They do repetitive work that relies on one type of muscle. Musculoskeletal disorders include inflammation disorders and degenerative conditions that affecting muscles, nerves tendons, ligaments, joints, and the human spine. These complaints are called RSI (Repetitive Strain Injures), CTD (Cumulative Trauma Disorders), and RMI (Repetitive Motion Injures)[5)]. Nurmalita, in her research shows that in every single activities of laundry workers, the positions are not ergonomic. Based on the posture assessment with RULA in her research, shows that the grand score is 4-7, the action level 2-4. This findings suggests that the improvement for the laundry workers' posture is needed. In addition, the finding shows that the ironing activities is the worse. The action level of ironing activities are two. Based on the result above, the exhaustive investigation is needed.[6)]

Due to the pre survey in laundry house, the workers are work too hard using their muscle. The activities include lifting and moving, washing, drying and ironing clothes. Based on the opinion of workers, the hardest activities is ironing. The workers finds the pain of waist and arm after ironing. They works fifteen hours. They works from 7 am to 10 pm.

**1. Problem Statement**

The comfortable and ergonomic position will greatly assist the workers in completing the job. However, unergonomic position causes musculoskeletal disorders. Based on the survey, ironing activities require workers to work in uncomfortable position. They needs standing by benting or sitting with bowed. It is assumed that this position cause musculoskeletal disorders. Due to the assumption above, the research related with the musculoskeletal disorders in laundry house is needed.

**2. Significance of the Study**

The purpose of the study is to analyze the work attitude and to describe musculoskeletal disorders of laundry workers. Moreover, the result of the reseach is expected to give some benefits. The benefits are:

a. To provide an overview of the work attitude and its influence to musculoskeletal disorders for the employee in laundry house.
b. To give the recommendations of the right work attitude in order to reduce musculoskeletal disorders.

**B. Method**

Research population: laundry worker in Tembalang areas. Instrument of research: observation, asessment of work posture, identification of musculoskeletal complaints. Methode of sampling with purposive sampling, the instrument used are measuring tool and RULA Nordic Body Map Quest. Nordic Body Map Questionaire is used to meassure pain of the body. Procedure research: primary data retrieval with the observation data to work process and monitoring of the conditions and the environment as well as the interview respondents. Data were analyzed qualitatively descriptive.

**C. Results And Discussion**

**1. Job Describtion**

The activities of laundry house are the process of washing clothes, lifting a bucket of laundry, drying the clothes, and ironing the clothes. Washing mechine is used to wash the clothes. All the laundry worker do the same activities. It takes 30 minutes to wasing the clothes ( or depend on the authomatic mechine). It takes 4 to 6 second for lifting the bucket of

laundry. It takes 3 to 8 minutes for dying the clothes (depend on the number of clothes). The rest of the time is used for ironing the clothes. Manual material handling is used during this process. Furthermore, musculoskeletal disorders may occur during the process above.

Musculoskeletal Disorders may appear during this activities. The activities are:

a. Lifting the bucket of laundry
   The workers put in the clothes into the bucket of laundry. Then, the worker lift and carry the clothes for drying. This lifting process use manual way (manpower). It is between 2 to 10 kilograms.
b. Drying the clothes.
   During this process, the workers needs to stand with both hands raised and head looked up slightly.
c. Ironing the clothes.
   Ironing is the last process before packaging process. During this process, the workers are in the seat position with slouching body and head bowed. It is the longest process than lifting and ironing clothes. An aprropriate of the table and the chair is identified as the main perceived cause of musculoskeletal disorders.

Based on the table 1, 90.3 % of laundry workers are female. They are more than 30 year (60.3%). 51.6 % of them, are work less than one year.

**Frequency distribution of Nordic Body Map.**

Based on the workers' Nordic Body Map questionaire, the nape and the right shoulders' pain is the worse. It is 54.8% for nape pain. Then, it is 71.0% for right shoulder pain.

**The result of RULA assessment**

The RULA assessment is conducted during ironing session. The researcher analyze by using RULA software.

Based on the data above, alot of ironing session of the laundry worker in Tembalang region is in action level 2 (64,51%). It is indicated that the further investigation is needed.

**The analysis of work postures with RULA in ironing session**

Based on the RULA assessment above, the respondents' ironing session is categorized in action level 2. It is indicated that the further investigation and treatment is needed.

The respondents form an angle of upper arm, forearm, wrist, neck, and torso. Three respondents form an angle of 20 to 45 degree in using upper arm. Then, two respondents form an angle of 45 to 90 degree in using upper arm. 60% of the respondents form an angle of > 100 degree in using forearm. 40% of the respondents form an angle of 60 to 100 degree in using forearm. More over, 80% of the respondent form an angle of 0 to 15 degree by using wrist in the middle position. Then, 20% of them form an angle of 15 degree by using wrist in the middle position.

The respondents' neck form an angle of 10 to 20 degree. The flexion forward of neck posture may cause muscle disorders. Backs hunched posture is an awkward postures that cause abnormalities of the spine.

The respondents' torso form an angle of 0 to 20 degree. The first respondent have torso incurvation. Then the fifth respondent have neck benting.

Based on the picture, the position of the respondent is the head down, torso bent, and the chair without back to lean on. Sit for long period is indicated as the main cause the weak of the abdomen muscles, curve spine, respiration disorders, and digestion organ. In sit position, the pressure of the back rise increasingly than in stand position or lie down position.

There are some findings in RULA analysis. The chair that is used by the respondent have no back for leaning on. It makes the worker easy to get tire and stiff. One of the respondents' table is lower than the workers' sit position. As a result, the worker have to work with bending their body and neck. The tool need to be designed for the workers' comfort. This effort is used to reduce musculoskeletal disorders.

It is unstable position when you have to work with bent position. Repetitive manual handling and bending position might also be link

with problem in low back pain. Moreover, poor ergonomic position (like bent) may have consequences in slipped disk.[5)]

The laundry worker need more than one hour to finish the ironing. The incompatible of work tools, anthropometry, and the work duration are indicated as cause of musculoskeletal disorders. Poor ergonomic gives influence to the workers' physical health.[6,7)]

**The Analysis of Musculoskeletal Complaints**

Totally (100%) of the respondents complains stiff of muscles after ironing the clothes. Based on the Nordic Body Map questionaire, the most common complaint is on the neck, nape of neck, right shoulder, back, right upper arm, waist, hips, forearm, wrist, and right hand. Awkward posture is the reason of the illness. The ironing activites count heavely on the upper limb. It is the hand, back, neck, shoulder, and arm.

The worker feel the musculoskeletal disorders at the age of 30 years. This condition is getting worse at the age of 40 years and above. The strength and resilience of the muscle is declining in the middle age. One of the respondents, age 31, have complained the musculoskeletal disorder in his leg. One of five respondents have leg cramps. The flexibility and body composition are getting weak when the body is getting older. The muscles' elasticity is decreasing due to the reduction of activities.[7,8)]

The shortest work period is six month. The longest period is five year. Working period influence the workers' musculoskeletal disorder. Working period have a strong relationship with muscle complaints. Based on the finding of a research, there are some classification of work period and the strength of muscle. They are 0-5 year, 6-10 year, and 11 year and more. The more of work period mean the more risk of musculoskeletal disorders for the worker. Additionaly, musculoskeletal disorders influenced by the excessive stretching of working poor posture, repetitive movements, bad working attitude.

According to the worker activities, the movement of the left hand does not significant. The left hand is not always do the heavy work. As a result, the workers' left hand is almost no complaint. Due to the Nordic Body Map, musculoskeletal disorder mostly affects the right limbs.[9)]

Based on the interview using RULA method, three respondents state their left forearm is fine. Then, two respondent state their left leg is fine.

Three respondents complain the upper arm stiffness since work in the laundry house. Then, two of respondents complain of stiffness in the upper arm after work in the laundry house. 80% of the respondents have wrist stiffness after

Table 1. The characteristic of laundry worker in Tembalang Region in 2014.

| Characteristic | Frequency | Percentage (%) |
|---|---|---|
| Sex | | |
| - Male | 3 | 9,7 |
| - Female | 28 | 90,3 |
| Age | | |
| - > 30 year | 19 | 61,3 |
| - <= 30year | 12 | 38,7 |
| WorkTime | | |
| - <= 8 hour | 10 | 32,3 |
| - > 8 hour | 21 | 67,7 |
| Work Periode | | |
| - < 1 year | 16 | 51,6 |
| - >= 1 year | 15 | 48,4 |
| Nutrition (IMT) | | |
| - Less | 5 | 16,1 |
| - Normal | 11 | 35,5 |
| - More | 15 | 48,4 |

work in the laundry house. Next, Four respondents complain the neck stiffness since work. Then, the torso soreness is suffered by all the respondents since work in the laundry house.

Based on the result of the study, musculoskeletal disorders occur in skeletal muscle. It is the muscle of the neck, shoulders, arms, fingers, back, waist and low body muscles. The musculoskeletal issus is dominated by low back pain. Based on Bureau Of Labor Statistics (LBS) in 1982, there are 20% cases of occupational illness, and 25% cases of back pain. Meanwhile, the National Safety Council reported that the occupational illness is 22% of 1.7 million cases of back pain.

Table 2. The result of Nordic Body Map for the Laundry Worker in Tembalang Region 2014.

| No. | Part of the body | Number (n) | Percentage (%) |
|---|---|---|---|
| 0. | Neck | 4 | 12,9 |
| 1. | Nape | 17 | 54,8 |
| 2. | Left Shoulder | 8 | 25,8 |
| 3. | Right Shoulder | 22 | 71,0 |
| 4. | Left upper arm | 0 | 0 |
| 5. | Spine | 0 | 0 |
| 6. | Right upper arm | 5 | 16,1 |
| 7. | Waist | 14 | 45,2 |
| 8. | Hips | 14 | 45,2 |
| 9. | Buttom | 5 | 16,1 |
| 10. | Left elbow | 1 | 3,2 |
| 11. | Right elbow | 3 | 9,7 |
| 12. | Left forearm | 1 | 3,2 |
| 13. | Right forearm | 7 | 22,6 |
| 14. | Left wrist | 0 | 0 |
| 15. | Right wrist | 7 | 22,6 |
| 16. | Left hand | 2 | 6,5 |
| 17. | Right hand | 7 | 22,6 |
| 18. | Left thigh | 1 | 3,2 |
| 19. | Right thigh | 0 | 0 |
| 20. | Left knee | 5 | 16,1 |
| 21. | Right Knee | 4 | 12,9 |
| 22. | Left calf | 10 | 32,3 |
| 23. | Right calf | 10 | 32,3 |
| 24. | Left ankle | 1 | 3,2 |
| 25. | Right ankle | 1 | 3,2 |
| 26. | Left leg | 4 | 12,9 |
| 27. | Right Leg | 4 | 12,9 |

Tabel 3. The result of Grand Score dan Action Level for the Laundry Worker in Tembalang Region 2014

| Grand Score | f | % |
|---|---|---|
| 3 | 10 | 32,25 |
| 4 | 10 | 32,25 |
| 5 | 5 | 16,13 |
| 6 | 4 | 12,9 |
| 7 | 2 | 6,45 |
| Action Level | f | % |
| 2 | 20 | 64,51 |
| 3 | 9 | 29,03 |
| 4 | 2 | 6,45 |

40% of the respondents said that the pain happen every week. Then, 40% of the respondents said that the pain happen every day. Next, 20% of the respondents said that the pain happen three times a week. Some of the respondents states that the pain will disappear after 1-2 days . However, some of them states that the pain will disappear after take a rest in the night. Take a rest in the night is the relaxation of all the organ systems of the human body.

The work duration of the respondents is 15 hours a day. Work period, were drafted by the goverment in the constitution number 13 article 77 section 2 in 2003. Based on the regulation, the maximum work period is 12 hours a day with one hour rest. The longer work duration influence the risk factor of musculoskeletal disorders. Undoubtedly, the over-duration causes the muscle disorder.[7,9)]

**D. Conclusion**

Based on the findings and the discussions of the research, It can be conclude that:

a. Based on the work posture analysis during the ironing session, 100% of the respondents are in the action level 2. It is indicated that the further and the deep investigation is needed.
b. The complaint of the worker lead to the risk of musculoskeletal disorders. All the respondents (100%) illness caused by by the unnatural posture while working. The most common complaint is on the neck, nape of neck, right shoulder, back, right upper arm, waist, hips, forearm, wrist, and right hand. 40% of the respondents said that the pain happen every week. Then, 40% of the respondents said that the pain happen every day. Next, 20% of the respondents said that the pain happen three times a week. Some of the respondents states that the pain will disappear after 1-2 days. All the respondents complain the body stiffness since work in the laundry house.

**Suggesion**

Realizing the harmful of musculoskeletal disorders, some suggestion are proposed for the owner of laundry house, and the worker of laundry house (respondent). The suggestions are:

a. For the owners
   It is necessary to reduce the work period in order to prevent the musculoskeletal disorders. Based on the constitution number 13 article 77 section 2 in 2003, the maximum of work period is 7 hours in a day, 40 hours in a week of 6 days work.For the workers.
b. For the workers
   In order to avoid musculoskeletal disorders, work posture and work tools that fit with the anthropometry of each respondent is needed.
   In ironing session, the workers need to use a chair with backrest. This backrest is aimed to support the back of the worker.
   During the ironing session, the workers need to take a break for 5 to 10 minutes. This way, the workers can relax for a while.

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# FACTORS ASSOCIATED WITH THE HYPERTENSION IN YOUNG ADULTHOOD IN PUSKESMAS SIBELA SURAKARTA

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**Abstract**

Hypertension is a degenerative disease that contributes to high rates of mortality in the world. It is a risk of the following diseases like stroke, heart failure, and other non-communicable diseases which will influence the productivity and quality of people live. The aim of this research was to analyze factors related with hypertension at the young people in Puskesmas Sibela Surakarta.

**T**he research used observational analytic method with case control approach. There 113 patients with hypertension were recruited based on the data from January to September 2014. The purposive sampling was used to determine the proportion of both case and control group for about 42 people respectively. The data was analized by Chi-square test.

The research yielded that there were relationship between food pattern (p=0.028; OR=2.667 ;95% CI=1.099-6.468) with hypertension incident. But there was no relationship between physical activity (p=0.483) and economic status (p=0.450) with incident hypertension in Puskesmas Sibela Surakarta

The health workers in Puskesmas Sibela should have a sustainability controlling for the patients to keep a good food pattern and physical activity within its services.

**Keywords**: Economic, Food Pattern, Physical Activity

## A. Introduction

Non-communicable diseases (NCDs) is a major health problem in developed countries. Based on data from WHO (2013), in 2008 the mortality rate of NCDs in Indonesia reached 647 per 100,000 population. According to the Ministry of Health (2012), in 2008 in Indonesia there were 582,300 men and 481,700 women died because of NCDs. According to data from the Central Java Provincial Health Office (2013), NCDs in Central Java province in 2012 noted to 1,212,167 cases. Based on data from the City Health Office (DKK) Surakarta in 2012-2013 NCDs number reached 198,465 cases.

Hypertension is not an infectious disease, but a degenerative disease which has high prevalence and mortality rate. It also affects a person's quality of life and productivity. Hypertension is also called The Sillent Killer because this disease is hidden initially. It has killed 9.4 million people in the world each year. World Health Organization (WHO) estimates the number of hypertensive patients will increase. In 2025, it is projected to reach around 29% of people in the world will be affected by hypertension (WHO, 2013).

The prevalence of hypertension cases in Central Java increased from 1.87% in 2007 to 2.02% in 2008 and 3.30% in 2009 or it can be said that there 3 per 100 people suffered hypertension. In 2011, there was an increase number of hypertension, from 562,117 to 634 860 cases. In addition, the prevalence of other diseases, such as stroke, also has high rates at 0.03% of hemorogik stroke and 0.09% of non hemorogik stroke. Likewise, prevalence diabetes mellitus increased in 2011 of 0.08%.

The number of hypertension cases in the last three years (from 2011 to 2013) in Surakarta reached 143,365. There are some health centers

that have a relatively high number of patients with hypertension, namely Puskesmas Sibela (4,014 people) as the highest of cases, Puskesmas Gajahan (3,421 people) and Puskesmas Sangkrah (2,543 people).

Lifestyle is an important risk factor in the onset of hypertension in young adulthood person. It is influenced by an unhealthy lifestyle, such as smoking, lack of physical activity, less nutritious of foods and stress (Nisa, 2012). In Indonesia, the rates of hypertension are still quite high and be a serious problem. Therefore, this study conducted to analyze factors (food pattern, physical activity and economic status) associated with hypertension in young adulthood in Puskesmas Sibela Surakarta.

**B. Method**

The type of this research was observational with case-control approach. This study analized the relation between physical activity, food pattern, economic status factors and incidence of hypertension retrospectively (Notoatmodjo, 2010). This research was conducted on August 2015 in Puskesmas Sibela Surakarta.

The population in this study were all outpatients (age 20-40 years) with hypertension in Puskesmas Sibela Surakarta during January to September 2014 amounted by 113 people. The sample was counted by 42 respondents in each case and control group, thus 84 respondents in total. The sample will be taken by simple random sampling technique for the case group. While the control group was taken from the nearest neighbour of the case group houses. Inclusion criteria is only applicable for the control group, which are:

1. Do not suffer from hypertension based on medical records at Puskesmas Sibela or other health centers.
2. Aged between 20-40 years.
3. Residing in coverage of Puskesmas Sibela Surakarta area.
4. Willing to be a research respondent till the end.

The analysis of the data used univariate and bivariate analyzes. Univariate analysis is used to perform frequency distribution of each variables in percentage include the mean, median, standard deviation, minimum and maximum values. It will be interpreted by tables or graphs. Bivariate analysis is used to determine the relationship between each independent variables (food pattern, physical activity and economic status) with the dependent variable (incidence of hypertension) which was identified by Chi-Square Test. Data was analyzed by using computer software with a significant level $\alpha = 0.05$ (95% confidence level).

**C. Result and discussion**

**1. The correlation between food pattern with hypertension**

There was a relationship between food pattern and the incidence of hypertension in adults in Puskesmas Sibela Surakarta ($p= 0.028 <0.05$). It can be seen with a good food pattern in the control group respondents more than the control group, while respondents with a poor food pattern is more prevalent in the case group. The estimated value of dietary risk factors with a reduction in blood pressure was obtained OR of 2.667 (95% CI = 1.099 to 6.468), so it can be interpreted that a person who has a poor food pattern will have 3 times of the risk for hypertension. In the case group, it was known to have a high propensity to consume salted fish, preserved foods, instant noodles, the use of flavorings and did not read the nutritional content label on packaged foods. Whereas the control group had a high propensity to consume salty foods, eating vegetables and fruit consumption of bananas.

Sodium has a relationship with the onset of hypertension. The greater amount of sodium in the body, there will be an increase in plasma volume, cardiac output, and blood pressure. However, a person's response to the levels of sodium in the body varies (Kartikasari, 2012). Some evidence of epidemiological studies had described the relationship between potassium intake with blood pressure, and a direct relationship between the ratio of sodium / potassium in the urine with blood pressure, increased consumption of potassium associated with natriuretic effect and the possible effects of

dierutik. Reduction in consumption of potassium increase calcium loss in the urine, which is an important cation that regulates blood pressure. At this situation can accelerate the loss of calcium stimulation of parathyroid hormone, which can contribute to an increase in blood pressure. Increasing concentrations of potassium in the body can reduce the production of free radicals in cells endhotel, which can help keep blood pressure (Corwin, 2009).

Dietary pattern in adult life specifically had relation with chronic disease risk factors, including blood pressure (McNaughton & Mishra, 2007)

**2. The correlation between physical activity with hypertension**

There was no relationship between physical activity with the incidence of hypertension in young adults in the region Puskesmas Sibela Surakarta (p = 0.483> 0.05). Prabaningrum (2014) revealed that physical activity was not associated with blood pressure (p = 0.794> 0.05. In addition, some studies showed that exercise was less effective than diet to reduce blood pressure or there was no correlation between physical activity and hypertension (Stefani, 2012; Fagard, 1999).

The absence of a relationship between physical activity with hypertension can be seen from the results of the univariate analysis the frequency distribution of physical activity, where most respondents already have high physical activity both in the case group and the control group. High levels of physical activity or physical exercise that is regularly associated with reduced mortality and risk of death from cardiovascular disease. High physical activity can prevent or delay the onset of high blood pressure and lower blood pressure in hypertensive patients (Gibney, 2009).

Through regular exercise (aerobic physical activity for 30-45 minutes / day) can reduce peripheral resistance which would prevent hypertension (Sihombing, 2010). An evidence based analyzed by the American College of Sports Medicine indicates that an isolated exercise session (acute effect) lowers BP an average of 5-7 mmHg (Baster, 2005).

**3. The correlation between economic status with hypertension**

There was no correlation between the economic status with hypertension in young adults in the Puskesmas Sibela Surakarta (p=0.450>0.05). It can be seen from the frequency distribution of economic status, where most respondents already have a high economic status both in the case group and the control group. This means that people who have high economic status and low economic status have the same risk for affecting by hypertension (Sulistiyowati, 2010). Some researchers said the same that income did not influence the high blood pressure (Wahid Saeed et al., 1996), and specifically among women (Hoang et al, 2007).

## D. Conclusion

Hypertension can suffer to younger people because of the change of lifestyle, including food pattern. There was positive correlation between food pattern with the hypertension disease. It should have been addressed by people during determine a good diet everyday. Eventhough, the study resulted there was no relation between physical activity, but a good exercise should be done regularly. Health workers also should take an action actively to promote a good lifestyle, especially for patients with hypertension, in order to avoid the worse diseases which can be come up.

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# CHILD REARING PRACTICES FOR CHILDREN AT THEIR FIRST YEAR OF LIFE: FINDINGS FROM THE PROSPECTIVE COHORT STUDY OF THAI CHILDREN

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**Abstract**

Window period of child growth and development was 1-2 years of age where appropriate child rearing plays a major role. Most studies investigated the rearing styles while information for the specific practices of the rearing was limited. This study aims to describe specific child rearing practices in Thai children.

This study is part of the Prospective Cohort Study in Thailand Children (PCTC) conducted in 2005.The PCTC enrolled 4,245 children who were born between October 15, 2000 and September 14, 2002.The total samples were 4,116 in four community-based rural areas including Northern region, Northeastern region, Central region, Southern region, and one tertiary hospital in Bangkok. Data were collected via face-to-face interviews. Child rearing information was obtained by both observation and interviewing.

4,116 children aged of 12 months ± 1 week, 79.7% had one sibling, 50.2% were girls, with a mean mother age of 27.1±6.3 years, gestational age of 38.7±1.9 weeks, and birth weight of 3,051.7±451.7 grams. More than half, 62.1%, of the principal caregivers were parents, 27.6%were grandparents and 10.4%were others. Child rearing practices were vary across different dimensions. In the responsiveness dimension, warmed were given to almost all the children 96.6%, decreasing to attachment 56.6 %, very low in cohesion 0.7% and clear communication 0.7%. In demandingness dimension there were 39.9 % on confrontation, monitoring 5.7 % and consistent 1.2 %.

This study showed that all except warmed and attachment child rearing practices were critical inadequately given to the first year of age with needs and urgent appropriate responses.

**Keywords:** Child rearing practices, Thai children, First year of life, growth and development, Cohort study.

## A. Introduction

Children are an important human resource(1-2), window period of their growth and development was 1-2 years of age where appropriate child rearing plays a major role. This period has long been known as a strong predictor of child growth and development. Several studies reported that child rearing practices (3-5) affected to Children's development.

A review literature related to child rearing practices base on the Baumrind's. concept Which has developed a model using two dimensions there were Responsiveness and Demandingness(6-12).

For Responsiveness consist of 4 items there are the care giver's practices for response the needs of children by; Warmth are take care, give them of love and support them. Cohesion are to understand, accept, give time and attention. Clear communication are easy communication and accept their opinions. And Attachment are comforting, encouraging, response the emotional needs, concern of them, make a role model of emotional and interaction with others

,Includes helping children to relieve anxiety the effects of isolation.

For Demandingness consist of 3 items there are the care giver's practices for Controls children by; The first Monitoring are use reinforcement, punishment, feed back, extinction or negative reinforcement, modeling behavior, Instruction, reasons and reasoning and training. The second Confrontation are negotiation, demanding and the last consistent, contingent are caregivers must be consistent and flexible, be the disciplinary rules, adherence to teach things and continuity and consistent emotional.

Most studies investigated the child rearing styles(13-16), while information for the specific practices of the rearing was limited. This research aims to describe specific child rearing practices in Thai children.

