PROCEEDING

INTERNATIONAL CONFERENCE ON PUBLIC HEALTH

ACCELERATING THE ACHIEVEMENT OF SUSTAINABLE DEVELOPMENT GOALS FOR THE IMPROVEMENT AND EQUITABLE DISTRIBUTION OF POPULATION HEALTH

SEBELAS MARET UNIVERSITY

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INTERNATIONAL CONFERENCE ON PUBLIC HEALTH

"ACCELERATING THE ACHIEVEMENT OF SUSTAINABLE DEVELOPMENT GOALS FOR THE IMPROVEMENT AND EQUITABLE DISTRIBUTION OF POPULATION HEALTH"

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"Accelerating the Achievement of Sustainable Development Goals for the Improvement and Equitable Distribution of Population Health"
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PREFACE

I am very excited to introduce and explain about this conference. I will start from the historical perspective. In 2015 the United Nations General Assembly ratified the 2030 Agenda for Sustainable Development: 17 goals, known by the acronym SDGs (Sustainable Development Goals). These goals have 169 targets aimed to address the world's most pressing issues and inequities. I believe that the Sustainable Development Goals have a significant role in the attainment of improved and equitable distribution of population health. None of the SDGs mention a specific disease or medical condition. Only one is focused on health (Goal 3: Good Health and Wellbeing). But in essence the SDGs offer a broader framework to address public health concerns in a more holistic way.

Prof. Bhisma Murti,
Chair of the International
Conference on Public Health

The SDGs integrate the economic, social and environmental dimensions of development and their inter-linkages within and across the goals. The SDGs recognize the evidence that poor health can no longer be separated from climate change, inadequate housing, gender disparities, and economic deprivation. Even peace, whose absence has forced millions to become refugees and migrants in recent years, such as those resorting from Syria, Afghanistan and Iraq to European countries, finds its way to the SDGs as one avenue towards improved population health.

The International Conference on Public Health (ICPH) is held in Solo, Indonesia, on September 14-15, 2016. It shares the holistic view of health development, and strives to support, strengthen, and realize this vision. The ICPH aims to spur the achievement of the SDGs in order to attain the improved and equitable distribution of population health.

The ICPH is a broad-based and multi-disciplinary international public health conference. The conference link researchers with users of research evidence. The conference bring together researchers in epidemiology, public health, health, and the other health-impact sector, national and local leaders, policy makers, program planners, administrators, allied health professionals, private sector, donor agencies, and academicians. These leaders and multidisciplinary professionals discuss population health issues and social economic development policies required to address the population health problems. In this fashion, research evidences will be more likely to be used and realized into policy, program, and intervention, for the improvement and fair distribution of population health.

There are 5 programs offered in two days of the conference: (1) Panel Discussion; (2) Symposium; (3) Workshop; (4) Oral Presentation; and (5) Poster Presentation. Distinguished international speakers are invited from five countries: USA, UK, Sweden, Thailand, and Indonesia. They come from nine world renowned universities, including Drexel University, Tulane University, Oxford University, Umea University, Chulalongkorn University, Khon Kaen University, Gadjah Mada University, Atmajaya University, and Sebelas Maret University. The honorable invited speakers include Mayors of Surabaya and Surakarta cities, chairman of the Indonesian Association of Public Health Professionals, and the famous former Indonesian Minister of Family Planning and Demography, and the Coordinating Minister of Peoples Welfare.

At least 360 participants and 397 participants have been registered to attend the first and second day of the ICPH, respectively. These participants come from all over Indonesia, Thailand, Cambodia, Malaysia, and Sweden. They present their notable research work in oral presentation and poster presentation formats. Research papers cover all branches of epidemiology: (1) Behavioral Epidemiology, (2) Social Epidemiology, (3) Life-Course Epidemiology, (4) Nutritional Epidemiology, (5) Environmental Epidemiology, (6) Urban Health, and (7) other public health related research. Selected abstracts and full papers from this conference are to be published in a series of internationally indexed conference proceedings, in one volume each year, both in digital and print forms.

I would like to extend my appreciation to Sebelas Maret University, all participants, and sponsors, which have co-funded this event. I must also offer gratitude to the honorable speakers who have kindly participated in this conference. Have a good time with this conference. I believe this conference will benefit much to all of you, and subsequently to population at large.

Surakarta, September 14, 2016

Chair of the International Conference on Public Health

Prof. Bhisma Murti

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BACKGROUND

A. Sustainable Development Goals

Economic development has a two-way relationship with health. Economic development affects population health. Conversely, population health affects economic development. Health is a vital resource for economic development. High level of population health can increase productivity and augment family income that in national aggregate increases Gross Domestic Product per capita. Conversely, economic development affects the sustainability of supporting system that population call for to create good health and quality of life.

Economic development has been increasingly using a massive scale of natural resources, energy, and human resources. Uncontrolled economic development, unbridled use of natural resources and energy for production and consumption that exceeds the earth capacity, can damage social environment and eco-system, resulting in deterioration of health and quality of life of the population.

A wise economic development therefore is indispensable. A development that is wise for society is one that is sustainable. Sustainable development refers to a development that aims to improve the quality of life of humans all over the world, covering the present generation as well as the future generation, without too much exploitation of natural resources that exceeds the earth capacity to hold.

The aim of sustainable development can be achieved through its four elements: (1) Economic growth and fairness; (2) Social development; (3) Natural resource conservation (environmental protection); (4) Good governance. The four elements are mutually supportive in creating sustainable development.

In June 2012 a conference was held by the United Nations in Rio de Janeiro, Brasil. The conference was attended by the United Nations member countries who discussed an agenda of sustainable development that was called as Sustainable Development Goals (SDGs). SDGs are a set of intergovernmental goals, targets, and indicators of sustainable development. SDGs follow and expand the Millennium Development Goals (MDGs) that had been implemented by member countries of the United Nations since 2001 and ended in 2015.

The eight Millennium Development Goals are:
1. To eradicate extreme poverty and hunger;
2. To achieve universal primary education;
3. To promote gender equality and empower women;
4. To reduce child mortality;
5. To improve maternal health;
6. To combat HIV/AIDS, malaria, and other diseases;
7. To ensure environmental sustainability; and
8. To develop a global partnership for development.

Although some MDG targets have been met, many other goals and targets have not been achieved. MDGs aimed to eradicate poverty and hunger, but failed to consider and address the root causes of poverty.

MDGs did not specifically consider the importance of improving economic development alongside poverty allevation. MDGs paid little attention to holistic, inclusive and sustainable development. MDGs overlooked gender equality and human right (Figure 1). In theory the MDGs should be implemented by all UN member countries. In reality the MDGs were only the business of developing or poor countries, with program financing from rich countries (UN, 2016; Guardian, 2016; Knoema, 2016).

Some of the chief problems that persist by the time the MDGs era have ended are as follow (UN, 2016):

1. There remain a wide gap between poor and rich households, between rural and urban areas
2. Gender inequality persists (Figure 1)
3. Conflicts (war, etc) often happen, a hardship that is a real threat to human development
4. Millions of people still live in poverty and hunger, lacking in access to basic services
5. Climate change and environmental degradation undermine progress, with the poor are afflicted the most
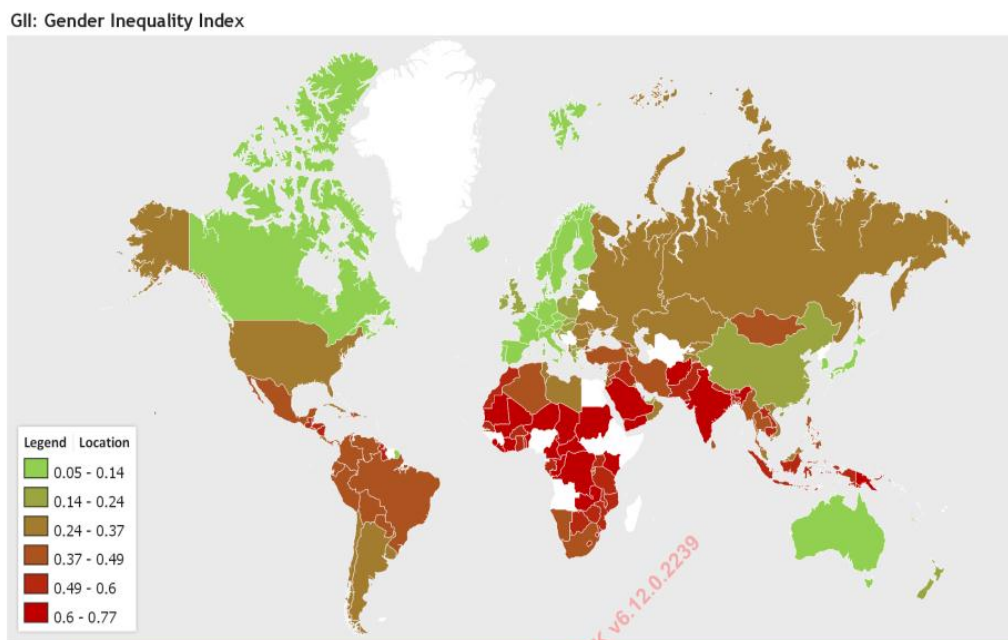
Figure 1   Gender Inequality Index (GII) in several countries, based on UNDP data 2011. Source: Knoema, 2016)

Figure 1 shows an analysis of UNDP data that demonsrates gender inequality across several countries in 2011. Gender inequality is assessed in terms of Gender Inequality Index (GII), consisting of three dimensions: (1) reproductive health, (2) empowerment, and (2) employment opportunity. GII=0 indicates perfect equality between male and female. GII= 1 indicates perfect inequality, with female being disadvantaged at maximum level. Indonesia falls into the group of countries with high gender inequality (GII 0.49-0.60) (Knoema, 2016).

In a summit meeting that was held at the UN headquarter in September 2015, 193 UN member countries agreed to set the SDGs an agenda for development framework to be implemented 15 years ahead from 2016 to 2030. The SDG agenda is a plan of action for people, planet, and prosperity. It is recognized that eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development. All countries and all stakeholders, acting in collaborative partnership, will implement this plan. The government of each member country – rich, middle-income, and poor countries – holds the greatest responsibility to implement and achieve the SDGs. It bears the chief responsibility in social and economic development that is required to achieve sustainable development. The government in all countries is expected to implement national economic development agenda, to prosper social welfare while protecting the earth planet.

SDGs expicitly aim to eradicate poverty and hunger, to reduce inequality within and among countries, to improve the management of water and energy, as well as to take urgen actions to address climate change. In contrast with MDGs, the MDGs emphasize the importance of taking some strategic actions in the effort to alleviate poverty. These actions include economic growth improvement, implemention of social policy intended to meet social need (education, health, social protection, employment opportunity), as well as policy measure undertaken to address climate change and environment protection.

SDG consist of 17 goals and 169 targets that encompas various issues of sustainable development (Figure 2).

Figure 2. 17 *Sustainable Development Goals.*
Source: GTP, 2016

The SDGs include the following goals (UN, 2015):
1. **Poverty -** End poverty in all its forms everywhere
2. **Food -** End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3. **Health** - Ensure healthy lives and promote well-being for all at all ages
4. **Education** - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5. **Women** - Achieve gender equality and empower all women and girls
6. **Water** - Ensure availability and sustainable management of water and sanitation for all
7. **Energy -** Ensure access to affordable, reliable, sustainable and modern energy for all
8. **Economy -** Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9. **Infrastructure -** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10. **Inequality** - Reduce inequality within and among countries
11. **Habitation** - Make cities and human settlements inclusive, safe, resilient and sustainable
12. **Consumption** - Ensure sustainable consumption and production patterns [31]
13. **Climate -** Take urgent action to combat climate change and its impacts [32]
14. **Marine-ecosystems** - Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15. **Ecosystems -** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
16. **Institutions** - Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
17. **Sustainability** - Strengthen the means of implementation and revitalize the global partnership for sustainable development

Almost all of the SDGs are health determinants that lie at various levels of organization. Only Goal #3 is not a health determinant but health goal per se that is intended to achieve. Goal #3 clearly seeks to achieve health for all (equitable health) at all ages (health equality according to age).

Based on Dahlgren and Whitehead (1991) conceptual framework on multiple layers of health determinants, and the fact that the SDGs are health determinants, then it is legitimate to take concerted action to spur the achievement of the SDGs. That way an eventual desirable effect of improved population health and more equitable distribution of population health will be gained.

B. Health Determinants

Currently held conceptual framework of health determinants states that individual health and equitable distribution of population health are determined by many factors that lie at various levels. Dahlgren and Whitehead (1991) depict various levels of health determinants in a eco-social determinants of health model (Figure 3). In this model, health care system is only one of many factors that determine individual and population health.

Figure 3 Eco-social determinants of health.
Source: Dahlgren and Whitehead (1991)

In this model, an individual whose health is to be promoted, lies at the center. This individual embraces demographic characteritics (age, sex), constitutional factor (gene), and micro-system environment at the cellular and molecular levels. At the first layer or level (micro level, downstream) lie health behavior and life-style. Health behavior and life-style can protect or harm health status (eg. smoking). At this level, the genetic constitution interacts with environmental exposure, and provides the potential tendency for an individual to be susceptible or resistent to harmful environmental exposure. The health-related behaviors and individual characteristics are then influenced by family pattern, friendship pattern, and norms that exist in the community.

The second level (meso level) consists of social and community influences, including social values, community institution, social capital, social network, and the likes. Social factors available at the community level can provide necessary condition for its community members to produce health. But social factor do not always provide the necessary social support for community members to produce health. It otherwise can adversely provide a negative impact on an individual's health.

The third layer or level (exo level) encompasses structural factors, including good living and housing environment, food availability, availability of energy (eg. electricity), good working environment, school envi-

ronment, provision of clean water, environmental sanitation, access to quality health care, access to quality education, and decent employment.

The outmost level (macro level, upstream) comprises macro conditions and policies of socio-economics, culture, politics, and physical environment. This level includes public policy, social-economic-political stability, international relation and global partnership, investment in economic development, war and peace, weather and climate change, eco-system, natural disaster, man-made disaster (eg. forest fire).

Based on the eco-social health model, individual, community, and population health require the fulfilment of each individual potential, physically, psychologically, socially, spiritually, economically, and individual's role in a family, community, work place, as well as realization of macro policies that help create the condition necessary for individuals to produce health.

In 1986, WHO endorsed the Ottawa Charter for Health Promotion that reaffirms health as a human right. The Ottawa Charter states that any effort to produce individual and population health requires some pre-conditions. These pre-conditions include peace, sufficient economic resources, sufficient food and housing, stable eco-system, and sustainabe use of resources. With this conceptual framework in mind, it is accurate to conclude that health is inseparable from social economic conditions, physical environment, individual health behavior, and life-style. This conceptual framework provides a holistic and systemic understanding of health. "Holistic" in a sense that individual health to be promoted consists of bio-psycho-social aspects. "Systemtic" in a sense that individual and population health are determined by factors at various levels. These factors are organized in a system at each level, and across levels, in a conceptual model so-called as "eco-epidemiology" (Susser dan Susser, 2001). The policy implication is that there is a need for healthy public policies. Healthy public policy refers to a public policy that can directly or directly improve individual health and collective community health.

C. The Role of Epidemiology

Epidemiology is the mother science of public health. Public health has been defined as "the science and art of preventing disease, prolonging life and promoting health through organized efforts and informed choices of society, organizations, public and private, communities and individuals" (Winslow, 1920). Thus, public health means not only science, but also art, and organized efforts. Public health aims not only to prevent disease, but also extend life, and improve health. Informed choices imply that public health efforts should be based on the best available research evidence. Generally the public health endevors are designed, planned, programmed, and implemented at group, community, or population level. Therefore policy making and program planning are an important strategy for a public health intervention to be effective. But as Winslow defines it, public health can also be implemented at the individual level, as long as it is organized.

The current and most useful definition of epidemiology is provided by John M. Last: "Epidemiology is the study of distribution and determinants of health-related states or events in specified populations, and the application of this study to control of health problem" (Last, 2000). Epidemiology studies the distribution of health conditions (including disease and its various consequences such as death and disability) in populations. It also investigates the causes and estimates the magnitude of the risk associated with those conditions. The results of epidemiological studies can be used to make evidence-based public policy and to develop effective public health intervention, by identifying the cause of disease, the determinant of population health, and the population target for public health intervention.

The era of modern epidemiology began since mid-eighteenth century when John Snow was conducting a cholera outbreak investigation in London. Precedented by a series of earlier milder outbreak, in 1854 a severe cholera epidemic attacked inhabitants near Broad Street, in Soho district of London, England (Figure 4). Doctor John Snow carried out an outbreak investigation, and formulated a hypotesis, which states that contaminated water, instead of bad air as commonly believed to be true in "miasma theory" in those days, is the cause of cholera transmission. By using statistical method, presenting frequency table, and drawing spot map (Figure 5) based on data collected house to house in what is later popularly known as "shoe-leather epidemiology", John Snow demonstrated that the incidence of cholera was high among population who drank water that was supplied by Southwark and Vauxhall Waterworks Company. This company was drawing water from the downstream of Thames River that was known to be polluted by sewage. The other company, the Lambeth Water Company, had recently moved its intake facilities to a location above the sewer outlets, the upstream of Thames River. As what now epidemiologists always do when analyzing data for an analytic epidemiology, Snow compared the mortality rates of consumers of the two sources of water. John Snow demonstrated that the incidence of cholera was much lower among population who drank water that was supplied by the Lambeth Water Company than that supplied by Southwark and Vauxhall Company. By current methodology, the design John Snow used in his study is classified as cohort study. But as Rothman (2012) puts it in his book "Modern Epidemiology", this design can also be said as "natural experiment".

Figure 4 Water pump at Broad Street London, in front of John Snow Pub. Source: Wikipedia, 2016
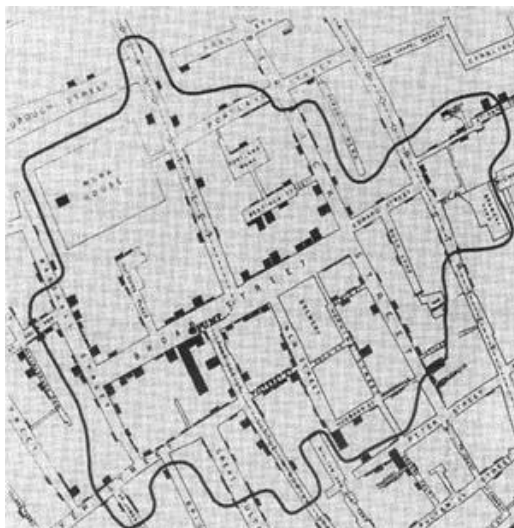
Figure 5 Map showing areas within walking distance of the Broad Street pump. Black bars indicate cholera deaths. Source: UCLA, 2016

John Snow's study becomes a cornerstone of public health history. For his persistent efforts to determine how cholera was spread, the statistical and mapping methods he initiated, and for the significant reduction of cholera mortality after discontinuation of the contaminated water supply in the affected areas, John Snow is widely considered to be the father of epidemiology (UCLA, 2016).

Currently held causation model states that health process and occurrence of disease involve several complex causal pathways, consisting of many causal factors that operate at various levels throughout the life course. In 1996, Susser and Susser proposed the "eco-epidemiology" concept. This concept provides a theoretical framework that integrates multiple factors from across various causal levels, including genetic, epi-genetic, individual, family, community, and social factors. The eco-epidemiology approach emphasizes on the importance of inter-connectiveness, interdependence, and interaction between those levels, development of exposure that operate over the life course, and the socio-temporal context that modifies the risk of disease. The eco-epidemiology paradigm offers the development of more realistic and complex causation models that are not confined to a purely biological model at the molecular level or a conventional risk factor model at the individual level.

Over the last two decades or so there has been an increasing use of multilevel model (also known as hierarchical model, mixed effects model) to examine public health problems, particularly the social determinants of health and disease. The increasing use of multilevel model has been induced by the increasing interest in the potential of health determinants at the ecologic, macro, or group level, as well as the idea that variables at the group level, or the nature of group individual relationship within a group, may better explain the distribution of health and disease in the population. The increased use of multilevel analysis is also much supported by the development of sophisticated statistical methods alongside the creation of new computer software, that can be applied to address various research questions involving nested data structure (Diez-Roux, 2000).

Eco-epidemiology incorporates the perspective of various branches of epidemiology that have been previously known, including social epidemiology, nutritional epidemiology, behavioral epidemiology, risk factor epidemiology, molecular epidemiology, environmental epidemiology, and at a lesser extent life-course epidemiology. Social epidemiology studies the social distribution and the social determinants of health, as well as the features and the causal pathways by which these social conditions can

affect health (Krieger, 2002; Honjo, 2004). Social epidemiology assumes that the distribution of health and disease in a population reflects the social and economic conditions that advantage one group and disadvantage another in a society. Studies in social epidemiology employ multilevel model to estimate the determinants at various levels in the disease causal pathway, particularly to account for the variations in the estimated correlation between variables of interest at the individual level that are attributable to contextual factors (Diez-Roux, 2000).

Behavioral epidemiology examines behavioral factors and life-style that are associated with disease risk, factors that affect those behaviors, and the application of this knowledge to develop intervention effective to change unhealthy behaviors. Behavioral epidemiology studies the association between adulthood behavior (smoking, diet, physical activity, alcohol consumption, and the likes) and the risk of developing disease in adult. However behavioral epidemiology may also use the life-course perspective. A study in behavioral epidemiology may investigate the long-term effect of dietary pattern and sedentary life style at adolescence and the risk of obesity in adult life (Kuh dan Ben-Shlomo, 1997; Sallis et al., 2000; University of North-Carolina, 2016).

Molecular epidemiology studies "the contribution of potential genetic and environmental risk factors, identified at the molecular level, to the etiology, distribution and prevention of disease within families and across populations" (Dorman, 2015). It employs bio-molecular techniques to elucidate the specific causal pathways of disease at the molecular level, the complex interaction between the genetic and molecular characteristics and environmental exposure in health process and disease occurrence. That way molecular epidemiology helps elucidate the pathogenesis of disease.

Life course epidemiology has been defined as "the study of long term effects on later health or disease risk of physical or social exposures during gestation, childhood, adolescence, young adulthood and later adult life" (Kuh dan Ben-Shlomo, 1997). It aims to elucidate biological, behavioral, and psychosocial processes that operate across an individual's life course, or across generations, to influence the development of disease risk. Life course epidemiology was built on the premise that various biological and social factors throughout life independently, cumulatively and interactively influence health and disease in adult life.

The enthusiasm of a life course approach in epidemiology began from the revival of interest in fetal origins hypothesis, also known as thrifty phenotype hypothesis, fetal programming hypotesis, or David Barker hypothesis. According to this hypothesis, adverse environmental exposures such as undernutrition may impact permanently and ireversibly when they occur during the critical periods of growth and development in utero (Figure 3). The harmful exposure may have long term effects on adult chronic disease risk by "programming" the structure or function of tissues, organs, or body systems of the fetus. This idea of "biological programming" was presented as an alternative paradigm to the conventional adult lifestyle model of adult chronic disease that focuses on how adult be-

haviours (smoking, diet, exercise and alcohol consumption) affect the onset and progression of diseases in adulthood (Kuh et al., 2003).

Life course epidemiology integrates the biological programming in utero and adult lifestyle approaches to chronic disease etiology, by building on the premise that various biological and social factors throughout life independently, cumulatively and interactively influence health and disease in adult life. It implies that life course epidemiology has joint interest with social epidemiology in investigating the role of social factors in the production of health and disease in populations. Particularly it studies how socially patterned exposures during childhood, adolescence, and early adult life, influence adult disease risk and socioeconomic position, and hence may account for social inequalities in adult health and mortality (Kuh et al., 2003).
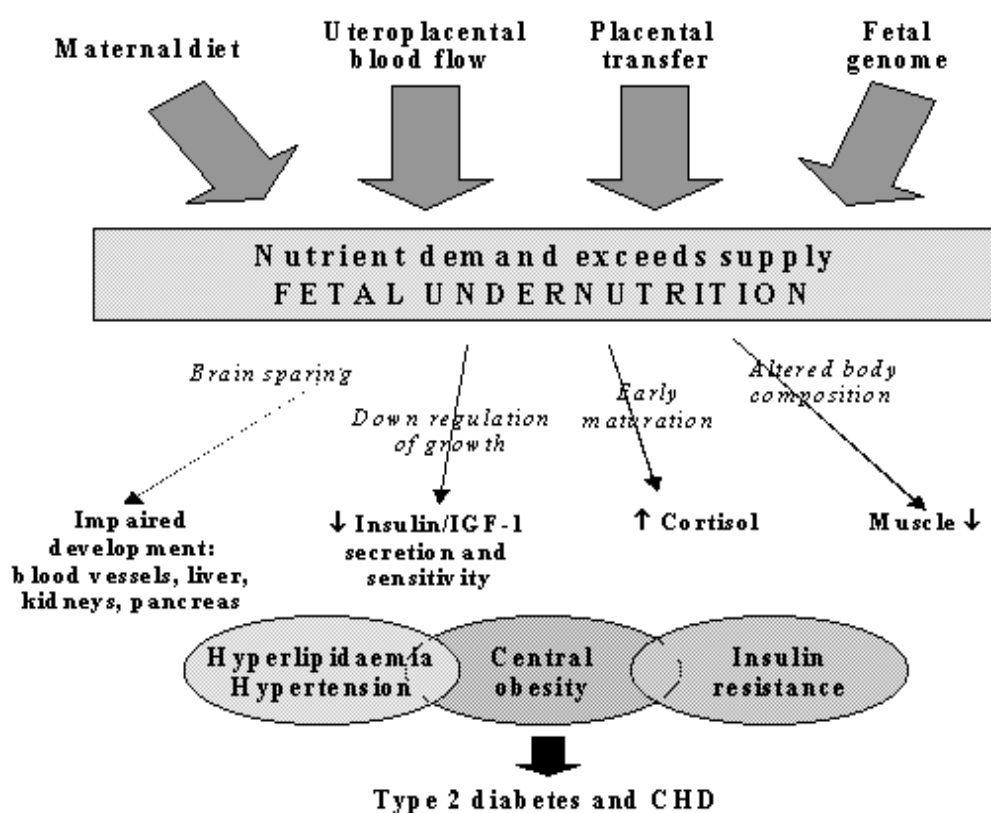
Figure 6 Causal pathway on the development of type 2 diabetes in adult life, according to "fetal origins hypothesis". Source: Fall, 2003

Nutritional epidemiology studies the relationship between nutritional factors (macro-nutrient and micro-nutrient intake), factors related to food (food security) and the risk of developing disease, as well as the application this knowledge to develop interventions that create healthy dietary pattern and strengthen food security.

Food security refers to a condition whereby every individual at all time has access to food that is sufficient in amount, safe, and nutritious, so that it can be used to maintain healthy and active life. Food security is built upon three pillars: (1) Availability (food is available at all time in a sufficient amount); (2) Access (sufficient resources are available to secure food);

(3) Utilization (food is consumed with correct and healthy pattern). Food security is a necessary condition for healthy dietary pattern (WHO, 2016).

Environmental epidemiology studies various environmental exposures that contribute to or protect against the occurrence of injury, disease, development disturbance, disability, and death, and the application of this knowledge to develop public health measures that are effective to control risks associated with harmful exposures (Wikipedia, 2016).