## B. Method

This study is part of the Prospective Cohort Study in Thailand Children (PCTC) conducted in 2005.The PCTC enrolled 4,245 children from four community-based rural areas including Northern region, Northeastern region, Central region, Southern region, and one tertiary hospital in Bangkok. The infants born between October 15, 2000 and September 14, 2002 were enrolled.. Our component of the study involved 4,116 children who's reached 12 months ± 1 week and excluded twin.(Figure1). Protection of human subjects. The PCTC project was approved by the Nation Ethics Committee of the Ministry of Public Health on 22 September 2000.

### Study outcome

Primary outcome is child rearing practices in Thai children. Data were collected via face-to-face interviews. Child rearing information was obtained by both observation and interviewing.

### Statistical analysis

Describe each demographic characteristic was presented as a mean and a standard

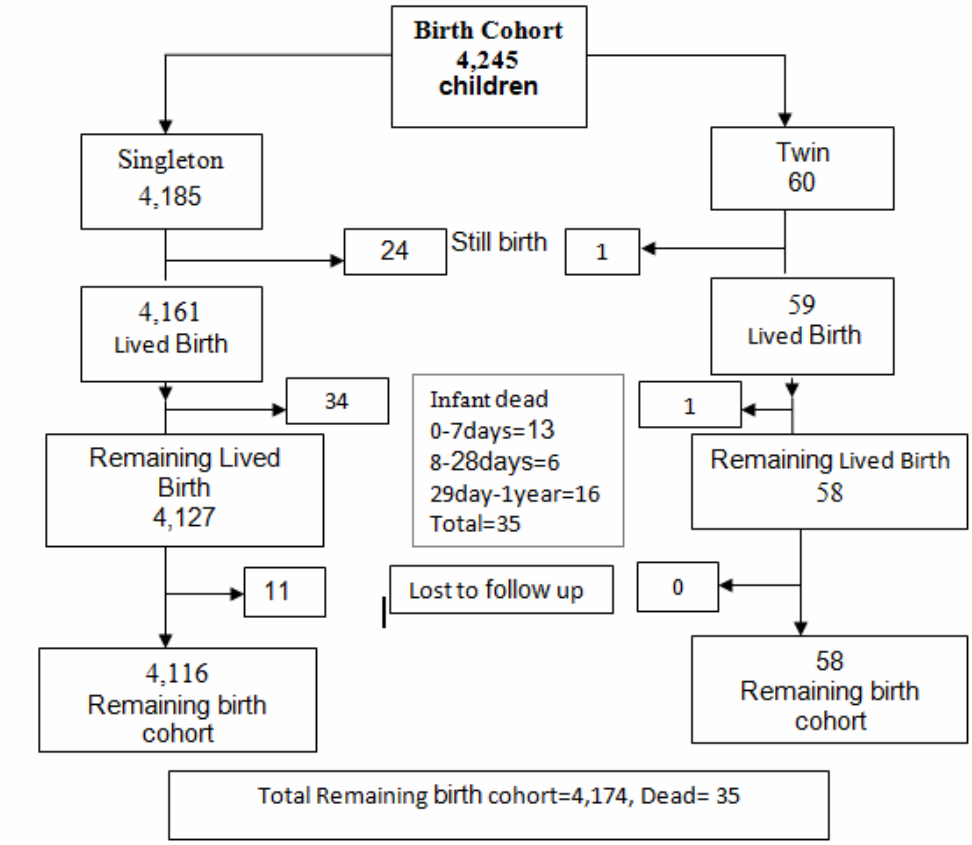


Figure 1.The flow chart

deviation (SD) for continuous variables and as a frequency and percentage for the categorical variables. The various child rearing practices by using frequency and percentage.

**Strength of the study**

The strengths of the study include: the wealth of prospective, longitudinal, epidemiological collected from observational, community-based. It is the evidence that was based on the largest cohort study of Thai children. It can be viewed as the first project of evidence for Thai children in this area and this study deep investigated to child rearing practice.

**C. Result and discussion**

4,116 children aged of 12 months ± 1 week, 79.7% had one sibling, 50.2% were girls, with a mean mother age of 27.1±6.3 years, gestational age of 38.7±1.9 weeks, and birth weight of 3,051.7±451.7 grams. More than half, 62.1%, of the principal caregivers were parents, 27.6% were grandparents and 10.4% were others.(Table1.) The first year of age is sensitive period or window of opportunity(17). Infant cannot control themselves , must rely on parents or care giver. It was during this time that parents are raising the most, followed by the grandparents. Maybe because Thai society changed to modernization, family structure changes. Children had migrant parent(s) to work in the industrialized or urban areas transferred child rearing to others include a grandparents and several left their children with grandparents

**Table 1.** Demographic characteristics presented as percentage unless specified otherwise

| Characteristics | Total ( n=4,116) | Percentage |
|---|---|---|
| **Infant** | | |
| **Gender** | | |
| Girl | 2,059 | 50.2 |
| Boy | 2,039 | 49.8 |
| Total | 4,098 | 100 |
| **Birth weight** | | |
| Mean (SD) | 3051.7(451.7) | |
| Median (Min: Max) | 3050(985:5220) | |
| **Gestational age** | | |
| Mean (SD) | 38.7(1.9) | |
| Median (Min: Max) | 39(24:45) | |
| **Number of sibling** | | |
| 1 | 3,282 | 79.7 |
| 2+ | 834 | 20.3 |
| Total | 4,116 | 100 |
| Mean (SD) | 1(1) | |
| Median (Min: Max) | 1(0:12) | |
| Mean (SD) | 1.(0.7) | |
| **Care giver** | | |
| Mother age | | |
| Total | 2,472 | 100 |
| Mean (SD) | 27.1 (6.3) | |
| Median (Min: Max) | 27(14:47) | |
| Principal caregiver | | |
| Father | 71 | 1.7 |
| Mother | 2,484 | 60.4 |
| Grandfather | 83 | 2.0 |
| Grandmother | 1,052 | 25.6 |
| Uncle Aunt | 160 | 3.9 |
| Other | 266 | 6.5 |

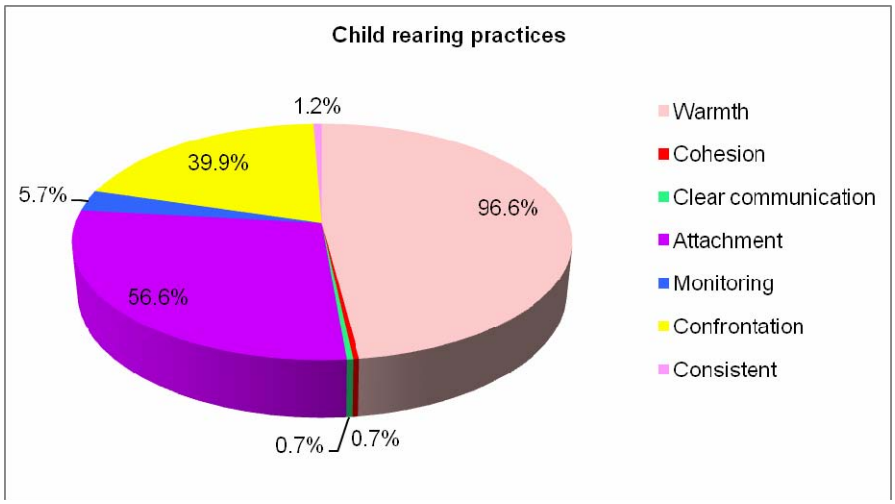


Diagram 1.

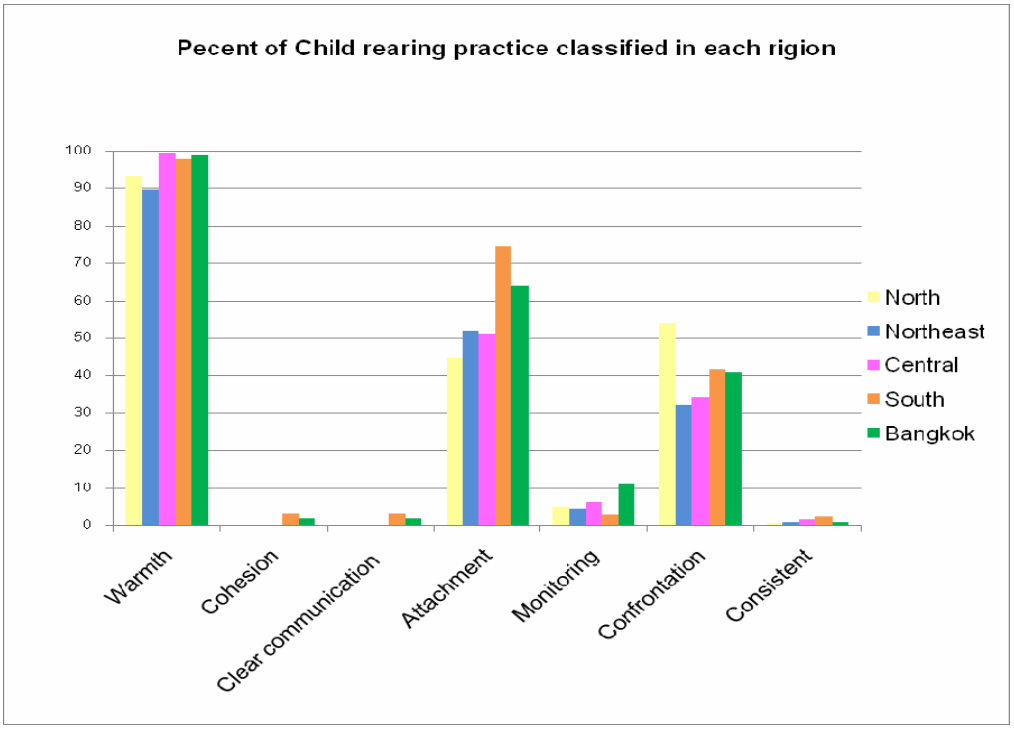


Diagram 2.

alone (18).

Child rearing practices in over all were vary across different dimensions. In the responsiveness dimension, warmed were given to almost all the children, decreasing to attachment, very low in cohesion and clear communication. In demandingness dimension there were rear very low all of items.

**Diagram1**

Child rearing practices classified in each region found that in warmth, Cohesion, Clear communication, monitoring and consistent not different. But in attachment and confrontation, there were difference between area. It is because Thailand has a variety of different cultures, the different parenting, especially in southern as the devout in religion and civil unrest have occurred in the area, so that was comforting is at a higher level Supervisory control and relatively high as well. And Supervisory Control Quite the same high.

This study showed that Thai children were reared mainly with warmth but very rare with cohesion and clear communication.

Probably because the family originally Thailand's extended family, which has a kinship ties and thus raised warmth, love and acceptance.(19) A show of warmth similar to European countries. The Western beliefs of parental responsiveness include explicit displays of affection, such as hugging, kissing, or praising (20). But differs from Chinese. Which Chinese parents may believe that praising their child could deter the child's achievement (21).

Parents' control and responsive may have different meanings in different cultures, especially in cultures that place value on relatedness and interdependency and discourage the expression of overt emotions. In Confucian based cultures, parental demonstrations of authority, such as the use of firm directives, close monitoring, and the use of "shaming" as a socialization tool may be perceived more favorably than in other cultures (22)

However, in Thailand ,the care giver should care closely, advice their children. and urgent appropriate responses.

**D. Conclusions:**

This study showed that all except warmed and attachment childrearing practices were critical inadequately given to the first year of age with needs and urgent appropriate responses.

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# THE DIFFERENCE OF STROKE NON HEMORRHAGIC PATIENTS ON LENGTH OF STAY AND COST OF TREATMENT BEFORE AND AFTER CLINICAL PATHWAY IMPLEMENTATION AT PANTI RAPIH HOSPITAL

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**Abstract**

Indonesia global health insurance system was established since January, 1st 2014. This is an effort to all Indonesian for increasing highest degree of their health statue. One indicator of the effectiveness and efficiency of health services is to minimize length of stay. This is encourage multidisciplinary to implementing clinical pathway for some diagnose as quality control and cost control.

This study conducted by analitycal survey with a retrospective design on SNH patients hospitalized at Panti Rapih Hospital from July to December 2014 that were used medical record of patients during care, data collecting techniques were used study documentation and interview. Total subjects were 68, consisted 34 before clinical pathway group and 34 after clinical pathway group.

The averages of SNH patients on LOS both without other variable correlation and complication disease correlation before and after clinical pathway implementation were ($P < 0,05$) meanwhile average stroke non hemorrhagic patients on cost of treatment both group without other variable correlation and complication disease correlation before and after clinical pathway implementation were ($P > 0,05$).

**T**here were any difference about LOS and cost of treatment because of clinical pathway on SNH patients with complication, however clinical pathway couldn't changed SNH patients without complication.

**Keyword** : Clinical Pathway, Length of Stay, Cost of Treatment

## A. Introduction

Integrated care pathways are structured multidisciplinary care plans which detail essensial steps in cares of patients with a specific clinical problem. They have been proposed as a way of encouraging the translation of national guidelines into local protocols and their subsequent application to clinical practice. They are also a mean of improving systematic collection and abstraction of clinical data for audit and promoting change in practice[1].

Ischemic stroke results in bland (non hemorrhagic) ischemia and infarction in a typically vascular distribution. The vascular distribution is often very helpful in differentiating stroke from tumor or demyelin[2].

Highly number of stroke non hemorrhagic patients at Panti Rapih Hospital approximately 60 – 70 patients with their highly cost of treatment encouraging medical committee to implementing clinical pathway for stroke non hemorrhagic disease.

Based on previous study in medical record instalation at Panti Rapih Hospital taken by January 12th – 15th, 2015. Clinical pathway were evaluated by CP's team that has been implemented for some diagnose. There were Partus Spontan, Pre Eclampsia, Dengue Fever of Children, Non STEMI, STEMI, Stroke Non Hemorrhagic, BPH, and Fracture Femur. These diagnose have chosen because of highly increased of these disease sufferer and these cost of treatment. From sample that were taken on

earlier study, there were 40 medical records of stroke non hemorrhagic patients devided into 20 medical records were before clinical pathway and 20 medical records were after clinical pathway. Stroke non hemorrhagic has chosen because it had the highest number of patients that hospitalized than others.

**B. Method**

The study was conducted by analitycal survey with retrospective design on stroke non hemorrhagic patients hospitalized at Panti Rapih Hospital from July to December 2014 that were used medical records of patients during care, data collecting techniques used study documentation and interview. Total number of subjects were 68, consisted of 34 patients before clinical pathway and 34 patients after clinical pathway. Data were analyzed with statistic to evaluate the average of Length Of Stay (LOS) and Cost Of Treatment with early examination data distribution. Because of both these variable hadn't normally distributed so data were analyzed by Mann Whitney U Test. It is used because data was statistic non parametric, each variable hadn't correlation to another. The conclusion can be take by the results of Mann Whitney U test with the results of (sig) or p value. If p value < 0,05 means that there are significant difference and p value > 0,05 that means no significant difference.

**C. Result and discussion**

Based on study documentation result, all medical records patient hospitalized during 2014 period at Panti Rapih there were consisted of stroke, stroke ischemic, and stroke hemorrhagic with its code I64, I63.-, and I61.9 were 672. Afterwards, population of stroke non hemorrhagic only was chosen in July to December period. July to September without clinical pathway and October to December with clinical pathway.

1. Data distribution of age

   The average of stroke non hemorrhagic patients before clinical pathway were 63,97 ± 8,744 with range of age 50 – 83 while after clinical pathway were 63,03 ± 11,642 with range of age 38 – 87. The result of Mann Whitney U test explained that p value > 0,05 it was concluded that there was no significant difference about both of group. The same result was showed before, with data distribution about ages of stroke non hemorrhagic patients, their range were 56-70 (52,5 %) and 30 – 55 (47,5%). This is because one of stroke non hemorrhagic factor that can't be control is age. It is about

Tabel 1. Characteristics of stroke non hemorrhagic patients before and after implementation of clinical pathway

| Characteristics | Before clinical pathway n (34) | After clinical pathway n (34) | *P value* |
|---|---|---|---|
| Ages | 63,97± 8,744 50 – 83 | 63,03± 11,642 38 – 87 | P= 0,672* |
| Gender : | | | |
| a. Male | 22 (65 %) | 22 (68 %) | P= 0,881** |
| b. Female | 12 (35 %) | 11 (32 %) | P= 0,835** |
| Complication of disease : | | | |
| a. Yes | 17 (50 %) | 27 (79 %) | P= 0,423** |
| b. No | 17 (50 %) | 7 (21 %) | P= 0,353** |

* : Mann Whitney U Test

** : Chi Square Test

degeneration process attack old. The vein will lose flexibility because of atherosclerosis.[3]

Adults (> 55) have twice possibility from suffering of stroke non hemorrhagic.[4]

2. Data distribution of gender

The results showed that 65 % from 34 patients before clinical pathway and 68 % from 34 patients after clinical pathway were male. The result of Chi Square Test explained that p value > 0,05 it concluded that there were no significant difference about gender before and after clinical pathway. 64 % stroke non hemorrhagic patients were male. It is because males were more often smoking than female.[5]

3. Data distribution of Complication of disease

The results showed that 50 % or 17 patients had complication disease during care before clinical pathway and 21 % or 7 patients had complication disease during care after clinical pathway. The most complication disease of stroke non hemorrhagic that written on medical record patients was Urinary Tract Infection. The results of Chi Square Test showed that p value > 0,05 it concluded that there were no significant difference about both of groups. The same result was showed that about 9 % patients with complication disease before clinical pathway and 5,92 % patients with complication disease after clinical pathway. Statistics result showed that p value were 0,480 > 0,05 it concluded that there were no significant difference about both of groups.[6]

Based on statistic test, both of groups showed that data distribution weren't normal. So statistic test used Mann Whitney U test. The average of stroke non hemorrhagic patients on Length Of Stay (LOS) before clinical pathway were 7,32±4,297 day and after clinical pathway were 5,32±1,512 day. The result of Mann Whitney U Test explained that p value < 0,05 it concluded that there were significant difference about two groups analyzed. The same result shows that the everage of Length Of Stay after clinical pathway implementation were 7.3 ± 0.5 day and before clinical pathway implementation were 10.9 ± 1.2 day. It concluded that there were significant diference because p < 0,05.[7] Other researches with some different result

Table 2. The difference of stroke non hemorrhagic patients length of stay before and after clinical pathway.

| | Before clinical pathway (day) n = 34 | After clinical pathway (day) n = 34 | P values |
|---|---|---|---|
| The average of Length Of Stay patients | 7,32 ± 4,297 | 5,32 ± 1,512 | 0,014* |
| The average of Length Of Stay patients with complication disease | 8,76 ± 5,506 | 5,43 ± 0,976 | 0,043* |

* = Mann Whitney U Test

Table 3. The difference of stroke non hemorrhagic patients cost of treatment before and after clinical pathway

| | Before clinical pathway (Rp) n = 34 | After clinical pathway (Rp) n = 34 | P values |
|---|---|---|---|
| The average of cost of treatment | 8.198.691 ± 10.026.026 2.613.000 – 61.017.000 | 6.362.543 ± 3.249.981 2.373.500 – 13.062.000 | 0,447* |
| The average of cost of treatment with complication disease | 11.222.382 ±13.552.217 3.160.500 – 61.017.000 | 8.157.738 ±4.054.705 3.830.500 – 13.025.666 | 0,824* |

* = Mann Whitney U Test

showed that clinical pathway implementation weren't given an impact to decrease the average of Length Of Stay (LOS) and cost of treatment.[8] Same result showed that clinical pathway of Congestive Hearth Failure hadn't different on patients Length Of Stay and cost of treatment.[9]

Patient's Length Of Stay (LOS) with complication disease before and after clinical pathway were 8,76 ± 5,506 day and 5,43 ± 0,976 day with p value based from Mann Whitney U Test < 0,05. It concluded that there were significant difference about two groups analyzed. This result implied that clinical pathway were effective to decrease number of complication disease. The same result also showed about clinical pathway on Acute Myocardial Infarction that Patient's Length Of Stay had significant decreased.[10] But, others results also showed by some researcher who interested about clinical pathway management in hospital. That clinical pathway had no significant difference for stroke diagnosis. It was happened because of clinical pathway hadn't implemented effectively.[11] The same result also showed that after their research about clinical pathway on Pneumonia that had no significant difference about two of groups (before and after). The result also showed that clinical pathway couldn't affort to decrease the number of patients mortality because of complication disease.[12] Another research about clinical pathway showed that clinical pathway on renal transplant. The average of patient's Length Of Stay with complication disease before clinical pathway explained that standar deviation value was 38,9 day and after clinical pathway was 18,9 day. P value > 0,002 there were no significant difference.[13]

Based on statistics test, both of groups explained that data distribution weren't normal. So statistics test used Mann Whitney U test. The average of patient's cost of treatment without other factor correlation before clinical pathway were Rp. 8.198.691± Rp. 10.026.026 with minimum and maximum cost Rp. 2.613.000 – Rp. 61.017.000. While after clinical pathway were Rp. 6.362.543 ± Rp. 3.249.981 with minimum and maximum cost were Rp.2.373.500 – Rp. 13.062.000. P value > 0,05, it concluded that clinical pathway hadn't significant difference. Although there were any decreased about cost of treatment after clinical pathway implementation but it didn't meant statistically. The same results were showed that background on increased of CVA's cost of treatment. His results explained that clinical pathway could efford to decrease cost of treatment amount 14,6 %. But it hadn't significant difference.[7] The same result also showed that even though the result explain that there were decreased about cost of treatment but it hadn't statistically significant difference.[14]

The average of patient's cost of treatment before clinical pathway were Rp. 11.222.382 ± Rp. 13.552.217 with minimum and maximum cost were Rp. 3.160.500 – Rp. 61.017.000 while after clinical pathway were Rp.8.157.738 ± Rp.4.054.705 with minimum and maximum cost were Rp.3.830.500 – Rp.13.025.666. P value showed that > 0,05 so it concluded that there were no significant difference about two groups. The same results were showed on clinical pathway of TURP at Aga Khan University Hospital. Those results explained that there were significant increased about completing documentation, consultation and education for patients family. But from those results there were no significant difference about cost of treatment before and after clinical pathway.[15] Another same results explained that clinical pathway of liver had significant decreased. But clinical pathway with complication disease correlation to outcomes hadn't significant difference.[16]

The development and implementation of a clinical pathway for patients with stroke during acute hospital phase can positively affect outcome in the form of reductions in length of stay, charges, and complications while improving and standardizing the quality of care.[7]

The implementation of clinical pathway is most likely to succeed when the decision to developing is take on an organizational basis. Senior management commitment and a strong medical and nursing are essential. Pathway documentation is more likely to be used if it is simple, clear and user friendly. The process of

pathway development considers why tasks and interventions are performed, and by whom, since it promotes greater awareness of the role of each professional involved in the care cycle.[17]

Success of clinical pathway implementation can be achieved by good organization of physician who serve medical care because clinical pathway are structured multidisciplinary care plans which detail essential steps in the care of patients with a specific clinical problem. They have been proposed as a way of encouraging the translation of national guideline into local protocols and their subsequent application to clinical practice. They are also a means of improving systematic collection and abstraction of clinical data for audit and of promoting change in practice.[1]

The main areas of concern for the patients of stroke are the treatment and outcomes and discover the ways for optimum management of a stroke patient. There is a certainty that if the patients stroke receive organized care, they will surely have better outcomes and prognosis. In a hospital setting, the well-trained staff and multidisciplinary approach to treatment and care characterize the stroke unit. The core disciplines for such multidisciplinary teams are: medical treatment, nursing, physiotherapy, occupational therapy, speech, language therapy and social work. The Clinical Pathways ensure a goal-defined, making certain a well-defined efficient diagnosis, organized and time-specified plan of treatment of the patients with stroke, which can as certain evidence based practice and an improvement in the quality of outcomes at a lower cost.[18]

They are designed to explicitly define what kind of continuity of care the patients should receive, at what time they should receive this care and what are the roles of the various multidisciplinary teams in the patient care. It has been seen, without much of much evidence to support this, which integrated care pathways are increasingly being implemented into the care of the patients with acute stroke and rehabilitation of the stroke patients. They have been shown to improve the patient outcomes, the quality of the care, decrease in the interventions ordered for the patients and decrease in the costs and also decrease in the length of the stay. They should not be seen as a 'cookbook' for healthcare – with prescriptive, step-by-step instructions – but rather as a set of appropriate, evidence-based activities and interventions for a specific user group. Care pathways are instruments that can reduce improper access to hospital emergency services, inappropriate admissions and unplanned discharges. So, to a great extent, they can help avoid

unmotivated and undesirable interruptions of care, which can damage people in need and be a waste of resources. Wasted resources are particularly common in situations where different professionals intervene without consulting each other, creating unnecessary and costly overlaps and confusion.[18]

## D. Conclusion

The average of stroke non hemorrhagic patients on Length Of Stay (LOS) both groups without other variable correlation and complication disease correlation before and after clinical pathway implementation ($P < 0,05$) it concluded that there were significant difference that meant clinical pathway implementation effective to decrease number of complication disease. However, the average of stroke non hemorrhagic patients on cost of treatment both groups without other variable correlation and complication disease correlation before and after clinical pathway implementation ( $P > 0,05$) there were no significant difference that meant decreased Patient's Length Of Stay (LOS) wasn't given impact to decrease patient's cost of treatment.