Environmental exposures can be distinguished into proximate and distal exposures. Proximate exposure directly causes health problem, including chemical substance, physical substance, and microbiologic pathogen. Proximate exposure occurs by air, food, water, and dermal contact. Distal exposure indirectly causes health problem. It causes health problem by changing intensity and frequency of proximate exposure, altering ecosystem (eg. forest fire), or changing other supporting system that is vital to human health (eg. health infra-structure damage) (Slikker et al., 1998).

By integrating all those branches of epidemiology, epidemiologic research provides empirical evidence on the causal pathways that explain how biologic exposures and social experience affect health process and the development of disease. It also provides evidence on the effects of biological changes, social changes, economic development, and changes in physical environment, that occur across various stages of life and across generations, on population health.

Epidemiology has an important role in providing theoretical models and scientific evidence for sustainable development. It identifies biological, physical, psychological, and social determinants, which form the SDGs, that have strong association with health improvement and equitable distribution of population health. Figure 7 depicts a flow diagram on the role of epidemiology in the achievement of SDGs, the improvement of health and equitable distribution of population health.

The value of epidemiologic contribution to sustainable development goals, however, will very much depend on the effectiveness of the government in using and translating the available knowledge and scientific evidence into actual social and health policy making, and the consistency of its implementation. The effectiveness of up-taking epidemiologic evidence for social and health policy making calls for sound, multidisciplinary, and multi-sectoral communication, among leaders, policy makers, program planners, implementers, practitioners, researchers, and academicians. Based on this background rationale, a scientific conference is being proposed to be held in Solo, Indonesia, on September 14-15, 2016. Name of the conference is "International Conference on Public Health (ICPH)".
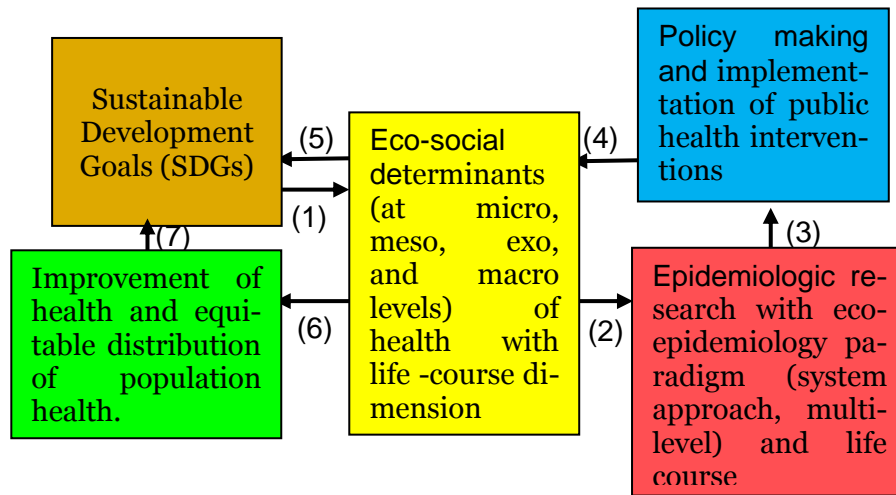
Figure 7 The role of epidemiology in the achievement
of SDGs, the improvement of health and equitable
distribution of population health.

D. Fair Distribution of Health

The goal of health development of the government in all countries is the attainment of optimal level of population health with equitable distribution of health among its citizens. Level of health is said to be optimal if it is high enough to enable individuals to perform various functions independently, to enjoy the values of life and the meaning of their existence, and to be productive.

Equitable distribution of health (alternatively, fair distribution of health), is defined as the distribution of equivalent level of health across various groups in the population with differential socio-economic conditions. In a population with equitable distribution of health, the difference in level of health among groups is due to biological endowment that is unavoidable (age, sex, gene). The health disparity is not attributable to unfair socio-economic conditions that are normatively avoidable.

Nowadays all countries in the world, including Indonesia, are facing various issues in population health, morbidity, mortality, and unfair distribution of population health. Figure 1 shows unfair distribution of health between high, middle, and low-income countries, in terms of life expectancy, by year 2010 (drstoney, 2016).

Comparing life expectancy and gross domestic product (GDP) per capita
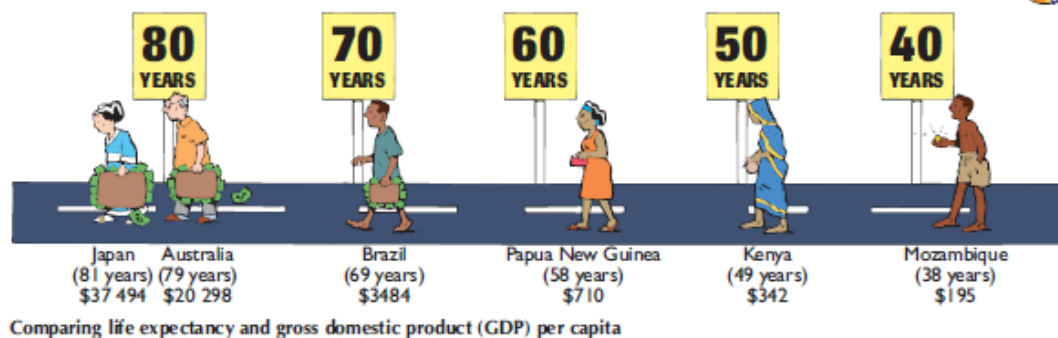
Figure 8 Disparity in life expectatncy between countries
with different gross domestic product (GDP) per capita,
by 2010. Source: stoney, 2016

The distribution of health is said to be fair if the level of health across groups do not differ significantly with different socio-economic status, race, ethnicity, religious denomination, political affiliation, and residence. In an equitable distribution of health, population who live in urban and rural areas, Java and outside Java, rich and poor countries, developed and developing countries, population of majority and minority, population with different race and ethnicity, population with different religious belief, diferent education level, population with or without disability, have equal level of health. If there exists some difference in the distribution of health, it is merely due to natural characteristics, such as age, genetic factor, and sex, which are unavoidable.

THEME

"Accelerating the Achievment of Sustainable Development Goals for the Improvemmmeeent and Equitable Distribution of Population Health"

AIM AND OBJECTIVES

A. AIM:
The International Conference on Public Health aims to spur the achievement of the Sustainable Development Goals, which will have an immediate impact on the improvement and more equitable distribution of population health, by strengthening the role of epidemiology.

The conference will bring together researchers in epidemiology, public health, and health, as well as national and local leaders, policy makers, program planners, administrators, allied health professionals, private sector, donor agencies, and academicians, to discuss population health issues and social economic development policies required to address the population health problems.

B. OBJECTIVES:
1. To disseminate the results of studies in epidemiology, public health, on the link between various bio-psycho-social factors as stated in the SDGs and the improvement and equitable distribution of population health. This research evidence can be used to guide policy making, program planning, and program implementation, that have a direct or indirect impact on population health.
2. To discuss government policies of socio-economic development, strategic planning, and their implementation, that are related to SDGs. National and local leaders, policy makers, program planners, from various sectors related to SDGs will present government policies, strategic plannning, their implementation and evaluation, that will have an impact on population health.
3. To increase the capacity of researchers in the use of various causation models, selection of appropriate study design, method of data collection, and correct data analysis, in studies of various branches of epidemiology, including social epidemiology, life-course epidemiology, be-

havioral epidemiology, nutritional epidemiology, infectious diseases epidemiology, environmental epidemiology, and urban health.

4. To enhance the skill of epidemiology and public health researchers in writing and publication of research articles in peer-reviewed international journals that are indexed in prominent external data base (e.g., Scopus, Pubmed Central/ Medline, Index Copernicus, Google Scholar, EBSCO Health Policy, Proquest Public Health, Proquest Health and Medical Complete, Thomson-Reuter, Gale Health Reference Center, Excerpta Medica).

PROGRAMS

1. Panel discussion
2. Symposium
3. Workshop
4. Oral presentation
5. Poster presentation

1. Panel Discussion

Panel discussion aims to bring together leaders, policy makers, program planners, public health professionals, epidemiological experts, academicians, and researchers, to discuss current issues in population health, and the socio-economic development to be taken to address the "root causes" of population health problems and inequitable distribution of population health.

Topic:

"Sector-Wide Healthy Public Policies and Strategic Planning to Spur the Attainment of Sustainable Development Goals, for the Improvement and More Equitable Distribution of Population Health"

Panelists and Sub-Topics:

1. FX Hadi Rudyatmo - Mayor of Solo City

"Planning Clean, Healthy, Safe, and Inclusive Solo City for All Citizens, in line with the Sustainable Development Goals"

2. Dr. Ir. Tri Rismaharini - Mayor of Surabaya City

"Planning Clean, Healthy, Safe, and Inclusive Surabaya City for All Citizens, in line with the Sustainable Development Goals"

3. Prof. Ana Diez Roux - Distinguished Professor of Epidemiology. Dean of the Dornsife School of Public Health, Drexel University, Philadelphia, USA

"Health Research into Sustainable Development Goals and Its Application in Policy Making: The Importance of Designing Effective Research Strategies to Address Complex Bio-Psycho-Social Determinants of Population Health"

4. Prof. Adang Bachtiar - Chairman, The Indonesian Association of Public Health Professionals (Ikatan Ahli Kesehatan Masyarakat Indonesia (IAKMI). Faculty of Public Health, University of Indonesia.

"Strengthening the Role of Public Health Professionals in Accelerating the Achievement of the Sustainable Development Goals"

5. Prof. John Kevin Baird - Professor of Malariology. Head of Unit, Eijkman Oxford Clinical Research Unit, University of Oxford, United Kingdom

"The Important Role of Sector-Wide Approach and Partnership in Control Strategies for Infectious Diseases – Experience from Indonesia and Other Tropical Countries"

6. Prof. Charles Suryadi - Center for Health Research, Atmajaya Catholic University, Indonesia.

"Strategic Planning of Heath City for All Citizens"

7. Prof. Haryono Suyono

"Optimizing Demographic Dividend and Aging Population to Accelerate the Achievement of Sustainable Development Goals"

8. Prof Bhisma Murti - Professor in Public Health. Graduate Studies in Public Health, Graduate Program, Sebelas Maret University

Host, panel discussion

2. Symposium

Experts in epidemiology present updated theoretical models along with supporting empirical evidence currently discussed in social epidemiology, life-course epidemiology, behavioral epidemiology, nutritional epidemiology, infectious dieases epidemiology, and environmental epidemiology. These models can be used as a theoretcal framework in policy making and program planning for the achievement of the SDGs.

Invited Speakers:

1. Prof. Malin Eriksson - Professor in Social Epidemiology. Epidemiology and Global Health Unit, Department of Public Health and Clinical Medicine, Faculty of Medicine, Umea University, Umea, Sweden

Topic: "Social Epidemiology: Gender, Race/Ethnic, and Socio-Economic Inequalities in Population Health, and the Implication for Public Health Intervention – Experience from Other Countries"

2. Prof. Lu Qi-HCA Regents Distinguished Chair and Professor of Epidemiology. Director,Tulane University Obesity Research Center, Tulane University School of Public Health and Tropical Medicine, USA

Topic: "Life-Course Epidemiology: The Importance of Studies in Long Term Health and Disease Risk Effects of Physical and Social Exposures During Gestation, Childhood, Adolescence, Young Adulthood and Later Adult Life, and Their Application for Public Health Interventions"

3. Assoc. Prof. Dr. Prathurng Hongsranagon-Lecture (Urban and Global Health) College of Public Health Sciences, Chulalongkorn University, Bangkok, Thailand

Topic: "The Driving Forces for Accelerating the expansion of the Universal Coverage to Support the Attainment of Sustainable Development Goals: Lesson Learned from Thailand's Experience"

4. Prof Ahmad Yunus – Professor in Agriculture. Sebelas Maret University, Indonesia.

Topic: "Nutritional Epidemiology: Climate Change and Food Security - Current Situation in Indonesia and Their Policy Implications for Population Nutrition and Health"

5. Prof. Joacim Rocklov - Professor in Epidemiology, Umea University, Sweden. A PhD in Environmental Health, a Master on Statistics and a Bachelor in Mathematics.

Topic: "Environmental Epidemiology: Climate Change and Health - A Promising Strategy for Health Sector Mitigation and Adaptation"

3. Workshop

The workshop aims to enhance the capacity of reserarchers in conducting epidemiological and health studies with new research methodology. It also aims to improve the skill of the researchers in writing and publication of research articles in international journals, as well as writing a policy brief.

Resource Persons:

CLUSTER A

1. Prof. Ana Diez Roux - Distinguished Professor of Epidemiology. Dean of the Dornsife School of Public Health, Drexel University, Philadelphia, USA

Topic: "How to Conduct Multilevel Analysis in Public Health Research"

2. Prof. Lu Qi- HCA Regents Distinguished Chair and Professor of Epidemiology. Director,Tulane University Obesity Research Center, Tulane University School of Public Health and Tropical Medicine, USA

Topic: "How to Design Studies, Collect Data, and Analyze Data in Nutritional Epidemiology"

3. Prof. Charles Suryadi - Atmajaya University, Indonesia

Topic: "How to Conduct Health Studies into Sustainable Development Goals in Urban Settings"

4. Prof. Nawi Ng - Professor of Epidemiology and Global Health. Chief-Editor of the Global Health Action Open-Access Journal. Umea University, Sweden

Topic: "How to Write and Publish Research Articles in International Journals with Scopus Indexing"

CLUSTER B:

1. Prof. Malin Eriksson-Professor in Social Epidemiology. Epidemiology and Global Health Unit, Department of Public Health and Clinical Medicine, Faculty of Medicine, Umea University, Umea, Sweden

Topic: How to Design Effective Research Strategies to Address Bio-Psycho-Social Determinants of Health

2. Prof. Joacim Rocklov - Professor in Epidemiology, Umea University, Sweden. A PhD in Environmental Health, a Master on Statistics and a Bachelor in Mathematics.

Topic: "How to Design Effective Research Strategies and Analyze Data in Environmental Health"

3. Prof. Laksono Trisnantoro. Professor in Health Policy and Planning. Graduate Studies in Medicine and Health. Gadjah Mada University, Indonesia.

Topic: "How to Write Effective Policy Brief and to Increase Use of Epidemiogical Studies in Health-Related Policy Making"

4. Prof. Wongsa Lohasiriwong-Professor in Public Health Khon-Kaen University

Topic: "How to Develop Healthy Cities in Support of the Sustainable Development Goals Achievement"

5. Prof. Bhisma Murti – Professor in Public Health. Graduate Studies in Public Health, Sebelas Maret University, Indonesia

Topic: "How to Conduct Path Analysis and Structural Equation Model for Health Research"

4. Oral Presentation and Poster Presentation

This program provides an opportunity for all honorable researchers in epidemiology and public health from Indonesia and all over the world, to present and discuss results of their stuides on the relationship between bio-psycho-social factors as stated in SDGs and the distribution of population health. Policy makers related to SDGs, program planners, administrators, practitioners, public health professionals, can use the study results in policy making, program planning, prpram implementation, and decision making.

The conference calls for research papers in the following areas:
1. Social Epidemiology
2. Life-Course Epidemiology
3. Nutritional Epidemiology
4. Maternal and Child Health
5. Behavioral Epidemiology
6. Infectious Diseases Epidemiology
7. Environmental Epidemiology
8. Urban Health

Research papers eligible for submission are not restricted to the areas delineated above. All research authors are kindly encouraged to submit their research papers in any topic as long as it addresses pubic health and SDG issues.

1. Behavioral Epidemiology

Behavioral epidemiology examines the association between behavior and life-style in the adulthood (e.g. smoking, diet, physical activity, alcohol consumption) and the risk of diseases in adult (Figure 1). But this definition only represents a part of four phases of behavioral epidemiology. Sallis et al (2000) proposed a framework that specifies a systematic sequence of phases in behavioral epidemiology, which leads to evidence-based interventions directed at populations. The four phases of behavioral epidemiology are follows: (1) Establish links between behaviors and health (eg. association between smoking and some chronic diseases); (2) Develop measures of the behavior (eg. develop a questionnaire to measure smoking); (3) Identify influences on the behavior (eg. what are factors that influence individuals to have smoking

Figure 1 Products unhealthy for consumption

habit); (4) Evaluate interventions to change the behavior (eg. to evaluate the effectiveness of hypnotherapy to quit smoking habit); (5) Translate research into practice (eg, to make policy at school and make a hypnotherapy program be impelemented for students and teachers who smoke).

For example, a study by Anderson et al., (2016) investigated if behavioral willingness (BW), or openness to engaging in a given behavior, is an important proximal predictor of alcohol consumption in adolescents and emerging adults (EAs). It found that context-specific BW potentiated coping motives' impact on increased alcohol consumption and potentially hazardous drinking at the end of participants' first year. These findings support the importance of BW and context in understanding motivation's role in drinking behavior for EAs.

2. Environmental Epidemiology

Environmental epidemiology investigates environmental exposures, including physical, chemical, biological, social, and economic exposures, that affect human health (Figure 2). Environmental epidemiology studies the effects of both risk factor and protective factor from the environment on the risk of injury, disease, development disturbance, disability, and death. Most environmental exposures are modifiable. Environmental epidemiology applies this knowledge to develop public health interventions that are effective to control harmful environment.

Figure 2. Immaculee Mujawamaliya, 31, collects water from a
crocodile-infested river with a girl from the Kajeruba village, Rwanda.
Source: Axis of Logic, 2016

3. Infectious Diseases Epidemiology

Infectious diseases remain the primary cause of millions of deaths world-wide each year, particularly in developing countries. Infectious disease is caused by a micro-organism that enters, grows, and multiplies in the human body.

Figure 3 TB breakthrough brings vaccine closer.
Source: BBC, 2002

Infectious disease epidemiology studies the distribution and causes of infectious diseases, including the interaction between host, vector, and environment, and the application of this knowledge to control and prevent diseases. Infectious diseases epidemiology traces, identifies, and assesses the occurrence of infection in the community. It investigates the transmission dynamics, develops and evaluates the effecttiveness of disease prevention and control programs.

Infectious diseases include both emerging and prevalent diseases, such as HIV/AIDS, hepatitis C, human papillomavirus (HPV), malaria, measles, tuberculosis (Figure 3), influenza, dengue hemorrhagic fever (DHF), food borne and water borne diseases, and zoonotic diseases.

4. Maternal and Child Health

Research into maternal and child health aims to promote maternal and child health. Factors studied in their relationship with maternal and child health includes both health care system determinant and non-health care system determinant. Health care system determinants include access to child health care, maternal health care, and reproductive health care. Research into this area include but not restricted to family planning, ante-natal care, birth delivery, post-natal care, neonatal care, vaccination, management of child illness, and nutritional support.

Figure 4 World Health Organization estimates household air pollution (HAP) to be the fifth greatest health risk in developing countries. Source: World Lung Foundation, 2016

For example (Figure 4), a study by Shibata et al. (2014) in Indonesia found that children had twice as more risk of contracting acute respiratory infection if they were not breastfed (OR= 2.18; p=0.06), or if they were exposed to environmental tobacco smoke during pregnancy (OR= 2.05; p=0.08). This study suggests that household incomes and mother's education have an indirect effect on childhood pneumonia and respiratory illness.

5. Nutritional Epidemiology

Nutritional epidemiology examines the association between nutritional factors (including macro and micro-nutrient intake, food security) and disease risk, and the application of this knowledge to develop public health interventions that promote healthy dietary pattern in the population.

For example (Figure 5), a study has shown that mothers who eat junk food when pregnant and then during breastfeeding may be putting their children at risk of liver disease. This study was carried out at the Royal Veterinary College (RVC), London and funded by the Wellcome Trust and the Society for Endocrinology. It suggests that pregnancy and lactation are not the time to overindulge on fatty, salty and sugary foods as this may cause long-term liver damage to the offspring (Bayol et al., 2010).

Figure 5 Mother's junk food diet are linked to liver disease in offspring

6. Social Epidemiologi

Social epidemiology studies the effect of socio-structural factors on health and the causal pathways by which these factors affect individual and population health. The socio-structural factors of research interest include but not limited to social class, gender, race, ethnicity, discrimination, social network, social capital, income distribution, and social policy. For example (Figure 6), nearly 17 million women living with HIV-AIDS worldwide are deprived of fundamental human rights, including reproductive rights. Cases of forced sterilization of women living with HIV have occurred in some parts of the world, including Kenya and most recently Namibia, where 15 women with HIV-AIDS victims become forced sterilization, have been sterilized without their consent (Sepulveda, 2012).

Figure 6 Nearly 17 million women living with HIV-AIDS worldwide are deprived of fundamental reproductive rights.
Source: UPI, 2012

7. Life-Course Epidemiology

Life-course epidemiology studies the long term effects of biological, physical, psychosocial, and socio-economic conditions, over lifetime, from pre-conception period, gestation, childhood, adolescence, young adults, the middle age, on health and disease risk in the adulthood. These exposures may impact permanently and irreversibly when they occur within the critical period, such as the gestation period. Each of these exposures accummulates and substantiates in disease risk over time through several pathways, including independent, cluster, chain of risk, or trigger effect mode.

Figure 7 Babies can "contract" depression from their mothers while they are still in the womb. Infants with depressed mothers have abnormal brain wiring. Source Healthdepots, 2016

For example (Figure 7), a study has shown that babies can "contract" depression from their mothers while they are still in the womb. Children whose mothers were depressed during pregnancy have a lifelong increased risk of mental illnesses such as anxiety and mood disorders. This is because they have reduced "structural connectivity" in the right amygdala of their brains, the brain region which controls emotion (Healthdepots, 2016).

8. Urban Health

Urban health studies the effect of various bio-psycho-social determinants and the complex physical environment, on the health status and distributi-

Figure 8   Jakarta's slum area. Source: Sofia Opi, 2016

on of health of city dwellers. Factors of study interest include bot not restricted to urban planning, inclusive socio-economic development, and development of safe infra-structures (Figure 8). Research in urban health also investigates risky behaviors among urban dwellers, including sedentary life-style, alcohol consumption, unhealthy diet, which are risk factors of cardiovascular diseases and cancer.

**SCHEDULE OF INTERNATIONAL CONFERENCE
ON PUBLIC HEALTH**
Best Western Premier Hotel, Solo, Indonesia
September 14-15, 2016

Panel Discussion and Symposium Schedule
Date: Wednesday, September 14, 2016

No.	Time	Topic	Speaker/ Moderator
1	07.30-08.00	**Registration**	Organizing Committee
2	08.00-08.15	1. Commencement Ceremony 2. National Anthem "Indonesia Raya"	Master of Ceremony: 1. Vera (Indonesian) 2. Mardhatillah (English) 3. Tiur (English) 4. Yunita Kristiani (Conductor)
3	08.15-08.30	Aim and Programs of the International Conference on Public Health	Prof. Bhisma Murti, Sebelas Maret University
4	08.30-08.40	Welcoming Address from the Rector of Sebelas Maret University	Rector UNS- Prof. Ravik Karsidi
	08.40-09.00	Coffee Break	
5	09.00-12.15	**Panel Discussion:** **Session 1: 09.00-10.00** **1. 09.00-09.15:** "Planning Clean, Healthy, Safe, and Inclusive Solo City for All Citizens, in line with the Sustainable Development Goals" -FX Hadi Rudyatmo – City Mayor of Solo **2. 09.15-09.30:** "Planning Clean, Healthy, Safe, and Inclusive Surabaya City for All Citizens, in line with the Sustainable Development Goals" - Dr. Ir. Tri Rismaharini- City Mayor of Surabaya **09.30-10.00: Discussion** **Session 2: 10.00- 11.00** **3. 10.00-10.15:** "Best Strategic Policy and Implementation Model to Optimize the Demographic Dividend and Aging Population to Accelerate the Achievement of Sustainable Development Goals"- Prof. Haryono Suyono, Former, Head, the National Coordinating Board of the Population and Family Planning. **4. 10.15-10.30:** "Strengthening the Role of Public Health Professionals in Accelerating the Achievement of the Sustainable Development Goals" – IAKMI

No.	Time	Topic	Speaker/ Moderator
		Chairman Prof. Adang Bachtiar **10.30-11.00: Discussion** **Session 3: 11.00-12.15** **5. 11.00-11.15:** "Health Research into Sustainable Development Goals and Its Application in Policy Making: The Importance of Designing Effective Research Strategies to Address Complex Bio-Psycho-Social Determinants of Population Health" - Prof. Ana Diez Roux - Distinguished Professor of Epidemiology, Drexel University, Philadelphia, USA **6. 11.15-11.30:** "The Important Role of Sector-Wide Approach and Partnership in Control Strategies for Infectious Diseases - Experience from Indonesia and Other Tropical Countries" - Prof. John Kevin Baird - Professor of Malariology. University of Oxford, United Kingdom **7. 11.30-11.45:** "Strategic Urban Health Planning for All Citizens"- Prof. Charles Suryadi, Center of Health Research, Atmajaya University, Jakarta **11.45- 12.15: Discussion** Host/ Moderator: Prof. Bhisma Murti, Sebelas Maret University	
	12.15-13.15	Lunch Break	
6	13.15-13.40	**Symposium I:** "Life-Course Epidemiology: The Significance of Studies in Long Term Health and Disease Risk Effects of Physical and Social Exposures During Gestation, Childhood, Adolescence, Young Adulthood and Later Adult Life, and Their Application for Public Health Interventions"	**Prof. Lu Qi-** HCA Regents Distinguished Chair and Professor of Epidemiology. Tulane University School of Public Health and Tropical Medicine, USA Moderator: Dr. Tonang
7	13.40-14.05	"Social Epidemiology: The Role of Social Capital in Designing Health Promotion Program to Reduce Health Inequity	Prof. Malin Eriksson – Professor in Social Epidemiology. Umea University, Sweden

No.	Time	Topic	Speaker/ Moderator
		Associated with Gender, Race/ Ethnic, and Socio-Economic Issues – Experience from Other Countries"	Moderator: Dr. Tonang
8	14.05-14.30	"The Driving Forces for Accelerating the Expansion of the Universal Coverage to Support the Attainment of Sustainable Development Goals: Lesson Learned from Thailand's Experience"	Prof Prathurng Hongsranagon – Chulalongkorn University, Bangkok, Thailand

Moderator: Dr. Tonang |
| 9 | 14.30-15.00 | Discussion/ Question and Answer | Moderator: Dr. Tonang |
| | 15.00-15.30 | Coffee Break | |
| 10 | 15.30- 15.55 | **Symposium II:**

"Nutritional Epidemiology: Climate Change and Food Security - Current Situation in Indonesia and Their Policy Implications for Population Nutrition and Health" | Prof Ahmad Yunus – Professor in Agriculture. Sebelas Maret University, Indonesia.

Moderator: Prof Bhisma Murti |
| 11 | 15.55-16.20 | "Environmental Epidemiology: Climate Change and Health - A Promising Strategy for Health Sector Mitigation and Adaptation | Prof. Joacim Rocklov - Professor in Epidemiology. Umea University, Sweden.

Moderator: Prof Bhisma Murti |
12	16.20-16.50	Discussion/ Question and Answer	Moderator: Prof Bhisma Murti
13	16.50-17.00	Summary of the symposium	Prof. Bhisma Murti
Closing of the day			

INTERNATIONAL CONFERENCE ON PUBLIC HEALTH
Best Western Premier Hotel, Solo, Indonesia
September 14-15, 2016

Workshop Schedule
Date: Thursday, September 15, 2016
Cluster A

No.	Time	Topic	Resource Person
1	08.00-09.30	How to Conduct Multilevel Analysis in Public Health Research	Prof. Ana Diez Roux - Dornsife School of Public Health, Drexel University, USA
	09.30-09.45	Coffee Break	
2	09.45-11.15	How to Design Studies, Collect Data, and Analyze Data in Nutritional Epidemiology	Prof Lu Qi - Tulane School of Public Health and Tropical Medicine, USA
3	11.15-12.45	How to Conduct Studies into Social Determinants of Health and the Promotion of Health Equity in Urban Settings	Prof. Charles Suryadi - Atmajaya University, Indonesia
	12.45-13.30	Lunch	
4	13.30-15.00	How to Write and Publish Research Articles in International Journals with Scopus Indexing	Prof. Nawi Ng – Professor of Epidemiology and Global Health. Umea University, Sweden
	15.00-15.30	Coffee Break	
5	15.30-17.00	How to Use Hypnosis to Support Health Promotion and Medical Therap	Hanung Prasetya, SKp, SPsi, Msi School of Health Polytechnics Ministry of Health, Surakarta
	17.00-17.15	Closing for the day	Hanung Prasetya, SKp, SPsi, Msi

Cluster B

No	Time	Topic	Resource Person
1	08.00-09.30	How to Design Effective Research Strategies to Address Bio-Psycho-Social Determinants of Health	Prof. Malin Eriksson – Professor in Social Epidemiology. Epidemiology and Global Health Unit, Umea University, Sweden

	09.30-09.45	Coffee Break	
2	09.45-11.15	How to Design Effective Research Strategies and Analyze Data in Environmental Health	Prof. Joacim Rocklov – Professor in Epidemiology. PhD in Environmental Health. Umea University, Sweden.
3	11.15-12.45	How to Write Effective Policy Brief and to Increase Use of Epidemiogical Studies in Health-Related Policy Making	Prof Laksono Trisnantoro – Professor in Health Policy and Planning. Gadjah Mada University, Indonesia
	12.45-13.30	Lunch	
4	13.30-15.00	"How to Develop Healthy Cities in Support of the Sustainable Development Goals Achievement"	Prof. Wongsa Lohasiriwong-Professor in Public Health Khon-Kaen University
	15.00-15.30	Coffee Break	
	15.30-17.00	How to Conduct Path Analysis and Structural Equation Model for Health Research	Prof. Bhisma Murti – Professor in Public Health. PhD in Health Economics. Sebelas Maret University, Indonesia
		Closing of the day	Prof. Bhisma Murti

A. Social capital and health implications for health promotion

Malin Eriksson[1,2] *

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This article is a review of the PhD Thesis of Malin Eriksson, entitled 'Social capital, health and community action implications for health promotion.' The article presents a theoretical overview of social capital and its relation to health, reviews empirical findings of the links between social capital and (self-rated) health, and discusses the usefulness of social capital in health promotion interventions at individual and community levels. Social capital, conceptualized as an individual characteristic, can contribute to the field of health promotion by adding new knowledge on how social network interventions may best be designed to meet the needs of the target group. The distinction of different forms of social capital, i.e. bonding, bridging, and linking, can be useful in mapping the kinds of networks that are available and health-enhancing (or damaging) and for whom. Further, social capital can advance social network interventions by acknowledging the risk for unequal distribution of investments and returns from social network involvement. Social capital, conceptualized as characterizing whole communities, provides a useful framework for what constitutes health-supporting environments and guidance on how to achieve them. Mapping and mobilization of social capital in local communities may be one way of achieving community action for health promotion. Social capital is context-bound by necessity. Thus, from a global perspective, it cannot be used as a 'cookbook' on how to achieve supportive environments and community action smoothly. However, social capital can provide new ideas on the processes that influence human interactions, cooperation, and community action for health promotion in various contexts.

Keywords: social capital; health promotion; social network interventions; supportive environments; community action self-rated health

This article has been commented on by Catherine Campbell. Please follow this link http://www.globalhealthaction.net/index.php/gha/article/view/5964 to read her Commentary.

In health were indexed in MEDLINE compared to at least 100 in 2006 (1). In 2010, the number of MEDLINE indexed papers on social capital and health had increased to 479. Several definitions of social capital exist, and depend partly on the originating discipline. But all have in common that social capital concerns 'social networks, the reciprocities that arise from them and the value of these for achieving (mutual) goals' (2, p. 2, original quote is without parentheses around 'mutual').

Despite more than a decade of research on social capital and health, the picture remains unclear. The theoretical and empirical links between social capital and health are still not resolved and the meanings of different forms of individual and collective social capital and their implications for health and health promotion need further exploration. In addition, the social capital literature is criticized for being 'gender and power blind,' and there is a need to include questions about the distribution of social capital, the amount and forms of social capital that are available for different groups, and the balance between investments and returns of social capital for these groups (3).

The overall aims of this article are to review the relationships between social capital and health and to discuss implications for health promotion. More specifically, the article aims to:

(1) Give a theoretical overview of individual and collective social capital and how they are related to health.
(2) Review empirical findings that link various forms of social capital to (self-rated) health for different social groups.
(3) Discuss the usefulness of social capital in health promotion interventions at individual and community levels.

Social capital and health theoretical overview

In sociology, the ideas behind social capital have roots dating back to Durkheim. It was not until the 1980s that the term was used in sociological writings by the French sociologist Pierre Bourdieu. However, it was the work of the American political scientist, Robert Putnam, which initially was the most utilized within health research. Both of these authors are considered influential theoretical contributors, with Bourdieu being a proponent of an individual approach and Putman having a more collective approach to social capital. Whether social capital is an individual or a collective feature is still debated. Within current health research, social capital is often viewed as both an individual and a collective feature, although the explicit choice of level of analysis requires different considerations and methods (1). In this section I will describe these approaches and how they are related to health.

Social capital as an individual asset social network approaches

These approaches have their theoretical origin in sociology. Social capital is broadly seen as 'the ability of actors to secure benefits by virtue of membership in social networks and other social structures' (4 p. 6). Thus, by belonging to social networks, individuals can secure certain benefits and resources that would not be possible in the absence of these networks. The resources do not reside within the individual (i.e. intrapersonal

resources) but in the structure of his/her social networks.

According to Bourdieu, inclusion in social networks is not something inherently possessed. Those with more resources to invest are more easily invited into powerful networks. Bourdieu highlights the role that power and inequality have on social capital and claims that dominant societal groups have more power to decide what networks are valuable and to include or exclude people from these networks (5).

Coleman (6) views social capital as a resource for action and identifies three forms: (1) obligations, expectations, and trustworthiness; (2) information channels; and (3) norms and effective sanctions. Doing something for others establishes an obligation for the others to reciprocate, thus influencing actions. Information constitutes an essential basis for actions; one vital form of social capital is therefore the potential information embedded in social relations. Existing norms also have powerful effects on actions through the rewards that can be expected if one adheres to the norms or by effective sanctions if one does not follow the norms.

Portes (4) adds to the concept of individual social capital when distinguishing between sources and effects of social capital. He makes a distinction between characteristics of the networks per se (i.e. motivations to make resources available) as the sources, while the actual resources provided (e.g. information, support, and opportunities) are defined as the effects of social capital. According to Portes, people can be willing to make resources available because of internalized norms to behave in a proper way, or because of solidarity with people who one can identify as sharing a 'common fate.' Further, reciprocity norms can make people willing to make resources available because of expectations of repayment. Further, Portes (4) contributes with valuable insights on the potential negative effects of social capital. The same ties that benefit members of a network may also lead to exclusion of outsiders. Strong supporting networks may result in an overload of demands on some (particularly successful) group members to make resources available. In addition, group participation necessarily demands a certain level of conformity that might produce restriction in individual freedom.

Individual social capital and health

Berkman and Glass (7) present several hypotheses about the link between resources embedded in social networks and health. The most obvious association is that involvement in social networks provides various forms of social support that may influence health by functioning as 'buffering factors' for stress (8). Social influence is another pathway between social networks and health (7). The influence of peers on health behaviors such as smoking and diet is clearly documented in health promotion (9). Further, social participation provides opportunities to learn new skills and confers a sense of belonging to one's community (7). Thus, social participation can influence health directly by activating cognitive systems, and indirectly by giving a sense of coherence and meaningfulness (7). Finally, group membership can also provide access to material resources and services with a direct bearing on health, such as job opportunities and health service (7). A more recent hypothesis relates individual position or

status in the social hierarchy of one's social network or community. Marmot (10) discusses this in terms of the 'status syndrome.' Having more opportunities than others within the same environment gives status; status is believed to influence health by the positive feelings of being privileged as well as by decreasing stress.

Social capital as a collective attribute social cohesion approaches

Within social cohesion approaches, social capital is viewed as a collective feature characterising whole communities. These approaches have their theoretical basis in the writings of Robert Putnam (11, 12). Putnam suggests that social capital, beside being a private good, is a collective and non-exclusive good in that living in a high social capital area can be beneficial even for individuals with poor social connections, with 'spill over' benefits gained from living in a high social capital community (12).

Following Putnam (11, 12), a high social capital community is characterized by the existence of dense and strong associations, and active citizens who are able to put public before private good. Further, citizens act as equals with the same rights and obligations for all, and horizontal relations of reciprocity are common. Finally, levels of interpersonal and generalized trust are high, which encourages people to cooperate on the basis of expected reciprocity.

Studies from the UK (13) and Sweden (14) illustrate the complexity of social capital in local communities, and indicate a need to go beyond Putnam's 'romantic' view of community. Westlund (15) suggests that the knowledge society, where internet communication partly replaces civil association activities, has led to societal fragmentation and consequent changes in social capital. Instead of being a pure public good, social capital has become a 'club good' for diverse subgroups within a community or society.

In addition, social scientist Michael Woolcock's work can be classified into a collective approach of social capital. He defines social capital as 'norms and networks that facilities collective action' (16 p. 13). Szreter and Woolcock (17) add to Putnam's communitarian view by discussing the macro political prerequisites for the development of trusting norms. They emphasize not only the importance of social ties within and between groups in a community, but also between citizens and various political institutions in a society. Just like Portes (4), Woolcock (16) underlines the importance of separating sources and consequences of social capital. According to him, trust is to be viewed as a consequence of social capital (16). This notion is in opposition to Putnam, who sees trust as a precondition for cooperation (11). However, Putnam's view has been criticized for its circular reasoning (18). In an attempt to sort out the sources and consequences of collective social capital in relation to health, I adhere to Woodcock's view, but am aware that trust is not universally acknowledged as an outcome of social capital.

Collective social capital and health

The potential links between collective social capital and health are still heavily debated. One possible pathway is that social capital has a mediating role between income inequality and health. This hypothesis was first developed by Wilkinson (19). His work built on studies showing that health is better and life expectancy is longer in populations with low degrees of income inequality. Wilkinson's explanation is that equal societies are more socially cohesive than less equal societies. Thus, equal income distribution leads to a positive social environment which is characterized by trust and social cohesion among citizens. Correspondingly, unequal societies have greater differences in status between citizens, creating mistrust and a decline in social cohesion, as well as high levels of crime and social anxiety (19).

In their early writings, Kawachi and Berkman (20) viewed social capital as a pure collective feature that is clearly distinguished from the research field of social networks. According to them (20), social capital should be viewed as a feature of the community or neighbor-hood to which the individual belongs. When discussing how (collective) social capital can affect individual health, Kawachi and Berkman (20) end up with similar explanations for social networks and health, namely that collective social capital influences health by influencing behaviors, access to health services, and psychosocial processes. This reasoning is problematic since it seems reasonable that social capital as a 'pure collective characteristic,' distinct from social networks, would have more 'pure collective effects' on health. Woolcock (16), and Grootaert and van Bastelaer (21) offer a solution for this when they recognize collective action and trust as consequences of (collective) social capital. This distinction may clarify how individual, as opposed to collective social capital, is related to health in different ways.

Turner (22) offers an alternative explanation of the association of income distribution and health. According to him, income equality not only increases social cohesion in a society, but also influences the level of public investment in housing, health care, etc., which thereby affect population and individual health. Other hypotheses of the links between collective social capital and health relate to how collective action can influence health. Kawachi and colleagues (23) note that a cohesive neighbor-hood is more successful in uniting for the best interest of the neighborhood. Consequently, communities rich in social capital can be more successful in influencing political decisions and fighting cuts to local services such as health care. High levels of social capital in local communities can influence health through the spread of healthy norms (23). Further, collective social capital is believed to facilitate faster and wider diffusion of (health) information and knowledge, which thereby can affect health (24). Finally, environments characterized by trust, participation and mutual support are believed to constitute 'health-enabling communities,' in that these communities are most likely to support health-enhancing behaviors (25). These beliefs are built on the notion that health behavior is determined more by collective social identities than by rational individual choices.

Links between social capital and health a summary

The hypotheses linking individual and collective social capital to health are summarized in Fig. 1. I believe that sources of social capital, in terms of macro-political structure and network characteristics, can be the same regardless of the level of analysis. In contrast, the consequences of social capital and their influence on health may differ depending on the level of analysis.

Individual social capital *The ability to secure benefits by virtue of membership in Social networks*				
Sources			**Consequences**	**Affects health by**
Macro structure	**Network characteristics**			
SOCIAL AND POLITICAL conditions	**Internalized NORMS**		Social support	Access to support/ Excess demands
			Social influence	Health enhancing/ Damaging behaviour
			Social control	Status and rewards/ Social exclusion
Income distribution	**Group SOLIDARITY**		Social participation	Cognitive skills Belongingness Life meaning
	RECIPROCITY		Material resources	Access to health services, job opportunities, finances, etc.
Collective social capital *Norms and networks that facilitate collective action*				
Sources			**Consequences**	**Affects health by**
Macro structure	**Network characteristics**			
SOCIAL AND POLITICAL Conditions	**Internalized NORMS**		Trust	Creates a health-enabling environment Spread of healthy norms by social control Effective diffusion of health information and knowledge Facilitates collective efficacy
Income distribution	**Group SOLIDARITY**		Collective action	Influence over political decisions/community resources
	RECIPROCITY		Material resources	Investment in health services

Fig. 1 Individual and collective social capital; sources, consequences and how they are related to health.

Starting at the individual level, internalized norms make people obli-

gated and willing to 'behave in the right manner,' such as supporting others. In addition, solidarity can make people willing to help others. Further, social support positively influences health by reducing stress for those who access various forms of support. Social support may also have a negative effect on health by increasing stress due to excessive demands on the support provider. Norms and solidarity can also affect health by social influence between members of a network. Trusted peers may influence health behaviors in others by functioning as role models. This influence can be either health-enhancing or health-damaging depending on the existing norms in the network. Strong norms and solidarity may also lead to high social control, which enables the network to control the norm compliance. Those who follow the norms are rewarded with status, with a positive effect on health, while those failing to adjust to the norms are 'punished' or socially excluded. Finally, norms and solidarity can make people willing or obliged to participate in various social activities, which can positively influence health through feelings of life meaning, as well as by the achievement of cognitive skills. Norms and solidarity as a group characteristic have in common that people make resources available without expecting something in return (4). In contrast, reciprocity as a network characteristic is based on people's expectation to be repaid when they make resources available. Reciprocity can lead to possession of material resources, which can influence health through e.g. access to health services, and job opportunities.

The lower part of Fig. 1 is an attempt to clarify the pathways between collective social capital and health. As per Woolcock (16), Grootaert and van Bastelaer (21), trust and collective action are defined as outcomes of social capital at the collective level. The arrow from trust to collective action illustrates that trust in turn facilitates collective action. An environment characterized by trust is believed to support health-enhancing behaviors (25). The diffusion of health information can be more effective in an environment characterized by trust, which thereby has a positive effect on health. Further, in an environment where people trust each other, healthy norms are more easily spread since social interaction is high. Collective action can have a direct influence on resource allocation in neighborhoods. Community members can increase control over their lives and environment through collective actions, which in addition to providing access to resources, may increase the capability of communities and individuals to change health-related behaviors. Finally, reciprocity norms at the community level may lead to higher levels of public investments that can influence population health through access to health services.

Different forms of social capital

The theoretical development of social capital has led to important distinctions between different forms of social capital (26). Krishna and Shrader (27) describe cognitive social capital as the less tangible side of social capital; norms of trust, solidarity, and reciprocity. Structural social capital, on the other hand, refers to the composition, extent, and activities of local level institutions and networks (27). In short, structural social capital refers to what people do, while cognitive social capital refers to

what people feel with regard to social relations (26).

Another important construct is the distinction between bonding, bridging, and linking social capital. Bonding social capital is characterised by strong ties within a network that strengthen common identities and functions as a source of help and support among members. Bridging social capital is characterized by weaker ties that link people from different networks together and become important sources of information and resources (12, 28). Szreter and Woolcock (17) introduced linking social capital which consists of vertical ties between people in different formal or institutionalized power hierarchies.

	Structural	Cognitive
Collective social capital 'Social Cohesion Approach'	Aggregated bonding, bridging and linking social networks	Aggregated trust and reciprocity norms
Individual social capital 'Social Network Approach'	**Bonding** Informal **Bridging** Formal **Linking** **NETWORKS**	Thick Personalized **TRUST** Thin Generalized Institutionalized **RECIPROCITY**

Fig.2 illustrates the division between structural and cognitive social capital for individual and collective approaches to social capital. An individual can be involved in networks characterized by bonding, bridging and/or linking ties. Such individuals have access to different forms of structural social capital. Involvement in different networks results in the creation of reciprocity norms as well as trust between people. Being involved in close (i.e. informal) networks with strong ties between people who are similar to each other leads to 'thick' trust trust in people known personally (personalized trust). Alternatively, involvement in bridging and linking (i.e. formal) networks gathers people with various back-grounds and may result in 'thin' trust trust between people who do not personally know each other (see Putnam [12] for a discussion of thick and thin trust). Thin trust can further be divided into 'generalized' trust in people in general, and 'institutionalized' trust in public institutions (29). On a collective level, structural social capital is often defined and measured as aggregated levels of involvement, i.e. as the proportion of people involved in various types of networks in a certain area. Similarly, collective cognitive social capital is often defined and measured as aggregated levels of trust, such as the proportion of trusting individuals in a certain area.

Social capital and health empirical evidence

A systematic literature review (42 papers in total) of the association between social capital and health across countries found significant associations between social capital and health in individual and ecological level studies. In contrast, studies investigating the link between collective social capital and health show inconclusive results (30). Similarly, in a systematic literature review of studies investigating the link between social capital and physical health, Kim and colleagues (24) conclude that the strongest associations are between individual social capital and health, particularly between cognitive components of social capital and self-rated health.

Our results (paper I) from a social capital survey in the Umea˚ region of Northern Sweden support a strong association between individual social capital and good self-rated health. Individuals with access to cognitive and structural social capital had higher odds ratio for good selfrated health compared to individuals with no access to these forms of social capital. This was true for men and women as well as for different educational groups (higher/ secondary/basic education). In accordance with previous research, we found this association stronger for cognitive than for structural forms of social capital. For example, people who said that they trust their neighbors (i.e. access to personalized trust, a cognitive form of social capital) were more than twice as likely to rate their health as good compared to those who answered that they did not trust their neighbors (31).

Some researchers (32, 33) suggest that inconclusive results about collective social capital and health clearly show that social capital is inappropriate for understanding contextual effects on health. Others state that the in-conclusiveness is mainly due to lack of consistency in how (collective) social capital is measured and potential confounding is handled (34). In particular, the need to control for individual social capital, using multilevel approaches, has been pointed out (35). In addition, the need for more area-based indicators of collective social capital has been stressed (26). Today, aggregated measures of individual trust and participation are the most commonly used measures of collective social capital (see 23, 34, 36 38), but these measures do not necessarily relate to the living area.

In paper II, we used survey data from the Umea˚ region to examine how different conceptualizations influence the association between collective social capital and self-rated health. We constructed two different measures of collective social capital; one trust-and-participation-related (aggregated levels of trust and participation), and one neighborhood-related (aggregated perceptions of neighborhood relations) measure. Women (but not men) living in very high social capital neighborhoods were significantly more likely to rate their health as good or fair (good fair) compared to women living in areas with very low social capital. After simultaneous control for sociodemographic factors and individual social capital, the probability for good-fair self-rated health remained significantly higher for women living in very high social capital areas compared to

women living in very low social capital areas when using the neighbor-hood-related measure.

This was not the case when the trust-and-participation-related measure was used. Our results (39) indicate that area-based indicators may be a more appropriate measure to rule out potential health effects of collective social capital. In addition, we found an independent positive health effect of collective social capital for women but not for men.

Social capital and health promotion

Given what we know about the links between social capital and health, what are the possible implications for health promotion? The starting point for my discussion is the definition given by WHO in the Ottawa Charter:

> Health promotion is the process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment. (40)

In this section I will discuss the challenges involved in
(1) How individual social capital can be strengthened as a health promotion strategy, and (2) how collective social capital can be mobilized as a health promotion strategy.

Strengthening individual social capital

As stated earlier, there is growing evidence that individual social capital (i.e. involvement in social networks) can influence health and health behaviors in a positive way through social support, social influence, social participation, and access to material resources. The improvement and maintenance of health is dependent not only on individual behaviors but also on the behaviors of significant others and the ability for fruitful communication within social networks. These ideas relate to the field of 'social network interventions' within health promotion.

Heaney and Israel (41) state that in order to diagnose the Strengths and weaknesses of existing networks, any social network intervention needs to begin with an assessment of the networks available in the target population. However, they (41) underscore the improbability of finding one social network intervention model that is effective for everyone. These types of interventions need to be tailored to the needs and resources of the particular target group, but are most likely to be effective if developed within an ecological framework that considers many levels of influence. Critics have questioned whether social capital adds anything new to the field of social networks and health (42), or if it is like 'pouring old wine into new bottles' (43). On the other hand, a need for evaluation of carefully designed and theory-driven social network interventions to gain more knowledge about the most effective strategies has been stressed (41).

Within this view, social capital has the potential to add new aspects.

The conceptualization of bonding, bridging, and linking social capital can guide the mapping of the kinds of networks available and for whom. In our social capital survey from Northern Sweden (31), women were more likely to have access to bridging social networks compared to men. Campbell and colleagues (13) examined community networks in two local communities in England. They found that women were more involved in strong face-to-face local networks, often with other women, while men were more involved in non-local networks. The same study (13) found that women were generally acknowledged as those who 'create local community' and this was possibly steered by gender expectations of women as primarily responsible for the home and living environment. We believe that women's greater involvement in bridging social networks may be a result of existing gender relations with higher expectations that women should be involved, for example, in children's activities.

We found (31) that people with higher education were more likely to have access to all forms of social capital. This was particularly true for bridging social networks; those with higher education were more than four times more likely to have access to this form of social capital compared to people with basic education. Ziersch (44) also found that those with greater resources and higher education had higher access to social capital in Australian households. According to Bourdieu (5), one could assume that the resources resulting from higher education also facilitate access to social capital.

The distinction of bonding, bridging, and linking can be further utilized to map out which forms of social networks are health enhancing or damaging, and for whom. Our results did not indicate that some forms of social capital might be bad for health, although this has been found in other studies. Mitchell and La-Gory (45) investigated the link between individual bonding (community involvement) and bridging (trust and bridging ties) social capital and mental health in an impoverished neighborhood in a southern US city. While bridging social capital showed a small inverse association with distress, community involvement seemed to increase an individual's level of mental distress. A studyon urban rural networks during the 1997 1999 Indonesian economic crisis found that women's involvement in bonding social networks had protective effects for families during times of crises, but higher costs than benefits for the women themselves. This was due to gender expectations that women should care for other family members (46). Kawachi and Berkman (47) reviewed the literature on social ties and mental health and found that the supporting effects of social connections are not equally shared, but influenced by gender expectations on women to be the primary providers of support to others. Thus, social capital can further advance social network interventions by acknowledging the risk for unequal distribution of investments and returns from social network involvement.

Mobilizing collective social capital

Mobilizing collective social capital connects to the 'community development approach' of health promotion. Health promotion programs that build on community development principles do not have the main objective of preventing a specific disease or promoting a specific health outcome. Rather, they build community capacity to improve the foundation for a flourishing community (48). These kinds of programs underscore the 'importance of creating environments in which individuals and communities can become empowered as they increase their community competence or problem-solving ability' (48 p. 305).

The 1986 Ottawa Charter (40) established five action areas for health promotion: (1) Building Healthy Public Policy; (2) Creating Supporting Environments; (3) Strengthening Community Actions; (4) Developing Personal Skills; and (5) Reorienting Health Services. A supporting environment means that people take care of each other and their communities. Supporting environments could thus be connected to what Campbell and Jovchelovitch (25) call 'health-enabling communities' that are characterized by participation, mutual support, and trust. Health promotion should work through effective community action, where community members set the priorities, plan strategies and implement them for achieving better health (40). These two goals for health promotion go hand in hand with the ideas behind collective social capital, since community (i.e. collective) action is viewed as a consequence of social capital at the community level. Mobilizing social capital in local communities could therefore be seen as a key goal for community development approaches in health promotion.

Our survey results reported in paper II (39) show that collective social capital, i.e. living in neighborhoods where one is expected to be engaged in issues that concern the living area, where it is common that neighbors talk to each other, and where people care for and help each other, increases the likelihood for good-fair health among women. These neighborhood characteristics might therefore constitute supporting environments and health-enabling communities, at least for women. Similar observations were made in a study from Tasmania, Australia (49) that showed how neighborhood safety and political participation reduced the risk for poor self-rated health among women but not men. Likewise Stafford and colleagues (50) found that living in a neighborhood with low levels of trust and integration increased the odds ratio for poor self-rated health among women but not men. The explanation for these gendered health effects of collective social capital need to be explored further.

Collective social capital may also have indirect positive effects on health by facilitating the ability of communities to work together to solve collective health problems (24). Paper III reports a qualitative case study where Putnam's analytical frame was used to explore social capital in a small community in Northern Sweden (14). Our case community was selected on the basis of a recent experience with a successful community action process. Due to a decreasing population, the primary health care center was closed. This political decision was strongly opposed by the com-

munity and triggered several community actions. The end result was the establishment of an association-driven health center. Existing social capital in this community was characterized by high levels of civic engagement that seemed to be inherited from one generation to the next (14). Strong and dense associations played an important role in getting people involved, and powerful 'helping-out norms' obligated people to engage in the community. Strong leaders set the norms and functioned as role models for participation. Effective information channels, e.g. face-to- face meetings, guaranteed that almost everyone was invited to participate. However, those who did not engage were seen as outsiders. According to Wakefield and Poland (51), strong community connections may also lead to increased social exclusion, an idea that was confirmed in our case study. In summary, existing social capital was mobilized and improved the capacity of our case community to work together to solve a collective health problem, but also risked increasing social exclusion for some groups (14). We concluded that there is a need to move beyond Putnam's theoretical concepts in order to achieve a comprehensive understanding of how social capital facilitates community action for health promotion purposes.

One premise is that mobilization of social capital may be a prerequisite for successful community health promotion (52). However, we still have limited knowledge on how social capital could be mobilized in local communities (53). Paper IV analyzes the social mechanisms underlying the community process of mobilizing social capital in our case community (54). A grounded theory situational analysis resulted in the construction of four categories representing mechanisms active in the mobilization process: motives, acts, explanations, and agency relations. These mechanisms worked through seven collective actors who were active in the process. Social capital was mobilized through interactions between significant collective actors, i.e. actors performing a collective identity and acting not as representatives for themselves, but for different social worlds in the community (55). Some collective actors stood out as the most influential for the mobilization to succeed. Trusted community leaders took the lead and got others involved, representing 'The enthusiast' and bringing fighting spirit to the process. Charismatic people from outside the community brought knowledge and significant resources into the process, representing 'The entrepreneur' a collective actor who added know-how to the process. Most people were not personally involved but were 'carried away' by the strong emotions of the process and supported their local leaders. This broad majority represented 'The conformer,' a collective actor who offered broad support and legitimacy to the process. In addition, the significance of a joint 'enemy' was identified. The political policy of decreasing resources was viewed as a threat. When the health center closed, this threat became visible and took the shape of the politicians who actually closed the health center. They became a symbol of 'The enemy,' a collective actor who served as a trigger in the mobilization process.