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# A STUDY ON INHALATION OF AIR POLLUTANT MATERIAL AND MOUTH BREATHING CORRELATION ON MOUTH BREATHING AND LIFE EXPACTANCY

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**Abstract**

Breathing influenced by the surrounding environmental conditions including air pollutants with all material contents and how the best way for breathing. That is why breathing process include the air quality must be understood, by doing the right breathing process and keep better life. This study held to understanding the basic principles of nose breathing, air pollutant, and exercise to strengthen nose breathing muscle.

This study held by literature review about life expectancy related by job and qualitative method by observing, analyzing and describing of the aspects impact of the air pollutant and affecting the breathing process as the case study.

Lowest life expectancy related by people whose work using voice/speech (singer, musician, journalist) and using breathing power (sportsman, football player, manual hard worker). Intensity exercise before support performers or effort to achieve the target and good performer push this profession using mouth breathing besides nose breathing.

Awareness of the health problems related with mouth breathing need improvement by seeking treatment for how to maintain nose breathing. Suggestion routinely mouth and tongue exercise can help for establishing nose breathing.

**Keywords**: life expectancy, air pollutant, mouth breathing, nose breathing, exercise

## A. Introduction

Breathing process as a part of human body is very important. Sometimes we are not aware of this vital function. The ability to inhale and exhale is essential to human existence, begin from nose as gate entrance upper respiratory units into lower respiratory units within the lungs. The primary function of the lungs is gas exchange for transporting oxygen from the environment into the blood and eliminating carbon dioxide from the blood to meet the metabolic demands of the body. Nose is the natural gateway for the air entering the body. Although the resistance to airflow is lower when the respiration follows the oral route, most individuals are habitual nose breathers. Indeed, the nose is physiologically fit for priming the ambient air before it is conveyed to the distal respiratory tissues. It serves as an integrated system for air filtering, heating and humidification. [(3)]. While breathing happen, influenced by the surrounding environmental conditions including temperature control, humidity setting and air pollutants with all material contents. That is why breathing process include the air quality must be understood, due by doing the right breathing process, we care our respiratory system and keep better life.

This study consider some previous research about achieving life expectancy related by occupation find that high-achieving life expectancy individuals tend to live longer than average, except for performers and athletes. Start from an analysis of 1,000 obituaries from *The New York Times* from 2009 – 2011, Richard Epstein and Catherine Epstein an Australian researcher in International Journal of Medicine finds the average age of death for notable people

varies depending upon their occupation. Athletes, performers, and creative types such as writers and artists died younger, on average, while people in business, politics, and the military hung on the longest. [3] Almost the same opinion comes from outlined researcher in Normal Breathing Journal that focus on why singers die early comes from data thousands of singers die earlier than the average life expectancy compared to other studied before according to life expectancy.[7]

This study, learning about the function of the human respiratory system, relates with environment especially air pollutant. First, study about air pollutant will able to provide information about its impact on human respiration system. Second, this study will ake precauion on introduction of anatomy – physiology of human respiratory system. This research will sudy about mechanism, how to obtain better air quality, exercise method to maintain nose breatthing during sleeping and not-sleeping condition. Finally, by combining the concepts of air pollutant, human anatomy and physiology respiration system, basic understanding of the environment principles and priority nose breathing function will obtain.

The objective of this study are understanding the basic principles of nose breathing, air pollutant, and exercise to strengthen nose breathing muscle, with explanation as:

- Recognize the importance of health environmental in processes of the human body
- Understand the function and airflow of the human respiratory system
- Apply basic needed exercise to maintain nose breathing gain life expectancy rate life

**B. Methods**

Review Literature study and Qualitative method by observing, analyzing and describing of the aspects impact of the air pollutant and affecting the breathing process as the case study. Researchers Richard Epstein and Catherine Epstein said in their study, based on analyzing 1,000 New York Times obituaries from 2009-2011 compare the life expectancies for different types

Table 1. Mean age at death as a function of occupational grouping[3]

| Occupation | N | Mean age |
|---|---|---|
| Performance/sports | 221 | 77.2 |
| Creatives/writers | 290 | 78.5 |
| Professional/academic/religious | 232 | 81.66 |
| Politics/business/military | 183 | 82.95 |
| Others | 73 | 83.53 |

Table 2. The related life expectancy by profession men and women [7]

| Life Age verge During Time | | 1972-1976 | | 2002-2005 | |
|---|---|---|---|---|---|
| **Non-manual** | **Examples of occupation** | **Men** | **Women** | **Men** | **Women** |
| Professional | Doctors, accountants, qualified engineers | 71.9 | 79.0 | 80.0 | 85.1 |
| Managerial and technical/ intermediate | Managers, journalists, teachers | 71.9 | 77.1 | 79,4 | 83.2 |
| Skilled non manual | Clerks, Cashiers, retail staff | 69.5 | 78.3 | 78.4 | 82.4 |
| **Manual** | | | | | |
| Skilled manual | Supervisors of manual workers, plumbers, electricians, goods vehicle drivers | 70.0 | 75.2 | 76.5 | 80.5 |
| Partly skilled | Warehousemen, security, guards, machine tools operators, care assistants, waiters | 68.3 | 75.3 | 75.7 | 79.9 |
| Untitled | Laborers, cleaners, messengers | 66.5 | 74.2 | 72.7 | 78.1 |

of jobs, shown in Table 1, according to a new Australian study. 1). Business people and politicians live the longest, their average life expectancy was 82,95 year. 2). Historians, economists, and people in other academic jobs, like professors, live almost as long. They die at age 81.66 year. 3). Being creative seems to be hazardous to your health. Writers, composers and artists only live until 78.5 year. 4). Performers, like actors, athletes, singers and musicians die earliest, at 77.2 year. And they're the most likely to die of lung cancer. The researchers weren't sure if it was their lifestyle or the stress of being famous that caused them to die earlier. Their write that fame and achievement in performance-related careers may be earned at the cost of a shorter life expectancy, In such careers, smoking and other risk behavior may be either causes of effects of success and/or early death [3].

Using data from Wikipedia, in list can be studied 110 footballers die in age 17 to 30. (years of death Jan 1889 to Nov 2014), and most causing of respiratory failure. For prevention by 2009 the Federation football and Association football implement preventive examination by medical checkup, ECG and ECHO examination for players in the Europe League 2011–12. Constant monitoring has been advised.

Some researchers suggested according to the reason why do singers die early? due singers have stressful lives, and being famous is a negative factor that makes them prone to chronic diseases, addictions, suicides, and poor health. They find that the most likely cause of poor health of singers lies in physical causes that relate to their professional work. Singers often spent up to 4-5 hours daily with incentive training during singing, and this produces a profound negative effect on their basal breathing patterns. There are dozens of studies testify that low $O_2$ in cells is the key cause for development of these diseases. Singing requires increased flow of air or ventilation. Hyperventilation minimizes alveolar carbon dioxide levels together with blood carbon dioxide quantity, becomes the crucial reason for lessened oxygen concentrations in body tissues. Obviously, low body $O_2$ also means low brain $O_2$. Moreover, in conditions of hyperventilation, apart from lack of $O_2$, the brain suffers from low $CO_2$ that is another crucial chemical for normal function of nerve cells. This effect takes place due to low arterial $CO_2$ levels. With reductions in brain $CO_2$, nerve cells become over-excited. That leads to "spontaneous and asynchronous firing of neurons. In other words, low arterial $CO_2$ causes appearance of problems with sleep, mood swings,

Table 3. Life Expectancy of different Profession[10]

| Profession | Life Age Average |
|---|---|
| Religious leaders | 82 |
| University professors and Politicians | 79 |
| Legal experts | 78 |
| Businesspeople | 77 |
| Senior government officials, artists and writers | 74 |
| Journalists | 72 |
| Athletes | 69 |
| Entertainers | 65 |

Table 4. Outdoor Sources of Major Indoor Air Pollutant [1]

| Pollutant | Percentage of emissions associated with industry | Percentage of emission associated with transport |
|---|---|---|
| Benzene | 32 | 65 |
| Carbon monoxide (CO) | 3 | 90 |
| Lead (Pb) | 31 | 60 |
| Oxides of Nitrogen (NO) | 38 | 49 |
| Particulates (PM10) | 56 | 25 |
| Sulphur Dioxide (SO2) | 90 | 2 |
| Volatile Organic Compounds (VOCs) | 52 | 34 |
| Ozone (O3) | Arises from atmospheric chemical reaction | |

anxiety, panic, and addictions. With developing hyperventilation, people get reduced results for body oxygen test. This happens when this singer breathes over two times more than the medical norm. If body $O_2$ drops below 10 seconds, there is an immediate danger of heart attack, stroke, seizures, asthma attack, or some other severe exacerbation. With application of breathing techniques, it is possible to achieve normal minute ventilation and normal $O_2$ values in tissues. Furthermore, high body $O_2$ and $CO_2$ values profoundly improve quality of voice in singers due to relaxation and expansion of smooth muscles of airways .[7]

There is another study written by the Telegraph on 25 Oct 2007, about how occupant ion is the attainment life expectation related by job. According to a 2011 a study in U.S., the gap in life expectancy at age 25, by education, with a bachelor's degree or higher. Middle-class professionals such as doctors and accountants are outliving builders and cleaners by as much as eight years, according to official figures. The study looked at people from five social classes in 1972-1976 and 2002-2005. Skilled workers have a greater increase in life expectancy and at the age of 65 than those in manual occupations. In professional occupations can expect live to 80, almost eight years longer than those in unskilled jobs, whose life expectancy is 72.7. Men in managerial and technical occupations such as journalists and teachers have slightly shorter life expectancy at 79.4, while unskilled workers such as laborers and cleaners have the shortest life expectancy as shown in Table 2. In this situation the figures showed the differences between social groups were growing. Those who have a lower life expectancy have it because of a range of factors, they may live in housing which is damp and has poor heating, or near busy roads which means more air pollution. There is also evidence that people on low incomes have higher smoking rates and their diets tend to be worse because high fat, high sugar diets are cheaper. The study shown people who working in a healthy environment, not in a rush, thinker, have longer life expectancy than people work by manual in an unpredictable environment. [7]

Based on research from Wonkwang University, Prof Kim Jong-In who analyzed newspaper obituaries and data from statistics Korea between 2001 and 2010 and derived the average life span of different professions.[10] Find that Clergy have the longest life expectancy and entertainers the shortest, according to that study. Show business is the only career where average life expectancy is growing shorter. Religious leaders lived an average of 82 years, which was the longest, followed by university professors and politicians (79), legal experts (78), businesspeople (77), senior government officials, artists and writers (74). But journalists (72), athletes (69) and entertainers (65) died relatively young, shown in Table 3.

This data, compare several prior research about life expectancy related job profession and life age average. According to the lowest life expectancy related job expectancy include singers, sportsman, journalist, clerks, cashiers, retail staff and hard manual worker like laborers, cleaners, messengers assumed that this profession using breathing mechanism process supporting their job and work environment condition impact their life. Hard intensity training for singers, sportsman and others profession give bad impact if using mouth breathing to support their breathing process to get their target and focus. Air pollution go into airflow process breathing airflow without filtering by nose give bad impact to this profession in their life. Need to know good breathing process by nose breathing and how is the effort practicing not to use mouth breathing.

## C. Result and discussion

According to the study data above it appears that human life expectancy related by job, affected by work environment and health environment air quality, and self-awareness in avoiding mouth breathing by maintain nose breathing

### C.1 How air pollutant related with respiration system

Now days, the air quality in the indoor environment has a significant impact on human

health and comfort. Because most people spend most of their time in indoor, poor indoor air quality can lead to discomfort, ill health, absenteeism, and low productivity. Good indoor air quality safeguards the health of indoor occupants and contributes to their comfort and well-being. Indoor air pollution has received little attention in past compared with the outdoor air pollution. It is now become main topic of increasing public concern, prompted partly by the isolation of the indoor environment from the natural outdoor environment in tight-sealed commercial building. (see Table 4)

There is growing public awareness regarding the risk associated with poor indoor air quality in the home and workplace. Because Americans spend approximately 22 hours every day indoors, susceptible individuals are at much greater risk of adverse health effects from chronic low levels of exposure to indoor air pollutants over time. Along with particulate matter, gases such as ozone, nitrogen dioxide, carbon monoxide, and sulfur dioxide; microbial and chemical volatile organic compounds; passive smoke; and outdoor ambient air are the most common types of air pollutants encountered indoors, and from their study find indoor pollutants act as respiratory irritants, toxicants and adjuvants or carriers of allergens. [10]. The health effects by poor indoor air quality are dependent on several factors such as the effect of each air contaminant, concentration, duration of exposure, and individual sensitivity. Until recently, the health effects of indoor air pollution have received relatively little attention from the scientific community. Along with particulate matter (PM), gases such as ozone (O3), nitrogen dioxide (NO2), carbon monoxide (CO), and sulfur dioxide (SO2); microbial and chemical volatile organic compounds (VOCs); and passive smoke are the most common types of air pollutants encountered indoors.[1].

The others air pollutant is indoor particulate matter. The adverse effects of indoor particulate matter are dependent on deposition in the respiratory system and the ability of the respiratory tree to remove them, which is directly related to particle size and chemical composition. For example, coarse particulate matter generated indoors (2.5-10 mm) tends to deposit in the nasal, pharyngeal, and laryngeal regions of the respiratory system, whereas fine (0.1-2.5 mm) and ultrafine (<0.1 mm) particulate matter generated indoors and outdoors tends to deposit in the trachea bronchial region and alveoli. Organic pollutants can adsorb onto the surface of these particles, contributing to important adverse health effects. Indoor particulate matter can also be classified according to its sources, which include cooking, heating, consumer products, building materials, house dust, particle re suspension from human activity such as vacuuming and foot traffic, outdoor particle infiltration, and secondary organic aerosol. Indoor particulate matter has been associated with increased respiratory symptoms.

The best standard environment indoor air quality, support by control procedure. standard. Their 3 primary considerations in improving indoor air quality are (1) Evaluation of construction failures that allow moisture into the walls of a building, (2) Poor ventilation causing excessive humidity and accumulation of gaseous and/or chemical exposure from materials in the living space, and (3) Poorly designed or HVAC systems that contribute to poor air circulation. Building a healthy home should take into account costs versus energy savings and improved health outcomes. [10]

**C.2 Breathing Process**

From the standpoint of respiratory deposition, the respiratory system can be divided into three regions. The regions differ markedly in structure, airflow pattern, function and sensitivity to deposit particles. The first is the head region which includes the nose, mouth, pharynx, and larynx. Inhaled air is warmed and humidified in this region. In this region nose as the main function. The second is the tracheobronchial region, include the airways from larynx to the terminal bronchioles. This region resembles an inverted tree with a single trunk, the trachea, subdividing into smaller and smaller branches. Finally, beyond the terminal

bronchioles is the pulmonary or alveolar region, where gas exchange takes place. The respiratory system of normal adult processes 10-20 m3 (12-24 kg) of air per day. The gas exchange area of the lungs is about 30 m2 and is perfused with over 200 km of capillaries. At rest, about 700 mL of tidal is inhaled and exhaled with each breath. During heavy work, tidal volume may be three times this amount. A resting adult breathes about 12 times a minute and this rate triples during heavy work.

Once deposited, particles are retained in the lung depending on their chemical properties, their location within the lung and the type of clearance mechanism involved. The airway surfaces of the first two respiratory regions are covered with layer mucous that is slowly propelled by ciliary action to the pharynx, swallowed to the gastrointestinal tract. This *mucociliary* escalator transports deposites particles out of the respiratory system in matter of hours. Soluble particles pass through the thin alveolar membrane into the bloodstream. Solid particles may dissolve slowly by phagocytic cells and dissolve or transported to the *mucocilliary* escalator, *Fibrogenic* dusts as silica interfere with this clearance mechanism and cause gradual scaring of fibrosis of the alveolar region [(4)].

Normal nasal breathing has two major advantages function that can not find in mouth breathing: 1. filtration function by the *ciliair* hairs, and 2. humidity function of inspired gas. Mouth breathing at bedtime is not good because do not have filtration by the *ciliair* hairs, no humidification of inspired gas, salivary glands going to slow down and cause the throat and mouth becomes dry.

**C.3 Mouth Breathing Effect**

Enhance the comprehension explanation above, mouth breathing can cause major health problems. The nose breathing route provides more resistance for respiratory muscles as compared to mouth breathing (the route for mouth breathing is shorter and it has a greater cross sectional area). Nose breathing has the filtration apparatus, warming and humidifies function that can filtering the deposit air. Tanaka, Japanese researcher in their study about assessment nasal function in control breathing, discovered that end-tidal-$CO_2$ concentrations were higher during nose breathing than during oral breathing. This research study revealed that a group of healthy volunteers had an average $CO_2$ of about 43.7 mm Hg for nose breathing and only around 40.6 mm Hg for oral breathing. Hence, mouth breathing reduces oxygenation of the whole body.[(12)] A short summary of immediate negative biochemical effects of mouth breathing related to $CO_2$ are: (1) Reduced $CO_2$ content in alveoli of the lungs (*hypocapnia*), (2) *Hypocapnia vasoconstriction* (constrictions of blood vessels due to $CO_2$ deficiency), (3) Reduced oxygenation of cells and tissues of all vital organs of the human body, (4) Biochemical stress due to dirty air (viruses, bacteria, toxic and harmful chemicals) entering into the lungs, (5) Possible infections due to absence of the self-immunization effect

Mouth breathing starts when body cannot get enough air through the nose, so the mouth takes over. This forces to breathe through the mouth out of sheer necessity, and this can become a life-long habit if not corrected. It is perfectly natural to breathe through mouth at certain times, such as when lifting a heavy load or exercising, but breathing through the mouth most of the time, however, can cause health problems. It is important to realize that mouth breathing and having an open mouth are really the same thing, and are equally detrimental to your health. Using the mouth for breathing disrupts our natural body mechanics. The root of the problem in many cases is oxygen deprivation, which can affect a number of body functions and lead to symptoms such as gingivitis and gum disease, bad breathe, poor sleep leading to chronic fatigue. In adults, poor oxygen concentration in the bloodstream has been associated with high blood pressure, heart problems, sleep apnea and other medical issues.[(11,17)]

Mouth breathing changes the way of tongue works and where it rests in the mouth. The tongue is made up of muscles covered by mucous membranes. These muscles are attached

to the lower jaw and to the hyoid bone (a small, U-shaped bone, which lies deep in the muscles at the back of the tongue) above the larynx. The tongue also aids in the formation of sounds of speech and coordinates its movements to aid in swallowing. Naturally tongue rest in the top of mouth, when mouth open it rests in the bottom. This leads to underdeveloped oral muscle, and can cause breathing, speech, swallowing, and chewing problem. When tongue rests low in the mouth, push forward to swallow as a tongue thrust. A tongue thrust and mouth breathing always go hand in hand it means if using mouth breathing, have a tongue thrust swallowing pattern. When the tongue is in the wrong position, the head tends to rest forward, causing the shoulders to slump. Human body unknown how to breathe normally, and the muscles of the face and mouth have compensated and learned to work correctly. Need exercise to help retrain muscles and to stop mouth breathing.

**C.4. Nose Breathing Maintenance**

Mouth breathing may seem like an easy habit to change, just close the mouth. Unfortunately, for people who struggle with nose breathing, changing mouth breathing habit it is not easy. There are several way offered to maintain nose breathing as:

(1) Make an effort not to open mouth to

| | |
|---|---|
| **Exercise 1** | Slowly open and close your mouth to its full extent, making sure the lips meet when closing. |
| **Exercise 2** | Pucker your lips (as if about to kiss). Hold for a count of 10. Relax. |
| **Exercise 3** | Spread your lips into a big, exaggerated smile. Hold. Relax. |
| **Exercise 4** | Mix Exercises 2 & 3: Pucker-Hold-Smile-Hold. |
| **Exercise 5** | Try to pucker with your mouth wide open, without closing your jaws together. Hold & relax. |
| **Exercise 6** | Close your lips and press them tightly together. |
| **Exercise 7** | Close your lips firmly, then make a "slurping" noise, as if sipping a drink. |
| **Exercise 8** | Open your mouth and stick out your tongue. Be sure your tongue comes straight out of your mouth and doesn't go off the side. Hold, relax and repeat several times. Work toward sticking your tongue out farther each day, but still pointing straight ahead. |
| **Exercise 9** | Stick out your tongue and try to reach your chin with the tongue tip. Hold at the farthest extension. |
| **Exercise 10** | Touch your nose with the tongue tip. Hold at farthest extension. |
| **Exercise 11** | Stick out your tongue. Hold a spoon upright against the tip of your extended tongue and try to push it away while your hand holds the spoon in place. |
| **Exercise 12** | Repeatedly stick your tongue in and out as fast as you can. |
| **Exercise 13** | Flick your tongue from corner to corner as quickly as you can. |
| **Exercise 14** | Move tongue all around your lips in a circle as quickly as you can, making sure you stay in constant contact. |
| **Exercise 15** | Open and close mouth as quickly as you can, making sure your lips close each time. |
| **Exercise 16** | Say "Ma-Ma-Ma-Ma" as quickly as possible, ensuring there's an "em" and an "ah" sound each time. |
| **Exercise 17** | Repeat with "La-La-La-La." |
| **Exercise 18** | Repeat with "Ka-Ka-Ka-Ka" as quickly and accurately as you can. |
| **Exercise 19** | Repeat with "Kala-Kala-Kala-Kala" |
| **Exercise 20** | Gargle loudly with warm water. |
| **Exercise 21** | Say the vowel sounds (A-E-I-O-U) as loud as you can. |
| Adapted from: combine methods that teach how train mouth and tongue muscle to improve breathing performance. | |

breath. The first rule is to breathe through nose breathe and awareness of healthy life encourage to close the mouth and use nose breathing.

(2) Whose suffer from mouth breathing during sleep time, learn the medical technique tape the mouth for stopping mouth breathing during sleep. For most people who still learn to stop mouth breathing, if they sleep on their back at night, try to sleep on side.

(3) A routine exercise to make strong tongue and jaw muscle can be train. The various muscles of respiration aid in both inspiration and expiration, which require changes in the pressure within the thoracic cavity. Diaphragm muscle, external intercostal and interchondral part of the internal intercostal muscles are big part of respiration musle. At the neck muscles, the sternocleidomastoid (elevated sternum) and the scalene muscles considered accessory muscles of breathing. The involvement of these muscles seems to depend on the respiratory activity. Apart from these neck muscles, the following muscles have also been observed contributing to the breathing: *serratus anterior, pectoralis major & minor, upper trapezius, latissimus dorsi, erector spinae (thoracic), iliocostalis lumborum, quadratus lumborum, serratus posterior superior and inferior, levatores costarum, transversus thoracis, subclavius* [13]. The technique is based on the neuromuscular re-education or re-patterning of the oral and facial muscles, tongue exercise and behavior modification techniques to promote proper tongue position, improved breathing, chewing and swallowing [14]. Modification technique with short method exercise and long method exercise can be combined.

The first is combination 4 steps exercise using mouth and tongue exercise A - I - O - Beh to strengthen musle tounge and be expected to improve nose breathing habit can be done 3 minutes two times every day. [10]

The second is combination 21 steps *oropharyngeal* exercise included exercises for the soft palate, tongue, facial muscles and mouth practiced 60 minutes daily and devided by 2 steps each for 30 minutes for one month than can be review for convenience. [9]

(4) Use the right pillow. Choose design pillow with a groove that cradles your head so you can lie comfortably on your controlled side sleep posture. Make sure the pillow align head, neck and shoulders for more relaxing and restful sleep, elevate upper body and align body spine so that airways are not blocked.

## D. Conclusion

1. Lowest life expectancy related by people whose work using voice talent (singer, musician, journalist) and using breathing power (sportsman, football player, manual hard worker).
2. Intensity exercise before support performers or effort to achieve the target and good performer push this profession using mouth breathing besides nose breathing.
3. Establish nose breathing come from how to be able to breathe clean air with a minimum of airborne particles by review home environment or work environment. Beside that establish easier nose breathing can be in a smoke free environment and awareness to using nose breathing
4. According to get better life age expectancy, the nature of people's jobs also has a defect, but they have autonomy and control over what they do, tend to be in a better health. At this time, many people even health care professionals are not aware of the health problems associated with mouth breathing. Seeking treatment for mouth breathing can significantly improve quality of life, and can be a part of the solution.
5. Suggestion routinely mouth and tongue exercise can help for establishing nasal breathing.