In summary, intentional mobilization of social capital in local communities for the purpose of health promotion needs to:
(1) Identify what must be overcome in the defined community (e.g. lack of safety, public services, a disease);
(2) Use the force of fighting spirit from trusted local leaders;

(3) Allow know-how from people inside and outside of the community who have significant resources and interest in the issues of concern;

(4) Strive for broad community support and legitimacy by reaching out to everyone with a personal invitation to join the process.

Discussion

The studies included in my thesis (56) support the idea that access to social capital is associated with good self-rated health and that strengthening individual social capital can be an important health promotion strategy. The distribution of social capital differs between different societal groups and this need to be acknowledged. Designing and implementing social network health interventions requires an awareness of individuals' unequal opportunities to join networks, and mandates serious efforts to involve all groups in supporting net-work activities.

In addition, the thesis supports collective social capital as positively associated with self-rated health for women but not for men. Mobilizing collective social capital may therefore be more health-enhancing for women. Collective social capital may also have an indirect positive effect on health for everyone by increasing the capability of communities to work together to solve collective health problems. Social capital in local communities can facilitate collective actions for public good, but may also increase social exclusion. Thus, mobilizing social capital in local community requires an awareness of the risk for increased social inequality.

The concept of social capital within health research has been heavily debated and criticised. Social capital research has been said to downplay the importance of material factors in public health in favor of psychosocial explanations (33). As such, social capital risks being used as an alternative to health policy based on state driven redistribution of resources (57). Muntaner and colleagues (57) suggest that a communitarian view of social capital represents a model of the social determinants of health without including analyses of structural inequalities in health such as class and gender. These inequalities may lead to blaming the victim of impoverished communities. Szreter and Woolcock (17) offers an intermediate view by saying that both material and psychosocial explanations are valid and do not contradict each other in explaining or targeting social inequalities in health. By adding the importance of state society relations (i.e. linking social capital) Szreter and Woolcock (17) integrate social capital into the macro political system and demonstrate how the formation and quality of social networks are shaped by political and structural factors. They (17) state that material needs are required to improve health, but the capability to benefit from these material needs often goes through social relations. Hawe and Shiell (58) conclude that social capital may add little to what we already know about community health promotion, but see a possible advantage in the rhetoric of social capital since it may invite 'new players' into the health promotion sector.

I believe in the power of rhetoric and think that labelling 'old facts' with new terms can help us gain new knowledge within the complex fields on

health promotion and the social determinants of health. Finally, I agree with the concluding remark of Wakefield and Poland (51 p. 28 29) about the role of social capital in health promotion: 'A construction of social capital which explicitly endorses the importance of transformative social engagement, while at the same time recognizing the potential negative consequences of social capital development, could help community organizers build communities in ways that truly promote health.'

Conclusion

Social capital, viewed as an individual characteristic, can contribute to the field of health promotion by adding new knowledge on how social network interventions may best be designed to meet the needs of the target group. The distinction of different forms of social capital, i.e. bonding, bridging, and linking, can be useful in the mapping of the types of networks available and for whom, as well as sorting out the forms of networks that are health enhancing or damaging and for whom. In addition, social capital can advance social network interventions by acknowledging the risk for unequal distribution of investments and returns from social network involvement.

Social capital, conceptualized as something that characterizes the whole community, contributes to the community development approach within health promotion. It provides a useful framework and starting point for what constitutes health supporting environments, and gives guidance on how to achieve them. The mapping and mobilization of social capital in local communities may be one way of achieving community action for health promotion. Further, the distinction of bonding, bridging, and linking social capital can provide ideas on the importance of balancing various network links that allow community action processes to emerge, such as within-and between-community networks, as well as links to political institutions.

From a global perspective, social capital cannot be used as a 'cookbook' for smooth achievement of supportive environments and community action, since social capital by necessity is context bound. However, social capital can provide new ideas about the processes that influence human interactions, cooperation and community action for health promotion in various contexts.

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Introduction to Multilevel Analysis Workshop

Instructor: Ana Diez Roux, avd37@drexel.edu, Professor of Epidemiology and Dean, Dornsife School of Public Health, Drexel University

Course Description:
Multilevel studies and multilevel analysis have been increasingly used in the public health field. This workshop will discuss the rationale for multilevel studies and multilevel analysis in public health as well as differences with other study designs and other analytical approaches. Although the course will not be heavily mathematical, we will review the basics of fitting multilevel models for different types of outcomes as well as the interpretation of estimates obtained from multilevel models. Emphasis will be on conceptual understanding, application and interpretation of multilevel analysis. We will also review and critique empirical applications in urban health research, and discuss conceptual and methodological challenges in using multilevel analysis.

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Additional resources for multilevel modeling:
Both the text books below have accompanying web sites with data and code.

Rabe-Hesketh S, Skrondal A. *Multilevel and Longitudinal Modeling Using Stata*, 3rd Ed. College Station, TX: Stata Press; 2012. (Stata)

Snijders TAB, Bosker RJ. *Multilevel Analysis: an Introduction to Basic and Advanced Multilevel Modeling*, 2nd Ed. London: Sage Publishers; 2012. (Various software)

The University of Bristol Centre for Multilevel Modelling web site (www.bristol.ac.uk/cmm/learning) has useful resources including free online tutorials and lists of books and training materials.

UCLA's Institute for Digital Research and Education web site (http://www.ats.ucla.edu/stat/) also has many useful resources including annotated code and output using a variety of software packages.

There is a two-part YouTube tutorial by Stata on multilevel linear models (https://www.youtube.com/watch?v=KALxDwwqX1A), with companion blog posts (http://blog.stata.com/2013/02/04/multilevel-linear-models-in-stata-part-1-components-of-variance and http://blog.stata.com/tag/multilevel-models/

Multilevel Models in Stata

by
Mustafa Hussein, University of Wisconsin at Milwaukee

Stata offers multiple ways for estimating multilevel models. The book "Multilevel and Longitudinal Modeling Using Stata," by Rabe-Hesketh and Skrondal, is a comprehensive guide for fitting a wide range of these models in Stata. Below, is a simple introduction on how to fit two-level random-intercept and random-slope models in Stata for a continuous and a binary outcome. In this example, we are interested in how much neighborhood socioeconomic status (measured as Census tract's median household income, in $10,000s) is associated with residents' body mass index (BMI, a continuous outcome), and with whether or not they are obese (BMI≥30, a binary outcome). The data is from a household health survey of adults in the Philadelphia region in 2012. The data structure shows individuals nested within neighborhoods:

	stcotrk	respid	bmi	obese	nbh_inc4
1.	42017100102	201260065	20.48	No	4.8417
2.	42017100102	201253041	28.88	No	4.8417
3.	42017100102	201254780	22.67	No	4.8417
4.	42017100102	201254733	35.5	Yes	4.8417
5.	42017100103	201253451	27.26	No	4.8873
6.	42017100103	201252880	26.6	No	4.8873
7.	42017100103	201252293	26.49	No	4.8873
8.	42017100103	201255067	33.28	Yes	4.8873
9.	42017100104	201251059	22.14	No	6.1061
10.	42017100104	201253313	25.62	No	6.1061
11.	42017100104	201254197	33.44	Yes	6.1061
12.	42017100104	201256475	22.21	No	6.1061
13.	42017100104	201258929	23.17	No	6.1061
14.	42017100104	201258963	35.87	Yes	6.1061
15.	42017100104	201259013	21.56	No	6.1061
16.	42017100104	201252037	34.97	Yes	6.1061
17.	42017100104	201255856	23.37	No	6.1061
18.	42017100104	201256097	25.82	No	6.1061
19.	42017100104	201257988	28.56	No	6.1061
20.	42017100105	201253727	27.89	No	6.6369
21.	42017100105	201258923	20.17	No	6.6369
22.	42017100105	201250651	32.92	Yes	6.6369
23.	42017100105	201255130	29.95	No	6.6369
24.	42017100105	201258390	23.96	No	6.6369
25.	42017100201	201250772	25.76	No	8.706077

BMI
Syntax: Two-level Random Intercept Model using <u>xtreg</u>
xtreg bmi nbh_inc4, i(stcotrk) mle
- "xtreg" allows fitting random-intercept linear regression models <u>only</u>. "bmi" is the outcome, "nbh_inc4" is the exposure, which is neighbor-

hood income in $10,000s, "i(stcotrk)" specifies the neighborhood (tract) ID, and "mle" specifies that estimation proceeds using maximum likelihood estimation (MLE). The default with this command is estimation via generalized least squares (GLS).

Output: xtreg

```
Random-effects ML regression              Number of obs     =       9247
Group variable: stcotrk                   Number of groups  =        964

Random effects u_i ~ Gaussian             Obs per group: min =          1
                                                         avg =        9.6
                                                         max =         39

                                          LR chi2(1)        =     203.39
Log likelihood  = -30293.412              Prob > chi2       =     0.0000


         bmi |      Coef.   Std. Err.       z    P>|z|     [95% Conf. Interval]

     nbh_inc4 |  -.3430071   .0223704   -15.33   0.000    -.3868523   -.2991619
        _cons |   30.38438   .1667211   182.25   0.000     30.05761    30.71115

     /sigma_u |    .802333   .1305642                       .5832276    1.103751
     /sigma_e |   6.358888   .0487666                       6.264022    6.455191
          rho |   .0156707   .0050823                       .0080631    .0287576

Likelihood-ratio test of sigma_u=0: chibar2(01)=   12.36 Prob>=chibar2 = 0.000
```

- In addition to sample and cluster details and parameter estimates, the output lists:
  o "/sigma_u": the MLE standard deviation of the random intercept (Level 2),
  o "/sigma_e": Level-1 error (standard deviation),
  o "rho": the intra-class correlation coefficient
  o Likelihood-ratio test of sigma_u right below the table: this tests whether adding the random intercepts improves model fit (relative to a linear model with fixed effects only)

Syntax: Two-level Random-Intercept Model using mixed
mixed bmi nbh_inc4 || stcotrk:, mle
- "mixed" is more versatile than "xtreg" especially in that it allows estimation of random-slope linear regression models. The "||" is the way "mixed" specifies the cluster (neighborhood) ID, followed by a colon ":"
- "mixed" output is identical to "xtreg" output, except in reporting variances of the random effects instead of standard deviations.

Syntax: Two-level Random-Slope Model using mixed
mixed bmi nbh_inc4 || stcotrk: nbh_inc4, mle cov(unstructured)
- To specify the effect of a covariate on the outcome as a random slope, specify it like "|| stcotrk: nbh_inc4". Also, you should specify "cov

(unstructured)" to impose no structure on the covariance between the random intercept and slope.

- Additional options to specify can include "vce(robust)" to obtain robust standard errors, and "reml" to use restricted MLE (used in SAS) instead of traditional MLE.

Output: *Two-level Random-Slope Model using* mixed

```
Mixed-effects ML regression                    Number of obs     =       9247
Group variable: stcotrk                        Number of groups  =        964

                                               Obs per group: min =          1
                                                              avg =        9.6
                                                              max =         39

                                               Wald chi2(1)      =     226.93
Log likelihood = -30287.814                    Prob > chi2       =     0.0000


         bmi |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]

    nbh_inc4 |  -.3338617   .0221626   -15.06   0.000    -.3772995   -.2904238
       _cons |   30.31142   .1743767   173.83   0.000     29.96965    30.65319



  Random-effects Parameters  |   Estimate   Std. Err.     [95% Conf. Interval]

stcotrk: Unstructured        |
            var(nbh_inc4)    |    .016423   .0103048      .0048012    .0561759
               var(_cons)    |   2.728926   .8792221      1.451264    5.131414
       cov(nbh_inc4,_cons)   |  -.2117004   .0976996     -.4031881   -.0202127

             var(Residual)   |   40.29021   .6137208      39.10512    41.51122

LR test vs. linear regression:        chi2(3) =      23.55   Prob > chi2 = 0.0000
```

- The bottom table of the output below lists variances for the random intercept (2.7289) and slope (0.0164) and also their covariance (-0.2177), as well as the level-1 error term (40.29). "mixed" output does not list the ICC, which you can easily obtain by typing "estat icc" immediately after model estimation. Also, one can look at the covariance matrix of the random effects by typing "Estat recovariance".
- To estimate best linear unbiased predictions (BLUPs) of the random intercepts and slopes, you can do so by typing "predict var_slope var_intercept, reffects" following model estimation and the BLUPs will be saved in variables var_slope and var_intercept.

OBESITY (=1 if BMI≥30; =0 if BMI<30)
Syntax: *Two-level Random-Intercept Logit Model using* xtlogit
xtlogit obese nbh_inc4, i(stcotrk) or

using <u>meqrlogit</u>

meqrlogit *obese* nbh_inc4 || stcotrk:, or

- xtlogit is similar to xtreg, and meqrlogit is similar to mixed above in terms of syntax and capabilities. xtlogit fits only random-intercept models while meqrlogit fits both random-intercept and random-slope models, has a larger set of estimation options, and works best when data has special behavior. OR: odds ratio.

Output: Two-level Random-Intercept Logit Model using <u>xtlogit</u>

```
Random-effects logistic regression          Number of obs     =       9247
Group variable: stcotrk                      Number of groups  =        964

Random effects u_i ~ Gaussian                Obs per group: min =          1
                                                            avg =        9.6
                                                            max =         39

Integration method: mvaghermite              Integration points =         12

                                             Wald chi2(1)      =     185.07
Log likelihood  = -5536.1725                 Prob > chi2       =     0.0000


      obese |        OR   Std. Err.       z    P>|z|     [95% Conf. Interval]

   nbh_inc4 |  .8932232    .007414   -13.60   0.000     .8788096    .9078732
      _cons |  .8884955   .0518813    -2.02   0.043     .7924131    .9962283

   /lnsig2u | -2.447142   .3032326                     -3.041467   -1.852817

    sigma_u |  .2941778   .0446021                      .2185515    .3959733
        rho |  .0256309   .0075729                       .014311    .0454918

Likelihood-ratio test of rho=0: chibar2(01) =      15.39 Prob >= chibar2 = 0.000
```

- A few things to note about the output for multi-level logistic models:
  - Likelihoods for nonlinear models are approximately estimated using numerical integration quadrature algorithms, with the default in Stata being Gauss-Hermite quadrature with 12 integration points ("Integration method: mvaghermite" in the output). Option intpoints (#) can be used to change the number of integration points. A good number of points for stable estimates is 30.
  - Only sigma_u and rho are shown in the xtlogit output. That's because sigma_e, the level-1 error term, is a constant equal to $\pi^2/3=3.29$. You can check for yourself by calculating the ICC, rho, as $(0.294)^2 / (3.29+(0.294)^2) = 0.0256$.
  - Like mixed, meqrlogit does not give the ICC, but it can be readily obtained by typing "estat ICC" after model estimation.

Syntax: *Two-level Random-Slope Logit Model using* <u>meqrlogit</u>

meqrlogit obese nbh_inc4 || stcotrk: nbh_inc4, or cov(unstructured)

Output: Two-level Random-Intercept Logit Model using <u>xtlogit</u>

```
Mixed-effects logistic regression              Number of obs      =      9247
Group variable: stcotrk                        Number of groups   =       964

                                               Obs per group: min =         1
                                                              avg =       9.6
                                                              max =        39

Integration points =   7                       Wald chi2(1)       =    161.07
Log likelihood = -5534.3696                    Prob > chi2        =    0.0000

       obese │ Odds Ratio  Std. Err.       z    P>|z|     [95% Conf. Interval]
─────────────┼────────────────────────────────────────────────────────────────
    nbh_inc4 │   .8880873   .0083052   -12.69   0.000     .8719576    .9045153
       _cons │   .9139781    .056313    -1.46   0.144     .8100105     1.03129


  Random-effects Parameters │   Estimate   Std. Err.     [95% Conf. Interval]
─────────────────────────────┼────────────────────────────────────────────────
stcotrk: Unstructured        │
            var(nbh_inc4)    │    .004031   .0030828      .0009004    .0180465
               var(_cons)    │   .1568672    .124836      .0329716     .746318
       cov(nbh_inc4,_cons)   │  -.0208248   .0203835     -.0607757     .019126
─────────────────────────────┴────────────────────────────────────────────────
LR test vs. logistic regression:     chi2(3) =     18.99   Prob > chi2 = 0.0003
```

- The layout of this output is identical to that obtained in the linear model with mixed. Post-estimation features, such as "estat icc", "estat recovariance", and "predict, reffects" can be called here as well, among many other capabilities (most notably margins and lincom, to calculate linear combinations and contrasts of coefficients and interactions).

Oral Presentation

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TOPIC I:

BEHAVIORAL EPIDEMIOLOGY

</div>

THE DETERMINANTS OF INAPPROPRIATE USE OF ANTIBIOTICS AMONG WORKING AGE POPULATION IN WESTERN CAMBODIA

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ABSTRACT

BACKGROUND: Antibiotics are among the most commonly sold drugs in the developing countries. The inappropriate use of antibiotics could result not only resistant bacterial strains but also adverse reactions and economic burden. The aim of this cross sectional study was to describe the antibiotics use characteristics and identify factors associated with inappropriate use of antibiotics among working age population in western Cambodia.

SUBJECTS AND METHODS: This was a cross sectional study. A sample of 344 subjects aged 18-59 years old was selected at random from 10 communes of three provinces in Western Cambodia. A structured questionnaire was developed to collect the data. The dependent variable was inappropriate use of antibiotics. The independent variable included average monthly family income, habitual use of medicine. A logistic regression was used to analyze the data.

RESULTS: 23.84% of the sample used antibiotic during the past 3 months, of which 14.83% were inappropriate use. The multivariate analysis indicated factor associated with inappropriate use of antibiotics were: low family income (adj. OR = 3.39; 95%CI: 1.18 to 9.74; p=0.024) and habitual use of oral antibiotics when having a cold (adj. OR=6.44; 95% CI: 1.55 to 26.91; p=0.010). The protective factor was habit of using oral antibiotics when having sorethroat (adj. OR=0.24; 95%CI: 0.08 to 0.78; p=0.018).

CONCLUSION: Almost a quarter of the samples used antibiotics. Low income and inappropriate antibiotic administration in respiratory tract infection increase the risk of antibiotic misuse.

Keywords: inappropriate use, antibiotics, income, habit, working age population.

APPLICATION OF SOCIAL MARKETING IN ACTIVE CASE FINDINGOF TUBERCULOSIS: EVIDENCE FROM INDONESIA

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ABSTRACT

BACKGROUND: Tuberculosis remained a major public health issue in many developing nations. Case detection rate remained low in Indonesia. Social marketing induces behavior change by making it compatible with individual perception, values, and convenience. This study aimed to apply social marketing to increase active case detection of tuberculosis.

SUBJECT AND METHOD: This was a qualitative-quantitative study conducted in two puskesmas (community health centers) in Sukoharjo district, Central Java, Indonesia. A sample of 30 health cadres was selected for this study. Another sample of health personnels from puskesmas and health programmers from the district health office, Sukoharjo, were selected for this study. The data were collected by interview, focus group discussion, and document review. Changes in knowledge and social marketing among health cadres before and after training was tested by t test. Case detection rates before and after training were compared and tested by chi square.

RESULTS: Knowledge in tuberculosis before training (mean=67.37; SD=11.37) increased after training (mean=83.97; SD=9.22), and it was statistically significant (p<0.001). Knowledge in social marketing before training (mean=73.04; SD=12.25) increased after training (mean=85.12; SD=12.02), and it was statistically significant (p<0.001). Tuberculosis case detection rate before trainingvincreased twice as many after training (OR=2.10; 95%CI=0.48 to 10.99; p=0.168)

CONCLUSION: Social marketing can be used to increase knowledge in tuberculosis among health cadres and case detection rate through active case finding.

Keywords: tuberculosis, active case finding, cadres, social marketing

THE ASSOCIATION BETWEEN BODY MASS INDEX, RELIGION INDEX, MEDIA, AND BODY IMAGE IN ADOLESCENTS

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ABSTRACT

BACKGROUND: Adolescents experience bio-psychosocial change in their developmental stages. These changes influence their perception about their body look. Some start to dislike their appearance. Someone's religiosity may protect them from the negative impact of the environment. Meanwhile, the mass media campaign about "slim ideal" for women and "shape and muscle" for men, is massive. This study aimed to examine the association between body mass index (BMI), religiosity, mass media, and body image in adolescents.

SUBJECT AND METHODS: This was a cross sectional study. A sample of 116 students was selected at random for this study from one public and one private senior high school in Surakarta, Indonesia. The dependent variable was negative body image. The independent variables included body mass index (BMI), religiosity, and exposure to "slim ideal" mass media. Body image was measured using Body Shape Questionnaire. Religiosity was measured using Duke University Religion Index Questionnaire. The data was analyzed using linear regression model.

RESULTS: BMI (b=3.22; 95%CI 2.08 to 4.36; p<0.001) and exposure to "slim ideal" mass media (b=16.35; 95%CI 1.92 to 30.78; p=0.027) had positive association with negative body image, and it was statistically significant. Religiosity (b=-3.10; 95%CI -11.86 to 5.64; p=0.483) had negative association but statistically not significant with negative body image.

CONCLUSION: BMI and exposure to "slim ideal" mass media have positive association with negative body image in adolescents.

Keywords: body image, adolescents, Body Mass Index, religion index, media.

CAFFEINE BEVERAGE CONSUMPTION BEHAVIOR AMONG WORKING AGE GROUP IN KHON KAEN PROVINCE, THAILAND

Phuwasin Buakate, Ratthaphol Kraiklanng,
Wongsa Laohasiriwong, Thanida Patisena

ABSTRACT

BACKGROUND: A nonlinear association between coffee consumption and CVD risk was observed in meta-analysis. Moderate coffee consumption was inversely significantly associated with CVD risk, with the lowest CVD risk at 3 to 5 cups per day. Heavy coffee consumption was not associated with elevated CVD risk.There has been an increasing trend of caffeine beverage consumption in Thailand. However, little was known about the consumer behavior on caffeine beverage among the working age group in Thailand. This study aimed to describe caffeine beverage consumption behavior among working age group in Khon Kaen province, Thailand

SUBJECT AND METHOD: This descriptive cross sectional study was conducted in Khon Kaen province, Thailand. A sample of 412 coffee drinkers aged 18-59 years old was selected by multistage random sampling from the working age population. A structured questionnaire was developed and tested for content validity by 3 experts. Cronbach alpha coefficient was 0.89.

RESULTS: The majority of 412 coffee drinkers were female (59.95%), with the average age of 36.61±13.20 years old, married (64.32%), 36.41% finished senior high school and 25% working in agricultural sector. Their median monthly income (min, max) was 9,000 (0, 70000) baht. Over the past month, 88.83% reported consuming caffeine beverage (95%CI: 85.78% to 91.88%). Caffeine beverage most commonly consumed was cola (38.10%). The median amount of coffee (ml) per time (min, max) was 250 (180, 1500) ml. The median monthly expense (min, max) for caffeine beverage was 600 (90, 3000) baht. Most coffee drinkers got coffee beverage information from television (61.75%). However, only 27.67% had high level of knowledge on caffeine beverage. 75.00% thought it was easy to access, 65.29% liked the taste, 53.64% believed in the caffeine beverage advertisement. 58.28% perceived price was appropriate, and 41.26% thought caffeine beverage was good for health.

CONCLUSION: Almost all of the working age group in Khon Kaen province, Thailand, drink caffeine beverage. Information, environment and marketing may have influence on their consumption behavior.

Keywords: caffeine beverage, behavior, working age group

SOCIAL COGNITIVE THEORY: THE RELATIONSHIP BETWEEN KNOWLEDGE, ENVIRONMENTAL OBSERVATION, OUTCOME EXPECTATION, SELF-EFFICACY, AND PREVENTIVE BEHAVIOR OF OVER WEIGHT IN ADOLESCENT

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ABSTRACT

BACKGROUND: Obesity is a global health problem that has been increasing in various age groups, including adolescents. Overweight and obesity should be prevented to reduce the risks of various chronic diseases, including cardio-vascular diseases and diabetes mellitus. Albert Bandura proposed Social Cognitive Theory to explain health-related behaviors. This study aimed to determine the relationship between knowledge, environmental observation, outcome expectation, self-efficacy, and preventive behavior of overweight in adolescent, using Social Cognitive Theory.

SUBJECT AND METHODS: This was an analytic observational study with cross sectional design, conducted in Malang, East Java. A total of 90 overweight or obese high school students in Malang were selected for this study. A set of questionnaire was designed to measure knowledge, environmental observation, outcome expectation, self-efficacy, and preventive behavior of overweight. This questionnaire was tested for validity and reliability. The data was analyzed using multiple linear regression model on STATA program.

RESULTS: Environmental observation (b=0.11; CI 95%=0.00 to 0.23; p=0.047), outcome expectation (b=0.11; CI 95%=0.00 to 0.22; p=0.041), and self-efficacy (b=0.14; CI 95%=0.04 to 0.24; p=0.006) had positive relationship with preventive behavior of overweight. However, the relationship between knowledge and preventive behavior was not statistically significant (b=-0.14; CI 95%=-0.44 to 0.15; p=0.342). Together the independent variables in the model explained 38% of the variation in preventive behavior of overweight (adjusted R^2=38.06).

CONCLUSION: Environmental observation, outcome expectation, and self-efficacy had positive relationship with preventive behavior overweight.

Keywords: knowledge, environmental observation, outcome expectations, self-efficacy, preventive behavior.

THE EFFECTIVENESS OF ACUPUNCTURE THERAPY ON WEIGHT REDUCTION AMONG OBESE PATIENTS IN MOJOKERTO, EAST JAVA

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ABSTRACT

BACKGROUND: Obesity is an abnormal or excessive fat accumulation within an individual's body that may impair health. Obesity is widely known as a risk factor of many chronic diseases, including hypertension, other cardiovascular diseases, and diabetes mellitus. Globally in 2014, more than 1.9 billion adults, 18 years and older, were overweight. Of these over 600 million were obese. As many as 39% of adults aged 18 years and over were overweight in 2014, and 13% were obese. As many as 41 million children under the age of 5 were overweight or obese in 2014. Obesity is preventable and curable. This study aimed to determine the effect of acupuncture therapy on weight reduction among obese patients.

SUBJECT AND METHODS: This was a quasi-experiment with before and after design, conducted at Yayasan Terapi Zona, Mojokerto, East Java. A sample of 30 obese patients was selected for this study. The independent variable was a series of 12 time acupuncture therapy. The dependent variable was body weight, measure by manual body weight scale. The change in body weight (kg) before and after acupuncture therapy was tested for statistical significance by t-test.

RESULTS: Age of the study subjects ranged from 18 to 25 years old. The body weight (kg) of the study subjects reduced from mean=65.2 (SD=9.64) kg before therapy to mean=62.2 (SD=9.51) kg after therapy, and it was statistically significant (p=0.047).

CONCLUSION: A series of 12 time acupuncture therapy can effectively reduce body weight among obese patients.

Keywords: obesity, weight reduction, acupuncture therapy

THE RELATIONSHIP BETWEEN EXPOSURE TO ANTI-SMOKING CAMPAIGN, KNOWLEDGE, FAMILY SUPPORT, AND SMOKING HABIT, AMONG MALE WORKERS IN EAST BORNEO, INDONESIA

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ABSTRACT

BACKGROUND: Indonesia has the highest (46.16%) prevalence of smokers among the ASEAN countries. Some anti-smoking measures had been implemented. However, little was known for their effect. This study aimed to determine the prevalence of smoking, and the relationship between exposure to anti-smoking campaign, knowledge, family support, and smoking habit, among male workers in East Borneo, Indonesia.

SUBJECT AND METHODS: This was a cross sectional study conducted in Samarinda, East Borneo, Indonesia. A sample of 311 male workers was selected at random from 10 subdistrics in Samarinda. The dependent variable was smoking behavior. The independent variable included exposure the anti-smoking campaign, knowledge about the damaging effect of tobacco smoking, and family support. A structured questionnare was developed to collect the data. A logistic regresion was used to analyze the data.

RESULTS: The prevalence of smokers was 45.6% (95%CI=40.09 to 51.23). Un-exposure to anti-smoking campaign (OR=2.24, 95%CI= 1.10 to 4.68; p=0.032), lacking in knowledge of the health damaging effect of tobacco smoking such as mouth and throat cancers (OR=2.43; 95%CI=1.16 to 5.06; p=0.018), and weak family support (OR= 2.07; 95%CI=1.09 to 4.50; p=0.006), were all associated with an increased probability of smoking.

CONCLUSION: Nearly half of the Indonesian male workers living in Samarinda were smokers. Un-exposure to anti-smoking campaign, lacking in knowledge of the health damaging effect of tobacco smoking such as mouth and throat cancers, and weak family support, were all associated with an increased probability of smoking. The government should increase the frequency of anti-smoking campaign and improve its access.

Keywords: anti-smoking campaign, smoking behavior, male workers

HEALTH-RELATED SEXUAL BEHAVIOR
AMONG TRANSGENDERS IN SINGARAJA, BALI

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ABSTRACT

BACKGROUND: The existence of persons with trans-genders orientation (waria) is undeniable. Usually trans-genders are at risk for sexual transmitted diseases and HIV/AIDS do to their sexual behavior. This study aimed to describe health related sexual behavior among persons with trans-gender orientation in Singaraja, Bali.

SUBJECT AND METHODS: This was a qualitative study conducted in Singaraja, Bali. The data was obtained from the trans-genders by in-depth interview and observation.

RESULTS: The trans-genders participated actively in social event and campaign related to HIV/AIDS prevention and control. However, they had high-risk sexual behavior, such as doing oral sex, anal sex, and squeeze sex. Only 80% used condoms during sexual intercourse. The trans-genders rarely checked up for reproductive health provided by the District Health Office in Singaraja, Bali. They were reluctant to be examined by female doctors.

CONCLUCION: The trans-genders in Singaraja, Bali, still have high-risk sexual behavior. The rarely use reproduction health services provided by the government, among others because they are not comfortable to be examine by female doctors.

Keywords: waria, trans-genders, sexual behavior, reproduction health

RELATIVE EFFECTIVENESS OF GAMEXAN AND PERMETHRINE AS ANTI-SCABIES, CONTROLLING FOR GENDER AND PERSONAL HYGIENE EDUCATION

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ABSTRACT

BACKGROUND: Prevalence of scabies remained high in slum areas and certain communities (e.g. religious boarding school). Incidence of scabies is associated with poor personal hygiene. Scabies is curable. This study aimed to determine the relative effectiveness between Gamexan and Permethrine as anti-scabies and effect modification by personal hygiene education.

SUBJECT AND METHODS: This was a double-blinded randomized controlled trial, conducted in Malang district. A sample of 40 students aged 12-18 years old from a religious boarding school in Malang district was selected at random for this study. The dependent variable was cure from scabies. The independent variable included anti-scabies (Gamexan and Permethrine), sex, and personal hygiene education. A multiple logistic regression was used to analyze the data.

RESULTS: After controlling for the effects of gender and personal hygiene education, Gamexan was 1/3 less likely to cure scabies than Permethrine (OR=0.38; 95%CI=0.12 to 1.19; p=0.096). Female gender (OR=8.13; 95%CI=0.87 to 76.24; p=0.067) and personal hygiene education (OR=9.37; 95%CI=2.92 to 30.07; P<0.001) increased the chance of cure. The effect of anti-scabies treatment on cure was modified by personal hygiene and education. The odd of cure with Permethrine was 3 times as many than Gamexan when personal hygiene education was not provided (OR=3.27; 95%=0.80 to 13.35; p=0.046). The odd of cure with Permethrine was 1.42 times as many than Gamexan when personal hygiene education was provided (OR=1.42; 95%CI 0.27 to 7.34; p 0.339).

CONCLUSION: Permethrine is three times more effective as anti-scabies than Gamexan when personal hygiene was not provided. This difference in effectiveness between the two anti-scabies treatments was not significant when personal hygiene was provided. Female gender and personal hygiene education increase the chance of cure.

Keyword: scabies, Gamexan and Permethrine, sex, personal hygiene education, effect modification

IMPLEMENTATION OF COLLABORATIVE AND COOPERATIVE METHODS TO STIMULATE CREATIVITY OF POSYANDU CADRES

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ABSTRACT

BACKGROUND: Integrated health posts (Posyandu) are on the cutting edge of the health care system. Posyandu cadres are expected to delivery health information. They are also expected to have high creativity in delivering health information so that community members can understand the information easily. Collaborative and cooperative learning methods are methods that enhance learning by peer interaction. Both techniques favor small-group with active student participation over passive, lecture-based teaching. Students are required to complete a specific task. In collaborative learning, students are assumed to already have the necessary social skills. The learning process builds on the existing skills in order to reach learning objectives. Students organize and negotiate efforts themselves. In cooperative learning students receive training in small group social skills. Activities are structured with each student having a specific role. The teacher observes, listens and intervenes in a group when necessary. Choice of these approaches depends on the academic maturity of the students. The structured cooperative learning style is more suitable for foundational knowledge typified in the lower education. The laissez faire approach of collaborative learning is more suitable for higher level content typified in the higher education. This study aimed to examine the effectiveness of collaborative and cooperative methods to stimulate the creativity of posyandu cadres.

SUBJECT AND METHODS: This was a qualitative, observational, and descriptive study. Training with collaborative and cooperative methods was conducted in Kepanjen district, Malang. It was attended by 100 posyandu cadres. A set of materials covering topics such as the elderly, stroke, and cadre role in the prevention of stroke, was given to posyandu cadres. Observation and video recording were made during the training. The dependent variable was creativity.

RESULTS: Collaborative and cooperative methods were used in the discussion to achieve the learning objectives. There were three scenarios for the discussion that aimed to bring insight to the posyandu cadres. At the end of the training, creativity of cadres seemed to emerge. Acronym was made by themselves to ease the tasks of cadres and to remember. SEHAT (healthy) was an acronym for balanced diet, rid of cigarettes, avoid stress, blood pressure regulation, regular exercise, and rest to prevent stroke. Other cadres made acronym of STROKE for stress, high blood pressure, smoking, cholesterol, emotion. STROKE acronym is also created to remind of stroke treatment.

CONCLUSSION: Collaborative and cooperative methods can be used to enhance the creativity of posyandu cadres.

Keywords: collaborative and cooperative methods, posyandu cadres, creativity

EFFECT OF COUNSELING WITH MULTIMEDIA VIDEO ON CLEAN AND HEALTHY BEHAVIOR AMONG ELEMENTARY SCHOOL STUDENTS IN BANTUL, YOGYAKARTA

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ABSTRACT

BACKGROUND: Healthy behavior should be practiced as early as possible in life. Children like playing. Therefore to be effective healthy behavior messages should be delivered while they are playing. Multimedia video had the potential to convey clean and healthy behavior messages. This study aimed to determine the effect of counseling with multimedia video on clean and healthy behavior among elementary school students.

SUBJECT AND METHODS: This was a quasi-experiment with before and after intervention design. A sample of 20 elementary students was selected from Elementary School 2 Jambidan, Banguntapan, Bantul, Yogyakarta. The intervention included counseling with multimedia video. The intervention contained clean and healthy behavior messages. The dependent variable was clean and healthy behavior measured by a structured questionnaire. Difference in the proportion of students with clean and healthy behavior before and after intervention was compared and tested by chi square.

RESULTS: 15 students (75%) had clean and healthy behavior before intervention. 16 students (80%) had clean and healthy behavior after intervention. This increase in the propotion of clean and healthy behavior before and after the intervention was statistically significant ($p < 0.001$).

CONCLUSION: Counseling with multimedia video can be used to increase clean and healthy behavior among elementary students.

Keywords: counseling, multimedia, clean and healthy behavior

SELF EFFICACY TO REFRAIN FROM DRUG ADDICTION RELAPSE AMONG POST DRUG REHABILITATION RESIDENTS IN TANAH MERAH, SAMARINDA, EAST KALIMANTAN

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ABSTRACT

BACKGROUND: Drug abuse and illicit drug trafficking continue to be a serious threat to many countries, including Indonesia. Drug trafficking such as shabu (methamphetamine) continued to increase in Indonesia from 2008 to 2011. Post drug addiction rehabilitation may need to work with families of post drug users in order to prevent drug use relapse. This study aimed to examine the effect of family support on post drug user's self-efficacy to refrain from drugs addiction relapse.

SUBJECT AND METHODS: This was a qualitative study with case study design, conducted in Tanah Merah Rehabilitation Center, Samarinda, East Kalimantan, Indonesia. A sample of key informants including post drug users, family members, and health personnel at the post drug rehabilitation institution, was used to collect data. The dependent variable was self-efficacy. The independent variable was family support. The data was collected by in-depth interview, focus group discussion, and direct observation.

RESULTS: Family consisting of parent, wife, children, brother, sister, or the loved one, could prevent former drug users from relapse. The indicators of family support that were important to prevent relapse included motivation from the family members, emotional support (such as attention and affection), a sense of caring, information support in the forms of suggestion, and confidence to recover from the family members.

CONCLUSION: Family support has positive impact on self-efficacy among post drug users to refrain from drug addiction relapse. Drug addiction rehabilitation institution should work together with families of the post drug users, in order to prevent drug addiction relapse.

Keywords: self-efficacy, drug addiction, family support, relapse

SOCIAL COGNITIVE THEORY AND PREMARITAL SEX AMONG ADOLESCENTS IN YOGYAKARTA

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ABSTRACT

BACKGROUND: Globalization and modernization seemed to have profound impact on the behavior of teenagers, especially sexual behavior. Social-cognitive theory proposed by Albert Bandura is a theoretical perspective that focuses on learning by observing others. One of the assumptions in the social-cognitive theory puts that learners can acquire new behaviors and knowledge by simply observing a model. A model is a person who demonstrates behavior for someone else. A peer group of an adolescent may function as this model. This study aimed to explain the role of peer group and mass-media in premarital sex among adolescents in Yogyakarta.

SUBJECT AND METHODS: This was a cross-sectional study conducted in Yogyakarta, with quantitative and qualitative methods of data collection. A sample of 47 teenagers was selected from Turonggo Wiro Budoyo community, Wirobrajan, Yogyakarta. The dependent variable was premarital sex. The independent variables were coercive initiative, exposure to pornographic mass-media, and reference to peer group model. The peer group under study was that with any member ever had experienced premarital sex. A set of questionnaire was developed and pre-tested to measure the study variables. Bivariate analysis with Odds Ratio and Chi-Square was used to analyze the data.

RESULTS: Incidence of premarital sex showed positive and strong association with coercive initiative (OR=20.30; 95%CI=2.21 to 186.00; $p<0.001$), exposure to pornographic mass-media (OR=3.88; 95%CI=0.09 to 21.70; p=0. 105), and reference to peer group model (OR=6.00; 95%CI=1.06 to 33.95; p=0.028).

CONCLUSION: Coercive initiative, exposure to pornographic mass-media, and reference to peer group model, are risk factors premarital sex among adolescents in Yogyakarta. This study supports Albert Bandura's social-cognitive theory, which emphasizes the role of peer group that functions as a model for adolescents to observe and learn about premarital sex as a new behavior.

Keywords: social-cognitive theory, peer group, model, premarital sex, adolescent

MOBILE PHONE DEPENDENCY AMONG HIGH SCHOOL STUDENTS IN RURAL AREA, CENTRAL JAVA

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ABSTRACT

BACKGROUND : Studies have shown that frequent use of mobile phone, either smartphone or non-smartphone, may cause at least 16 inadvertent health-related effects: serious addiction, painful withdrawal, back problems, nerve damage, anxiety and depression, stress, weight problem and fitness level, disrupted sleep, source of bacteria, attention span, social effect, text claw, indirect injuries, eyesight, hearing, and radiation. This study aimed to compare level of dependency between use of smartphone and non-smartphone, as indicator by duration of use.

SUBJECT AND METHODS: This was a cross sectional study conducted in Sukoharjo, Central Java. A sample of 219 high school students from a rural area, Sukoharjo, Central Java, was selected for this study. The dependent variable was duration use of smartphone or non-smartphone, as an indicator of dependency. The independent variable was type of mobile phone, i.e. smartphone or non-smartphone. A questionnaire was used to collect data. The data were analyzed using Mann-Whitney test.

RESULTS: Mean duration use of smartphone (mean=5.50; SD=1.10) was longer than non-smartphone (mean=4.39; SD=0.90), and it was statistically significant (p=0.038).

CONCLUSION: The dependency is stronger among the smartphone users than non-smartphone users among high school students, as it is indicated by the longer duration of use.

Keywords: mobile phone, smartphone, side effect, dependency, rural, high school students

SMOKING CESSATION AND NON-SMOKING PUBLIC AREA: A CASE STUDY IN BANTUL, YOGYAKARTA

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ABSTRACT

BACKGROUND: Smoking is a habit detrimental to health. According to World Health Organization, tobacco smoking killed one person every second. Approximately there were 4.9 million smoking related deaths occurred annually worldwide. About 70 percent of this figure occurred in developing countries. Therefore smoking habit should be stopped and prevented. This study aimed to examine smoking cessation behavior in a non-smoking public area.

SUBJECT AND METHODS: This was a qualitative study with case study approach, conducted in Bantul, Yogyakarta. A sample of 7 key informants was selected by snowball sampling for this study. The data were collected by interview and observation.

RESULTS: Two of the main reasons for smokers to quit smoking were economic factor and health state. The supporting factors for quit smoking were strong will, family and neighborhood support, and the existence of non-smoking public area. Healthy behavior model based on resident convention had a strong influence on the formation of collective behavior. Inhibiting factors of stop smoking were tobacco addiction, smoking friends, and bad neighborhood. Some smokers curbed smoking by drinking mineral water, doing daily activities, and sport.

CONCLUSION: Strong will, economic factor, health state, family and neighborhood support, and non-smoking public area, are the driving forces to quit smoking. Tobacco addiction and smoking friends inhibit the process of quit smoking.

Keywords: behavior, smoking cessation, non-smoking area

EXPERIENCE OF DISSOCIATIVE TRANCE DISORDER IN ADOLESCENTS

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ABSTRACT

BACKGROUND: Dissociative trance disorder (DTD) frequently occurred in the community, particularly among teenagers. This study aimed to the experience of dissociative trance disorder in adolescents.

SUBJECT AND METHODS: This was a qualitative study using phenomenological approach conducted in Malang, East Java. The study subjects were eight adolescents who had experienced dissociative trance disorder. The data were collected by in-depth interview.

RESULTS: The predisposing factors of DTD included: a) Biological factors, trance history of family; b) Psychological factors: more than one time of trance history, victim/witness physical abuse, trauma or mental pressure from family/environment, unstable mind and feeling suspicious to others, easily disappointed to others, repression coping habit; and c) Socio-cultural factors: mystical thought/occult, watching horror movies, creepy situation memory. Precipitating stressors of DTD were trouble or distress of family or school. Experience responses before DTD included: (1) Hearing rowdy/noisy voice; (2) Noisy/unclear sound, (3) Hot ear feeling; (4) Hot air condition (5) Uneasy feeling; (6) Confusion; (7) Scare; (8) Frantic, (9) Anger; (10) Heavy head; (11) Dizziness as if pulled by others; (12) Heavy body; (13) Numb; (14) Cramps; (15) Dark ambient view; and (16) Restless. Experience responses during DTD included unconsciousness and amnesia. Experience responses after DTD included headache, body ache, unfocused mind, silence, tiresome, confusion, uneasy feeling, and weakness.

CONCLUSION: This study identify biological, psychological, and socio-cultural predisposing factors for DTD among adolescents. Precipitation stressors include problem in the family or school. Experience responses before DTD include maladaptive behavior and feeling, and physical complaints. Experience responses during DTD include unconsciousness and amnesia. Experience responses after DTD include the change of feeling, behavior, and physical complaints. It is recommended to create an environment around adolescents that is free from violence and distress.

Keywords: adolescence, dissociative trance disorder

EFFECT OF COPING STRATEGY AND GANGRENE COMPLICATION ON THE LEVEL OF STRESS IN PATIENTS WITH DIABETES MELLITUS, AT ADI HUSADA HOSPITAL, SURABAYA

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ABSTRACT

BACKGROUND: In many people with diabetes, stress can cause blood glucose levels to rise. Learning strategies to deal with stress may lessen this effect. Having diabetes, and incidence of complication (e.g. gangrene), is in itself a major source of stress. People with diabetes have higher rates of anxiety and depression. Learning how to manage stress and treating these skills as a priority, can help people with diabetes cope with stress more effectively. This study aimed to analyze the effect of problem-focused coping strategies and emotion focused coping as well as complications of gangrene on the stress level in patients with diabetes mellitus.

SUBJECT AND METHODS: This was a cross sectional study, conducted in Adi Husada Kapasari Hospital, Surabaya, East Java. A sample of 40 patients with diabetes mellitus was selected for this study. The dependent variable was stress level. The independent variables were the coping strategy and gangrene complication. The coping strategy was distinguished in two types: (1) Problem-focused coping (PFC); (2) Emotion-focused coping (EFC). A questionnaire was developed to measure coping strategy and level of stress. The data was analyzed by a multiple linear regression.

RESULTS: Level of stress decreased with increasing problem-focused coping (b= -0.49; 95%CI= -0.82 to -0.17; p=0.004). Level of stress increased with increasing emotion-focused coping (b= 0.81; 95%CI= 0.52 to 1.11; p<0.001), and the incidence of gangrene complication (b= 3.66; 95%CI= 0.59 to 6.74; p=0.021).

CONCLUSION: Level of stress decreased with increasing problem-focused coping, but increased with increasing emotion-focused coping and the incidence of gangrene complication. Patients and health-social care professionals are suggested to capitalize problem-focused coping strategy to alleviate level of stress in patients with diabetes mellitus.

Keywords: problem-focused coping, emotion-focused coping, gangrene, stress, diabetes mellitus

EFFECT OF YOGA EXERCISE ON BLOOD PRESSURE REDUCTION IN THE ELDERLY

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ABSTRACT

BACKGROUND: High blood pressure (hypertension) can quietly damage body for years before symptoms develop. Left uncontrolled, it may cause disability, poor quality of life or even fatal heart attack. Many studies have shown, with treatment and lifestyle changes, an individual can control high blood pressure to reduce the risk of life-threatening complications. Yoga researchers demonstrate that yoga works because it modulates the physiological system of the body, specifically its effect on the heart rate. Yoga therapy is a multifunctional exercise modality with numerous benefits. Not only does yoga reduce high BP but it has also been demonstrated to effectively reduce blood glucose level, cholesterol level, and body weight. This study aimed to test the generalizability of previous finding about the effectiveness of yoga in reducing in blood pressure, when an elderly population in East Java was used as the target population.

SUBJECT AND METHODS: This was a quasi-experimental study, before and after with control design, conducted in Mojokerto, East Java. A sample of 24 elderly with hypertension who lived in Panti Werdha Majapahit, Brangkal, Mojokerto, East Java, was selected for this study. The dependent variable was blood pressure, measured by mercury sphygmomanometer. The independent variable was yoga exercise. The data was analyzed by paired t-test.

RESULTS: The systolic blood pressure (mmHg) decreased by 25 mmHg from (mean=164; SD=13.33) before yoga to (mean=139; SD=15.56) after yoga, and it was statistically significant ($p<0.001$). The diastolic blood pressure (mmHg) decreased by 13 mmHg from (mean=93; SD=3.50) before yoga to (mean=80; SD=6.56) after yoga, and it was statistically significant ($p<0.001$).

CONCLUSION: Yoga exercise effectively reduces both systolic and diastolic blood pressure in the elderly.

Keywords: hypertension, yoga exercise, elderly

TOPIC II:

ENVIRONMENTAL EPIDEMIOLOGY

THE CORRELATION BETWEEEN EXPOSURE TO CARBON MONOXIDE AND HEMOGLOBIN LEVEL AMONG STREET FOOD VENDORS AT GLADAG MARKET, SURAKARTA, CENTRAL JAVA

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ABSTRACT

BACKGROUND: Carbon monoxide (CO) is an emission that comes from incomplete combustion of oxygen and fuel in vehicles. Carbon monoxide can affect human health. It binds hemoglobin (Hb) to form COHb bond. People who work near heavy traffic are at risk for CO exposure. This study aimed to examine the correlation between exposure to carbon monoxide and hemoglobin level among street food vendors at Gladag food market, Surakarta.

SUBJECT AND METHODS: This was an analytic observational study with cross-sectional design. A random sample of 38 street food vendors at Gladag food market Surakarta. Carbon monoxide was measured by CO meter. Hemoglobin was measured by spectrophotometry. Spearman correlation was used to show the correlation between exposure to carbon monoxide and hemoglobin level among street food vendors.

RESULTS: There was positive weak correlation between exposure to carbon monoxide and hemoglobin level among street food vendors, and it was not statistically significant (r=0.15; p=0.362).

CONCLUSION: There was positive weak correlation between exposure to carbon monoxide and hemoglobin level among street food vendors.

Keywords: Carbon monoxide, exposure, hemoglobin, street food vendors

FACTORS ASSOCIATED WITH CHEMICAL PESTICIDE USE AMONG FARMERS IN EASTERN PART OF CAMBODIA

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ABSTRACT

BACKGROUND: Chemical pesticides are known to have adverse impact on human health. However, little is known about the magnitude and factors influencing chemical pesticide use in Cambodia. The study aimed to describe and determine factors influencing chemical pesticide use among farmers in the Eastern part of Cambodia.

SUBJECT AND METHODS: This was a cross-sectional study. A total of 287 farmers were selected by multistage random sampling proportional to size of the population from 8 communes in the Eastern part of Cambodia. The questionnaire was developed to measure variables under study. A multiple logistic regression was applied to estimate the factors influencing chemical pesticide use.

RESULTS: 53.66% of the sample was female. Mean age=41.01, and SD=10.8 years old. The average monthly income was 460,000 Riel (112 US$). The illiteracy rate was 15.68%. All of these farmers planted rice, cassava and caisim. 72.13% of all farmers used chemical pesticide. 68.13% of 182 rice farmers used 2,4-D. 92.48% of 133 cassava farmers used glyphosate, and 54.89% used 2,4-D. 71.43% of 35 caisim farmers used fipronil, and 68.57% used malathion. Factors significantly associated with chemical pesticide use were illiteracy (OR=2.60; 95%CI 1.02 to 6.62; p=0.045) and increase in farm size per m^2 (OR=2.12; 95%CI 1.59 to 2.84; p<0.001).

CONCLUSION: Chemical pesticide use was very high in Cambodia. Some used prohibited chemical. Illiteracy and farm size affect chemical pesticide use among farmers in Cambodia.

Keywords: chemical pesticide use, Cambodia, farmer

FLUORIDE LEVEL IN DRINKING WATER
IN FEDERAL TERRITORY OF LABUAN, MALAYSIA

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ABSTRACT

BACKGROUND: Fluoride in drinking water is one of few chemicals that have been shown to cause health effect. Low concentration of fluoride in drinking water has beneficial effect on teeth. But excessive exposure to fluoride can give rise to adverse effects. About 50% of fluoride intake are excreted via kidney, thus fluoride content in urine is an indicator for exposure to fluoride. According to the National Standard for Drinking Water Quality, Malaysia, the optimum level of fluoride in drinking water should be 0.40 to 0.60 mg/L. This study aimed to determine fluoride level in drinking water in Labuan, Malaysia.

SUBJECT AND METHODS: This was a prevalence study, conducted in Labuan federal territory, Malaysia. Three samples of drinking water were collected in three consecutive days. A DR/2500 HACH direct reading spectrophotometer was used to analyze water samples for fluoride. The data was analyzed using SPSS 21.

RESULTS: Mean (SD) of fluoride level in drinking water was below the recommended range, i.e. 0.36 (±0.13) mg/L. More than half (57–63%) of drinking water samples had fluoride levels lower than the recommended range.

CONCLUSION: More than half of the water samples had low levels of fluoride.

Keywords: fluoride, drinking water, DR/2500 HACH spectrophotometer, Labuan

CLIMATE SERVICES FOR INFECTIOUS DISEASE CONTROL: A NEXUS BETWEEN PUBLIC HEALTH PREPAREDNESS AND SUSTAINABLE DEVELOPMENT, LESSONS LEARNED FROM LONG-TERM MULTI-SITE TIME-SERIES ANALYSIS OF DENGUE FEVER IN VIETNAM

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ABSTRACT

BACKGROUND: Climate services provide valuable information for making actionable, data-driven decisions to protect public health in a myriad of manners. There is mounting global evidence of the looming threat climate change poses to human health, including the variability and intensity of infectious disease outbreaks in Vietnam and other low-resource and developing areas. In light of the Sustainable Development Goals, this study aimed to examine the utility of spatial and time-series analysis, to inform public health preparedness strategies for sustainable urban development, in terms of dengue epidemiology, surveillance, control, and early warnings.

SUBJECTS AND METHODS: Nearly 40 years of spatial and temporal (times-series) dataset of meteorological records, including rainfall, temperature, and humidity (among others) which can be predictors of dengue were assembled for all provinces of Vietnam. This dataset was associated with case data reported to General Department of Preventive Medicine, Ministry of Health of Vietnam, during the same period. Time series of climate and disease variables were analyzed for trend and changing pattern over time. The time-series statistical analysis method sought to identify spatial (when possible) and temporal trend, seasonality, cyclical pattern of disease, and to discover anomalous outbreak events, which departed from expected epidemiological pattern, and corresponding meteorological phenomena, such as El Nino Southern Oscillation (ENSO).

RESULTS: Analysis yielded largely converged findings with other locations in South East Asia for larger outbreak years and events such as ENSO. Seasonality, trend, and cycle in many provinces were persistent throughout the dataset, indicating strong potential for climate services to be used in dengue early warnings.

CONCLUSION: Public health practitioners, having adequate tools for dengue control available, must plan and budget vector control and patient treatment efforts well in advance of large scale dengue epidemics to curb such events with overall morbidity and mortality. Urban and sustainable

development in Vietnam might benefit from evidence linking climate change and ill-health events spatially and temporally in future planning. Long term analysis of dengue case data and meteorological records, provided a cases study evidence for emerging opportunities that on how refined climate services, could contribute to protection of public health.