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# MACROERGONOMICS FOR INTEGRATED PUBLIC HEALTH AND SAFETY

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**Abstract**

Companies need manpower that has a certain ability to support their business processes. On the other hand, the manpower has needs that must be met to establish their economic life. The relationship between a company and the manpower is a mutually beneficial, if the ability of workers that supplied by the community in accordance as the company expected. But sometimes there are communities that have varying capabilities, those in terms of skill, knowledge, or attitude (SKA). Lack of adequate manpower will have impacts on the company; one of them is safety and health issue.

More than 50% citizens of Indonesia as workers, with the number of work accidents nationwide are high at 103,000 each year; which resulted death, disability or occupational diseases. Increases number of accidents, the greater the losses materially, time-loss, and declining productivity of a company. Accidents from 2011-2014 was recorded;only 51.14% of cases workers can recover after workplace accidents. Unrecovered workers became dependents, unproductive and require social support because they can no longer work due to disability or illness caused by work. For the community, these facts imply that the company does not bring benefits to the fullest.

In macroergonomics, the interaction between manpower, technology, working environment and its interaction with the community will be assessed.This paper uses this approach to designs an entire system to accommodate human performance capability in all its aspects, and to provide solutions to solve the problems mentioned above by conducting a literature review and create a conceptual framework.

**Keywords**: macroergonomics, public health, safety, human well-being.

## A. Introduction

Workplaceor company has an impacton the community, generallyeasyto seeare theimpact totheir economics and society[1] With theemployment, as a community memberthosewho became workers, have a sourceof income and economic support of their household. This makes the economic capacityof theworkerscan improvetheir socialstatusin the society. The relationship between a company and the manpower is a mutually beneficial, if the ability of workersthat supplied by the community is accordance as the company expected. But sometimes there are communities that have varying capabilities, those in terms of skill, knowledge or attitude.

Other important impact ofa workplace and sometimes under estimated is the impacton the health, physical or mental, ofthe workers[2,3,17]. Work is an economic activity but also health matters, because occupational injury and illness are part of the work [8].There is evidence that companies are experiencing increased societal pressure to take on public responsibilities and are rapidly increasing their efforts to respond to health of workers [3]. To accomplish this goal, highly relevant and well suited to implement ergonomics as sustainable development to the business sector, and the more successful

organizations seeing this as an opportunity, not a burden [3,27].

More than 50% citizens of Indonesia asworkers, with the number of work accidents nation wide are high at 103,000 each year; which resulted death, disability or occupational diseases[9]. Increases number of accidents, the greater the losses materially, time-loss, and declining productivity of a company. Accidents from 2011 to 2014 was recordedevery semester [28];51,14% of workers fully recover, 44,50% cannot work temporally, 3,12% impaired, and 1,32% died after an accident.Almost 47,63% of workers, not to mention their family, became dependents, unproductive and require social support because theycan no longer work due to disability or illness caused by work.For the community, these facts imply that the company does not bring benefits to the fullest.

**Table 01**. Capability and Willingness

| | Willing | Not Willing |
|---|---|---|
| Capable | - Productive<br>- Less productive<br>- Can be productive | - Can be productive<br>- Less productive<br>- Not productive |
| Not Capable | - Less productive | - Less productive<br>- Not productive |

Individual factors that substantial influence success as workers are the skills, knowledge and attitude [(31)(32).] And as seen in Table 01,capability summarizes the skills and knowledge, and willingness summarizes the attitude.If someonehas urge or motivation towork, thentheycan beproductive, less orunproductivedepending onthe capabilities theypossessed.This capability differences not only the level of education, but can be caused byimpaired physical, mental or well-being. Therefore, if someone do not have capability and do not have urge to work, they became dependent in the community.

## C. Results and Discussion

### 1. Healthy Workplace

Public health is concerned with protection of the entire community from illness and the prevention of disease. This concernwould certainly include the millions of peoplewho go to work in a company, small or large businesses[(13)].It is quite apparent that work can, and does, influence health [(1)(3)(5).]Over the past several decades, WHO definitions of a healthy workplace have evolved greatly; from an exclusive focus on the physical work environment (traditional approach of occupational health and safety: directinteraction with physical, chemical, biological and ergonomic hazards), and broadened to include health practice factors (lifestyle);psychosocial factors (work organization and workplace culture); andinterrelation to the community; all of which can have a great effect on worker's health[(4)(17)(32).]

Factors Affects the Health ofWorkers

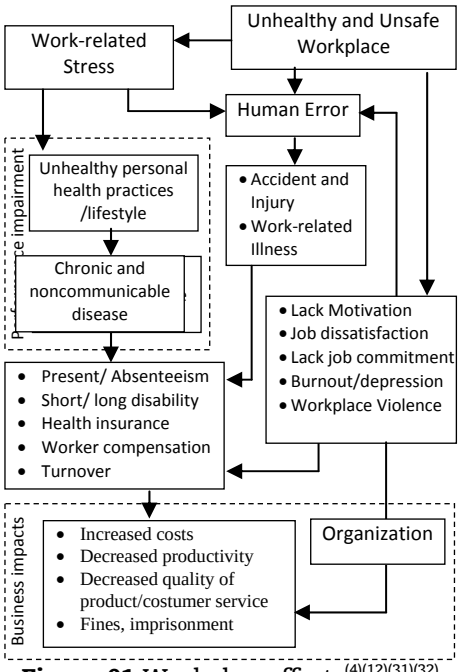


**Figure 01**.Workplaceeffects[(4)(12)(31)(32)]

WHO estimated, out of the two million estimated deathsfrom occupational injuries and illnesses, in 1998approximately 346,000 were due to traumaticworkplace injuries. Protecting health by removing hazards in the workplace, and thus avoiding disease, does notguarantee

that workers will experience a goodhealth. A worker's health is also influencedby his or her personal health practices [4].

Mind and body are one, and what affects one inevitably affects the other. Sometimes non-physical or psychosocial hazards in the workplace can also affect physical safety. In fact, psychosocial hazards can be associated with injuries in either a direct or indirect manner hazardous conditions in the workplace [4][32][31].

## 2. Safety

At first, occupational healthevolved fromthe realization that theworkcancause health problemsoroccupational diseasethat requiresprevention efforts. In theprehistoric era, the Egyptiansalreadyknowthe benefits ofthe veilforrespiratoryprotectionat work incinabarmine. InSwitzerlandthere isa noteon the effectsof sunlighton theworkers atthe minekingSolomon. Ramazini, wrote abook called A Diatribeon Diseases of Workersthat discuss diseases that arise among the workers[22][32].Hence as industrial, technology and information vastly increase,ILO and WHO are collaborate agoal to help prevent, monitor and controloccupational health and safety, as a national and worldwide concern[4].

In Indonesia, Menteri Tenaga Kerja Republik Indonesiais the national decision maker in occupational health and safety(OHS) regulation, with a visionfor Safety Culture Indonesia in 2015. Some regulation examples of worker's OHSrights are[17][22][31]: UUD 1945 Pasal 27 ayat 2, every person have a right to have a job and live a good life; UU No. 1 Tahun 1970, concerning OH Sresponsibility of worker, employer and safety auditor; and UU No.13 Tahun 2003 Pasal 4c, employer must cover work protections to aids worker's wellbeing.

Safety on public health

Public health had developed a tool kit of ways to deal with injuries and diseases.The most important of these tools is epidemiologystudies of determinants, distribution, and frequency of disease.This tool can be used as a way to look at the value of injury and illness and to determine how many units of whatever a company produces are required to pay for a workplace injury [13].

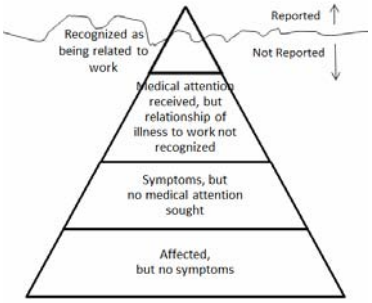


**Figure 02.** Occupational Disease Iceberg[23]

Many companies miss the distinction between mere compliance to the requirements of safety and health standards, and actively working on preventing problems[13]. A standard typically grows out of a workplace problem: a set of injuries, illnesses, or fatalities; and some of events that gain attention nationally via the media, may start its rulemaking process. Therefore, it is important to have a regulation that can protect workers, even though the process of rulemaking seems to take forever[13].

## 3. Ergonomics

Ergonomics is a multidiscipline activity toward collecting information about human capacity and capability, and use it to design task, product, workplace and tools [18]. Since the early days of the discipline, organizational design and management factors have sometimes been considered in ergonomic analysis and design, but it was not until the beginning of the 1980s that the area began to receive formal recognition as a distinct sub discipline of ergonomics[16][32].

Ergonomics was born utilizingother basic studies about human; for example anatomy, psychology, physiology, orthopedic, health, and sociology; then rapidly grow and broaden[16][18]. There are some approaches to ergonomics: human-machine or hardware ergonomics, human-interface or cognitive ergonomics, human-environment or environmental ergonomics, and human-job or work design ergonomics. These first four approach constitute as micro-ergonomics cause dealing with

individual/smaller system;and the holistic human-organizationalapproach ergonomic is macroergonomics[13][14][15]. By implementation of ergonomics, reductions of 60 - 90% or more in work-related musculoskeletal disorders, accidents, injuries, and scrap rates have been impressive productivity improvements[16].

## 4. Macroergonomics

Macroergonomics formally identified by HalHendrickin 1986, to ensure that the overall work system design is compatible with organization characteristics, a sociotechnical system [20][21][24], can adapt to technology and environment transformation.Designing effective and optimal work systems using a macro ergonomics approach can lead to benefits that are recognized throughout the organization, and incorporate a systems approach to understanding the organization[14][15].

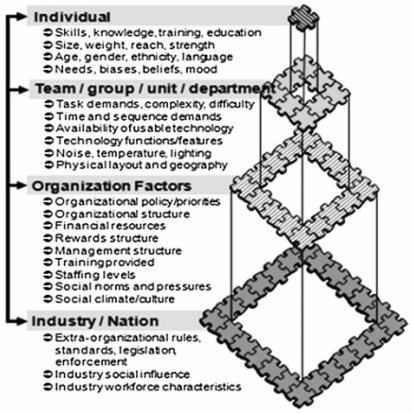


**Figure 03.**Hierarchial model of socio-technical system [20]

In Hendrick[16] there are 16 macro ergonomics effective and commonly use methods presents. Some of the methods can be used to aid the others. For example interview and survey methods [26][6], they can help identifying and gaining insight into problem. The focus group [26] brings people from a particular work system together, to be interviewed, then reveal specific kinds of macroergonomics intervention that might be effective in either redesigning the work system or implementing the intervention. Participatory ergonomics [2] adaptation of participatory management was developed for both micro and macroergonomics interventions.

There two methods can be used for the purpose of assessing the structure of work systems in terms of their compatibility with unique sociotechnical characteristics [14][15][16][18].MacroergonomicsAnalysis of Structure [11][18]empirically combine analytical model of work system's technology, personnel subsystem, and the external environment as the key characteristics to be evaluated; and Macroergonomics Analysis and Design[15] clearly describes implementation of macroergonomics. The main value of MEAD is its ten-step process for evaluating work-system processes[10][18]:(a) observe,(b) type ofsystemandperformance analysis, (c) analysis ofthetechnical work, (d) identifying datavariance, (e) matrix analysisof variance, (f) controlsthe varianceandanalysis ofthe role, (g) the designorganizations, joint, andfunctions,(h) analysis ofthe perception ofresponsibility, (i) the system design, supportandinterface,and(j) the implementation, iteration, improvement.

## 5. Integrated Conceptual Model

Murphy et al [25] introduced a model with aim designing a methodology that extends the construct of safety climate beyond the safety climate scores in order to explore the organizational context relating to those scores using a sociotechnical systems (STS) approach; and the concept of mesoergonomics is one proposed way to tie it all together.Since STS are viewed as dynamic, open, with permeable boundaries, and continually evolving in response to multiple internal and external influences. Context is also important in macroergonomics toallow the examination of what specifically can cause accidents and injuries that occur as a result ofthe interface between workers and their environments, whereas safety climate assesses the overall perception of workers as they interact with theirwork environments. This Murphy [25] model can be used to determine influences of organizational performance and safety outcomes within a work system. If a work system is poorly designed and subsystems are

misaligned, safety climate will be negatively impacted.

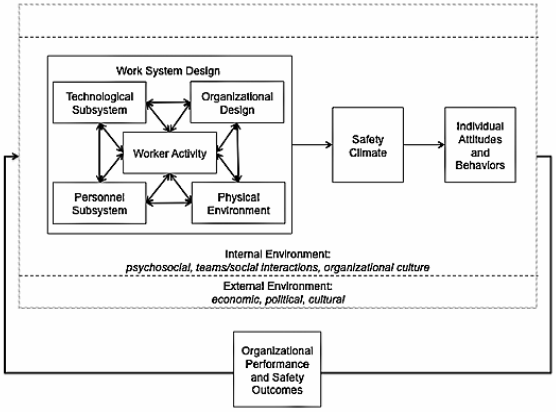


**Figure 04.**A conceptual model of safety[25]

In recent years, a number of research and practice-oriented approaches towards systems design and safety have adopted an explicitly sociotechnical perspective. Kleiner et al [21] approached the issue from the three sociotechnical perspectives with which researchers are most experienced: humansystems integration, macroergonomics and safety climate; to examine sociotechnical attributes of safe and unsafe systems. The need for an increased understanding of the factors that underlie and promote safety within sociotechnical systems has significantly grown as a direct result of the accelerating complexity of work environments. Some of the reasons are [23][21]: increased system complexity and interconnectedness, rapid pace of technological change, and changing nature of accidents.

Workplace safety is a persistent, international concern, and not only the absence of work-related injury [7][30].Interest in the sociotechnical systems approach to workplace safety reflects a growing belief that many dimensions of safety are emergent properties of such systems[7][21][30].Carayon et al [7] describe two fundamental problems with the current research paradigm in workplace safety: narrow identification of an injury event as a local failure in a system and limited focus on exposure of the individual worker to workplacehazards.The proposed Carayon[7] sociotechnical system model for workplace safety integrates the work system model of Smith and Carayon[6][7].

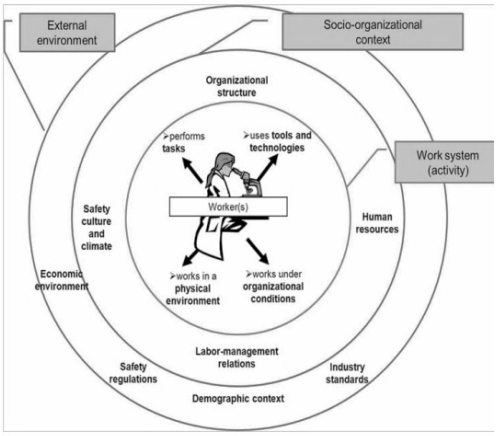


**Figure 05.**Model of sociotechnical system for workplace safety[7]

Complex systems can be modeled as a hierarchy of levels of organization, each more complex than its level before them[4][7]. The innermost layer is labeled the work system and describes the local context in which work activities are performed. The second layer, termed the social-organizational context, refers to organizational culture and structure within the company. The outer layer represents the social, economic, legal and political environment[7][25].

One of an effective health and safety programs is education, with involvement of community members and workers. Prioritizing educational needs not only make learning active, but they also value workers and community residents knowledge and experience; whose the ones most familiar with their jobs, homes,and communities. And also, participatory broaden the objectives of education to give workers and community residents the skills, support, context, framework, and strategic planning practice necessary for them to identify hazards and take action to improve health, safety, and environmental conditions[1][17][23][30].

No one would disagree that work, health and community are related. The WHO's model for creating healthy workplaces is intended to provide guidance for what a workplace can do, when workers and their representatives and the employer work together in a collaborative manner. But to make an effective program, should contain at least two points of reference to

ensure successful of the ergonomic–safety terrain[1][4][17][30][33]: management-leadership commitment and worker involvement.

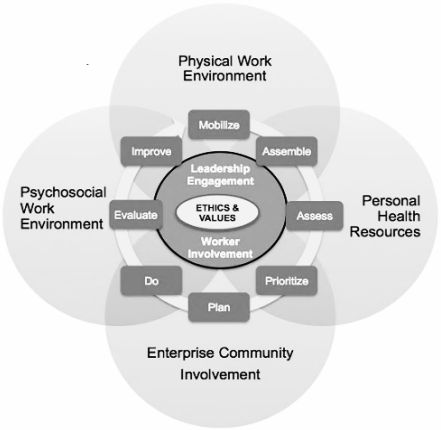


**Figure 06.**WHO Healthy Workplace Model[4]

Governments, national and regional laws and standards, civil society, market conditions, and primary health care systems all have a tremendous impact, for better or for worse, on the workplace, and on what can be achieved by the workplace parties on their own. These interrelationships are complex [4][30]. The broader work and occupational demographic context influences individual enterprises, their organizational culture and the specific system interfaces [7].

## D. Conclusion

There is an urgent need to develop anintegrated sociotechnical systems approach to workplace safety that include broaden organizational support in safety; for the worker, employer and the community. This paper uses Murphy et al. [25], Karsh et al. [20], Kleiner, et al [21], Burton [4] and Carayon et al. [7] approach to designs an entire system to accommodate human performance capability in all its aspects, and to provide solutions to solve the problems mentioned by conducting a literature review and create a conceptual framework.

Many macroergonomics studies have been conducted to find the suitable method and approach to solve the industrial problems which are more complex with uncertainties [33].The next significant step is toexplore this conceptual model and develop systematical approach as Jupriyanto, et al[19], Gadesiwatiand Yassierli[10], and some other more implementation of macroergonomics in Indonesia, as challenges to the field of occupational health and safety, mostly in ergonomics, to take care.

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# IMPACT OF SOCIOECONOMICS DISPARITIES ON CARDIOVASCULAR DISEASES IN THAI POPULATION: THE NATIONAL SOCIOECONOMICS STUDY

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**Abstract**

Cardiovascular diseases (CVDs) was one of the three leading cause of death in Thai population. Whether socioeconomics (SES) determinates are associated with CVDs is unclear. This study aimed to determine the association between socioeconomics factors and CVDs prevalence.

The study used the data form the NationalSocioeconomics Survey that was a cross-sectional study conducted by the National Statistical Office in 2012 The 16,905 sampleswere multi stages randomly selectedfrom all 77 provinces in Thailand to response to a structure questionnaire. The association between SES and CVDs was modeling by multiple logistic regression with controlling the covariates.

Most of the samples were female (53.21%) with the average age of 44.38 (S.D.=18.16) years old. The prevalence of CVDs was 10.64% (95% CI: 0.10% To 0.11%.).The result of multivariate analysis indicated that, SES that were risk factors of CVDs were female ($OR_{adj}$=1.59, 95% CI=1.36 to 1.85), aged ≥ 62 years old ($OR_{adj}$=83.53, 95% CI=38.25 to 182.44) and were the government officer/state enterprise ($OR_{adj}$=1.43, 95% CI=1.04 to 2.00). On the other hand the SES that were protective factors of CVDs were living in non-municipalities area($OR_{adj}$=0.75;95%CI=0.63 to 0.88; p-value=0.001), had higher education($OR_{adj}$=0.51; 95% CI=0.35 to 0.75; p-value=0.001), and living in the Northeast region($OR_{adj}$= 0.54, 95% CI=0.41 to 0.71; p-value<0.001).

SES disparities had influences on CVDs prevalence. The vulnerable groups were female, elderly, government, state enterprise officers, low education, urban residents and specific regions.

**Keywords:** Cardiovascular diseases, socioeconomic, disparities, national survey, impact Thailand

## A. Introduction

From the report of World Health Organization (WHO), each year 17.5 million people die from CVDs and it was 31% of all deaths worldwide. More than 75 % of CVDs death was occur in low – income and middle – income country. Thailand is the one country in this group, we also facing with the high death rate because of CVDs. It is the one of five leading causes of death in Thai population, in 2013 there were 54,530 death (84.38 per 100,000 population) from CVDs (number from Bureau of Policy and Strategy, Office of Permanent Secretary). The government had to allocate budget of 10% or more for treatment and do the health promotion every year (number from Bureau of the Budget, Prime minister's Office). Although, Thai researchers have conducted a lot of research concerning CVDs, there are mainly focuses on the relationship between health behavior and CVDs. Only a few research that explore their association with socioeconomic status. This study was conducted using the nationwide population database of Thailand.

**B. Method**

This study examined the relationship between the socioeconomic status and CVDs using the data set of a cross-sectional study conducted by the National Statistical Office (NSO). A Stratified Two–stage Sampling was adopted for the survey. Provinces were considered to be constituted strata. There were altogether 76 strata; each stratum was divided into two parts according to the type of local administration, namely, municipal areas, and non-municipal areas. Next step was selection of primary sampling units. The sample selection of blocks/villages was performed separately and independently in each part by using probability proportional to the total number of households in that block or village. The last step of sampling was selection of secondary sampling units. In this stage, private households were the ultimate sampling units. Households in every sample block and village were listed to serve as the sampling frame then the set of households was rearranged by size of household (classified by number of household members) and type of economic household (determined on the basis of the occupational type which produces the highest income in the household). Finally, private sampled households were selected by using the systematic method in each type of local administration.

Data was analyzed by using STATA (Version 13, Stata Corporation, and College Station TX). Bivariate analysis was performed to explore the crude relationship of one individual independent with the outcome variable without considering the effect from other variables. The independent variables from crude analysis that have a p-value $\leq 0.25$ were included in the multivariate model by using multiple logistic regressions to explore the association between cardiovascular disease (CVDs) that were presented with adjusted OR and 95% confident interval. The best modeling was constructed using the backward elimination that excluded the variable that had p-value $\geq 0.05$ until cannot exclude any variables. This model was used to determine the association between the factors and CVDs.

**C. Result and discussion**

**Majority the respondents were female**

(53.21%). Age variable was categorized in groups with the range of 15 years that were 15-30 years old (26.23%), 31-46 years old (28.45%), 47-62 years old (27.97%) > 62 years old (17.34%). Most of the samples were married (62.07%), lived in the non-municipalities area (56.39%). Almost half finished primary education (49.79%). The highest proportion was from the Northeast of Thailand (29.69%). More than half of population said that they have no current liabilities 75.86% and most of them have a career as an agriculturist or fisherman 37.55%.

The result form bivariate analysis indicated that female ($OR_{adj}$ = 1.8, 95% CI = 1.59 to 1.95, p-value<0.001), people who were older than 62 years old ($OR_{adj}$ = 136.8, 95% CI = 81.92 to 228.49, p-value<0.001), had widow status ($OR_{adj}$= 14.7, 95% CI = 11.87 to 18.29, p-value<0.001), lived in North ($OR_{adj}$ = 1.2, 95 % CI = 1.07 to 1.43, p-value<0.001) and working as personnel/employee in private sector ($OR_{adj}$= 4.5, 95% CI = 0.38 to 0.56, p-value<0.001) had higher oods of having CVDs. High education ($OR_{adj}$ = 0.2, 95% CI = 0.15 to 0.22, p-value<0.001), lived in non-municipalities area ($OR_{adj}$ = 0.8, 95% CI = 0.70 to 0.84, p3value<0.001), live in the Northeast of Thailand ($OR_{adj}$ = 0.5, 95% CI = 0.42 to 0.57, p-value<0.001) general contractors/labor ($OR_{adj}$ = 0.5, 95% CI = 0.38 to 0.86, p-value<0.001) were the protective factors.

In the final model of the multivariate analysis, the risk factors of CVDs were female ($OR_{adj}$ = 1.59, 95% CI = 1.36 to 1.85), older than 62 years old ($OR_{adj}$ = 83.53, 95% CI = 38.25 to 182.44) and the government officer/state enterprise ($OR_{adj}$ = 1.43, 95% CI = 1.04 to 2.00) e and occupation. On the other hand the protective factors were living in non-municipalities area ($OR_{adj}$ = 0.75, 95% CI = 0.63 to 0.88; p-value = 0.001, graduated with degree or higher ($OR_{adj}$ = 0.51, 95% CI = 0.35 to 0.75; p-value = 0.001) and living in the Northeast), and ($OR_{adj}$ = 0.54, 95% CI = 0.41 to 0.71; p-value < 0.001).