Keywords: dengue, Vietnam, climate change, time-series analysis, climate service

A SPATIO-TEMPORAL ANALYSIS OF DENGUE FEVER TRANSMISSION IN YOGYAKARTA CITY, INDONESIA

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ABSTRACT

BACKGROUND: Dengue fever remains a major health problem in tropical countries. Some measures had been implemented by the government to control this disease. Apparently, however, these measures were not effective. Therefore, there is a need for a study that provides information to aid the control program. This study aimed at investigating the space-time clustering of dengue fever transmission in Yogyakarta.

SUBJECT AND METHODS: This was a retrospective cohort study using surveillance data on dengue fever cases in all subdistricts, Yogyakarta, Indonesia, from January to July 2014. This secondary data was obtained from the Municipality Health Office, Yogyakarta City. The space-time clustering of dengue fever case transmission was analyzed using SaTScan permutation model.

RESULT: Dengue fever case transmission was clustered temporarily in several spots during the study period. The clustering of dengue fever transmission differed significantly among sub-districts with Mergangsan sub-district showing the highest cluster (p=0.005).

CONCLUSION: There is a significant difference in dengue fever transmission clustering among sub-districts in Yogyakarta City with the highest cluster occurring in Mergangsan sub-district. This finding can be used to guide future study into intervention priority of dengue fever control in Yogyakarta City.

Keywords: dengue fever, cluster, space-time analysis, urban, SaTScan

CORRELATION BETWEEN BLOOD CARBON MONOXIDE AND VITAL CAPACITY AMONG STREET FOOD VENDORS AT GLADAG FOOD MARKET, SURAKARTA, CENTRAL JAVA

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ABSTRACT

BACKGROUND: Carbon monoxide is an emission that comes from incomplete combustion of oxygen and fuel in vehicles. Carbon monoxide can affect human health. It binds hemoglobin to form carboxyhemoglobin (COHb) bond. The COHb bond can cause hypoxia that eventually reduces vital capacity. People who work near heavy traffic are at risk for CO exposure. This study aimed to examine the correlation between exposure to carbon monoxide and vital capacity among street food vendors at Gladag food market, Surakarta.

SUBJECT AND METHODS: This was an analytic observational study with cross-sectional design. A random sample of 38 street food vendors at Gladag food market Surakarta. Carbon monoxide was measured by CO meter. COHb was measured by spectrophotometry. Vital capacity was measured by spyrometry. Spearman correlation was used to show the correlation between exposure to carbon monoxide and vital capacity among street food vendors.

RESULTS: There was negative moderate correlation between exposure to carbon monoxide and vital capacity among street food vendors, and it was statistically significant (r=-0.49; p=0.002).

CONCLUSION: Exposure to carbon monoxide reduces vital capacity among street food vendors.

Keywords: Carbon monoxide, exposure, vital capacity, street food vendors

THE EFFECT OF PESTICIDES COUNSELING ON KNOWLEDGE AND PERSONAL HYGIENE AMONG RICE FARMERS IN SUKOHARJO, CENTRAL JAVA

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ABSTRACT

BACKGROUND: Rice is an important cash crop. Pesticides were commonly used to increase the crop yield in Sukoharjo, Central Java. However, their health impact has not been studied yet. Counseling on pesticide may boost farmers' understanding on the danger of pesticide. This study aimed to determine the effect of pesticide counseling on knowledge of pesticide safety and personal hygiene among rice farmers in Sukoharjo, Central Java.

SUBJECT AND METHODS: This was a quasi-experimental study, before and after with no control design. It was conducted in Nguter, Sukoharjo, Central Java. A sample of 60 rice farmers was selected for this study. The dependent variables were knowledge on pesticide and personal hygiene. The independent variable was counseling on pesticide. A questionnaire was developed to measure knowledge and personal hygiene. The difference in knowledge and personal hygiene scores before and after counseling was tested by Wilcoxon test.

RESULTS: Rice farmers had mild to moderate pesticide poisoning. This was because most farmers did not use any personal protective equipment during pesticide handling. Only a few used shoes (55%), masks (15%) and gloves (12%) during pesticide spray. Mean knowledge on the effect of pesticide increased from 47.16 before intervention to 82.08, and it was statistically significant ($p < 0.001$). Mean personal hygiene on the effect of pesticide increased from 70.91 before intervention to 86, and it was statistically significant ($p < 0.001$).

CONCLUSION: Rice farmers in Sukoharjo, Central Java, have mild to moderate pesticide poisoning, which is due to the lack of knowledge and personal hygiene. Most farmers do not use any personal protective equipment during pesticide handling.

Keywords: counseling, pesticide, knowledge, personal hygiene, rice farmer, protective equipment.

EFFECT OF COMMUNITY LEAD TOTAL SANITATION ON PERSONAL HYGIENE AND LATRINE OWNERSHIP

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ABSTRACT

BACKGROUND: Good personal hygiene with respect to human excreta disposal is important to prevent environmental pollution and diseases. Several strategies had been implemented, but thus far were not effective. A new method, namely Community Lead Total Sanitation (CLTS) had been developed to empower community participation in addressing personal hygiene and sanitation issues. This study aimed to determine the effect of community lead total sanitation on personal hygiene and latrine ownership.

SUBJECT AND METHODS: This study was a quasi-experimental, before and after with no control design, conducted in Kediri, East Java. A sample of 125 households was selected from 1258 households living in a rural area, Kediri, East Java. The dependent variables were personal hygiene with respect to human excreta disposal and good latrine ownership. These variables were measured by a questionnaire. The independent variable was Community Lead Total Sanitation program. This program was intended to empower community so that they are able to identify environmental factors affecting community health and solve this problem. Changes in the proportion of community members with good personal hygiene and good latrine ownership were tested by McNemar test.

RESULTS: The proportion of community members with good personal hygiene increased from 66 (52.8%) before program to 84 (67.2%) after program, and it was statistically significant (p=0.002). The proportion of community members with good latrine ownership increased from 66 (52.8%) before program to 92 (73.5%) after program, and it was statistically significant (p<0.001).

CONCLUSION: Community empowerment with Community Lead Total Sanitation is effective to improve personal hygiene with respect to human excreta disposal and to increase good latrine ownership.

Keywords: human excreta disposal, latrine, personal hygiene, Community Lead Total Sanitation

SOCIO-ECONOMIC AND ENVIRONMENTAL RISK FACTORS OF TUBERCULOSIS IN WONOSOBO, CENTRAL JAVA, INDONESIA

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ABSTRACT

BACKGROUND: Tuberculosis incidence has been increasingly high in Wonosobo, Central Java, over the past years. The occurrence of tuberculosis can not be separated from the geographic, demographic, and socio-economic conditions. Poor environment is a suitable for bacteria proliferation and transmission. This study aimed to examine socio-economic and environmental risk factors of tuberculosis.

SUBJECT AND METHODS: This was a case control study conducted in Wonosobo, Central Java. A sample of 70 tuberculosis cases and 70 controls was collected for this study. The dependent variable was tuberculosis status. The independent variables included history of contact, house ventilation, humidity, house temperature, house density, kitchen smoke, and family income. The data was analyzed with a multiple logistic regression.

RESULTS: Of the 140 study subjects, 33 (47%) had primary education, and 21 (30%) were farmers. People who had contact history with tuberculosis case had 10 times as many risk of contracting tuberculosis than those did not have contact history (OR=10.00; p<0.001). People who lived in a house with poor ventilation had 2.2 times as many risk of contracting tuberculosis than those lived in a house with good ventilation (OR=2.20; p<0.018). High humidity increased the risk of tuberculosis 4 times as many as low humidity (OR=4.00; p=0.001). Living in house with higher temperature increased the risk of tuberculosis 3.8 times as many as lower temperature (OR=3.80; p=0.009). Living in a crowded house increase the risk of tuberculosis 5 times as many as living in a scant house (OR=5.00; p<0.001). Kitchen smoke increased the risk of tuberculosis 2.5 times as many as without smoke (OR=2.50; p=0.007). Low family income increased the risk of tuberculosis 3 times as many as high family income (OR=3.00; p=0.002).

CONCLUSION: History of contact, poor house ventilation, high humidity, hot house temperature, crowded house, kitchen smoke, and low family income, are risk factors for tuberculosis in Wonosobo, Central Java.

Keywords: tuberculosis, environmental factor, socio-economic factor

SPATIAL ANALYSIS AND THE DETERMINANTS OF MOSQUITO VECTOR OF FILARIASIS IN THE ENDEMIC AREAS OF WEST SUMATERA

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ABSTRACT

BACKGROUND: Filariasis is an infectious disease caused by filarial worm (Wuchereriabancrofti, Brugiamalayi and Brugiatimori). It is transmitted by mosquito vector. Agam and West Pasaman are hyperendemic areas of filariasis in West Sumatra, with prevalence of 11.27 cases per 100,000 population, and 12.40 cases per 100,000 population, respectively. The environmental condition consists of mountain, plain, river, lake, plantation, and rice field. This study aimed to determine the risk factors associated with the incidence of filariasis and to implement the use of geographic information system for mapping the vulnerability of area in West Sumatra.

SUBJECT AND METHODS: This was case control study, conducted in Agam and West Pasaman districts, West Sumatera. A sample of 74 cases and 74 controls was selected for this study. Both study groups were matched by age and sex. Spatial and multivariate analyses were employed for data analysis.

RESULTS: In Agam district, the type of vector was Culex (67.26%), Aedes (18.06%), Armigeres (14.19%), and Anopheles (0.48%). In West Pasaman district, the type of vector was Culex (70.25%), Aedes (20.25%), Armigeres (08.19%) and Anopheles (1.31%). In Agam and West Pasaman districts, the risk factors of filariasis included lack of knowledge (the strongest risk factor in Agam), absence of wire net, hanging out in the evening, use of mosquito bed net, absence of chemical insecticide, open clothes, presence of animal reservoir, living near plantation, paddy, river, marsh, shrub, and use of house ceiling (the strongest in West Pasaman). In Agam clustering of filariasis was found Subang, Muaro Putuih, Sungai Aur, Nagari Air Haji, Binjai, and the Crossing Valley.

CONCLUSION: The strongest risk factor of filariasis in Agam is the lack of knowledge. The strongest risk factor of filariasis in West Pasaman is the use house ceiling. The most common type of filarial vector in Agam and West Pasaman is Culex.

Keywords: Geographic Information System, filariasis, risk factor, vulnerabilities, Agam, West Pasaman.

TOPIC III:

INFECTIOUS EPIDEMIOLOGY

QUALITATIVE STUDY ON PET-RELATED HUMAN BEHAVIOUR AND OTHER RISK FACTORS OF RABIES IN BULELENG, BALI

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ABSTRAK

BACKGROUND: Bali has been an endemic province since 2008. Rabies cause specific death was 8, 1, and 2, respectively, in 2012, 2013, and 2014. Number of dog or cat bites was 55836, 44690, and 46877, respectively, in 2012, 2013, and 2014. The study aimed to explore pet-related human behavior and other risk factors of rabies in Buleleng, Bali.

SUBJECT AND METHODS: This was a qualitative study conducted in poor communities living in Bulian village, Kubutambahan sub-district, Buleleng district, Bali. Twenty households were purposively selected for this study. The key informants included household members, heads of hamlet, and head of village. The data were collected by in-depth interview, direct observation, and document review.

RESULTS: House condition and sanitation were acceptable, despite low socio-economic position of community members. Dog population was high. Most of them lived wild, unattended, or did not have identity necklace. Ten out of 20 household interviewed reported that their members were bitten by dog over the past year. Most of the dogs had never been vaccinated. Most of the villagers had poor knowledge and practice on how to treat wounds. Villagers usually let the dogs that had bitten human to live free or killed them immediately.

CONCLUSION: Uncontrolled of dog population, widespread unvaccinated dogs, uncontrolled dog mobility, lack of proper knowledge and practice on wound treatment, were the main risk factors of rabies incidence.

Keywords: rabies, dog bite, pet-related human behavior, risk factor

COMMUNITY-BASED ECOSYSTEM APPROACH IN CONTROLLING DENGUE HEMORRHAGIC FEVER VECTOR

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ABSTRACT

BACKGROUND: Dengue hemorrhagic fever vector control needs to involve the community as dengue is a bio-anthroposocial disease. However, vector control has been so far implemented separately from the community involvement. It is therefore necessary to integrate the vector control into an ecosystem approach. This study aimed to determine the effect of ecosystem approach in reducing the density of dengue vector in urban areas.

SUBJECT AND METHODS: A community-based controlled trial was conducted in six neighborhoods and four elementary schools in Malang, from June 2013 to December 2015. These communities were assigned into 3 groups: (1) Ecosystem I group; (2) Ecosystem II group; and (3) Control group. The independent variable under study was the ecosystem approach comprising larva surveillance, ovitrap, and inorganic waste management. This ecosystem was preceded by an in-depth community need assessment. This ecosystem was implemented over 4 months. The dependent variables included Density Index, Maya Index, and mean number of eggs per ovitrap. The data were analyzed with 3 weekly moving average charts, Kruskal-Wallis test and Mann-Whitney Test.

RESULTS: The Density Index was lower both in ecosystem I group and ecosystem II group than in the control group, and it was statistically significant (p=0.002). The difference in Density Index between the ecosystem I group and ecosystem II group was not statistically significant (p>0.05). The Maya Index (p=0.287) and mean number of eggs per ovitrap (p=0.851) were not statistically different among the 3 groups. All of the mosquito larvae hatched from ovitrap eggs are Aedes.

CONCLUSION: The ecosystem approach with mosquito larva surveillance, ovitrap application, and inorganic waste management, preceded by in-depth need assessment, can decrease the density of Aedes mosquito. The ecosystem approach can improve community participation.

Keywords: dengue hemorrhagic fever, ecosystem approach, larva surveillance, ovitrap, Density Index, Maya Index

FACTORS ASSOCIATED MOSQUITO LARVAE ERADICATION AND EARLY MANAGEMENT OF DENGUE HEMORRHAGIC FEVER AMONG POOR COMMUNITY IN LOKAPAKSA VILLAGE, BULELENG, BALI

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ABSTRACT

BACKGROUND: Dengue haemorrhagic fever (DHF) remains a public health importance in the world. It causes hospitalization, death of patients, and high healthcare costs. This study aimed to describe factors associated mosquito larvae eradication and early management of DHF among poor community in Lokapaksa village, Buleleng, Bali.

SUBJECT AND METHODS: This was a qualitative study carried out in poor community in Lokapaksa village, Buleleng, Bali. The study subjects included 30 household heads and village heads. The data were colected by focus group discussion, indepth interview, and direct observation.

RESULTS: Outbreak of DHF occurred in Bali. In January 2016, 4 patients died from DHF. In 2015, according to the Provincial Health Office, there were 910 DHF cases, of which 262 cases occured in Buleleng, 245 cases occured in Gianyar districts. The response to new cases by clinics and community health centers was often late. Most of the villagers had low level of knowledge in mosquito larva eradication and early management of DHF. Mosquito larvae were found in about half of the houses surveyed. All of the household studied threw garbage in the backyard of houses. Health personnels had ever implemented fogging.

CONCLUSIONS: The villagers had low level of knowledge and poor practice in mosquito larva eradication and early management of DHF. Environment sanitation was poor. Health care system had late response in the incidence of new cases.

Keywords: Dengue Hemorrhagic Fever, mosquito larvae, larva eradication, early case management

SPATIO-TEMPORAL ANALYSIS OF DENGUE
AND WEATHER VARIABLES IN YOGYAKARTA

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ABSTRACT

BACKGROUND: Dengue Hemorrhagic Fever (DHF) is one of the main public health issues in Indonesia, and is endemic in all provinces. The annual incidence of DHF has been fluctuated in Yogyakarta. This study aimed to examine the pattern of the relationship among weather variables on the incidence of dengue in the city of Yogyakarta for 5 years (2010-2014).

SUBJECT AND METHODS: This was an ecological study with spatio-temporal approach. The study population was the incidence of dengue for the period 2010-2014 in Yogyakarta city. The independent variables in this study were rainfall, temperature, relative humidity, and wind velocity. The dependent variable was the incidence of DHF. The data was analyzed using graphic/time-trend and spatial statistical analysis. Rainfall in theory increases mosquito breeding place. In this study, however, rainfall was not included in fitting the regression analysis model.

RESULTS: There was a relationship among weather variable with dengue incidence, both in graphs/time-trend and spatial statistic analyses. In the graph/time-trend and spatial analysis, there was a relationship between dengue outbreaks in 2010 and 2013 in rainfall fluctuations and temperature. Two regressions models were used, i.e. Poisson Regression and Negative Binomial Regression. The smallest Akaike's Information Criterion (AIC) and Bayesian Information Criterion (BIC) values were used to indicate model fit with respect to the contribution of weather variables on dengue incidence. The incidence of dengue at a lag of one month, temperature of the same month, temperature at the lag of two months, relative humidity of the same month, relative humidity at the lag of three months, and wind velocity at the lag of two months, were predictors for dengue incidence.

CONCLUSIONS: The pattern of dengue incidence following climate fluctuation, rainfall lag of two months, temperature lag of three months, humidity in lag of one month, had positive association with increased incidence of dengue. Wind velocity was inversely associated with dengue incidence of the same month. The policy implication of the study is that the Health Office of Yogyakarta city should consider climatological data in surveillance and planning dengue prevention program.

Keywords: dengue hemorrhagic fever, vector-borne disease, climate, spatio-temporal analysis

FACTORS ASSOCIATED WITH THE INCIDENCE OF MEASLES IN TIMOR TENGAH SELATAN DISTRICT, NUSA TENGGARA TIMUR

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ABSTRACT

BACKGROUND: Immunization coverage is only one of the determinants of measles incidence. High immunization is not a guaranty to avoid an extraordinary incidence of measles. This study aimed to determine factors associated with the incidence of measles in Timor Tengah Selatan district, Nusa Tenggara Timur.

SUBJECT AND METHODS: This was a case control study conducted in Kualin community health center, Timor Tengah Selatan district, Nusa Tenggara Timur. 102 cases of measles were compared with 102 controls. The independent variables included age, sex, nutritional status, access to vitamin A, immunization status, house crowdedness, presence of contact, education, family income, house ventilation, and house light. The dependent variable was measles case. Odds Ratio (OR) and chi square statistic were used to show bivariate association and statistical significance.

RESULTS: Poor nutritional status (OR=29.79; p<0.001), no access to vitamin A program (OR=39.36; p<0.001), no immunization (OR=159.46; p<0.001), crowded house (OR=18.62; p<0.001), and presence of contact (OR=9.78; p<0.001) were found to be risk factors of measles. Age ≥15 years old (OR=0.09; p=0.010) and higher family income (OR=0.03; p<0.001) were found to be protective factors of measles. The association between sex (OR=1.26; p=0.484), education (OR=0.83; p=0.732), existence of house ventilation (OR=0.77; p=0.597), house light (OR=0.88; p=0.860), and the risk of measles was not statistically significant.

CONCLUTION: Poor nutritional status, no access to vitamin A program, no immunization, crowded house, and presence of contact, are risk factors of measles. Age ≥15 years old and higher family income are protective factors of measles.

Keywords: measles, risk factors

EFFECT OF PERCEPTION, ATTITUDE, PATIENT SAFETY POLICY, STAKEHOLDER SUPPORT, AND HEALTH PROMOTION, ON INFECTION PREVENTION EFFORT IN HOSPITAL

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ABSTRACT

BACKGROUND: Patients who receive health service, health worker, and visitors in a hospital are at risk for nosocomial infection, ie infection acquired in hospital. The presence of patient safety policy and health promotion are needed for surgical infection prevention effort. This study aimed to analyze the effect of health worker perception, attitude, patient safety policy, stakeholder support, and health promotion, on surgical infection prevention effort.

SUBJECT AND METHODS: This was a cross sectional study conducted at PKU Muhammadiyah Hospital, Yogyakarta, Indonesia. A sample of 104 health care workers from this hospital was selected at random for this study. The dependent variable was surgical infection prevention effort. The independent variables were the health worker perception on surgical infection prevention effort, attitude, presence of patient safety policy, stakeholder support, and health promotion. The data were collected using a questionnaire and in-depth interview. The data were analyzed using path analysis model.

RESULTS: Health workers perception had positive effect on surgical infection prevention effort, and it was statistically significant (b =0.45; p<0.001). The effects of attitude (b=0.08; p=0.311), presence of patient safety (b=0.06; p=0.413), stakeholder support (b=0.13; p=0.134), and health promotion (b=0.04; p=0.719) on surgical infection prevention effort were nearly non-existent, and statistically non-significant. The model fit indices met the requirement for path analysis model: x^2=4.48; p=0.214; GFI=0.98; AGFI=0.88; RMSEA=0.069; NFI=0.98; CFI=0.99.

CONCLUSION: Health workers perception affects surgical infection prevention effort. Attitude, presence of patient safety policy, stakeholder support, and health promotion, do not affect surgical infection prevention effort.

Keyword: perception, attitude, patient safety, stakeholder support, health promotion, surgical infection prevention effort

RISK FACTORS FOR TUBERCULOSIS AMONG OUT-PATIENTS AT COMMUNITY HEALTH CENTER IN KUDUS, CENTRAL JAVA

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ABSTRACT

BACKGROUND: According to the World Health Organization, worldwide, 9.6 million people are estimated to have fallen ill with TB in 2014: 5.4 million men, 3.2 million women and 1.0 million children. Globally, 12% of the 9.6 million new TB cases in 2014 were HIV-positive. This study aimed to estimate the relative risk of tuberculosis with respect to some social-economic factors, in coastal area, Central Java.

SUBJECT AND METHODS: This was a cross sectional study conducted in Kudus, Central Java. A sample of 36 tuberculosis suspects aged >25 years old was selected for this study from visitors at Community Health Centre (Puskesmas) Gribig, Gepok subdistrict, Kudus, Central Java. The dependent variable was Acid Fast Baccilus status. The independent variables included age, nutrition status, education level, employment status, income, and smoking status. Bivariate analysis with Chi Square test was used for data analysis.

RESULTS: The following factors increased the risk of positive test of acid fast baccilus: (1) Productive age (OR=25.00; 95%CI= 3.45 to 142.86; p<0.001); (2) Body mass index <25 (OR=5.50; 95%CI= 1.28 to 23.69; p=0.017); (3) Education less than high school (OR=13.60; 95%CI= 1.48 to 125.30; p=0.007); (4) Employed (OR=16.00; 95%CI= 2.74 to 93.61; p<0.001); (5) Income <Rp 889.000 per month (OR=26.71; 95%CI= 2.88 to 248.00; p<0.001); (6) Smoker (OR=7.00; 95%CI= 1.59 to 30.80; p=0.007).

CONCLUSION: Productive age, body mass index <25, education less than high school, employed, income <Rp 889.000 per month, and smoking, are important risk factors for tuberculosis in a coastal area in Central Java, Indonesia.

Keywords: tuberculosis, acid fast baccilus, risk factors, coastal area

INFECTIVITY AND GENETIC POLYMORPHISM OF ANOPHELES MACULATUS AND AN. VAGUS IN DIVERSE ENDEMICITY MALARIA AREAS IN THE KOKAP SUB-DISTRICT OF KULON PROGO

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ABSTRACT

BACKGROUND: It is crucial to regularly monitor the infectivity and genetic polymorphism of Anopheles sp in endemic areas for early detection and accurate rapid response planning of indigenous malaria transmission. The Kokap Sub-District has the highest number of malaria cases in the Kulon Progo District. Its five villages showed diverse malaria endemicities. Anopheles maculatus was pointed out as the main vector and An. vagus as a suspect vector. The purpose of this investigation was to examine whether the populations of these two species were different with regard to infectivity and genetic polymorphism in villages that were high endemic (HEV) and low endemic (LEV).

SUBJECT AND METHODS: A cross-sectional observational study was performed in one HEV (Hargotirto) dan one LEV (Hargomulyo) on An. maculatus sp and An. vagus sp parous mosquitoes. The mosquitoes of both villages were collected simultaneously using the resting collection method, five times each, during October-December 2013. The collections were conducted in three houses by two collectors per house (one inside and one outside) in 50 minute intervals from 18.00PM to 06.00AM. Mosquitoes that meet the inclusion criteria were examined using the Multiplex-PCR method to detect the existence of Plasmodium and the Random Amplified Polymorphic DNA (RAPD) method to identify mosquito DNA polymorphism.

RESULTS: The PCR test results of DNA samples of An. maculatus (25 HEV and 7 LEV) and An. vagus (18 HEV and 20 LEV) of the two villages showed that only the HEV sample was Plasmodium sp positive with 28% An. maculatus and 17% An. vagus infectivities (OR=6.08; CI95%: 0.31-120.4; p=0.043). The RAPD-PCR test results of DNA samples of An. maculatus (5 per village) and An. vagus (5 per village) of the two villages showed identical degrees of DNA polymorphism.

CONCLUSION: The endemicity of the two villages was related to Anopheles sp infectivity. Although no Plasmodium sp positive anophelines were found in the LEV vector surveillance is nonetheless necessary considering the same levels of DNA polymorphism.

Keywords: Anopheles sp, infectivity, endemicity, genetic polymorphism

THE CASE OF MALARIA AND ITS RELATIONSHIP TO VECTORIAL CAPACITY OF *Anopheles farauti* LAVERAN (DIPTERA: CULICIDAE) ON COASTAL ECOSYSTEM (BIAK NUMFOR REGENCY) OF PAPUA PROVINCE

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BACKGROUND: Biak Numfor regency had high number of malaria cases in Papua Province. This regency is an area with coastal ecosystem. *Anopheles farauti* was reported as one of the main vectors of malaria in Papua. Vector capacity (VC) is a quantitative entomology indicator used to measure contagious potency of malaria in endemic areas. Vectorial capacity is the rate (usually daily) at which a bloodsucking insect population generates new inoculations from a currently infectious case. Vectorial capacity is the product of the eight components; vector longevity is a key component. It is a measure of potential rather than actual rate of transmission, because it includes no parasitological information. This study aimed to estimate VC of *An. farauti* Laveran (Diptera: Culicidae), and to determine its relationship with of malaria cases in Biak Numfor regency.
SUBJECT AND METHODS: Methods used to calculate VC values were: (1) Human landing collection, (2) Ovarial surgery, and (3) ELISA test. Data of malaria cases were obtained from the Regency Health Office of Biak Numfor.
RESULTS: Vector capacity values in Biak Numfor coastal ecosystem were within the range between <0.01 to 0.05. This result indicated that *Anopheles farauti* mosquito was a potential malaria vector and it increaseed the contagious risk of malaria in coastal ecosystem.
CONCLUSION: *Anopheles farauti* mosquito is a potential malaria vector and it increases the contagious risk of malaria in Biak Numfor coastal ecosystem.

Keywords: Biak Numfor regency, vectorial capacity, *Anopheles farauti*.

EFFICACY OF ALBENDAZOLE, ALBENDAZOLE-LEVAMISOLE AND MEBENDAZOLE-LEVAMISOLE AGAINTS SOIL-TRANSMITTED HELMINTH INFECTION IN SCHOOL CHILDREN, DELI SERDANG, NORTH SUMATERA

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ABSTRACT

BACKGROUND: Intestinal worm infection in particular of Soil Transmitted Helminth (STH) remained an important global public health problem, with high prevalence existed in the tropic and sub-tropic regions, including Indonesia. The prevalence was higher in rural than urban community. Helminthiasis (worm infection) is a chronic infection of nematode worm, which comprised *A. Lumbricoides, T. trichiura, N. Americanus,* and *A. duodenale.* This infection can cause physical and intellectual retardation in children. This study aimed to examine the efficacy of Albendazole, Albendazole-Levamisol, and Mebendazole-Levamisol in intestinal worm eradication.

SUBJECT AND METHODS: This was a double-blind randomized controlled trial, conducted in Deli Serdang, North Sumatera, from April to June 2015. A sample of 180 primary school children was allocated in 3 groups: (1) Albendazole 400 mg; (2) Albendazole 400 mg-Levamisol 50 mg/ 100 mg; and (3) Mebendazole 500 mg-Levamisol 50 mg/ 100 mg. The independent variable was anti-helminthiasis consisting of Albendazole 400 mg, Albendazole 400 mg-Levamisol 50 mg/ 100 mg, and Mebendazole 500 mg-Levamisol 50 mg/ 100 mg. The dependent variable was STH infection, which was examined from the stool using Kato-Katz method. The stool was collected and examined on day-7, day-14, and day-21 after treatment. The other dependent variable was side effect of the treatment.

RESULTS: The types of STH infection were as follows: 92 (51.11%) Ascariasis, 37 (20.55%) Trichuriasis, and 51 (28.33%) mixed infection. The cure rate for *A. lumbricoides* infection was 100% in all groups. The cure rate of *T. trichiura* infection was 66.7% for Albendazole, 94.7% for Albendazole-Levamisol, and 92.3% for Mebendazole-Levamisol, and this difference was statistically significant (p<0.001). The cure rate for mixed infection was 28.6% for Albendazole, 85.7% for Albendazole-Levamisol, and 66.7% for Mebendazole-Levamisol and this difference was statistically significant (p<0.001). The cure rate of mild *T.trichiura* infection by single-dose Albendazole-Levamisol was better than either Albendazole or Mebendazole-Levamisole (p=0.010). Nausea and diarrhea were present in all treatment groups, but the difference was not statistically significant.

CONCLUSION: Albendazole was more efficacious than either Abendazole-Levamisol or Mebendazole-Levamisole to *T. trichiura* and mixed infection. All anti-helminthic cure 100% of *A. lumricoides*. The best treatment for mild *T. trichiura* infection is single dose Albendazole-Levamisol.

Keywords: Soil Transmitted Helminth, Albendazole, Albendazole-Levamisol, Mebendazole-Levamisol

TOPIC IV:

MATERNAL AND CHILD HEALTH

SOCIO-ECONOMIC AND DEMOGRAPHIC FACTORS AFFECTING CONTRACEPTIVE USE IN WOMEN: EVIDENCE FROM THE INDONESIAN NATIONAL SOCIOECONOMIC SURVEY (SUSENAS)

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ABSTRACT

BACKGROUND: Family planning program plays an important role in safe motherhood. Birth spacing and correct choice of contraceptive determine maternal health and the quality of family. However, the current user of contraceptive in Indonesia among women of reproductive age is low compared with other ASEAN countries (60%). This study aimed to determine the social, economic, and demographic factors that affect contraceptive use in Indonesia.

SUBJECT AND METHODS: This was a cross-sectional study using secondary data derived from the national socio-economic survey (SUSENAS) in 2014. A sample of 61,970 married women was selected for this study. The dependent variable was contraceptive use. The independent variables included maternal age, number of living children, family income, maternal schooling, maternal employment status, rural urban residence, and region of residence. Multiple logistic regression analyses were used to estimate the effects of socio-economic and demographic variables on contraceptive use.

RESULTS: Only 39% of married women in Indonesia used contraceptive. The most popular contraceptive method used was injection (55%). Factors affecting contraceptive use were maternal age over 30 years (OR = 1.11; 95%CI 1.05 to 1.17; p<0.001), number of living children >2 (OR = 1.5; 95%CI 1.48 to 1.68; p<0.001), secondary school (OR = 0.92; 95%CI 0.89 to 0.96; p<0.001), family income quintile 5 (OR = 0.89; 95%CI 0.84 to 0.94; p<0.001), work outside (OR= 0.88; 95%CI 0.85 to 0.91; p<0.001), living in urban area (OR = 0.86; 95%CI 0.83 to 0.89; p<0.001), residing in Java/Bali (OR = 1.41; 95%CI 1.35 to 1.47; p<0.001).

CONCLUSION: Maternal age over 30 years, number of children >2, and residing in Java/Bali, increase the likelihood of contraceptive use. Secondary school, family income quintile 5, work outside, and living in urban area, decrease the likelihood of contraceptive use. Family planning policy, information, education, and communication programs should consider these determinants of contraceptive use.

Keywords: contraceptive use, women, socio-economic demographic factors, Susenas

PERCEPTION AND EXPECTATION ON THE "ALERT VILLAGE" PROGRAM AMONG HIGH RISK PREGNANT WOMEN IN LUMAJANG, EAST JAVA

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ABSTRACT

BACKGROUND: The "Alert Village" is a government program that aims to help empower village communities to achieve optimal health. With this program village communities are expected to have high concern, responsibility, and responsiveness to local health problems. Village communities are expected to be aware and well-informed about their own health. They are expected to be alert and ready to respond correctly to health risk and hazard. They must have the ability and willingness to identify causes of health problem and improve their own health. This study aimed to document the perception and expectation among high risk pregnant women on the "Alert Village" program as indicated in Lumajang district, East Java

SUBJECT AND METHODS: This was a qualitative study carried out in Lumajang district, East Java. The primary informants were high risk pregnant women. The secondary informants included local communities, health personnels and maternal health programmers. The data were collected by in-depth interview, direct observation, and document review.

RESULTS: Most pregnant women perceived that the introduction of the "Alert Village" program had brought about improvement in the provision of women health care. The health personels monitored high risk pregnant women more intensely. The quality of the ante-natal care and delivery care was improved and they were more accessible to pregnant women. The communities had more power and control over their own resources. They collected fund from the community members to help support pregnant women to cover the costs associated with ante-natal and delivery care. Transportation showed improvement and it eased referal system. Some expectations are expressed to be realized: (1) Increased frequency of ante-natal visits to high risk pregnant women; (2) Provision of concomitant health education at the point of care; (3) Provision of an aid program that supplies nutritious food supplement to high risk pregnant women.

CONCLUSION: The "Alert Village" has improved the quality and quantity of ante-natal and delivery care to high risk pregnant women. It empowers the communities to have control over their own health problems. Yet continuing actions need to be taken to maintain and improve these initiatives.

Keywords: "Alert Village program", high risk pregnant women, ante-natal care, delivery care

MENSTRUAL CYCLE IRREGULARITY AND BODY MASS INDEX AMONG SECONDARY SCHOOL STUDENTS IN SRAGEN, CENTRAL JAVA

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ABSTRACT

BACKGROUND: The Indonesian Health Survey in 2010 reported that 68.3% of women aged 10-59 years old had a regular menstrual cycle in the past one year. Approximately 13.7% of the affected women experienced problem associated with irregular menstrual cycle. Irregular menstrual cycle may cause anxiety, heighten emotional sensitivity, and disturb daily activities in the affected women. Irregular menstrual cycle occurs due to imbalanced sexual hormone. This hormonal imbalance might be worsened by poor nutritional status. This study aimed to estimate the association between irregular menstrual cycle and body mass index.

SUBJECT AND METHODS: This was a cross sectional study conducted in Sragen, Central Java. A sample of class IX secondary school (MTs) students in Kalijambe, Sragen, was selected at random for this study. The dependent variable was the menstrual cycle irregularity in the past 3 months. It was measured by a questionnaire. The independent variable was body mass index. The body weight was measured by a weight scale. The body height was measured by micro-toise. The association between study variables was estimated by Spearman correlation coefficient.

RESULTS: Fifty percent of the sample had normal body weight, 43.8% were underweight, 6.3% were obese. As much as 12.5% of them had irregular menstrual cycle. There was a very weak and statistically non-significant correlation between body mass index and menstrual cycle irregularity (r=0.08; p=0.183).

CONCLUSION: There was a very weak and statistically non-significant correlation between body mass index and menstrual cycle regularity.

Keywords: menstrual cycle, regularity, body mass index

EXPERIENTIAL LEARNING CARE TO INCREASE MATERNAL ABILITY IN CARING PREMATURE INFANTS

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ABSTRACT

BACKGROUND: Premature born infants are at high risk for asphyxia, jaundice, and infection. Health care providers and mothers, therefore, should pay more attention to the care of their premature infants. Experiential learning is the process of learning through experience, and is more specifically defined as learning through reflection on doing. This study aimed to determine the effect of experiential learning care (ELC) on the ability of mothers in caring their premature infants.

SUBJECT AND METHODS: This was a quasi-experiment, pre and post with no control group design. A sample of 56 mothers with premature infants who were hospitalized at the Perinatal Intensive Care Unit (PICU) Dr. Wahidin Sudiro Husodo Hospital, Mojokerto, were selected for this study. The dependent variable included various abilities of mother in caring premature infants. The independent variable was ELC with module. The effect of ELC on various dependent variables was analyzed by Odds Ratio, 95%CI, and Chi square.

RESULTS : ELC increased maternal ability to recognize abnormal clinical signs and symptoms in premature infants including apnea, hypothermia, and poor nutrition (OR=89.31; 95%CI= 19.12 to 417.20; $p<0.001$), the ability to identify other clinical problems in premature infants (OR=64.78; 95%CI= 17.19 to 244.10; $p<0.001$), the ability to take care of their premature infants (OR=58.44; 95%CI=15.64 to 218.40; $p<0.001$) , and the ability to make clinical decision together with health care provider (OR=99.00; 95%CI=21.04 to 465.90; $p<0.001$).

CONCLUSION: Experiential learning care can increase maternal ability to take care of their premature infants.

Keyword: experiential learning care, premature infants

ACCESS TO INFORMATION, SOCIO-CULTURAL FACTOR, AND THEIR RELATIONSHIP WITH READINESS TO PROVIDE EXCLUSIVE BREASTFEEDING AMONG PREGNANT WOMEN

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ABSTRACT

BACKGROUND: Review of evidence has shown that, on a population basis, exclusive breastfeeding for 6 months is the optimal way of feeding infants. Breast milk promotes sensory and cognitive development, and protects the infant against infectious and chronic diseases. Exclusive breastfeeding reduces infant mortality due to common childhood illnesses such as diarrhea or pneumonia, and helps for a quicker recovery during illness. This study aimed to examine the relationship between access to information, socio-cultural factor, and readiness to provide exclusive breastfeeding among pregnant women.

SUBJECT AND METHODS: This was a cross sectional study conducted in Surakarta, Central Java. A sample of 150 pregnant mothers was selected at random from 3 community health centers in Surakarta. The dependent variable was readiness to provide exclusive breastfeeding. The independent variables were access to information and socio-cultural factor. The socio-cultural factor consisted of 3 indicators: (1) Value and belief on colostrum, (2) Value and belief food intake, and (3) Tradition and belief about breastfeeding. A questionnaire was developed to measure these variables. A multiple linear regression model was used to estimate the relationship between variables.

RESULTS: Access to information (b=0.30; p=0.021) and positive socio-cultural factor (b=0.20; p=0.044) increased the readiness of pregnant mothers to provide exclusive breastfeeding, and both relationships were statistically significant.

CONCLUSION: Access to information and positive socio-cultural factor increase the readiness of pregnant mothers to provide exclusive breast-feeding. Health promotion initiative is recommended to improve information access and to enhance positive socio-cultural values and beliefs in order to increase readiness among pregnant mothers to provide exclusive breastfeeding.

Keywords: exclusive breastfeeding, access to information, socio-cultural factor

MATERNAL AGE, HISTORY OF DISEASE, NUTRITIONAL STATUS IN PREGNANCY, AND THEIR ASSOCIATION WITH LOW BIRTH-WEIGHT IN AISIYAH HOSPITAL, KUDUS, CENTRAL JAVA

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ABSTRACT

BACKGROUND: Low Birth Weight (LBW) is a risk factor for diabetes mellitus and coronary heart disease in adult. The incidence of LBW remained high in Indonesia. Deleterious bio-psychosocial exposure during the gestation period may have negative impact on birth-weight. This study aimed to determine the association between maternal age, history of disease, nutritional status in pregnancy, and low birth weight**.**

SUBJECT AND METHODS: This was a cross-sectional study conducted in Kudus district, Central Java. A sample of 59 new-born babies was selected from Aisiyah Hospital for this study. The dependent variable was birth-weight. The independent variables were maternal age, history of disease, and nutritional status. Maternal age and history of disease were measured by questionnaire. Nutritional status during pregnancy was measured anthropometry. Bivariate analysis involving Odds Ratio and Chi Square test was used to analyze the data.

RESULTS: Maternal age <20 years or ≥35 years old increased the risk of delivering LBW infants 1.24 times as many as maternal age between 20 and 35 years old, although it was not statistically significant (OR=1.24; 95%CI=0.28 to 5.42; p=0.775). Pregnant mother with history of disease had the risk of delivering LBW infants 4 times as many as pregnant mother without history of disease, and it was marginally significant (OR=4.00; 95%CI=0.89 to 17.87; p=0.057). Pregnant mother with protein energy malnutrition had the risk of delivering LBW infants 7.5 times as many as pregnant mother without protein energy malnutrition and it was statistically significant (OR=7.53; 95%CI=1.43 to 39.49; p=0.008).

CONCLUSION: History of disease and protein energy malnutrition during pregnancy are risk factors for delivering LBW infants.

Keywords: low birth-weight, age, history of disease, nutritional status

RELATIONSHIP BETWEEN LACTATION AND POST-PARTUM UTERINE INVOLUTION IN SRIKANDI HUSADA CLINIC, KUDUS, CENTRAL JAVA

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ABSTRACT

BACKGROUND: Rapid uterine involution prevents post-partum hemorrhage. Lactation stimulates the release of oxytocin hormone that can be used to enhance uterus contraction. This study aimed to analyze the relationship between lactation and post-partum uterine involution.
SUBJECT AND METHODS: This was a cross sectional study, conducted from January to November 2014, in Kudus, Central Java. A sample of 30 post-partum mothers was selected from Srikandi Husada Clinic, Kudus, Central Java. The dependent variable was post-partum uterine involution. The independent variable was lactation. The data was analyzed using Odds Ratio and Chi Square.
RESULTS: There was positive relationship between lactation and normal uterine involution, although it was not statistically significant. Lactating mothers were 5.71 times more likely to have normal uterine involution than non lactating mothers (OR=5.71; 95%CI=0.44 to 7.18; p=0.144).
CONCLUSION: It is advised that postpartum mothers increase lactation to enhance uterine involution.

Keywords: postpartum, lactation, uterine involution

TYPE OF INFORMATION SOURCE AND THE QUALITY OF KNOWLEDGE IN POST DELIVERY CONTRACEPTION AMONG PREGNANT WOMEN

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ABSTRACT

BACKGROUND: Good knowledge in contraceptive is important for post-partum women to choose the correct contraceptive for them. It is hypothesized the quality of knowledge in contraceptive vary by types source of information. This study aimed to estimate the assotiation between type of information source and the quality of knowledge in post-delivery contraception among pregnant women.

SUBJECTS AND METHODS: This was a cross-sectional study conducted in Kudus. A sample of 63 pregnant women in third trimester was selected for this study. The dependent variable was knowledge in post delivery contraception. The independent variable was the type of information source. A structured questionnaire was developed to collect the data. The data was analyzed using Odds Ratio and Chi-square.

RESULTS: The quality of knowledge in post delivery contraception varied by the type of information source. The following types of information source increased the likelihood for pregnant women to obtain good knowledge, from the strongest relationship to the weakest relationship: parents (OR=7.36; 95%CI=2.22 to 24.38; p<0.001), pregnant women class (OR=5.19; 95%CI=1.57 to 17.12; p=0.005), magazine or newspaper (OR=2.28; 95%CI=0.64 to 8.10; p=0.193), television (OR=1.69; 95%CI=0.58 to 4.89; p=0.326), Midwife (OR=1.50; 95%CI=0.53 to 4.21; p=0.440), and internet (OR=1.12; 95%CI=0.38 to 3.28; p=0.829). Friends (OR=0.52; 95%CI=0.17 to 1.63; p=0.265), facebook (OR=0.97; 95%CI=0.32 to 2.99; p=0.971), and radio (OR=0.80; 95%CI=0.26 to 2.39; p=0.694) were types of information source that decreased the likelihood to pregnant women to obtain good knowledge, but they were not statistically significant.

CONCLUSION: Parents and pregnant women class stand out to be two types of information source that strongly increase the likelihood of pregnant women to obtain good knowledge in post-partum contraception, and they are statistically significant.

Keywords: type of information source, knowledge, contraception, pregnant women

THE RELATIVE EFFECTIVENESS OF BENSON'S RELAXATION THERAPY, AL QURAN MUROTAL THERAPY, AND GROUP COMMUNICATION IN THE REDUCTION OF ANXIETY IN PREGNANT WOMEN BEFORE LABOR

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ABSTRACT

BACKGROUND: Psychological condition of pregnant mothers before delivery is an important factor for smooth labor process. Anxiety may cause uterine muscles spasm, poor contraction, poor dilatation, and pain. In addition, anxiety may cause vasoconstriction of uterus, poor vascularization, poor contraction, and prolonged labor. Benson's relaxation therapy, Al Quran murotal therapy, and group communication may reduce anxiety. This study aimed to determine the relative effectiveness of Benson's relaxation therapy, Al Quran murotal therapy, and group communication, in reducing anxiety among pregnant women before delivery.

SUBJECT AND METHODS: This was a quasi-experimental study with control group design conducted in Kudus, Central Java. A sample of 30 pregnant mothers was selected from Kaliwungu, Tanjung Rejo, and Dawe sub-districts, Kudus, Central Java. The sample was divided into 3 groups: (1) Benson's relaxation therapy, (2) Al Quran murotal therapy, and (3) Group communication. The dependent variable was anxiety. Anxiety in pregnant women before delivery was measured by Edinburgh Postnatal Depression Scale (EPDS). The difference in anxiety before and after intervention was tested by t-test. The difference in anxiety among the 3 groups was tested by One Way Anova and post-hoc test.

RESULTS: Both relaxation (p=0.020) and Al Quran murotal (p=0.001) therapies significantly decrease anxiety after intervention. Group communication did not significantly decrease anxiety (p=0.529). There was no significant difference in the average decrease in anxiety between Benson's relaxation and Al Qur'an murotal therapy (p=0.780).

CONCLUSION: Both relaxation and Al Quran murotal therapies decrease anxiety in pregnant women before delivery, with equal effecttiveness. Group communication was not effective in reducing anxiety.

Keywords: Benson's relaxation therapy, Al-Quran murotal therapy, group communication therapy, anxiety

RELATIONSHIP BETWEEN WORKPLACE SUPPORT AND BREASTFEEDING SELF-EFFICACY WORKING MOTHERS IN PUSKESMAS JETIS YOGYAKARTA

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ABSTRACT

BACKGROUND: According to WHO, less than 40% of infants worldwide were exclusively breastfed. In Indonesia, only 48.6% and Yogyakarta 42.70% of infants were exclusively breastfed. This breastfeeding level is far below the national target of 80% exclusive breastfeeding for infants. Support from the workplace may increase breastfeeding self-efficacy among mothers with infant. This study aimed to determine the relationship between workplace support and breastfeeding self-efficacy among mothers with infant.

SUBJECT AND METHODS: This study was a cross sectional study conducted in Yogyakarta. A sample of 87 mothers who had infants under 6 months from Puskesmas Jetis, Yogyakarta, was selected for this study. The dependent variable was breastfeeding self-efficacy. The independent variable was workplace support. A questionnaire was developed to measure these variables. Bivariate analysis involving Odds Ratio and Chi Square test was used to analyze the data.

RESULT: Workplace support increased breastfeeding self-efficacy. Mothers with support from the workplace were 1.59 times more likely to have strong breastfeeding self-efficacy than those without support from the workplace (OR=1.59; p=0.013).

CONCLUSION: Workplace support increases breastfeeding self-efficacy. It is suggested that every workplace provides support to working mothers with infants (e.g. breastfeeding corner) to increase breastfeeding self-efficacy.

Keywords: workplace support, breastfeeding, self-efficacy, working mother, infants

THE EFFECT OF MASSAGE ON WEIGHT GAIN AND SLEEP DURATION AMONG INFANTS IN KEDIRI EAST JAVA

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ABSTRACT

BACKGROUND: Massage therapy is an old and popular human touch. It has a positive effect on infant health, because it stimulates vagal nerve and hormone that improve digestion and regulate nutrient absorption. This makes the infant hungry faster, suckles more frequently, and in effect gains more weight. In addition, infant massage stimulates endorphin release that reduces pain, so that the infant feels calm, reduces crying, and sleeps more. This study aimed to determine the effect of massage on weight gain and sleep duration among infants.

SUBJECT AND METHODS: This study was a quasi experiment, before and after with control design. It was conducted in Pare, Kediri, East Java. A sample of 60 infants aged 1 to 3 months was allocated into 2 groups: (1) The experimental group consisted of 30 infants who got massaged; (2) The control group consisted of 30 infants who did not get massaged. The dependent variables were weight gain and sleep duration. Sleep duration was measured by timer and questionnaire. Weight gain was measured by a scale. The independent variable was infant massage. Weight gain between the 2 groups was analyzed using Odds Ratio and Chi Square test. Mean difference in sleep duration was tested by t-test.

RESULTS: Massaged infants were 2.49 times as many to weight gain than unmassaged infants (OR=2.49; p=0.040). On average massaged infants slept longer than unmassaged infants, and it was statistically significant (p<0.001).

CONCLUSION: Infants massage increases weight gain and sleep duration.

Keywords: infants massage, body weight, sleep duration

MATERNAL AND INFANT FACTORS ASSOCIATED WITH BREASTFEEDING IN A HOSPITAL ROOMING-IN WARD SYSTEM, KUDUS, CENTRAL JAVA

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ABSTRACT

BACKGROUND: Breast milk is the best nutrition for infants. Breast milk contains a variety of nutrients and fluid that infants need. The practice of breastfeeding may be influenced by several factors, such as maternal knowledge in breastfeeding, maternal competence in lactation management, maternal condition, and infant condition. A new strategy to facilitate breastfeeding is to provide rooming-in one ward system for the new born babies. This study aimed to investigate factors associated with breastfeeding in a rooming-in ward system for the new born babies.

SUBJECT AND METHODS: This study was cross-sectional, conducted in Kudus, Central Java. A sample of 30 lactating mothers was selected from rooming-in ward in a hospital, Kudus, Central Java. The dependent variable was breastfeeding. The independent variables were maternal condition and infant condition. A questionnaire was developed to measure the variables. The data was analyzed using Odds Ratio (OR) and Chi-Square.

RESULTS: Good maternal condition (OR=15.00; 95%CI=1.45 to 155.30; p=0.008) and good infant condition (OR=38.25; 95%CI=4.59 to 318.60; p<0.001) were positively and strongly associated with the likelihood of breastfeeding.

CONCLUSION: Maternal and infant conditions are important determinants for breastfeeding in a hospital rooming-in ward system.

Keywords: breastfeeding, maternal condition, infant condition, rooming-in ward.

EFFECT OF HEALTH EDUCATION AND "PREGNANT MOTHER AWARENESS MOVEMENT" ON KNOWLEDGE AND COMMUNITY PARTICIPATION IN SAFE MOTHERHOOD, IN TANGERANG, BANTEN

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ABSTRACT

BACKGROUND: Neonatal mortality, infant mortality, and maternal mortality remained important public health in most developing countries, including Indonesia. Neonatal mortality rate in Puskesmas Kronjo, Tangerang Banten was 6 per 1000 live birth in 2014, and 7 per 1000 live birth in 2015. There is a need to assess the effect of health education and community awareness program on the knowledge in safe motherhood and number of antenatal care visits. This study aimed to determine effect of health education and "pregnant mother awareness movement" on knowledge and community participation in safe motherhood.

SUBJECT AND METHODS: This was a quasi-experimental study, before and after intervention with no control design, conducted in Tangerang, Banten. A sample of 25 pregnant mothers was selected from Community Health Center (Puskesmas) Kronjo, Tangerang, Banten. The dependent variables were knowledge in safe motherhood and community participation in maternal care. The independent variable was a program consisting of health education and "Pregnant Women Awareness Movement" (Gerakan Peduli Ibu Hamil (GeLiBuMil)). The health education was intended to give information on the important antenatal care and other safe motherhood services. The "Pregnant Women Awareness Movement" aimed to increase awareness of safe motherhood. A question-naire was used to measure knowledge before and after the intervention. Document review was used to collect on community participation in safe motherhood. Change in percentage of pregnant mothers who had good knowledge in safe motherhood before and after intervention was estimated by Odds Ratio and tested by Chi Square test.

RESULTS: Health education and "Pregnant Women Awareness Movement" altogether increased knowledge in safe motherhood among pregnant mothers. Pregnant mothers who received this intervention prog-ram were 3.19 times more likely to have good knowledge in safe mother-hood than those who did not receive the program (OR=3.19; 95%CI=1.00

to 10.17; p=0.047). There was 12% increase in the number of visit among pregnant mothers to use antenatal and other maternal care.

CONCLUSION: Health education and "Pregnant Women Awareness Movement" can effectively increase knowledge in safe motherhood and antenatal visits among pregnant mothers.

Keywords: neonatal mortality rate, antenatal care, health education, community awareness

ASSOCIATION BETWEEN MATERNAL EDUCATION, FAMILY INCOME, AND INFANT DEVELOPMENT, IN COMMUNITY HEALTH CENTER PENELEH, SURABAYA

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ABSTRACT

BACKGROUND: Child development is an important parameter of child health. Child development is influenced by several factors including prenatal condition, culture, family socioeconomic status, nutrition, climate or weather, exercise, child position in the family, intelligence, and hormonal influence. Somatotrophic hormone and thyroid hormone stimulate body metabolism. Parental factors such as parental emotion, education, and experience, may also affect child development. This study aimed to estimate the association between maternal education, family income, and infant development.

SUBJECT AND METHODS: This study was a cross sectional study conducted in Surabaya, East Java. A sample of 215 children aged 24 to 36 months from Setro hamlet, Tambaksari sub-district, Surabaya, East Java. The independent variables were family income and maternal education. These variables were measured by a questionnaire. The dependent variable was child development. This variable was measured by Pre Screening of Development Questionnaire (Kuesioner Pre Skrining Perkembangan, KPSP), which was developed by the Ministry of Health. The data was analyzed by a multiple linear regression.

RESULTS: There were positive relationships between family income (b=1.14; 95% CI=0.37 to 1.92, p=0.005), maternal education (b=1.58; 95%CI=0.58 to 2.58; p=0.002) and child development. Children aged 2 to 3 years old with family income >Rp 2.000.000 per month had better child development than those with lower income. Children aged 2 to 3 years old with high school or higher maternal education had better child development than those with lower education.

CONCLUSION: Higher maternal education and higher family income have positive impact on child development.

Keywords: maternal education, family income, child development

AEFFECT OF OXYTOCIN MASSAGE ON LABOR DURATION AND UTERINE INVOLUTION AT INDEPENDENT MIDWIVERY PRACTICE SRI HASTUTI SURABAYA

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ABSTRACT

BACKGROUND: Prolonged labor may cause poor infant clinical condition. Lengthening uterine involution may cause postpartum hemorrhage. Oxytocin is a hormone secreted by the neurons of the hypothalamus and stored in the posterior pituitary in mammals. Theoretically, oxytocin stimulates contraction of uterine smooth muscle by increasing the sodium permeability of uterine myofibrils. High estrogen concentrations lower the threshold for uterine response to oxytocin. Uterine response to oxytocin increases with the duration of pregnancy. This study aimed to determine effect of oxytocin massage on labor duration and uterine involution.