From the multivariate analysis the highest magnitude of association with CVDs was age. Getting older, people organ and function are generally deteriorate. A previous study in America indicated that the first heart attack is happen in the male with average age 64.7 years and female is 72.2 years and the incidence is greatly increase in the 60 – 79 age group (1). This study also found that compared with males, females had higher risk. The study from Saudi Arabia showed that 38% of boys and 52.7% of girls spent 3 hours a day in front of the television, 25.7% of males and 42.9% of female didn't have any physical exercise (2). For the developed country male and female had almost the same CVDs risk of death risk (3). In America one in three women die from having cardiovascular disease that equal to 1 person per minute (4) and the relative risk and event rate of CVDs were increased in female more than male in every age group (5). From the traditional risk factor female were more likely to have the effect from CVDs than male and there were some female-specific risk factor that can found during the pregnancy period (6).

Even though females had a higher risk of having CVDs but the mortality was higher in men than males when adjusted for age (7). Marital status showed a significantly role in the bivariate analysis but there was no significant role in multivariate analysis. The empirical study in US showed that married status had association with CVDs because it was associated with the increasing of BMI among those who were married (8). In japan people who lived alone were more likely to drinking when compare with who were with others as well as the social isolation which can cause depression that is the risk factor for many disease as well as CVDs (9). Married women seem to have lower risk than women who divorced or had widowed status in term of good economic status and psychosocial resources especially for women who were not remarry, this group faced with the worse chronic conditions such as CVDs (10). Higher education level is the protective factor for people who finished high school or higher decreased the chance from having CVDs by when compared with the group that had only primary education or lower. Education variable played the significant role, education is the factor that can improve socioeconomic status that influencing health status of population (11). It was statistical significantly associated with CVDs prevalence (12), people who had low education will have higher risk of having CVDs more than person who has higher education level. The more educational level the more decreasing risk factor with 13% (13) or we know as the protective factor. Education can influence long term health due to have more preventive knowledge, healthy diet, healthy behavior (14) and high educate people were more likely to have more effective communication with the health personnel about health information exchange and proactive in searching for health information (15).

Different educational level is mean different job and different income level but income inequality was not a direct effect of cardiovascular disease mortality. For the occupation, the risk group were people who work as a government officer/state enterprise and production in both craft and industry but for the personnel/employee in private sector and general contractors/labor were the protective factors which decreasing the chance from having CVDs. In contrast there were some previous studies indicated that the prevalence of CVDs were higher in the labor group. The study from Singapore showed the relationship between people who working as the professional driver and CVDs due to the long working hours, traffic jam and low physical activities which had higher risk when compared with other occupations (16). The result from the study in Spanish workers showed the highest prevalence of cardiovascular risks (CVRs) were in the Agriculture and Construction sectors whereas the lowest prevalence was in the industrial workers because in Spain the blue-collar had higher BMI than the white-collar occupation groups as well as the CVRs prevalence (17).

When we focus on the living area people who lived in non-municipalities area (non-municipalities area mean the area in the sub-

rural or rural which is less developed than municipalities' area) is the protective factor that can decrease the risk from CVDs. People who lived in the urban area were more likely to have a higher risk than people who lived in the rural area, since they had different lifestyles and different exposures. The chances of having CVDs in low and middle income countries were lower than those in high income countries. However, the mortality rate of CVDs was higher in low and middle income countries. This might be happen due to the management and treatment that was ineffective (18), **(**19**).** For the major modifiable factors (such as hypertension, smoking, diabetes mellitus and excessive alcohol intake) of cardiovascular disease (CVDs) in adult population were very commonly found in semi-urban area (20). In the boarder view of the region when compared with Bangkok and boundary provinces, people in the North had higher risk, whereas living in the Northeast region had lower risks. This might be the contribution of economic status and lifestyle.

**D. Conclusion**

Gender (female) and age (older than 62 yrs.) were non-modifying risk factors of CVDs. Concerning modifying factor , working in government officer/ state enterprise was CVDs risk factors whereas lived in non- municipality areas, in the Northeast, had high educational attainment were protective factors of CVDs.

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# KNOWLEDGE OF TODDLER'S MOTHER ON REPRODUCTIVE HEALTH IN MIJEN DISTRICT OF SEMARANG CITY

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**Abstract**

Reproductive health problem is not problem faced by adolescent only, but also faced by children. It can be seen by increasing number of sexual abuse among children in 2014 the cases were 40.47% by total. Children cannot be overcome the problem by themselves but needs the role of parents. The aimed of the study was to assessing the knowledge of toddler's mother on reproductive health.

The study was observational study with cross sectional approach. Respondents of the study were total toddler's mother in Mijen district. Data has been collected by interview with questionnaire instrument and analyzed by descriptive statistic test.

Result showed that age of the respondents majority were 35 years old. The education of respondent was 40% had finished primary school. They accessed information of reproductive health by television. Most of respondent has two children, and only 20% of respondents do teach their children about reproductive health. Half of the respondents have good knowledge of reproductive health. All of them agreed that children should properly dresses in any situation to minimize sexual abuse intention from others.

The study concluded that still needed massive promotion of parents to teach their children about reproductive health. It can be benefit to the children to avoid child abuse. Children would able to keep their self save.

**Keywords:** reproductive health, knowledge, child abuse

## A. Introduction

Reproductive health problem is the problem of all ages. In 2014, data showed that sexual abuse among children are 40.47% from all cases of sexual abuse. While, many of sexual abuse has been done by closed family and school environments. Most of child sexual abuse has been happening for long time, and just realized by parents when the children is not open to the environment. The actor of sexual abuses in children is variation, from closes family such as uncle, step father, and grandfather.

In other hand, sexuality still taboo in society reminds that society feel uncomfortable to talk about sexuality. When the children asked about sexuality to the family, parents will have no responds for the question. This is caused by knowledge among parents are still low that affected children not get knowledge about sexuality. The unknown of children will lead to the negative effect which children will try to search information about sexuality by them self and the sources is not the right one. All of that lead to sexual abuse among children.[1]

Majority of sexual abuse victim is not realized that they were faces sexual abuse. The unknown of organs function can be prevented by acknowledge parents and teach the children about sexuality in early ages.[2]

Sexuality education is education related to sex, biology, sexual orientation, socio culture value, and behavior. Sexual education is right of each child, right to access health services and reproduction health, freedom of thinking and decided on reproductive health. Myth in community is still common, such as talk about sexual reproduction is taboo.[2]

## B. Method

Method of this research was descriptive with cross sectional approach. Respondents were cadres in Polaman district. Data has been

collected by questionnaire and analyzed by chi square test.

**C. Result and discussion**

Judging from age, the respondents have a varied age is 21 years from the youngest to the oldest 42 years old. Most of the mothers in the village Polaman 35 year old were 20% of the total number of respondents. When seen from above the age distribution, age of mothers belong to the productive age which have the ability to access information that is deeper and has the ability to care for the children.

Based from accessed of information, the majority of mothers accessing information from television that was 80%. Only 5% of mothers accessed news paper. This because the village Polaman where the newspaper has not become a major requirement in obtaining information. Based on media access in Australia, suggests that TV advertising impressions accessible to 100% by housewives at 6 am to midnight. This demonstrates the high access television media by housewives.

Judging from the level of education of the respondents, mostly only primary school was 40%. There were only 5% of mothers who completed undergraduate education up. Based on Abdul Malik research, showed that the educational background of a person affects the ability to teach. As mothers in the village Polaman, the higher education will be completed more likely to provide reproductive health education mother to her child. It can be said that the provision of reproductive health education in village Polaman still low because of the relationship with the educational level of mothers.

Most mothers do not work the formal sector, which amounted to 80% of mothers just as a housewife. This is an opportunity where the housewives have more time with their children making it possible for mothers to provide reproductive health education from an early age in children. However, it is still constrained because housewives still have minimal knowledge about reproductive health, as shown by the average value prior to learning the mapping method only reached 11.90. Most mothers find it taboo to talk about reproductive health to their children because they still assume that reproductive health is to talk about sex, and they worry if their children are taught early sex will do diverge later as adults. Seeing the number of children, most have two children ages do not differ much.[3-4]

**D. Conclusion**

The study concluded that still needed massive promotion of parents to teach their children about reproductive health. It can be benefit to the children to avoid child abuse. Children would able to keep their self save.

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# THE CORRELATION BETWEEN AGE, TENURE, AND HEIGHT WITH MUSCULOSKELETAL DISORDERS COMPLAINT (OBSERVATIONAL STUDY AMONG BRICK CRAFTSMAN IN LOK BUNTAR VILLAGE SUNGAI TABUK DISTRICT)

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**Abstract**

Based on research by the Center for Ecological Health Research and Development Department of Health in 2004 involving 800 people from 8 informal sector in Indonesia, brick craftsman are a group of workers who suffered most musculoskeletal disorders (MSDS) complaints. This research aims to determine correlation between age, tenure, and height with MSDS complaints among brick craftsman in Lok Buntar Village Sungai Tabuk District.

This is an observational analytic research with cross sectional approach. The population was the entire of brick craftsman in Lok Buntar Village with 37 samples. The research instrument was a sheet, microtoise and Nordic Body Map check list. The statistical test had been used chi-square test ($\alpha = 0.05$).

The majority of respondents in aged $\geq$ 35 years (54.05 %) with work duration $\geq$ 8 years (56.76 %) and height $<$ 151.3 cm (67.57%). The results showed that there is a significant correlation between age with MSDS complaints with p-value of 0.001 and OR was 17,500, there is significant correlation between tenure with MSDS complaints with p-value 0.000 and OR was 26,000, but there is no significant correlation between height with MSDS complaints by p-value 0.353.

There is significant correlation between age and tenure with MSDS complaint, but there is no significant correlation between height with MSDS complaint. Therefore, brick craftsman is suggested to create an ergonomic work stations.

**Keywords:** musculoskeletal disorders complaints, age, tenure, height, brick craftsman

## A. Introduction

Musculoskeletal disorders (MSDS) complaints are complaint in the skeletal muscles that felt by someone ranging from mild to very ill (1). Based on data from EODS (Eurostat Figures on Recognized Occupational Diseases) reported in Europe in 2005, MSDS complaint ranks first as an occupational disease. A survey was also conducted on workers in Europe stated that 24.7% of workers complain of back pain, muscle aches 22.8% and 45.5% complained of pain and fatigue (3).

Based on research by the Center for Ecological Health Research and Development Department of Health in 2004 involving 800 people from 8 informal sector in Indonesia, showed MSDS complaints affects about 31.6% of oil palm farmers in Riau, 21% puppet artisans in Yogyakarta, 18% onyx artisans in West Java, 16.4% of gold miners in West Kalimantan, 14.9% in Bogor shoemaker, and 8% in Central Java brass artisans. Brick craftsman in Lampung and Jakarta are fishing in a group of workers who suffered most MSDS complaints, each about

76.7% and 41.6%. All average workers complain of pain in the back, shoulders, and wrists (4).

One of the brick-making site that is popular in South Kalimantan is Lok Buntar Village Sungai Tabuk District. Based on preliminary surveys and information from Secretary of Sungai Tabuk District, Sungai Tabuk District has Small and Medium Enterprises (UKM) that produce more bricks than other villages in the district, such as Abumbun Jaya, Gudang Tengah, and Gudang Hirang. Lok Buntar village has 82 brick-making home-based business and printer 120 bricks. Brick making in Lok Buntar village is work done by women workers and the process is done manually, from the printing process until the drying process. When the process works, bending the body, the position of the head is bowed, sat bending, and lifting weights repeatedly without an ergonomic position. This conditions can increase the risk of MSDS complaints among the workers.

There are 3 factors as causes of MSDS complaints that are individual factors, occupational factors and environmental factors. Previous research on factors associated with MSDS complaints among furniture workers in Benda District of Tangerang City in 2011 states that there is a correlation between individual factors with MSDS complaints. Individual factors that influence the risk of MSDS complaints namely age, tenure and height (2.5).

MSDS complaints usually experienced at the age of 35 years and the level of complaints will increase with age, tenure for 8 years or more at risk of developing MSDS complaints compared tenure <8 years, in terms of height, the body generally frequent high had MSDS complaints (5). Therefore, researchers interested in conducting research to determine the correlation of age, tenure and height with MSDS complaints among brick craftsman in Lok Buntar village Sungai Tabuk District.

## B. Method

This is an observational analytic study with cross-sectional method. Research sample or respondents in this study using purposive sampling technique as many as 37 brick craftsman with the inclusion criteria.

The data were obtained by filling a questionnaire to find out the identity of respondents, age and height of the respondents, sheets Nordic Body Map (NBM), which has been standardized to measure musculoskeletal disorders complaints and Visual Analogue Scale (VAS) to determine the subjective pain scale a little sore, sick and very ill at the brick craftsman.

Independent variable namely age, tenure, and height. Dependent variable is MSDS complaints. Data were analyzed using univariate analysis to look at the frequency distribution of each variable separately, both independent variables are age, tenure, height, and the dependent variable is the MSDS complaint. Bivariate analysis was used to analyze the correlation between ages, tenure, height with MSDS complaints using chi square test with a confidence level of 95%.

## C. Result and discussion

Lok Buntar Village located in Sungai Tabuk District South Kalimantan Province. This area is known for its small and medium-sized industrial area because there are a lot of brick-making home-based business.

The printing process begins of making bricks raw materials and raw materials put into place printing. After completion of the printing process, was appointed to the location of brick drying to dry. After drying or oven burnt bricks that reduced water content and the bricks become stronger. Work scorer brick work is done in an abnormal posture like that too bent backs, some tasks in the brick molding is done in a static position, and conducted several times repeated movement in a long time.

The activity is carried bricks printer raises the risk of MSDS complaints. Individual factors such as age, tenure and height is one of the few risk factors that influence the occurrence of MSDS complaints. Person's age affects bone degeneration, the older person has higher risk of decreased elasticity of the muscles and bones. MSDS complaints is a chronic disease that

takes a long time to develop, so the longer it works, the greater the risk for MSDS complaints. At higher body generally often experience back pain due to due to the equilibrium condition in order to receive the load structure, good weight of the body as well as other additional loads (5).

**Univariate**

In this study, the focus of the study were age, tenure, the height and MSDS complaints among bricks printer. Preview age, tenure, height and MSDS complaints of respondents as follows.

**1. Age of respondents**

Based on the results of the study to 37 respondents obtained the frequency distribution of the age of the respondents is presented in Table 1.

Table 1. Distribution and Frequency of respondent's age

| No. | Age | Number | Percentage(%) |
|---|---|---|---|
| 1 | <35 years | 17 | 45.95 |
| 2 | ≥ 35 years | 20 | 54.05 |
| Total | | 37 | 100 |

Sources: Primary Data

Table 1 shows the distribution and frequency of respondent's age were chosen as samples in this study. Average age of respondents is 33.87 years old. As many as 17 (45.94%) of respondents ages <35 years old and categorized as no-risk aged group.

**2. Tenure of respondents**

Based on the results of the study to 37 respondents obtained the frequency distribution of the respondents tenure is presented in Table 2.

Table 2. Distribution and Frequency of respondent's tenure

| No. | Tenure | Number | Percentage(%) |
|---|---|---|---|
| 1 | <8 years | 16 | 43.24 |
| 2 | ≥ 8 years | 21 | 56.76 |
| Total | | 37 | 100 |

Table 2 shows the distribution and frequency of respondent's tenure were selected as samples in this study. On average, respondents had 10.62 years of tenure. As many as 16 (43.24%) of respondents have a tenure < 8 years and categorized as a group are not at risk.

**3. Height of respondents**

Based on the results of the study to 37 respondents obtained frequency distribution of heights is presented in Table 3.

Table 3. Distribution and Frequency of respondent's height

| No. | Height | Number | Percentage (%) |
|---|---|---|---|
| 1 | <151 cm | 25 | 67.57 |
| 2 | ≥151.3 cm | 12 | 32.43 |
| Total | | 37 | 100 |

Table 3 shows the distribution and frequency of respondent's height were selected as samples in this study. On average, respondents had height 149.42 cm. As many as 25 (67.57%) of respondents had a height <151 cm and categorized as a group are not at risk.

**4. Musculoskeletal Disorders Complaint**

Based on the results of the study to 37 respondents obtained frequency distribution of musculoskeletal disorders complaints is presented in Table 4.

Table 4. Distribution and Frequency of respondents musculoskeletal disorders complaints

| No. | MSDS Complaints | Number | Percentage(%) |
|---|---|---|---|
| 1 | complaints | 21 | 56.76 |
| 2 | no complaint | 16 | 43.24 |
| Total | | 37 | 100 |

Based on Table 4, it is known that the majority of respondent's worker is impaired by as much as 21 respondents or 56.76%. While respondents were not experiencing as many as

16 complaints musculoskeletal disorder or by 43.24% of respondents.

MSDS complaints experienced by 56.76% of respondents mapped by *Nordic Body Map* to 28 points of the body. Point is an indicator of the body are mapped locations MSDS complaints in this study. The frequency distribution of respondents by the body that feel MSDS complaint can be seen in Figure 1.

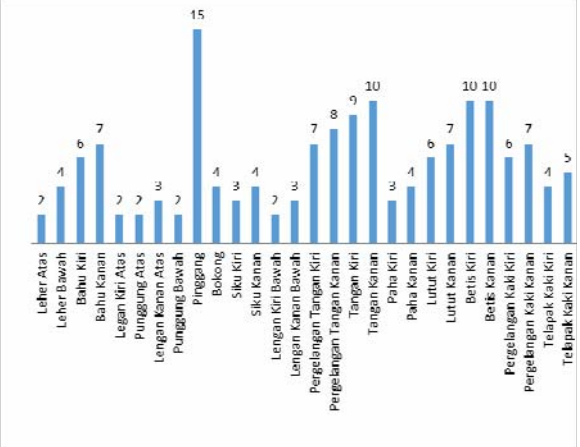


Figure 1. Distribution Frequency MSDS complaints locations

Figure 1 examines that part of body that most complained is waist as many as 71.43% respondents, followed by right shoulder, right arm, left calf, right calf and left hand as many as 47.62% and 42.6% respectively. Respondents who complain of pain waist section has an average age of 40.87 years with an average service life of 15.73 years and an average height of 148.4 cm.

Each job position has different effects on the body. In the brick molding process workers have to adjust the body with the tools and objects that worked. Brick molding activities is work being done on the floor by bending and squatting position so as to cause complaints of pain in the hip, spine or on the knees, if this position is maintained for a long time and constantly lead to serious problems in the muscles and joints. Based on observations, printer bricks in the village of Lok Buntar dominant work by using the right hand so that your right hand is one of the most body point in complaining

Working with a squat position has the advantage, among others, energy consumption and reduced blood circulation purposes. Working with a squatting position also has positive factors that can prevent workers from arthritis or osteoarthritis. But the squat stance for too long can cause the spine to curve and stress on leg muscles, knees and lumbar region. Symptoms that may occur are fatigue, pain, restless or edgy (15).

This is consistent with data reported by the Center for Ecological Health Research and Development Department of Health in 2004 involving 800 people from the informal sector in Indonesia 8 which shows complaints musculoskeletal disorder affects about 31.6% of oil palm farmers in Riau, 21% artisans puppet skin in Yogyakarta, 18% artisans *onyx* in West Java, 16.4% of gold miners in West Kalimantan, 14.9% in Bogor shoemaker, and 8% in Central Java brass artisans. Brick craftsman in Lampung and Jakarta are fishing in a group of workers who suffered most MSDS complaints, each about 76.7% and 41.6%. All average workers complain of pain in the back, shoulders, and wrists (4).

In addition to mapping points of the body that have complaints, based on research results musculoskeletal perceived MSDS complaints by workers printer bricks in Sungai Tabuk Village Lok Buntar District is also divided according to the type of complaint is considered, the level of complaints, time of presentation, and the frequency of complaints. The description of the type of complaint, complaint rates, time of onset of complaints and the frequency of complaints with the following explanation.

**a. Types of complaints**

Type of complaint that most felt by the data above is as much as 100% or the total respondents felt sore. Followed by pain or pain that is felt 76.19% of respondents. While the types of complaints that are not perceived by the respondents during the last seven days is swelling around the body. Aches and pains classified in phase 1 of the 3 stages of severity of complaints musculoskeletal, where complaints arise will usually disappear after a period of

work (in one night) and had no effect on job performance (6,7).

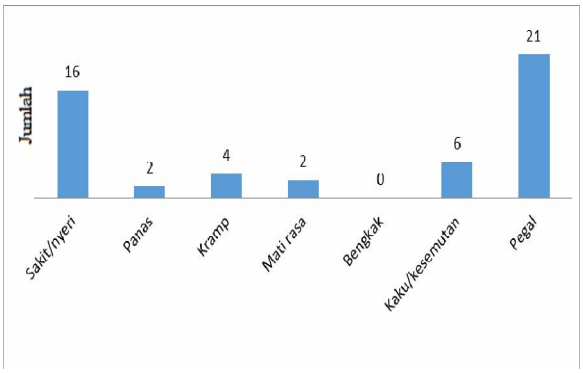


Figure 2. Distribution Frequency MSDS types complaints

**b. The level of complaints**

The rate refers to respondent pain VAS. 61.90% of the 21 respondents felt minor complaints, while the pains felt by 33.30%, and 4.80% of respondents who felt the complaints were very sick. Respondents who experienced a mild complaint median age of 37.31 years to 12.54 tenure life and 147 cm height. Respondents who experienced pain complaint levels had an average age of 45.43 years, with an average tenure of 21.57 years and an average height of 148.29 cm. Respondents to the level of complaints is very ill 61-year-old with tenure of 15 years and 148 cm height.

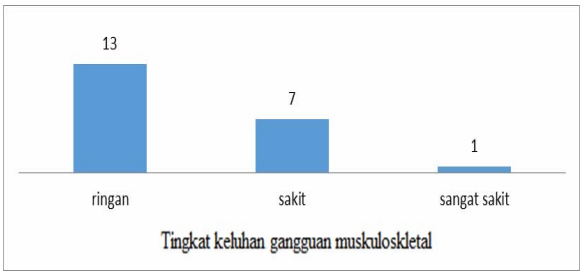


Figure 3. Distribution Frequency MSDS level complaints

**c. Time of symptoms**

Based on this research, it is known that the overall scorer brick workers have complaints at night or while resting. This is because the effects of stress that would arise when your muscle relaxation of the body, when the absence of muscle *exercise* that will arise will be silent inflammation and pain. Based on the interview, respondents analgesic drugs and herbal medicine to reduce pain at night, at work or at the time of the aches and pains that arise when working.

**d. Frequency of complaints**

Frequency of MSDS complaints the respondents perceived more as much as 1-2 times a week for as many as 42, 86% of respondents. MSDS complaints that appear several times in a day experienced by 38.09% of respondents. Frequency of perceived grievances experienced by respondents and 1 times a day experienced by 14.29% of respondents. While the frequency of the complaint to the respondent that appears 3-4 times a week just 4.76 respondents.

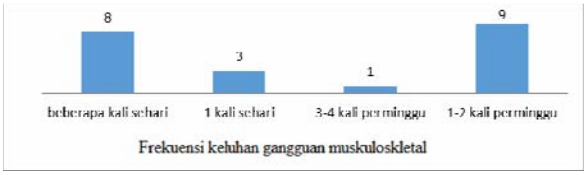


Figure 4. Distribution Frequency MSDS complaints

During the study, the group of respondents who felt the emergence of the complaint several times in one day had an average age of 46.5 years with an average tenure of 17 years and with an average height of 147.63 cm. Respondents who felt the emergence of complaint 1 times in one day had an average age of 40 years with an average service life of 24 years and height 148.33 cm. Respondents who feel complaints 3-4 times a week had an average age of 33 years with an average tenure of 20 years, height 141 cm. While respondents who felt the MSDS complaint 1-2 times a week had an average age of 37.66 years with an average tenure of 11.11 years and an average height of 147.78 cm.

**Bivariate**

**1. The correlation between age and MSDS complaints**

Based on Table 5, there are 6 respondents (16.2%) with age <35 years who had MSDS complaints and as many as 15 respondents (40.5%) with age ≥ 35 years who had MSDS complaints. From the results obtained *chi-square* statistical test *p-value* of 0.001 with a 95% degree of confidence, and it can be concluded that there is a significant correlation between age and MSDS complaints. *Risk* calculation obtained *estimate* of 17.5 means the printer OR brick aged ≥ 35 years 17.5 times more likely to experience MSDS complaints compared with brick scorer aged <35 years.

The results are consistent with research conducted by Mutiah in 2013 which proves that there is a significant correlation between age and MSDS complaints workers wok makers in the village Cepogo Boyolali. Research conducted by Endang to haul loads artisan gold miners in the district of Lebak Cilograng in 2010 also proved that workers aged ≥ 35 years had a risk of 9 times to experience MSDS complaints compared with workers aged <35 years (3.16).

Age causes a decrease in the ability of body tissues (muscles, tendons, joints and ligaments). In line with the increasing age of the bone degeneration will happen, it starts at age 35 and increases at age 40 years or older. According to Zaki in heavy physical activity correlation study with *back pain* in the working age population in Java and Bali mentioning that the peak complaints musculoskeletal disorders in women with age 46 ± 14.1 years. At the age of degeneration in the form of tissue damage, tissue turn into scar tissue, and a reduction in the stability of fluid that causes bone and muscle is reduced and the time a person reaches 60 years of age, average muscle strength decreased to 20% (3,5,17 ).

Basically muscle disorder is one of the common health problems for middle age and older. At the age of muscular strength and endurance began to decline coupled with physical stress factors of work with a high workload situation will increase the risk of MSDS complaints especially in workers aged over 35 years. This result is supported by the conditions in the study is that the majority of workers aged ≥ 35 years, in fact there are two workers aged ≥ 60 years are still forced myself to work as a printer bricks.

Table 5. Statistical analysis of correlation between age and MSDS complaints

| No | Age | MSDS complaints | | Total | *Odd Ratio* (OR) | *p-value* |
|---|---|---|---|---|---|---|
| | | No complaints | There complaints | | | |
| 1 | <35 years (no risk) | 14 (37.8%) | 6 (16.2%) | 20 (54%) | | |
| 2 | ≥ 35 years (risk) | 2 (5.4%) | 15 (40.6%) | 17 (46%) | 17,500 | 0.001 |
| **Total** | | 16 (43.2%) | 21 (56.8%) | 37 (100%) | | |

Source: Primary data

Table 6. Statistical analysis of correlation between tenure and MSDS complaints

| No. | Tenure | MSDS complaints | | Total | *Odd Ratio* (OR) | *p-value* |
|---|---|---|---|---|---|---|
| | | No complaint | There complaints | | | |
| 1 | <8 years (no risk) | 13 (35.1%) | 3 (8.1%) | 16 (43.2%) | | |
| 2 | ≥ 8 years (risk) | 3 (8.1%) | 18 (48.7%) | 17 (56.8%) | 26,000 | 0,000 |
| **Total** | | 16 (43, 2%) | 21 (56, 8%) | 37 (100%) | | |

Source: Primary Data

Table 7. Statistical analysis of correlation between height and MSDS complaints

| No. | Height | MSDS complaints | | Total | *Odd Ratio* (OR) | *p-value* |
|---|---|---|---|---|---|---|
| | | No complaint | There complaints | | | |
| 1 | <151.3 cm (no risk) | 9 (24, 3%) | 16 (43, 3%) | 25 (67, 6%) | | |
| 2 | ≥ 151.3 cm (risk) | 7 (18, 9%) | 5 (13, 5%) | 12 (32, 4%) | 0,402 | 0,353 |
| **Total** | | 16 (43, 2%) | 21 (56, 8%) | 37 (100%) | | |

Source: Primary Data

**2. The correlation between tenure and MSDS complaints**

Based on Table 6, there are 3 respondents (8.1%) with tenure <8 years who had MSDS complaints and as many as 18 respondents (48.7%) with the tenure ≥ 8 years who had MSDS complaints. From the results obtained *chi-square* statistical test *p-value* of 0.000 with a 95% degree of confidence, and it can be concluded that there is a significant correlation between tenure and MSDS complaints. Calculation of *risk estimate* obtained by 26,000 OR printer means a brick with 8-year tenure ≥ 26 times more likely to experience MSDS complaints compared to bricks printer with tenure <8 years.

The results are consistent with research conducted by Zulfiqor in 2010 which proves that there is a correlation between long working lives by tampering complaint musculoskeletal on Fabrication welder at the PT. Caterpillar Indonesia Year 2010. Research conducted by Nurhikmah the furniture trade in the District of Tangerang City museum in 2011 also proves that workers who have tenure ≥ 8 years have 8,929 times the risk for experiencing MSDS complaints compared to workers with tenure <8 years (2.8).

The period of employment is a factor related to the length of one's work. In this regard, the complaint musculoskeletal disorders including chronic disease that requires long time to develop and manifest. The longer the time worked, the greater the risk for MSDS complaints, especially jobs that require great exertion such as printing and lifting bricks. In the process of printing and transporting bricks, the whole body under stress, so that the blood vessels shrink. This situation reduces the flow of blood that carries oxygen and sugar throughout the body, resulting in bone and muscle will feel tired and sore, and the most influential parts of the body at the time of printing and is transporting backbone. Imposition backbone in a long time resulting in permanent narrowing of the disc cavity and also resulted in degeneration of the spine that causes chronic lower back pain. (3.16).

Based on observations at the time of the study, the average worker has been worked into the printer bricks from a young age because of his profession as a printer brick is handed down from the family profession. Not surprisingly, there are some respondents that have been working for 20 to 30 years due to economic demands. In this case, Sungai Tabuk Village Lok Buntar District Local Government is expected to intervene against a brick printing workers. These interventions may include assistance in the form of venture capital, Small and Medium Enterprise Credit (KUKM) to the printer bricks. This is done to provide venture capital for the improvement of quality of life and economic improvement of the standard printer when bricks and expected capital gain, the printer can be changed professions brick and has a more promising job or continue working as a printer of bricks, but the proceeds must be used to buy and create an ergonomic work facilities in order to provide comfort and prevent workplace complaints of occupational diseases and improve labour productivity.

**3. The correlation between height and MSDS complaints**

Based on Table 7 it is known that there are 16 respondents (43.3%) with height <151.3 cm experiencing MSDS complaints and as many as 5 respondents (13.5%) with the height ≥ 151.3 cm experiencing MSDS complaints musculoskeletal. From the test results obtained by *chi-square test p-value* of 0.353 with a 95% degree of confidence, and it can be concluded that there is no significant correlation between height and MSDS complaints.

This study is in line with that made by the states in 2010 Cherry wood height has no significant correlation with MSDS complaints on driving activities expedition team Enseval PT Putera Megatrading Jakarta with *p-value:* 1.000. At higher body generally will experience MSDS complaints in the waist area, but no significant correlation between height with MSDS complaints in this study may be due to respondents with height <151.3 also experiencing MSDS complaints so it can be said respondents with both high-risk and respondents with a body height not risk having

the same risk of experiencing MSDS complaints that may arise due to factors of old age or because of long working lives because of these two risk factors is the dominant factor that causes MSDS complaint (11).

Although the effect is relatively small, height is one key element of a person's size and weight is a factor that can cause skeletal muscle complaints. However, body size is also influenced by other elements, namely body weight as measured by BMI. A person with excess weight will strive to support the weight of the front of the lower back muscles contracting and if this continues in the long term will lead to an emphasis on cushioning the spinal cord. This is the deficiency in this study because it does not measure BMI and height only focuses on bricks printer. It is expected that future studies will look at the correlation between BMI and MSDS complaints among brick workers

## D. Conclusion

The conclusion of this study is the majority of respondents (54.05%) aged over 35 years with an average age of all respondents was 33.87 years. Most of the respondents (56.76%) have a service life of less than 8 years with an average tenure of all respondents was 10.62 years. Most of the respondents (67.57%) have a height of less than 151.3 cm with an average height of all respondents was 149.43 cm. Most of the respondents (56.76%) had MSDS complaints. There is a significant correlation between age and MSDS complaints brick molders in Sungai Tabuk Village Lok Buntar District. There is a significant correlation between tenure and MSDS complaints musculoskeletal brick molders in Sungai Tabuk Village Lok Buntar District. There was no significant correlation between heights with MSDS complaints brick molders in Sungai Tabuk Village Lok Buntar District.

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# THE RELATIONSHIP KNOWLEDGE, ATTITUDE AND ACTIONS OF PARENT ABOUT GROSS MOTOR STIMULATION TO THE ABILITY WALK OF CHILDREN

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**Abstract**

**S**timulation of gross motor skills such as walking becomes important given by parents because it will affect the child's social behavior (social interaction) in the future. Stimulation is given as a form of parenting behavior, and influenced by knowledge, attitude, action about gross motor stimulation. This research attempt to find out the relationship of knowledge, attitudes and actions of parents about gross motor stimulation to the ability walk of children

An observational study with cross sectional design. Method of taking the sample is total population, and sample is all parents (father, mother or grandmother) who have children are in a phase of walking or maximum 2 years. Techniques of statistical tests using Chi-Square with degree of confident of 95%.

Results show that no relationship of knowledge of parents about gross motor stimulation to the ability walk of children (p= 0.865), no relationship of attitudes of parents about gross motor stimulation to the ability walk of children (p=0.747), and no relationship of actions of parents about gross motor stimulation to the ability walk of children (p=0.106).

Statistically concluded that there is a no relationship of knowledge, attitudes and actions of parents about gross motor stimulation to the ability walk of children.

**Keywords**: knowledge, attitude, action, parent, stimulation, skill of walking

## A. Introduction

Gross motor development is development of body movement control with intergation of Central Nervous System (CNS), Peripheral Nervous System (PNS) and big muscles form locomotion movement and posture. Gross motor development was started when embrionic still growing up step by step from rolling phase, prone positioning, sitting, standing and running [(11)]. Research Kuperus [(6)] found out that children with biological risk may catch up cognitive deficiancy by being given stimulation of environment. By that observing, it is considerable to give stimulation for children, specified for the gross motor development [(14)].

Stimulation of environment will be more effective if concern on steps of development. For example, at 7,5 to 8 months children's had steping reflex who steps on the ground. From this situation is the best time for parents to give gross motor stimulation to children because they are can learning how to walk and goal this development is walking ability[(9)]. The result of Clearfield's [(2)] research show that walking ability will integration with children's social interaction.

Parented as stimulant is parenting the first environment to children know. Therefore, parents are urged to comprehend of parenting. Factors which influence of behavior parenting are knowledge about stimulation giving, attitude, and action whose given by parents in daily [(3)].

The observation result on 37 children in Posyandu Makam Haji, Menur 10 exposes that 17 children have not match with gross motor of

milestone, and the other 20 have match with gross motor of milestone. That's make interested for researcher, how the number of children who have not match with gross motor of milestone as many as those who have. Is there relationship of knowledge, attitudes and actions of parents about gross motor stimulation to the ability walk of children.

Walking is skill of gross motor . This skill of gross motor involves big muscles activities and connected to body posture control. When walking, dynamic body posture involves works from sensoric information and propeoseptive, joints and muscles which inform where the body posture located[10]. Aaverage, children able to stand with holding on something at 11,7 months, so that stimulation can be given earlier before they get 11,7 months. Research in United Kingdom about age of walking is 97% children reach walking at 12-14 months with 6 steps without holded[11].

Walk stimulation can be given to strengthening of muscles when walking activities because muscle power is very important to walking. Beside muscle power, balance is the seond factor which supports walk activities. A child must be able to stand on one foot when other foot is swing and to move body weight from one foot to other[10].

Some factors when given stimulation, and one of them is parents environment[8] . Stimulated given to children, parents are influenced by knowledge, attitude and action about giving gross motor stimulation[7]. Knowledge is result of knowing process of a human to something in order to comprehend an object or information. This information can be about giving gross motor skill [12]. Attitude is a view and feeling which are influenced by the past time memories about what have been known and impression to information known [1]. Parents who have been given such information, will create a kind perception towards information[13]. Action is realisation of kowledge process and the gained attitude [4]. In this stage, parents give stimulation to children can be seen of other people. Stimulation is form of traninig to children [7].

**B. Method**

This research applies observational method with Cross Sectional outline. Makam Haji is chosen as location of this research where there are 10 Posyandu (Menur 1 to 10). The research was done during 10 - 26 February 2015. Population in this research is all parents (father, mother and grandmother) who have children are in a phase of walking or maximum 2 years, and there are 66 parents.

Method of sampling in this research is total population with inclusion and exclusion criteria, so that get 60 samples to entry this research. Analysis used in this research is Techniques of statistical tests using Chi-Square and alternative test using Fisher's exact with degree of confident of 95%.

**C. Result and discussion**

**1. Respondent Characteristic**

Respondent who take children to Posyandu have 19-60 years old, with average of age is 34,33. Respondents are dominated by 25-30 years old as many as 30 respondents, who this age is better thinking maturity. The highest education level of this repondent is university or academy graduate and the lowest is elementary level. High school graduate has the most number of this respondent (40%) with 24 repondents, so that good thinking maturity will result better by giving gross motor stimulation. As a note, knowledge itself is not enough because it is also influenced by expreience of family[5]. In characteristic, house wife has the most job owned by the respondents (73,3%) as many as 44 persons.

**2. Relation Analysis**

Based on Chi-Square, it is known that p-value for for knowledge, attitude and action variable are 0.865, 0.747, and 0.106. It gained p-value > 0.05 so that Ho is accepted. Concluded that there is a no relationship of knowledge, attitudes and actions of parents about gross motor stimulation to the ability walk of children.

Statistically, there are no relation between knowledge about giving gross motor stimulation because when good knowledge is not together with awareness attitude, the result will never be

good [5]. Notoatmojo [7], "knowing" behavior has a long process which come in sequence they are awareness, feeling interested, considering, trial and adopt. In adoption stage, somebody's behavior is suited with knowledge, awareness and attitude towards an object, so that habit is constructed. Habit is constructed when knowledge is accompanied by positive awareness towards an object, so that they will result in long term behavior, but when knowledge is not together with awareness, result will only be temporary.

Table 1. Analysis result of the relation of the parental knowledge about giving the rough motoric stimulation towards children's walking ability

| | Children's walking ability | | | | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | Slow | | Normal | | Fast | | | | |
| Knowledge Catagory | (n) | (%) | (n) | (%) | (n) | (%) | (n) | (%) | *p Value* |
| Good | 4 | 11,4 | 22 | 62,9 | 9 | 25,7 | **35** | **100** | 0,865 |
| Poor | 4 | 16 | 15 | 60 | 6 | 24 | **25** | **100** | |
| **Total** | **8** | **13,3** | **37** | **61,7** | **15** | **25** | **60** | **100** | |
| **Attitude Catagory** | | | | | | | | | |
| Good | 4 | 16,7 | 15 | 62,5 | 5 | 20,8 | **24** | **100** | 0,747 |
| Poor | 4 | 11,1 | 22 | 61,1 | 10 | 27,8 | **36** | **100** | |
| **Total** | **8** | **13,3** | **37** | **61,7** | **15** | **25** | **60** | **100** | |
| **Action Catagory** | | | | | | | | | |
| Good | 7 | 20 | 18 | 51,4 | 10 | 28,6 | **35** | **100** | 0,106 |
| Poor | 1 | 4 | 19 | 76 | 5 | 20 | **25** | **100** | |
| **Total** | **8** | **13,3** | **37** | **61,7** | **15** | **25** | **60** | **100** | |

From this research, shown by parent respond when we were asked answer of attitude questioner, there is stiil doubt in giving simulation like shown in picture. Doubtfully respond represents disagreement opinion to give gross motor stimulation to children, so that built perception will influence to trust about gived gross motor stimulation. Purwandari[8] said that, there is a factor which very influencial in giving stimulation, that is intensity. This factor can be reason to no relationship of knowledge, attitudes and actions of parents about gross motor stimulation to the ability walk of children.

From so many respondents, researcher found there are two respondent (one from posyandu 6 and the other is from posyandu 10) who have the relationship of knowledge, attitudes and actions of parents about gross motor stimulation to the ability walk of children. Knowledge, attitude and action about giving gross motor stimulantion from parents is good, and walking children is develop before. But percentation is very low, only 3,33%.

Many factors become base view of no relation in this research as explained previously. Considering that gross motor development is a long term investment which may not be seen in short period of time, because this developmet keeps moving for cognitive maturity and develpoment of children interaction with other people.

## D. Conclusion

Conclude this research is no relationship of knowledge, attitudes and actions of parents about gross motor stimulation to the ability walk of children. This research also contains considerable suggestion for the next research: to enhance parental knowledge about giving gross motor stimulation, there should be a kind of socialization. Availability of quality time by parents, so that researcher will have to conder that factor also. Variation of respondent should be increased since it will influence trust level and research success.

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# OCCUPATIONAL SAFETY AND HEALTH ON TOURISM SECTOR TOWARD ASEAN ECONOMIC COMMUNITY

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**Abstract**

Tourism is one of the important industrial sectors. The tourism sector is an industry that employs many workers and a source of income for the country. The existence of both natural attractions and tourist facilities surround artificial and is a pleasant place to visit. Leisure visitors in tourist areas should also be accompanied by protection of the safety and health while in tourist areas. This study aimed to analyze the implementation of work safety in the tourism sector. This reserach using critical analyze methode.

The results showed that of some of the focus of research, there are some things that still need improvement, including the lack of a comprehensive policy between the government concerned, the tourism offices, labor offices and health offices concerning safety in the tourism sector, safety facilities such as portable fire distinguisher on public facility are still lacking. There has been no regular monitoring of related parties.

Advice that can be given in this study was made a few policy between tourism offices, labor offices and health offices authorities to implement health and safety in the tourism sector and be monitored regularly

**Keyword:** safety and health on tourism

## A. Introduction

Health and Safety is the certainty that the working conditions, work processes, equipment and work environment as well as healthy and safe worker for doing the job, so avoid workplace accidents and occupational diseases. Safety scope of activities covering all areas, both formal and informal sector. Safety purpose is to protect workers and industrial assets from losses from workplace accidents and occupational diseases. With the implementation of safety is expected to occupational risks can be controlled and can provide economic benefits and high productivity.

Tourism is one of the industrial sectors that offer major product in the form of services. Industrial tourism sector is not free from the risk of danger of accidents. Occupational hazards contained in the tourism sector comes from the work process, working equipment, and the behavior of the tourism sector workers. The number of foreign tourist visits to Indonesia in 2014 reached 9.44 million visits. This figure is up 7.19 percent compared with visits during 2013, amounting to 8.80 million visits (CBS, 2014). International arrivals rose as much as 5 percent in Europe, Asia and the Pacific, and the Middle East, as well as 4 percent in the United states, according to figures released by the World Tourism Agency of the United Nations (UNWTO). Safety regulations in No. 1 of 1970 states that every workplace shall enjoy the protection of health and safety at work. In addition to Law No. 10 of 2009 on Tourism said that tourism employers have an obligation to provide comfort, hospitality, security protection and safety of tourists tourism and provide protection to high-risk activities.

Tourism is one sector of the amplifier source of state income. Facing the free market competition in both the ASEAN and global level, the tourism sector must be ready to provide the

best services to the tourists either domestic or foreign. One indicator that the tourism ministry is a guarantee of safety and health in the tourist area. Based on the background above, the formulation of the problem in this research is what are the potential sources of danger in the tourism sector and what are the safeguards that have been implemented government safety at this tourist sector.

This study aims to 1). Identify potential sources of danger in the tourism sector, 2). Analyzing the hazard control accidents and health problems in the tourism sector

**B. Method**

The method used in this study is a critical review of the literature or studies safety tourism sector in Indonesia

**C. Result and discussion**

In general, by type tourist attraction is divided into two, namely nature and artificial tourism. Nature tourism is a major tourist attraction derived from nature. Examples of natural attractions is a mountain or mountain, sea, marine parks, waterfalls, lakes, beaches and rivers. While the artificial tourism is the main man-made attractions, such as playground, museums, historical and archaeological heritage sites. In addition the scope of the study safety tourism sector is also associated with the facility which is located in the area of tourism, including hotels and restaurants

Based on the theory of occupational accidents Ilci (International Loss Control Institute) work accident occurred because of the interaction of several factors: 1) Lack of Control, 2) Basic causes personal factors and job factors, 3) Immediate Causes, substandard action and Substandard condition, 4) Incident , contact with energy and substances, 5) Loss. Schematically depicted in a work accident in the scheme below:

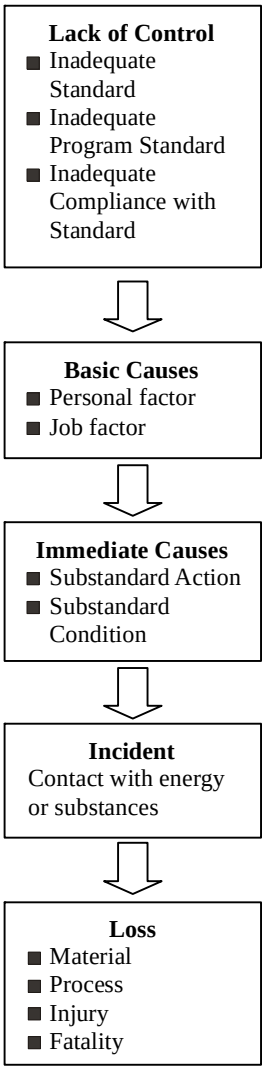


Figure 1. ILCI Loss Causation Model

**Lack of control**

Lack of management control of hazards in a tourist spot. The absence of control of hazards in tourist spots can be caused by three things: 1) There is no policy that menyeluru about tourism safety, 2) there are however less policy could be implemented, 3) Lack of compliance with policies.

First there is the danger that adequate control policies. In Indonesia, the regulation concerning the safety of tourism still partially regulated. For example, Law No. 10 Year 2009 regarding tourism does not provide any technical explanation form the management obligations of the safety in the tourism sector. Managers of tourist attractions should have a commitment to tourism safety. The commitment

embodied in the form of licensing and subsequent policies and implications for the provision of facilities safety in the tourism sector. Example no safety procedures when located in the tourist area, the playground is not all vehicle functions controlled his tools, at the hotel, lodging, or entertainment places are not all available fire extinguisher.

Secondly, there is a policy or program, but does not meet the standards. For example in marine tourism transport ship buoy number provided on generaly less than the number of passengers. With facilities while not all are in a condition unsafe for use. The number of passengers often exceeds the capacity should be. In terms of tourism sector workers, not all of them received training about safety in the tourism sector

Third, there is no adherence to the program. Meaning there is no certainty about the result of a breach of these rules. Viewed from the side there has been no legislation or appointed official overseeing the safety in the tourism sector

**Basic Causes**

Basic causes of two, namely the human factor and the factor of the job. The human factor is very important in the implementation of safety tourism sector. Human factors mentioned include inadequate physical and psychic abilities, knowledge, skills, work experience, health status and motivation. Factors job be a source of danger is the lack of supervision or control, no working procedures, inadequate equipment and machinery of work, working conditions eg noise, temperature, radiation, chemicals, machinery and equipment that is dangerous.

Tourism sector workers should have a good basic knowledge safety. Knowledge may include knowledge about the sources of danger that exists around a tourist attraction, the knowledge to control hazards in tourism and knowledge of procedures safety tourist attraction. For example on tourism bus driver. Often found that the tourism bus driver working more than 8 hours a day, without a break this happens because of ignorance of the travel agent or driver on a driver driving safety limits. The result is fatigue in the driver. The next human factor is the lack of skills. For example at the hotel. Hotel is a facility that is widely available around the tourist areas and has a risk of fire. Not all employees can operate a fire extinguisher.

Risk of danger that comes from the work of, among others, the absence of supervision or control of the manager. This supervision includes supervision of working procedures, supervision of machinery, equipment, supervision of maintenance, supervision of the work attitude. For example in areas or high-risk rides like roller coaster, tornando, lightning should be checked periodically to make sure the machine and safety belt functions. At the beach attractions, must be equipped with beach uniformed rescue workers. There must be clear rules that visitors who swim at the beach should be near the beach attendant / guard sea. Not all beach attractions are equipped with surveillance of sea guard.

**Immediate Causes**

Immediate causes of two, which acts under the standards and conditions below standard. Action under standards that operate the machine without having authority, failure to warn, use of safety equipment but inaccurate, hasty in doing the job and working under the influence of drugs and alcohol. Substandard conditions derived from the absence of a guide or barrier between the dangerous and the tourist area of safe, no signs of safety in tourism, poor houskeeping, sanitary food available at the tourist rarely gets control. The parking area is also rarely gets attention (Bagyono, 2005)

**Incident**

Incident or accident is an undesiredevent that is likely to cause the loss of material and non-material eg injury to persons, damage to property, loss of working hours and the disruption of the production process. The accident that occurred at the tourist attraction between landslides in Pacet Mojokerto attractions, rides in Dufan jammed suddenly, tour buses rolled in Probolinggo, several cases of drowning while swimming at the beach.

**Loss**

Losses experienced by tourism operators in case of accidents is the loss of material, namely the provision of insurance claims to victims. Losses are generally impinge on both human visitors, workers and managers in the form of major injury or major illness, serious injury or ilness, ilness or minor injury. Damage to property in the form of catastropic events, major, serious and minor. Similarly, a loss in the process as well be catastropic, major, serious, and minor (ILCI, 1990)

## D. Conclusion

There is no policy to regulate safety in the tourism sector in Indonesia comprehensively. Regulation is still normative and technical yet. There is no standard safety tourism sector. Similarly, the safety features are not yet fully available attractions. From the results of the study suggested the need for legal protection of tourism management in efforts to protect the safety and comfort of visitors and employees. In addition it should be made a standard or assessment or safety certification in tourism carried out by an independent institute

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# BEHAVIOR OF MELON FARMERS IN USING PERSONAL PROTECTIVE EQUIPMENT AS A PROTECTION EFFORT OF PESTICIDE POISONING

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**Abstract**

Melon farmer in the village of Curut and Wedoro, with the ability to successfully cultivate farmland has become a center for the production of melon fruit. Melon cultivation relatively high risk, so the use of pesticides can not be avoided. Based on observations in the field, rarely encountered farmers use Personal Protective Equipment (PPE) with a complete, one cause of poisoning by pesticides are farmers pay less attention to the use of PPE.

This study used an explanatory study with a survey method. Retrieval technique based on purposive sampling and sample obtained 43 respondents. The research instrument used was a questionnaire and examination kholinesterase levels in the blood of farmers.

Melon farmer behavior in Curut and Wedoro village, in the use of PPE has a tendency not good, it can be seen that 100% of farmers did not use boots, 69,77% did not use gloves, 53,3% did not use caps, 30,2% did not use a mask, 4.66% did not use trousers. Average of 8,288 farmers cholinesterase at U / L, with a range of levels kholinesterase 4.94 U / L - 11,350 U / L. Subjective complaints perceived by farmers are headache, blurred vision and fatigue.

**Keywords:** Pesticide, Farmers, Personal Protective Equipment

## A. Introduction

Grobogan subdistrict with the planted area of about 500 hectares, capable of producing 12,500 tons of melons and successfully dominating the Central Java market . Beside the quantity, the quality from aroma and taste of the fruit is also favored by the market [1]. This shows that melon is the potential commodities because it has economic value and high competitiveness compared to other fruits.

Melon are very susceptible to pests and diseases, so the use of pesticides in the melon already started when the germination of seeds by soaking in warm water mixed with a systemic fungicide, for 4-6 hours. Seeds soaked in a solution of Agrimycin bactericide (oxytetracycline and streptomycin sulfate) or Agrept (streptomycin sulfate) at a concentration of 1.2 grams / liter and spraying bactericidal at the age of 20 HST. Spraying fungicide Previcur N (propamocarb hydrochloride) at a concentration of 2-3 ml / liter when the attack has passed the economic threshold. Derasol 500 SC fungicide (carbendazim) at a concentration of 1-2 ml / liter. Attacked stem Base is smeared with fungicide solution Calixin 750 EC (tridemorph) with a concentration of 5 ml / liter [2]. Perceived difficulties at the time of planting melon by farmers include weather changes including changes in rainfall patterns, intensity of sunlight, the amount of evaporation, and humidity varies each year.[3]

Impact of pesticide use on human health, for example the impact of acute pesticide poisoning have occurred that killed 10 people until mid-July 2007 in Kanigoro Magelang. In Ngawi in 2001 has been carried out examinations of blood cholinesterase 320 melon farmer spraying with heavy exposure to the results of 40%, 52% exposed to moderate, mild exposure to 7% and 1% of normal[4]. Chemical constituents in pesticides, which are organophosphate and

carbamate have effects on insects and mammals including human. There are affects the action of the acetylcholinesterase enzyme on the nervous[5].

One cause of accidental poisoning by pesticides are farmers pay less attention to the use of Personal Protective Equipment (PPE) in the process of spraying pesticides. PPE is a set of tools used by worker to protect part or all of the body from the potential hazards / accidents such as pesticide poisoning. The use of PPE when spraying can reduce direct contact with pesticides and inhaled when breathing, in addition to the APD also has the potential to reduce acute and chronic poisoning[6].

Melon farmer in Curut and Wedoro village with their knowledge has been successfully cultivate soil and black clay into a melon production center, where the cultivation of melons classified as high risk, so the use of pesticides can not be avoided. Based on field observations,there are rarely farmers using complete PPE, so it is necessary to do research on the behavior of the melon farmers in the use of PPE as prevention of risks of pesticide poisoning.

**B. Methods**

This study includes an explanatory study using survey method used to obtain the facts and seek factual information [7]. Interviews and observation methods are used to analyze the behavior of farmers in the use of personal protective equipment when farmers apply pesticides. Sampling technique based on purposive sampling and obtained 43 respondents from the village of Curut and Wedoro, subdistrict of Penawangan, Grobogan District of Central Java. The research instrument was a questionnaire used to interview and measure-ment kholinesterase levels in the blood.

**C. Results and Discussion**

**1. Characteristics of Respondents**

Of the 43 samples of farmers in the village of Curut and Wedoro Penawangan District have age and education level that can be illustrated in Table 1:

Table 1. Characteristics of Respondens

| Characteristics of Respondens | Melon Farmer (n = 43) |
|---|---|
| Age (%) | |
| 21-30 | 4,7% |
| 31-40 | 21,0% |
| 41-50 | 44,0% |
| 51-60 | 21,0% |
| 61-70 | 9,3% |
| Education (%) | |
| Primary School | 49,0% |
| Secondary School | 33,0% |
| High School | 11,0% |
| Undergraduate | 7,0% |

The most age of melon farmers with a range of 41-50 by 44% (19 people). As for the education level of farmers, the highest average is primary school graduates was 49% (21 people), Secondary school 33% (14 people), Senior high school 11% (5 people) and undergraduate as much as 7% (3). The higher the level of education of farmers will affect the thinking of farmers in early applied science in agriculture, and the information obtained is more and more farmers, including how to use personal protective equipment to protect themselves from the risk of pesticide poisoning.

**2. History of Pesticide Exposure**

Melon plants are very susceptible to diseases and pests, so farmers need to use pesticides to control pests and diseases that attack the melon crop. The use of pesticides continue to cause farmer's risk of getting exposure to pesticides. Of the 43 respondents drawn, all farmers use pesticides to control pests and diseases in plants, the average perminggunya farmers spraying 2-4 times depending on how many pests and diseases attack the farm. In one growing season 70% of farmers use pesticides melons as much as 4 types of pesticides, with 18.6% of the farmers use doses above the dose (Table 2).

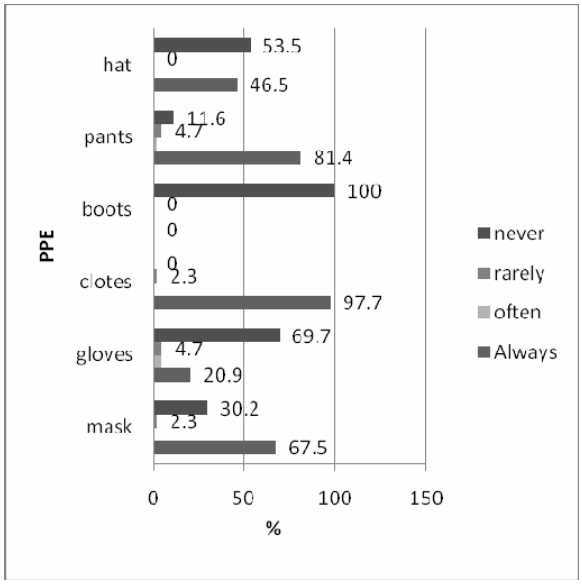
**3. Practice Use of Personal Protective Equipment**

During spraying crops farmers recommended to always use personal protective equipment (PPE), which uses a mask, gloves, long sleeves, boots, pants and a cap or hat. Personal protective equipment is used to avoid direct contact of the body with toxic pesticides. Practice melon farmer in the village of Curut and Wedoro in the use of

PPE when spraying pesticides can be seen in graph 1.

Table 2. History of Pesticide Exposure

| Pesticide Exposure | Melon Farmer (n = 43) |
|---|---|
| Spreading Frequencies/week (%) | |
| 1 times | 7,0% |
| 2 times | 27,9% |
| 3 times | 37,2% |
| 4 times | 25,6% |
| 7 times | 2,3% |
| Kind of Pesticides (%) | |
| 2 | 2,3% |
| 3 | 18,6% |
| 4 | 70,0% |
| 5 | 2,3% |
| 7 | 6,8% |
| Doses of using pesticides (%) | |
| Based on suggestion | 62,8% |
| Under suggestion | 18,6% |
| Upper suggestion | 18,6% |




Graph 1. The use of PPE Practices by Farmers in the village of Curut and Wedoro, Subdistrict of Penawangan

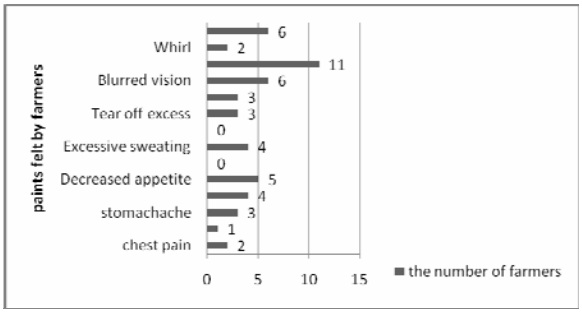
From the graph 1 above can be seen in the use of PPE farmers practice masks as much as 67.5% (29 people) were always used, 2.3% (1) farmers who rarely wears and 30.2% (13 people) of farmers who never wear a mask when spraying pesticides. Practice using gloves there are 9 people who always wears, two people often wear, two people who rarely wears and 69.77% (30 people) farmers never wear gloves when spraying pesticides. Long sleeves as much as 97.7% (42 people) farmers who have always used and 2.3% (1 person) who does not use long sleeves while spraying. All of the respondents have never used boots on while spraying. Practice using existing trousers while spraying 81.4% (35 people) is always used, 2.3% (1 person) is often used, 4.66% (2 people) rarely use them and 11.64% (5 people) do not use during the spraying process. Farmers as much as 46.5% (20 people) always use the cap / hat and 53.5% (23 people) never use a cap / hat on while spraying.

**4. Levels of Kholinesterase in Farmers' Blood**

From the results of cholinesterase examination of the farmer in the village of Curut and Wedoro gained an average results about 8288 U / L, the lowest yield 4.94 U / L and the highest examination results is 11 350 U / L with normal standards for men 4620-11500 U / L, this means that the content of pesticides in the farmers' blood are approaching threshold consideration. Abnormal Cholinesterase levels in the farmers' blood can cause health problems. The strength of the enzyme cholinesterase inhibition is determined by the content of the dangers of chemical pesticides present in the blood. When cholinesterase enzyme levels in the blood will increase the decreased levels of red blood or plasma cholinesterase significantly before the appearance of symptoms resulting. The examination of cholinesterase level in the farmers' blood will help in the prevention of fatal impact[8].

**5. Pesticide Poisoning Symptoms and Signs**

A long time in contact with the pesticide would have effects on the farmers' health, pesticide poisoning symptoms such as tiredness, headaches, and others. Farmers in the village of Curut and Wedoro also experiencing symptoms of poisoning, from 43 sample farmers there are 16 farmers who experience / feel / have symptoms of poisoning. Here are the symptoms of intoxication that natural melon farmers in Subdistrict Penawangan:




Graph 2. Pesticide Poisoning in Rural Farmers in Curut and Wedoro Subdistrict Penawangan

Symptoms of toxicity experienced by the farmers are headaches, fatigue, blurred vision, lack of appetite, excessive sweating, muscle feels weak, increased saliva production, excessive water out of the eyes, abdominal pain, chest pain, feelings of anxiety and diarrhea. Headache is a symptom of pesticide poisoning is most felt by the Melon farmers in the village of Curut and Wedoro.

Behavior is what has done by humans, either directly observable or not. Human behavior is essentially an activity of the man himself [9]. Farmers in the District of Curut and Wedoro Penawangan using pesticides in order to protect melon and watermelon crops from pests and plant diseases that will harm their crops. According to David Pimentel, the pesticide has a significant relationship to food production where the estimated use of pesticides will reduce the possibility of crop pests by 10%, but if the farmers do not use pesticides are possibly between 0-100% crop loss due to pests[10,11,12].

Based on data from respondents education, the level of education of respondents included in the low category (49% of primary school graduates), this condition will affect the mindset of the people. Traditional farming communities are still often characterized by low levels of education[5]. The average farmer to mix more than one pesticide in a single spray, according to the Canadian Federation of healthy meals, mixing pesticides is not an effective way to control crop pests, otherwise it will adversely affect both the environment and human health[13,14].

In fact the melon farmers in the village of Curut and Wedoro are at high risk of exposure to direct contact pesticides, either when mixing, stirring or spraying pesticides. It was reported that chlorpyripos contained in pesticides easily absorbed by the skin[15]. Based on the research of Erik Jors, in Bolivia found that almost all the farmers do not get instructions on how to use the right pesticides and prevention so that he is not exposed to hazards posed by pesticides[16] the situation is similar to the situation in Curut and Wedoro village where farmers are mostly less educated do not get instructions on how to cultivate the right pesticide. Lack of knowledge about the processing of pesticides showed a lack of access to information[16]. The results of Klith Hanne Jensen (2011) showed that farmers with higher education levels would reduce the risk of pesticide poisoning because he was wearing extra protection. In addition, the cleanliness of personal protective equipment will also affect the incidence of pesticide poisoning[17].

The frequency of spraying pesticides found most farmers spray the melon 3 times in one week, (37.2%). Based on the research results of Eric, found that there is a relationship between perceived symptoms with a frequency of pesticide spraying, this suggests that the more a farmer spraying pesticide then it is likely to show symptoms of poisoning increases[16]. From the research, Michael stated that the frequency of the use of pesticides has exhibited significantly towards frequency relationship of farmers visited health service because of illness[18].

Based on the research results, the behavior of farmers in the use of PPE showed a trend is not good, ie 100% of respondents do not use boots, 69.77% did not use gloves, 53.3% did not use a cap / hat, 30.2% did not use mask, 4.66% did not use trousers. These conditions make the risk of exposure to pesticides melon farmers, causing melon farmers were poisoned, although the light levels. If the melon farmers do not use gloves or masks, the pesticide can be attached to the skin of the hands and absorbed into the body through the pores of the skin, it is consistent with studies of Murphy and LaCross[4] which

states that the use of gloves can reduce exposure pesticides to 99%. In addition to the impact of acute poisoning, chronic effects caused by the use of pesticides include cancer. In the United States found cases of cancer caused by pesticides is less than 1%, this is because the cancer is a chronic impact that takes a long time so most of the incidence of cancer was not associated with exposure to pesticides[19]. Based on this, it is possible that farmers melons in the village of Curut and Wedoro at risk for developing cancer due to less use of PPE[10]. The lack of use of PPE in the farmers showed a lack of availability of tools, lack of money to purchase PPE or due to hot weather so that farmers do not use PPE because of the inconvenience[16].

The results of the study Budiyono, 2005, showed no association between the use of personal protective equipment to the level of toxicity of spraying melon farmer in the village of Jatigembol, subdistrict Kedunggalar, Ngawi. Although the number of respondents who wear personal protective equipment for 31 respondents but the poisoning of 22 respondents, is due to the use of personal protective equipment is not complete, for example, just wear long sleeves and long pants but without wearing a mask and gloves. In addition to the lack of PPE is used, pesticide poisoning is also influenced by the wrong pesticide management, including not using pesticides a good mixer, not washing tools used after spraying and the use of pooled water to wash the atomizer. This resulted in pesticide sprayers attached to it will be easier to enter the body, causing acute poisoning as a result of exposure to pesticides[10,20].

Afriyanto research (2009), showed no association between the use of PPE with organophosphate poisoning incident at the spraying chilli farmer. In general, the behavior of the farmers in this area use PPE incomplete[21]. In general, they only use an average of 3 PPE in the form of long-sleeved shirts, long pants and a hat. In addition, Miss Saowanee research (2009) in Thailand showed that farmers there wearing PPE incomplete, including only wearing boots and long-sleeved shirts, even found 4.1% of respondents drink or smoke while spraying pesticides[22]. Florencia Research shows that only a third of farmers who use gloves and masks, most of the farmers do not have the awareness to purchase PPE[23]. The belief of farmers that pesticides are not toxic and harmless to health so that farmers do not use PPE when applying pesticides[24,6].

From the results of cholinesterase examination of the farmer in the village of Curut and Wedoro gained an average results 8288 U / L, the lowest yield 4.94 U / L and the highest examination results of 11 350 U / L with normal standards for men 4620-11500 U / L , this means that the content of pesticides in the melon farmers' blood approaching the highest threshold, so it can be detrimental to health. As for the complaints of the farmers, most are headache, blurred vision and fatigue. Abnormal absorption of cholinesterase at the farmers almost always produces a mixture of anti-cholinesterase[25].

Pesticides can enter the body through the respiratory tract, mouth and skin penetration, it is a good way to prevent poisoning and reduce to the smallest possible hull contact with pesticides is to provide protection on the part - the part with the personal protective equipment. Toxicity and morbidity caused by pesticides is an expensive price to be paid by farmers who use no appropriate PPE[10]. The economic pressures felt by many farmers to adopt healthy behaviors and safety in the use of pesticides[26].

Symptoms of poisoning are felt by melon farmers in the village of Curut and Wedoro mostly headaches. But farmers do not realize that the symptoms experienced due to pesticides. Farmers with low education will not associate the symptoms of poisoning are felt with the use of pesticides[27]. The use of masks and gloves is very low among farmers. This results in easy contact with the mouth pesticides[28,29]. Please note that in addition to direct contact when applying pesticides were also found when the home contact pesticide storage. In addition to farmers, the risk to

children of farmers poisoning also increased as the number of pesticide stored in the house[30,31].

**D. Conclusion**

Melon farmer behavior in the village of Curut and Wedoro showed a trend in the use of PPE is not good, ie 100% of respondents do not use boots, 69.77% did not use gloves, 53.3% did not use a cap / hat, 30.2% did not using masks, 4.66% did not use trousers. Cholinesterase at the farmers obtained an average of about examination results 8288 U / L, the lowest yield 4.94 U / L and the highest examination results 11 350 U / L with subjective complaints experienced by farmers, most are headache, blurred vision and fatigue.

Melon farmers should wear complete PPE, ie boots, long pants, long sleeves, gloves, masks, goggles and cap so as to prevent and reduce pesticide poisoning.

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# EFFECT OF NUTRITIONAL EDUCATION ON NUTRITIONAL KNOWLEDGE OF ELEMENTARY STUDENTS

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**Abstract**

The unhealthy habits such as, consumed snacks, low physical activity increased widespread phenomenon occurred among school students. Data from Household Health Survey by the Ministry of Health in 2004 found 8% overweight students at aged 5-17 years. This study aims to improve the nutritional knowledge of elementary school studentss about street food.

This research used quasi-experimental with pre-post test design. The treatment consist of training, discussion, and simulations. Analysis of the data used SPSS with paired non-parametric (Wilcoxon).

The results achieved are subject to a number of 68 child sex distribution of boys (63.24%) and girls (36.76%). The distribution of students knowledge level before assistance to less category amounted to 73.53%, enough 26.47% have a sufficient level of knowledge. The distribution of students knowledge level after mentoring for good of 53.24%, enough 35.29%, and 1.47% have less knowledge level. The mean knowledge increased from 5.2 to 8.5.

There are differences in the level of knowledge before and after nutrition counseling ($p = 0.0001$).

**Keywords**: elementary students, nutritional education, nutritional knowledge.

## A. Introduction

School-age students were an investment of the nation, because of the age students were the future generation. Growing development of school-age students who depend optimal nutrition with the right quality and quantity. In times of growth and development of the provision of nutrients or nutrient intake in students can not always be carried out perfectly. Lots of problems caused in feeding untrue and distorted. These irregularities cause disturbances in many organs and body systems.[1]

On the other hand, the health condition of students of primary school age shows the data of concern. Nutritional status examination by the Kusuma Buana Foundation in 2345 primary school studentss in the Pulau Seribu (2008) found that of the indicator weight for age, the malnutrition of 25.5%, 2.9% severe malnutrition. With height for age indicator revealed malnutrition malnutrition 22.1% and 7.2%. A short survey conducted on elementary school students Darunnajah shows that 9 out of 10 students were given an allowance for consumption of street food at school. Only 1 in 10 students who supplied food from home by their parents. Though there are snacks that are low in school nutrition and less maintained clean. Information selection of healthy snacks for primary school students was obtained from parents, teachers, peers, playmates in the neighborhood, and future information media. Parents and teachers would provide correct information about how to choose nutritious snacks. Although not all parents pay attention to what their students buy a snack. The main role that influence the selection of snacks for school students taken by the television and peers. Unfortunately, these are not a good influence. Precisely because of the role both cases, the students become exposed to unhealthy snacks and low in nutrients.[2]

Various studies also show that the lifestyle of modern society has led the activity of primary school age students also began to be influenced by an unhealthy lifestyle. The habit of unhealthy snack foods, physical activity reduced the increasingly widespread phenomenon occurred among school students and is evident from the results of the Household Health Survey by the Ministry of Health in 2004 which found 8% overweight in students aged 5-17 years. Without the efforts of earnest then all this could result in the birth of the next generation's lifestyle and health and nutritional status of the poor and at risk of developing various health problems.[3]

Based on the above, it would require a nutrition training at the elementary school students in order to know which foods are good for health. Additionally need the involvement of the school in this training in order to become a students assistant in the selection of snack food and urge parents massing each students to choose to equip their students than pocket money to buy street food.

**B. Method**

This research used quasi-experimental design with pre-post test design. The concept of this activity is mentoring. Methods of these activities in the form of assistance to elementary school studentss Integrated Darunnajah Mranggen which includes preparation and implementation of the assistance. The method used is lectures, discussion, and simulations. Number of subjects as many as 68 people were selected by purposive random sampling technique. First, they were given an explanation of the technical implementation of the training includes pre test, core activities, and post test. In addition to the opening session, the participants are given the motivation to be willing to live a healthy life, especially in the choice of food should be appropriate religious guidance because education is the basis of Islam. Secondly, they carry out pre-test to measure how much knowledge about street food. Third, training sessions focusing ability of participants to identify healthy snacks and avoid unhealthy foods. If possible you should ask each parent to provide lunch to school. Besides the material also includes the types of healthy jananan, signs of healthy and unhealthy snacks, first aid when affected by unhealthy snacks (poisoning), nutrient content in some types of snacks. Fourth, participants practice a healthy snack food choices with media sample a variety of snacks and drawings. Fifth, the end of the training given post-test to determine whether there is an increased knowledge of the training topic. Analysis of the data used is different test paired non-parametric (Wilcoxon) because the data distribution was not normal.

**C. Result and discussion**

This research is in a primary school building, also has a boarding school and orphanage. It lies in the middle of the village population. The school is included in the upper middle class in the region. So that students who are in it have the character is almost the same as students who live in urban areas. Some negative characteristics attached to them is a little bit difficult to set up. Number of subjects been registered to participate in this mentoring is class 4 and 5 amounts to 80.

The reason is they have a material pemahanan level higher than the younger class and is expected to be a "model" for them through programs of school-based health. Whereas grade 6 is not targeted because soon will meghadapi exam and left the elementary school. Subjects involved in this devotion of 68 people with the distribution of sex 36.76% female and 53.24% male. From figure 1 & 2, the subject of boys (63.24%) more than in girls (36.76%). In accordance with expectations, this service gives changes in the level of knowledge that is statistically significant at the target ($p = 0.0001$). The mean knowledge increased from 5.2 to 8.5. At the time of election practice healthy snacks, all with the target for the enthusiastic about the event. The level of knowledge of a subject before and after assistance is presented in the pie chart below. (Figure 1 and 2).

Data presented in figure 2 targets with less knowledge level of 73.53%, while 26.47% have a sufficient level of knowledge. Data presented in

Figure 3 targets with a good knowledge level of 53.24%, enough for 35.29%, and 1.47% have less knowledge level. These results are consistent with that expected to be the target of assistance, ie more than 80% of the target to increase the value of knowledge.

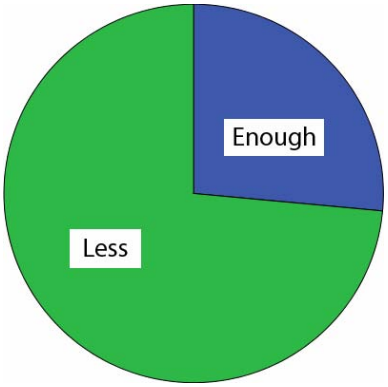


Figure 1. Before and after treatment of nutritional knowledge of elementary studentss

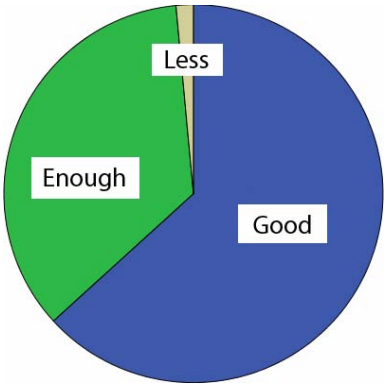


Figure 2. Distribution of the level of knowledge of the target after mentoring

Most instances of malnutrition in students can be avoided if a person has enough knowledge about how to choose healthy foods. But the influence of nutrition knowledge on food consumption is not always linear, meaning that the higher the level of knowledge housewife food consumption may not necessarily be good. Food consumption is not only influenced by knowledge of nutrition by itself, but it is the interaction with the attitude and skills.[1,3]

School students are able to choose their own food, but necessary role of those closest to the monitoring of nutritional status, namely the mother. Mariani (2002) suggests that women who have a high nutritional knowledge will familiarize students to prefer foods that are healthy and meet nutritional needs. The incidence of malnutrition causes disorders of cognitive development in students. The results showed that students with normal nutritional status have a higher value than the cognitive development of students with malnutrition.[4,6]

## D. Conclusion

A number of subjects are 68 studentss with boys (63.24%) and girls (36.76%). The distribution of studentss' knowledge level before assistance to less category amounted to 73.53%, while 26.47% have a sufficient level of knowledge. The distribution of studentss' knowledge level after mentoring for both categories of 53.24%, quite by 35.29%, and 1.47% have less knowledge level. The mean knowledge increased from 5.2 to 8.5. There are differences in the level of knowledge before and after nutrition counseling ($p = 0.0001$).

This study suggest for Increasing the participation of schools in monitoring students foods and monitoring the nutritional status of studentss in order to always be in the normal category.

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# FACTORS ASSOCIATED WITH QUALITY OF LIFE OF RUBBER FARMERS IN NORTHEAST THAILAND

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Abstract

The purpose of a cross-sectional survey was to study factors associated with quality of life of rubber farmers in Northeast Thailand. Multistage random sampling was 362 rubber farmers. Data collections were accomplished with a self – administered questionnaire. Data were analyzed by descriptive and inferential statistics

The results showed that majority of the samples were male 53.39% with an average of age 45.3 ±10.4 years. Factors of general working: Duration of rubber farmers ocupation are an average 42.5 ± 5.3 year and duration of rubber tree plantations are 7.3 ± 2.6 hours/day. Factors of rubber farmers working: They have been repeating hand wrist arm and shoulder for working over 2 hours/day (65.19%) hours/day. Psycho-social of rubber farmers, They done rubber trees over 8 hours/day so, they got stress 44.75% hours/day. Factors of related to quality of life of rubber farmers were significant difference (p-value = 0.05) i.e. Gripping their's hand over 2 hours/day (Adjusted OR = 2.53; 95% CI = 1.17 to 5.47; p-value = 0.018) Anxiety about low rubber pricing (Adjusted OR=2.32; 95% CI = 1.14 to 4.72; p-value = 0.019) inadequately rest, causing to accident.(Adjusted OR = 3.27; 95% CI = 1.55 to 6.86; p-value = 0.002).

**Keywords:** Factors Associated with Quality of Life, Quality of Life of Rubber Farmers

# ASSOCIATION BETWEEN ERGONOMIC RISK FACTORS AND WORK-RELATED MUSCULOSKELETAL DISORDERS IN BEVERAGE FACTORY WORKERS, INDONESIA

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**Abstract**

Musculoskeletal disorders (MSDs) are the major causes of illness among working age group. This cross-sectional study aimed to identify prevalence of MSDs, the influences of between ergonomic riskson (MSDs) among beverage factory workers, Indonesia.

This cross sectional study systematic randomly selected 309 samples from all 3 sectors of a beverage factory proportional to size of the population to response to a structured questionnaire, standardized Nordic questionnaire and physical assessment by physiotherapists. The relationships between ergonomic risk factors and MSDs when controlled covariates were assessed using multiple logistic regression.

The prevalence of MSDsusing standardized Nordic questionnaire was 71.84% during the last 7 daysand58.90% for the past 12months.The prevalence of MSDs diagnosed by physiotherapist was 56.31%. The multivariate analysis identified that when control other covariatesHigh ergonomic risks on the left of shoulders were significantly increased MSDs during past 12 months (AdjOR:3.54-95%CI:1.49 to 8.37) and MSDs diagnosed by physical assessment (AdjOR:2.91-95%CI:1.30 to 6.52). High ergonomic risks on the neck lead to the increasing of MSDs during the last 7 days (AdjOR:2.15-95%CI:1.27 to 3.65), past 12 months (AdjOR:5.31-95%CI:2.53 to 11.11) and also MSDs diagnosed by physical assessment (AdjOR:4.35-95%CI:2.11 to 8.96) with all of them. Smoking and education also had influences on MSDs.

Ergonomic risks had impacts on MSDs both in long and short terms with the super imposed of smoking and socioeconomic status.

**Keywords:** Musculoskeletal disorders (MSDs), Ergonomic risks, smoking, socioeconomics

## A. Introduction

Nerves, tendons, muscles and supporting structures, such as the vertebral discs are affected in individuals suffering from musculoskeletal disorders (MSDs). Symptoms include pain, discomfort, numbness and tingling in the affected area. The severity could range from mild and periodic to severe, chronic and debilitating conditions. The conditions had high impact on worker health and economics consequences (1). In the United States, MSDs are the largest categories of workplace injuries and are responsible for nearly 30% of all workers' compensation costs. US companies spent 50 billion dollars on direct costs of MSDs in 2011, its indirect costs can be up to five times the direct costs of MSDs. The average MSDs come with a direct cost of almost $15,000 (2). HSE figures show that in Great Britain an approximately 439,000 workers in 2011/12 suffered from musculoskeletal disorders caused or aggravated by their current or past work. Around 176,000 of these workers suffered from back pain, approximately 177,000 from problems related to upper limbs and neck and approximately 86,000 with lower limb problems. An estimated 7.5 million working days were lost in 2011/12 through work-related musculoskeletal disorders that were caused or aggravated by work. On average, each person suffering took an estimated 17 days off in 2011/12 (3).

In Indonesia, the Health Department report in 2005 concluded that among all ill health of workers, 40.5% was related to their work. A study including 9482 workers residing in 12 Indonesian counties/cities explored health problems experienced by the workers found that 16% were related to MSDs(4).

MSDs have been found to be associated with several factors, include socio-demographic, psychosocial and physical. Socio-demographic factors are age, education level, physical fitness and duration of employment, gender, smoking habit and marital status, working hours, psychosocial factors include job demands, job control, job satisfaction, support. Physical factors are exerting excessive force, excessive repetition of movements, awkward postures, static postures, motion, compression, inadequate recovery time due to overtime, excessive vibration, whole-body vibration, working in cold temperatures (CCOHS). In an beverage production company, almost at every step within the production process have potential risk for MSDs, therefore the occupational health and safety (OHS) are main concerns (5).

Staffs working in supporting office dealing with administration, advertisement, book keeping, etc. have to sit for hours in front of a computer screen. Workers in the production halls have to stand in front of machinery and even when someone can sit throughout his or her working times as inspector, he or she has to observe the bottle pass through the conveyor which is very monotonous activity which can cause strain. For workers packing and palletizing the bottles have excessive physical activities, while the operator of the forklift truck have to move crates of drinks and arrange these products on pallets located on the top floor and then stored in the warehouse (6). Knowing the MSDs situation and its possible risk factors could help managing the situations and risk factors. Therefore, the current study aimed to investigate the prevalence of MSDs in this industry and identify the influences of ergonomic risks on MSDs among beverage factory workers in Indonesia.

**B. Methods**

This cross-sectional study was designed to describe the situation of MSDs and key risk factors, ergonomic, psychosocial and socio demographical factors. It also aimed to determined the association between ergonomic risks factors using BRIEF Questionnaire for ergonomic susceptibility screening and MSDs when controlled other covariates including psychosocial and socioeconomic factors. MSDs were diagnosed using both the standardized Nordic questionnaire for MSDs conditions during the past 7 days, 12 months and at present by physical assessment by physiotherapists. The study was conducted in one of beverage industry in Central Java, Indonesia from May to July 2015. The study population was 1839 workers who work in the beverage company. The illegible workers included in the study were those who have been working in this company for at least 6 months both under temporary contract and permanent workers. Preexisting conditions of either bone or muscle disease such as rheumatic, arthritis, osteoporosis and others were excluded. Disabled respondents or respondents who had a disability, both mentally and physical disabilities was also excluded. A sample size of 309 (Hsieh, 1989) was required to detect a change in probability of having MSDs among factory workers who had an approximately 79% of reported MSDs with a power of 84% and 0.05 significant level. The samples was systematic randomly selected proportional to size of the population of each three sectors of the factory.

**C. Result and Discussion**

In this study, almost all respondents were male (98.71%). This sex composition was not an intentional since almost all of the study population was males. This study was similar sex composition with a study conducted by Osborne in 2012 entitled Work-Related Musculoskeletal Disorders Among Irish Farm Operators roomates conducted among predominantly male (95%) as the samples (7). Respondents were randomly selected from 3 sectors: administration (6:15%), production (40.13%) and distribution (53.72%) since there were difference in nature of works.

The work characteristics involve difference postures and forces and times in performing which put the workers at risk of musculoskeletal complaints. In average there were in middle age group that should be healthy (35.40 years old) but might starting being consider as risk group for non-communicable diseases (NCDs) (≥ 35 years old). In addition their mean BMI was 24.27 kg./m2 with a median of BMI was 24.09 27 kg./m2, indicated the overweight nutritional status that also increased the NCDs risks. This characteristic of age and BMI were similar to the study of Chang, 2014 conducted in betel quid cross among workers in Taiwan (8). Majority of the samples smoked (52.27%), considered as another risk factors. Regarding the level of education, most of the employees finished high school (71.01%). This is in accordance with the job that does require skills, although not high just enough for employees to be able to operate a machine used for the production process, may be supporting the future the health related behavior modification in the future. The mean duration of working period was 112.84 months with the median duration of 91 months. The working period is similar to a study conducted by Zulfikar Taufik PT Caterpillar Indonesia in 2012 (9). Most of them were full time (65.37%).

Most of the respondents (71.84%) complaints of having MSDs in the last 7 days, 58.90% for the past 12 months. MSDs diagnosed by physiotherapist were 56.31%. The prevalence of MSDs during the last 7 days was highest. May be it was the contribution of the data collection was conducted in the weekdays and in the middle of their work hours. They might felt exhausted at that time. Therefore perceived MSDs were higher for the last 7 days. On the other hand for the past 12 moth, they might have MSDs, however after taking some rests they would recovered and might not remember that they had MSDs except the problems that were rather serious (mild to severe), therefore the 12 moths-prevalence was lower. It was confirmed by that, the prevalence of MSDs by physical assessment is similar with MSDs during the past 12 months. The physiotherapist found some strain muscle or stiff muscle in some particular of musculoskeletal system that could make remained discomfort to the people who suffer from it, therefore they could remember and reported their MSDs to the researcher.

Based on BRIEF survey by humantech the highest ergonomic risk was in the both left and right of elbows (73.14%). Almost all parts of body, medium ergonomic risk was dominate, even though it was just slightly different prevalence between workers who had medium ergonomic and high ergonomic risks. The prevalence of medium ergonomic risk on the left hand and wrist was 55.99% and the right was 55.02%. That of left shoulder was 77.02%, 63.11% for the right and 55.02% for the back .

The multivariate analysis identified that when control other covariates smoking was statistically significantly associated with MSDs during past 12 months (AdjOR:1.47-95%CI:0.83 to 2.60) with (p-value＜0.001). Some researchers have found a similar positive association between smoking and musculoskeletal symptoms (10). Several studies has shown that smokers have likely to suffer from back problems than non-smokers. Relationship smoking with complaints MSDs caused by cough increase pressure on the stomach and cause tension in the spine or backs (11). Education was significantly associated with MSD during the last 7 days (p-value＝0.012) (AdjOR:3.29-95%CI:0.89 to 12.16), past 12 months (p-value＜0.001)(AdjOR:4.95-95%CI:1.35 to 18.11) and MSDs diagnosed by physical assessment (p-value＜0.001)(AdjOR:14.74-95%CI:3.79 to 57.38) among beverage industry workers. Education might give different perspective to see the pain. Persons with high educational level might also have better possibility to find another job opportunity that helps them to reduce their musculoskeletal pain. Their knowledge and education might give them better opportunities to adjust them self to a new situation if they experience much pain. All situations has its positive and draw back consequences, but education might help to over come it little easier than people who does not have enough educational background (12). But in this study showed slightly different results, workers with

higher education who actually have a higher likelihood of developing MSDs. The reason that most likely was in the case of this disease in our study is related to the work attitude and relationship with MSDs, here someone who has high the education not necessarily be aware of the diseases they experienced because of the attitude of the working and MSDs is not a common disease that can be known to everyone though with higher education though. Then another possibility was that workers with higher education in this company generally works as a supervisor, head, finance and so on are always being targeted by companies that sometimes they work very hard and are too focused to achieve the targets so they are not too concerned with the work attitude or complaints of muscle feels. Also muscle complaints here is not acute disease but a chronic disease that most likely of sufferers are unaware of the disease. High ergonomic risks on the left of shoulders were significantly increased MSDs during past 12 months (AdjOR:3.54-95%CI:1.49 to 8.37) and MSDs diagnosed by physical assessment (AdjOR:2.91-95%CI:1.30 to 6.52) with (p-value<0.001). High ergonomic risks on the neck lead to the increasing of MSDs during the last 7 days (AdjOR:2.15-95%CI:1.27 to 3.65), past 12 months (AdjOR:5.31-95%CI:2.53 to 11.11) and also MSDs diagnosed by physical assessment (AdjOR:4.35-95%CI:2.11 to 8.96) with all of them (p-value<0.001). High ergonomic risks on the left of shoulders and neck possibly because of their responsibilities were mostly pouring sugar into the mixing tank. Postures when poured sugar is not a natural position, workers perform movements such as half-squat to pick up the sugar and then stand by lifting sacks of sugar, weigh 25 kgs, and pour it into the tank and carried out continuously. Neck is also considered as the high risk category, typing and focus in front of the computer screen. Sometimes the effects of the from head concentrating on the computer screen were not only on the eye, but also the neck which supports the head to remain upright when typing continuously fairly and correctly without a break. This activity is also effect to the shoulders because the employee do not use a proper chair without backrest while they type.

**D. Conclusion**

A total of 309 employees at the beverage industry at this factory has been taken based on systematic random sampling techniques. The socio-demographic characteristics of the respondents were summarized, most of them were from distribution department followed by production and administration departments. Almost all of the respondents were male. Their mean age was 35.40 years old. Most of the workers completed high school followed by bachelor degree, secondary and primary education. The average BMI was 24.27 kg/m2 of which most of them had normal BMI. The average working in monthly was 112.84 then median duration of working was 91. Most of them were not working in shift. More than half were smoker. Based on BRIEF survey by humantech the biggest prevalence of high ergonomic risk was in the both left and right of elbows part (73.14%). Almost on all of part of body, medium ergonomic risk was dominate, eventhought it was just slighty different number between workers who have medium ergonomic risk and high ergonomic risk. The prevalence of medium ergonomic risk on the Hand and wrist left side was 55.99% and right side 55.02% then shoulder left side was 77.02% and right side 63.11% after that on the back was 55.02%.

The multivariate analysis identified that when control other covariates smoking was statistically significantly associated with MSDs during past 12 months. Education was significantly associated with MSD during the last 7 days, past 12 months and MSDs diagnosed by physical assessment among beverage industry workers. High ergonomic risks on the left of shoulders were significantly increased MSDs during past 12 months and MSDs diagnosed by physical assessment. High ergonomic risks on the neck lead to the increasing of MSDs during the last 7 days, past 12 months and also MSDs diagnosed by physical assessment.

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# INCOME, EDUCATION, GEOGRAPHIC DISPARITIES AND HYPERTENSION IN THAILAND: RESULTS FROM THE NATIONAL SOCIOECONOMIC SURVEY

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**Abstract**

Whether socioeconomic status has any impact on hypertension is unclear. This study aimed to identifying the association between socioeconomicsstatus (SES) with hypertension in Thailand.

This cross-sectional study analyzed the data from the national socioeconomic survey by the National Statistical Office, Thailand. The survey was conducted in the samples that were randomly selected from the population in all 76 provinces in Thailand. The multiple logistic regression was use determine the association between the SES and hypertension.

There was total of 16,488 samples. Their mean age was 43.04 (± 17.39 S.D) years old. Majority was female (53.58%), finished primary education (53.27%). Most of them (89.57%) earned less than 10,001 Baht/month, lived in rural areas (62.77%), 28.03% were from the Northeast region, 18.53% were smokers. The overall prevalence of hypertension was 10.19% (95%CI: 8.23–11.76%).The multivariate analysis indicated that there were significant relationships between socioeconomics factors and hypertension that included primary education attainment (ORadj = 1.18; 95%CI:1.01 to 1.38), got monthly income<10001Baht (ORadj = 3.71; 95%CI:1.97 to 7.00), urban living (ORadj= 1.38; 95%CI:1.18 to 1.62) and lived in Bangkok when compared to the Northeast region (ORadj = 2.38; 95%CI:1.89 to 3.03) when control other covariates.

The study indicating that socioeconomic had influences on hypertension. Low education, income and metropolitan residents were vulnerable for hypertension.

**Keywords:** hypertension, socioeconomic, geographic, urban, disparity, Thailand

# SOCIOECONOMICS DISPARITIESAND CHRONIC RESPIRATORY DISEASES IN THAILAND: THE NATIONAL SOCIOECONOMICS SURVEY

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**Abstract**

Chronic respiratory diseases (CRD) are the third leading cause of death in Thailand. The impact of socioeconomics on CRD is unclear. The aim of this nationwide population-based study was to determine the association betweensocioeconomics determinant and CRD in Thailand.

This study used the data from the national socioeconomicssurvey,thatwas a cross-sectional study conducted by the National Statistical Office in 2010. The survey used a stratified two-stage sampling to select a national representative samples to response to a structure questionnaire. The total of 17,040 participants who met the inclusion criteria was included in this analysis. Simple and multiple logistic regression were used to identify the associationbetween socioeconomic factorscontrolled other covariate.

The prevalence of CRD was3.81% (95%CI: 3.43 to 4.18). In the bivariate analysis, gender, members of household, geographic locations, fuels used for cooking and smoking were significantly associated with CRD.However in the multiple logistic regression, the odds of having CRD was significantly higher among those who lived in urban areas ($OR_{adj}$= 2.20; 95%CI: 1.71 to 2.83), female($OR_{adj}$= 2.20; 95%CI: 1.71 to 2.83), aged≥41years ($OR_{adj}$= 1.63; 95%CI: 1.99 to 2.24), used wood as fuels for cooking ($OR_{adj}$= 1.71; 95%CI: 3.78 to 30.30) and smoking ($OR_{adj}$= 4.52; 95%CI: 3.79 to 3.58) when control other covariates.

Socioeconomics has influences on CRD. Those who were female,middle aged, urban residents, used wood as fuels for cooking and smoking were vulnerable for CRD.

**Keywords:** Chronic respiratory diseases, socioeconomic,gender, disparity, Thailand.

# EDUCATIONAL STRESS AND DEPRESSION AMONG HIGH SCHOOL STUDENTS IN THE NORTHEAST OF THAILAND

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**Abstract**

Depression is a major risk factor for suicide of high school students. The situations and roles of educational stress on depression are complicated and unclear. This study aimed to identify the prevalence and characteristics of educational stress and its association with depression among high school students in the Northeast of Thailand.

This cross-sectional study used a cluster random sampling to select 1,112 high school students (grade 10th, 11th and 12th ) from 5 provinces in the Northeast of Thailand to response to a self-administered structured questionnaire. Depression was determined using the Center for Epidemiological Studies–Depression Scale (CES-D), Thai version. Descriptive statistics was used to describe the educational stress and depression situations and characteristics. Multivariate modeling was performed by using a multiple logistic regression approach to investigate associated.

Most of these students had medium level of educational stress (59.62%; 95%CI: 56.27 to 63.73) and 15.02%; 95%CI: 9.58 to 20.42 had high level of stress. The prevalence of depression was 37.32 % (95%CI: 34.47 to 40.16), of which 19.78%; 95%CI: 16.68 to 23.32 were in female, 17.54%; 95%CI: 14.81 to 21.20 among males. Depression prevalence were highest among grade 10th (13.76%; 95%CI: 10.46 to 17.54), sciences – mathematic program (25.45%%; 95%CI: 21.95 to 28.05). Factors that were significantly associated with depression were those with high level of educational stress (aOR=2.67; 95%CI: 2.15 to 3.17) and medium level of educational stress (aOR=1.68; 95%CI: 1.26 to 2.09) when control age and school size (number of students) as covariates.

More than 75 percent of these students had medium to high level of educational stress, about one third had depression. Student with high educational stress, female, first year in high school and students in sciences – mathematics program were vulnerable to depression.

**Keywords:** depression, educational stress, high school students, Thailand.

# INFLUENCES OF SOCIOECONOMIC DETERMINANTS ON DIABETES MELLITUS: THENATIONAL SOCIOECONOMICS SURVEY, 2012

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**Abstract**

Disparities in socioeconomics (SES) have been reported as major determinants of the rapid increasing trend of diabetes mellitus (DM) in middle-income countries. However, there are still inconclusive research evidences to support. The study aimed to identify the influence of SES factors on DM in Thailand.

This analyses used the data from the National Socioeconomics Survey,across-sectional study that was conducted by the National Statistical Office, using structured questionnaire interview among Thai population aged 15 years to 65 year olds who were stratified two–stage randomly selected from all 77 provinces of Thailand in 2012. Simple and multiple logistic regressionswere used to determine the roles of SES on prevalence of DM.

Majority of the samples were female 52.4%, with an average age of 39.60 ± 14.44 years old. Most of them had primary education(55.5%),had monthly income ≥ 30,001Baht (59.36%) and 29.62% were from the Northeast. The prevalence of DM was 8.11 % (95%CI: 6.25 to 9.74). The multiple regression analysis indicated that female ($OR_{adj}$ = 1.81; 95%CI: 1.57 to 2.10), lived in the Northeast($OR_{adj}$= 1.33; 95%CI: 1.03 to 1.72)and had low educational attainment($OR_{adj}$ = 1.17; 95%CI: 1.00 to 1.43), aged 65-74 year olds ($OR_{adj}$= 39.10; 95%CI: 25.74 to 59.40) had higher odd of having DM when control the covariatesincluding marital status, occupation, residential area, employment, monthly income, current liabilities and remaining debt,

Gender, region of resident, educational attainment and age had influences on DM prevalence among Thai population.

**Keywords:** Socioeconomics, Diabetes Mellitus, Gender, Disparity

# PERCEPTION OF UDINUS STUDENT ABOUT PICTORIAL HEALTH WARNING (PHWS) ON CIGARETTE PACK

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**Abstract**

Ministry of Health Regulations No. 28 of 2013 requires pictorial health warning (PHW) on 40 5 size of pack side of cigarette that sold In Indonesia. However, there are two controversial PHW since there are images of "smoking man" and "a man who smoke with a child in his arm". The two PHW seems encourage people to smoke. This study aims to determine UDINUS students' perceptions to the five PHWs.

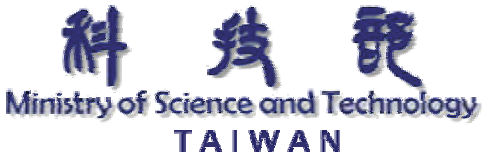
This was descriptive research with 99 students as respondents that were selected by simple random sampling methods; they were the students from five faculties in Dian Nuswantoro University. A self administered questionnaire was used for collecting data.

Result shows that the best PHW based on respondent's perception were "throat cancer", which 61.6% respondent perceive it was clear message, 54.6% threatening and 52.5% informative. While the worst PHW was "smoking man" which only 37.3% of respondent perceive it was clear message, 19.2% threatening and 29.3% said it was informative. The three of PHWs that perceived by respondents related to the danger of smoking were "lung cancer and chronic bronchitis" (55.6%), throat cancer (52.6%), and mouth cancer (53.6%). More than 50% of respondents said that smoking can caused serious health problems such as describe in those PHWs. Looking the "cancer" PHWs made (50.6%) of respondents had intention to quit smoking.

The recommendation is PHWs must be clear, informative and use threatening pictures such as throat, lung and mouth cancer.

**Keywords** : Perception, Pictorial Health Warnings, Cigarettes





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