SUBJECT AND METHODS: This was an experimental study, using post test only design with a control group. It was conducted at Independent Midwivery Practice (BPM) Sri Hastutik, Surabaya, East Java. A sample of 32 pregnant mothers was monitored during the delivery and post partum processes. The dependent variables were phase I labor duration and uterine involution. The independent variable was oxytocin massage. The data was analyzed by McNemar test.

RESULTS: Pregnant mothers who received intra-partum oxytocin massage were 6.60 times more likely to have rapid labor than those who did not receive oxytocin massage (OR=6.60; 95%CI= 1.40 to 31.05; p=0.013). Pregnant mothers who received intra-partum oxytocin massage were 9.53 times more likely to have rapid uterine involution than those who did not receive oxytocin massage (OR=9.53; 95%CI= 1.85 to 49.20; p=0.004).

CONCLUSION: Oxytocin massage is effective to shorten labor duration and uterine involution.

Keywords: oxytocin massage, phase I labor duration, uterine involution

THE QUALITY OF CARE AT THE INDEPENDENT MIDWIFERY CLINICS, SURABAYA

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ABSTRACT

BACKGROUND: There have been an increasing number of independent midwifery clinics in Surabaya that received Bidan Delima award. However, anecdotal evidence from lay people indicated that some midwifery clinics were lacking in hospitality and reliability in the delivery of care. Some patients said that they lacked in communication and prompt decision making in obstetric emergency cases. This study aimed to assess the quality of care provided by the independent midwifery clinics in Surabaya.

SUBJECT AND METHODS: This was a qualitative study conducted in Surabaya, East Java. Five patients each from three independent midwifery clinics (BPM) in Surabaya were selected purposively for this study. The SERVQUAL dimensions of quality were chosen for criteria assessment, which included: (1) Reliability; (2) Tangible; (3) Responsiveness; (4) Empathy; (5) Assurance. The data were collected by in-depth interview, focus group discussion, direct observation, and document review. As a key informant, the patients were interviewed to give their opinions about the quality of care.

RESULTS: Health service quality provided by BPM has met the four dimensions of quality, including reliability, responsiveness, empathy, and assurance. Their services were fast and precise. The midwives were friendly and caring. The tangible dimension of quality, however, needs improvement. The entire informants were satisfied. Midwife services were perceived better than hospital services. The obstetric equipment used by the midwives has met the required standard. The informants expected that the BPM improve facilities, such as air conditioned rooms and parking lot.

CONCLUSION: The patients generally perceive the quality of care provided by the independent midwifery clinics meet the reliability, responsiveness, empathy, and assurance, dimensions of quality. The tangible dimension needs improvement.

Keywords: quality of service, independent midwife clinics

EFFECT OF BRAIN BUTTON ON THE DEVELOPMENT OF PRE-SCHOOL CHILDREN IN LAMONGAN, EAST JAVA

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ABSTRACT

BACKGROUND: Brain button is a type of brain exercise, which consists of a series of exercises that aims to help brain function better, making the brain sharper and smarter. This exercise starts with putting one hand over the navel. With the thumb and fingers of the other hand, the subject is expected to feel for the two hollow areas under the collarbone, about one inch out from the centre of the chest. Then the subject rubs these areas vigorously for 30 seconds to one minute, from left to right. Brain button stimulates the carotid arteries, which supply freshly oxygenated blood to the brain. This study aimed to test the hypothesis on the effect of brain button on improving development among pre-school children.

SUBJECT AND METHODS: This was a quasi-experimental study, before and after with no control design. A sample of 30 pre-school children from Dharma Wanita Sumber Sari Kindergarten, in Lamongan, East Java, was selected for this study. The independent variable was brain button. The dependent variable was mental development, which was measured by Pre-Screening Development Questionnaire (Kuesioner Pra-Skrining Perkembangan, KPSP). The data was analyzed with Odds Ratio (OR) and McNemar test.

RESULTS: There was an effect of brain button on improving child mental development, although it was not statistically significant. Pre-school children who received brain button were 4 times more likely to have normal development than those who did not receive brain button (OR=4.00; 95%CI= 0.32 to 50.22; p=0.256).

CONCLUSION: The effect of brain button on improving child mental development is in conclusive in this study, as the effect is not statistically significant.

Keywords: brain button, mental development, pre-school children

TOPIC V:

NUTRITIONAL EPIDEMIOLOGY

SODIUM, FAT, AND CHOLESTEROL CONTENTS IN EAST JAVA TRADITIONAL FOOD

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ABSTRACT

BACKGROUND: Restriction of sodium, total fat, saturated fat, cholesterol and trans-fats consumption are essential to control blood pressure. Health professionals in Indonesia such as doctor, nurse, and midwife, often have difficulty in providing advice related to traditional food consumption to prevent hypertension, due to the lack of information of nutrient contents in traditional food. This study aimed to identify and compare sodium, total fat, saturated fat, cholesterol and trans-contents in ten groups of traditional food in East Java

SUBJECT AND METHODS: This was an analytic observational study using cross-sectional design. Fifty samples of food were selected purposively from food vendors in Malang city, which were then divided into 10 groups. These groups of traditional food included rawon, chicken soto, beef soto, chicken satay, lamb satay, meatball, tahu lontong (tahu tek), rujak cingur, tahu campur, and pecel. Sodium content was measured using spectrophotometry. Total fat was measured using soxhlet method. Saturated fat, trans-fat, and cholesterol were measured using modified chromatography column. One-way ANOVA was used for data analysis.

RESULTS: Levels of sodium, total fat, saturated fat, cholesterol, and trans fats were significantly different among the 10 groups of traditional food ($p < 0.001$). Tahu tek showed the highest (mean ± SD) sodium level (191.6 ± 32.2mg) and total fat (33.7 ± 2.2 grams) content per 100 grams of food. The highest cholesterol content was found in lamb satay (124.8 ± 7.9 mg) and rawon (124 ± 10.3mg) per 100 grams of food. All food groups except pecel had high saturated fat content. All food groups contained low level of trans-fats.

CONCLUSION: People should be aware and advised to limit their consumption of tahu tek, lamb satay, and rawon.

Keywords: traditional food, sodium, fat, cholesterol, East Java

PHYTOCHEMICAL SCREENING AND TEST OF ANTIOXIDANT ACTIVITY IN THE EXTRACT OF MANGOSTEEN RIND

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ABSTRACT

BACKGROUND: Mangosteen (Garcinia mangostana L.) rind had been known as an agriculture waste. However, some recent studies reported that Mangosteen rind had some health benefit. The rind (skin) of Mangosteen fruit was reported to contain compounds such as xanthones and anthocyanin antioxidants. There is a need to examine the chemical compound content of Mangosteen rind and the activities of antioxidants contained in the Mangosteen rind, so as to increase natural source of antioxidants for human health. This study aimed to produce ethanol extract of Mangosteen rind, to identify chemical compound content, and test its antioxidant activity.

SUBJECT AND METHODS: Ethanol extract of Mangosteen rind was produced to identify its chemical compound content. The DPPH method was used to test Mangosteen's antioxidant activity with EC_{50} as a measure of the fruit potency. Half maximal effective concentration (EC_{50}) refers to the concentration of Mangosteen fruit which induces a response halfway between the baseline and maximum states after a specified exposure time. The EC_{50} of Mangosteen and vitamin C were compared.

RESULTS: Mangosteen rind extract consisted of saponin, tannins, polyphenol, triterpenoid, flavonoid, alkaloid and glycoside. The DPPH test of antioxidant activity showed that the EC_{50} of Mangosteen was 8.85 μg/ml, which exceeded the EC_{50} of 4.55 μg/ml in vitamin C.

CONCLUSION: Mangosteen rind extract consisted of saponin, tannin, polyphenol, triterpenoid, flavonoid, alkaloid and glycoside. Mangosteen rind extract has a strong antioxidant activity.

Keywords: mangosteen rind, phytochemical screening, antioxidant

GENDER, DIET, AND METABOLIC SYNDROME IN ADOLESCENTS IN MALANG, EAST JAVA

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ABSTRACT

BACKGROUND: Metabolic syndrome is a set of sympton causing degenerative disease. Metabolic syndrome is assesed based on individual body mass index, waist circumference, blood presure, triglyceride level, high density lipoprotein level, and fasting blood sugar level. People with overweight and obesity had an increased risk of metabolic syndrome. This study aimed to examine the relationship between gender, diet, and metabolic syndrome, in adolescents.

SUBJECT AND METHODS: This was a cross sectional study conducted in Malang, East Java. A sample of 227 adolescents was selected from several high school in Malang. The dependent variable was metabolic syndrome. The independent variables were gender and diet, which included energy, carbohydrate, protein, and fat intake. The data were analyzed using linear regression.

RESULT: There were positive and statistically significant relationships between metabolic syndrome and energy intake (b=0.01; 95%CI=0.009 to 0.02; p=0.026); carbohydrates intake (b=0.02, 95%CI=0.01 to 0.04; p=0.012); protein intake (b=0.07; 95%CI=0.03 to 0.09; p=0.010); fat intake (b=0.06; 95%CI=0.04 to 0.12; p=0.002), gender (b=1.81; 95%CI=0.08 to 3.52; p=0.039).

CONCLUSION: Diet and gender are risk factors for metabolic syndrome.

Keywords: metabolic syndrome, gender, diet

DENTAL MATURITY, ORAL HYGIENE AND HEIGHT OF JUNIOR HIGH SCHOOL STUDENTS IN GOITER ENDEMIC AREA IN KARANGANYAR REGENCY

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ABSTRACT

BACKGROUND: Geographical condition may affect human behavior and phyisical development. Soil and water in goiter endemic areas generally lack of iodine. This study aimed to determine dental maturity, oral hygiene, and height of junior high school students in goiter endemic area.

SUBJECT AND METHODS: This cross sectional study was conducted in a goiter endemic area in Ngargoyoso, Karanganyar regency, Central Java, with junior high school students were taken by purposive sampling as study sample. The dependent variables included dental maturity, oral hygiene, and height. Dental maturity was assessed by counting the number of tooth eruption. Oral hygiene was assessed by the number of OHI-S. Height was measured by microtoise. Chi Square test was used to test differences.

RESULTS: There were 208 students aged 12 to 15 years, consisting of 96 boys (46.2%) and 112 girls (53.8%). Dental maturity of girls were better than dental maturity of boys, and it was statistically significant (p=0.006). As many as 51 boys (53.1%) had complete and 45 boys (46.9%) had incomplete dental maturity. As many as 80 girls (76.4%) had complete and 32 girls (28.6%) had incomplete dental maturity. Oral hygiene between both sexes was comparable, and it was not statistically significant (p=0.180). As many as 15 boys (15.6%) had good, 76 boys (79.2%) had moderate, and 5 boys (5.2%) had poor oral hygiene. As many as 18 girls (16.1%) had good, 80 girls (71.4%) had moderate, and 14 girls (12.5%) had poor oral hygiene. Mean height of boys was 151 cm, with maximum height of 173 cm and minimum height of 126 cm. Mean height of girls was 149 cm, with maximum height of 171 cm and minimum height of 136 cm. The mean height of junior high school students in goiter endemic area in Ngargoyoso district was still normal compared with non-goiter endemic area.

CONCLUSION: Dental maturity of girls were better than dental maturity of boys. Most of oral hygiene of junior high school students were in the medium category. Oral hygiene between both sexes was comparable. The mean height of junior high school students in goiter endemic area in Ngargoyoso district was still normal.

Keywords: dental maturity, oral hygiene, height, goiter endemic areas

A NEW ALTERNATIVE QUAC-STICK TO PREDICT THE RISK OF CHRONIC ENERGY DEFICIENCY IN MALAY INDONESIAN WOMEN (18-49 YEARS)

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ABSTRACT

BACKGROUND: Indicators to assess the nutritional status in women of reproductive age (WRA) in particular to identify chronic energy deficiency (CED) were still limited. Upper arm circumference (MUAC) and the Body Mass Index (BMI) had been used to assess the status of CED, but it still has its limitations. This study aimed to develop a new indicator QUAC-Stick (the ratio of MUAC to Upper Arm Length (UAL)) for the risk asesement of CED on WRA in Malay Indonesia women (18-49 years).

SUBJECT AND METHODS: The cross sectional study design, used a part of data from National Basic Health Research (Riskesdas) 2013 and primary collecting data among 1009 WRA aged 18-49 years (not pregnant) in Makassar and Tana Toraja, South Sulawesi Province. Analysis used the ROC to get the optimal formula and the cut off point using BMI as the gold standard.

Results: MUAC/$\sqrt{\text{UAL}}$ (named UMMI index) with a cut-off point < 4.25 to detect the risk of CED, had better validity (Sn=80% (95% CI=70.8 to 87.3); Sp = 84% (95% CI = 81.4 to 86.3); PPV = 35% (95% CI = 29.2 to 42.0); NPV = 97% (95% CI = 96.1 to 98.4; ROC = 82% (95% CI = 80.0 to 86.1) compared to MUAC < 23,5 with the gold standard was BMI <18.5. Prevalence of CED on WRA 9.9% (BMI <18.5); 22.4% (MUAC/$\sqrt{\text{UAL}}$< 4.25). The validity of MUAC < 23.5 was good (Sn = 76%, Sp = 87.2%), but the optimal cut-off point for screening was MUAC < = 24,0 cm (Sn = 90%, Sp = 77%). The correlation (r) between MUAC-weight = 0.82; UAL-Height = 0.45; MUAC-BMI = 0.82 and MUAC/$\sqrt{\text{UAL}}$ to BMI = 0.80 (P = 0.000).

Conclusion: The new alternative indicator was MUAC/$\sqrt{\text{UAL}}$ <4.25 to assess the risk of CED on WRA in Malay Indonesia women (18-49 years). Further revalidation study is needed to be able applying the indicator to the wider population.

Keywords: Ratio, MUAC, Women of reproductive, CED, Arm Length

EFFECT OF HEALTH EDUCATION ON MATERNAL KNOWLEDGE AND CHILD NUTRITIONAL STATUS AMONG CHILDREN UNDER THREE YEARS OLD WITH UNDERNUTRITION, IN PASURUAN, EAST JAVA

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ABSTRACT

BACKGROUND: Undernutrition may disturb child growth and development. At acute phase it may threaten child survival and lead to lost generation. This study aimed to determine the effect of health education on the improvement of maternal knowledge and child nutritional status.

SUBJECT AND METHODS: This was a quasi-experiment study, before and after with no control design. A total sample of 75 children under three years old with undernutrition was selected for this study from Posyandu, at Community Health Center (Puskesmas) Gondangwetan, Pasuruan, East Java. The independent variable was health education. The dependent variables were maternal knowledge in nutrition and child nutritional status, as measured by weight for age. Maternal knowledge and confoundding factors were measure by a questionnaire. Child nutritional status was measure a month and two months after health education. The confounding factors included family income and maternal education. The effect of the independent variables on the dependent variables were analyzed using multiple logistic regression model.

RESULTS: Knowledge in nutrition increased significantly before and after health education (b=7.35; p=0.001). A month after health education, children whose mother had high knowledge in nutrition were 2.6 times more likely to have good nutritional status than those whose mother had low knowledge, although it was not statically significant (OR=2.57; p=0.195). Two months after health education, children whose mother had high knowledge in nutrition were 2.2 times more likely to have good nutritional status than those whose mother had low knowledge, although it was not statically significant (OR=2.21; p=0.147). These estimates were made after controlling for the effect of family income. Children whose mother had higher family income were 12.2 times more likely to have good nutritional status than those whose with low family income (OR=12.2; p=0.037).

CONCLUSION: Health education to mothers can improve knowledge in nutrition and improve nutritional status among children under three years old in Pasuruan, East Java.

Keywords: health education, knowledge, nutritional status, children under three years old

PIZZA AND HUMBURGER CONSUMPTION AS RISK FACTORS FOR OVERWEIGHT IN ADOLESCENTS IN JAMBI

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ABSTRACT

BACKGROUND: Overweight and obesity are the result of "caloric imbalance" too few calories expended for the amount of calories consumed and are affected by various genetic, behavioral, and environmental factors. Childhood obesity has both immediate and long-term health effects. Obese youth are more likely to have cardiovascular disease, prediabetes, bone and joint problems, sleep apnea, social and psychological problems (e.g. stigmatization and poor self-esteem). This study aimed to estimate the effect of pizza, hamburger, and food consumption pattern, as risk factors for overweight in adolescents.

SUBJECT AND METHODS: This was a cross sectional study using primary data from 137 students aged 14 to 17 years old at SMAN 5 High School in Jambi City, Jambi. The independent variable was junk food consumption pattern, which included pizza and hamburger; instant noodle; popcorn, chips and French fries; soft drink; tea, coffee, cappuccino and cookies; cake and sweet foods. They were assessed using food frequency questionnaire. The dependent variable was nutritional status. It was measured by Body Mass Index for Age (BMI for Age) using WHO Anthropometry software. The counfounding variables were gender, maternal education, maternal employment status, paternal employment status, and family income. The data was analyzed by a multiple logistic regression with Prevalence Odds Ratio (POR).

RESULTS: The prevalence of overweight was 23.4%. The consumption pattern: (1) Pizza and hamburgers (13.1%); (2) Instant noodles (10.2%); (3) Soft drinks (11.7%); (4) Cake and sweet foods (33.6%); (5) Pop corn, chips and french fries (47.4%); and (6) Tea, coffee, cappuccino and cookies (45.3%). Overweight and obesity in adolescent was strongly associated with pizza and hamburger consumption (POR=3.55; 95%CI=1.08 to 11.68; p=0.037), after controlling for the effect of confounding factors. Higher maternal education (POR=2.17; 95%CI= 0.44 to 10.73; p=0.341), employed father (POR=1.96; 95%CI=0.81 to 4.77; p=0.135), increased the risk for overweight and obesity. Instant noodle consumption habit (POR=0.21; 95%CI=0.23 to 1.83; p=0.16), and tea, coffee, cappuccino and cookies consumption habit (POR=0.45; 95% CI=0.18 to 1.09; p=0.079), decreased the risk for overweight and obesity in adolescents.

CONCLUSION: Pizza and hamburger consumption habits are strong predictors for overweight and obesity in adolescents.

Keywords: overweight, obesity, junk food, adolescents

ASSOCIATION BETWEEN FEEDING PATTERN AND NUTRITIONAL STATUS AMONG TODDLERS, IN JOMBANG, EAST JAVA

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ABSTRACT

BACKGROUND: To develop the optimal potential of children, it is vital that they are provided with nutritionally sound diets. Diet and exercise patterns during childhood and adolescence may spell the difference between health and risk of disease in later years. Different stages of the life cycle dictate differing nutrient needs. This study aimed to describe feeding pattern and to determine the association between feeding pattern and nutritional status among children aged 1 to 5 years old, in Jombang, East Java.

SUBJECT AND METHODS: This was a cross sectional study, conducted in Jombang, East Java. A sample of 72 children aged 1 to 5 years old (toddlers) were selected from Carangwulung village, Wonosalam district, Jombang regency, East Java. The dependent variable was nutritional status, which was measured by weight for age according to WHO 2005. The independent variable was feeding pattern, including energy intake and protein intake. Feeding pattern was measured by 24-hour food recall questionnaire. Nutrient adequacy in meeting the energy and protein requirement per day was measured by Nutrisurvey software. The association between energy and protein intake and nutritional status was analyzed by Odds Ratio (OR) and Chi-Square test.

RESULTS: There was a strong and positive association between energy intake and nutritional status in children aged 1 to 5 years old. Children with good energy intake were 19.72 times more likely to have good nutritional status those with poor energy intake (OR=19.72; 95%CI= 2.45 to 158.90; p<0.001). There was a strong and positive association between protein intake and nutritional status in children aged 1 to 5 years old. Children with good protein intake were 19.09 times more likely to have good nutritional status those with poor protein intake (OR=19.09; 95%CI= 4.96 to 73.52; p<0.001).

CONCLUSION: Both energy and protein intake are strong predictors for nutritional status among children aged 1 to 5 years old. Children with good energy and/or protein intake are more likely to have good nutritional status.

Keywords: feeding pattern, energy intake, protein intake, nutritional status, toddler

TOPIC VI:

OTHERS EPIDEMIOLOGY

COMPARISON OF DIABETES MELLITUS PREVALENCE BETWEEN UNIVERSAL AND TARGETED SCREENING AMONG TUBERCULOSIS PATIENTS IN RESOURCE LIMITED SETTINGS

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ABSTRACT

BACKGROUND: Diabetes Mellitus (DM) increases the risk of active Tuberculosis (TB) infection and treatment failure. Therefore, screening of DM is important in TB patients. However, it may not be possible to screen all patients where resources are limited. This study aimed to compare the sensitivity of universal screening and targeted screening methods in the detection of DM among TB patients.

SUBJECT AND METHODS: TANDEM study was conducted from February to June 2016. This project consisted of prevalence study and clinical trial on TB-DM. A sample of TB patients aged ≥ 35 years old was selected for this study. The prevalence of the universal screening method was compared with that of the targeted method in the detection of DM among the TB patients.

RESULTS: By universal screening, 128 out of 748 (17.11%) TB patients were confirmed to have DM. By targeted screening, 30 out of 85 (35.29%) TB patients were confirmed to have DM. This difference in prevalence between the two screening methods was statistically significant (p<0.001). Mean age (year) of TB patients with DM was 53.38 (SD=9.72), whereas mean HbA1c was 10.77% (SD=3.10).

CONCLUSION: The prevalence of targeted screening method in the detection of DM among TB patients was higher than that of universal screening method. The targeted screening method has the potential to be used in resource-poor settings.

Keywords: prevalence, diabetes mellitus, universal screening**,** targeted screening, tuberculosis

THE EFFECT OF AWKWARD POSTURE ON WORK-RELATED MUSCULOSKELETAL DISORDER AMONG HOSPITAL WORKERS IN PEKANBARU, RIAU

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ABSTRACT

BACKGROUND: Work-related musculoskeletal disorder may cause discomfort, work loss, and subsequently economic loss, in most industries, including hospital. Little is known about the effect of awkward posture on work-related musculoskeletal disorder. The study aimed to examine the effect of awkward posture on work-related musculoskeletal disorder among hospital workers.

SUBJECT AND METHOD: This was a cross sectional study conducted at a hospital in Pekanbaru, Riau. A sample of 205 hospital workers was selected at random for this study. The independent variables was awkward posture, measured by REBA method. The dependent variable was work-related musculoskeletal disorder, measured by Nordic Body Map. The confounding factor was smoking status. The data were analyzed using multiple regression model.

RESULTS: As many as 82.9% of the hospital workers studied experienced mild work-related musculoskeletal disorder. As many as 17.1% of the hospital workers experienced severe work-related musculoskeletal disorder. After adjusting for the effect of smoking, awkward posture increased the risk 7 times as many of work-related musculoskeletal disorder, and it was statistically significant (OR= 7.14; 95%CI= 2.93 to 17.36; p=0.001).

CONCLUSION: After adjusting for the effect of smoking, awkward posture increased the risk of work-related musculoskeletal disorder. Hospital workers with awkward posture need special attention as they are at higher risk of experiencing work-related musculoskeletal disorder.

Keywords: awkward posture, work-related musculoskeletal disorder

ASSOCIATION BETWEEN HSCRP LEVELS AND GLYCEMIC CONTROL WITH TOTAL INTERATRIAL CONDUCTION TIME IN TYPE 2 DIABETES MELLITUS PATIENTS

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ABSTRACT

BACKGROUND: Type 2 Diabetes Mellitus (T2DM) represents one of the most important risk factors for atrial fibrillation (AF). Numerous studies have shown that T2DM and poor glycemic control reflected by glycated hemoglobin A1c (HbA1c) levels are independently associated with AF onset. Recent experimental studies reported that the increased susceptibility to AF in the diabetic patients was presumably due to the slowing conduction associated with increased interstitial fibrosis. Systemic inflamemation can play role in the development of atrial fibrillation. High-sensitivity C-reactive protein (HsCRP) is an inflammatory biomarker that independently predicts the cardiovascular risk. This study aimed to analyze the association between HsCRP level, glycemic control, and total interatrial conduction time in T2DM patients.

SUBJECT AND METHODS: This was an analytic cross sectional study. A total of 41 patients with T2DM were evaluated. HsCRP and HbA1c were measured from peripheral venous blood samples taken from these patients. The total interatrial conduction time was measured by tissue Doppler echocardiography. Multiple regression analysis was use to analyzed the data.

RESULTS: The high-sensitivity C-reactive protein level was higher in the T2DM patients with HbA1c≥7% (0.44±0.30) than in the T2DM patients with HbA1c<7% (0.32±0.22), although statistically non-significant (p=0.183). The total atrial conduction time (milliseconds) was longer in the T2DM patients with HbA1c≥7% (100.29±28.53) than in T2DM patients with HbA1c<7% (94.88±16.50), although statistically non-significant (p=0.449). Multiple regression analysis showed that HsCRP level (b=38.78; 95%CI=14.01 to 63.54; p=0.003) and glycemic control (b=14.04; 95%CI=0.09 to 27.98; p=0.048) had positive association with total interatrial conduction time in T2DM patients.

CONCLUSION: HsCRP level and glycemic control had significant positive association with total interatrial conduction time in T2DM patients.

Keywords: HsCRP, glycemic control, HbA1c, total interatrial conduction time.

EFFECT OF ETHANOL EXTRACT OF CHAYOTE ON THE ACTIVITY OF GLUTATHIONE PEROXIDE AND BLOOD SUGAR IN MICE WITH HYPERGLYCEMIA

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ABSTRACT

BACKGROUND: Streptozotocin (STZ) causes hyperglycemia in guinea pig through oxidative stress mechanism that damages pancreatic β cells. Ethanol extract of chayote (*Sechium edule Jacq. Swartz*), locally called as "Ekstrak Etanol Buah Labu Siam" (EEBLS), was hypothesized to decrease oxidative stress. Glutathione peroxidase (GPx) is the general name of an enzyme family with peroxidase activity whose main biological role is to protect the organism from oxidative damage. This study aimed to determine the effect of EEBLS on decreasing blood sugar level and increasing the activity of GPx enzyme.

SUBJECT AND METHODS: This was a randomized controlled trial with before and after intervention outcome variable measurement. The study subjects were white male mice (*Mus musculus* L.) with DD Webster strain randomized into 4 groups: (1) Negative control group (normal); (2) Positive control group with STZ 60 mg/kgBW; (3) Experimental group I with STZ 60 mg/kgBW and EEBLS of 100 mg/kgBW; and (4) Experimental group II with STZ 60 mg/kgBW and EEBLS of 200 mg/kgBW. The addition of STZ 60 mg/kgBW was intended to increase blood sugar level.

RESULTS: Blood sugar level (mg/dL) on the 28th day in the negative control group was (mean=127.67; SD=12.93), positive control group (mean=184.29; SD=21.24), experimental group I (145.33; SD=11.13), and experimental group II (mean=133.50; SD=38.19). EEBLS decreased blood sugar and it was statistically significant (p=0.001). The activity of GPx on the 28th day in the negative control group was (mean=420.05; SD=78.95), positive control group (mean=425.98; SD=22.50), experimental group I (mean=427.57; SD=73.82), and experimental group II (mean=418.46; SD=54.90). EEBLS did not increase the activity of GPx; the change in GPx was not statistically significant (p=0.992).

CONCLUSION: Ethanol extract of chayote (*Sechium edule Jacq. Swartz*) administered either in 100 mg/kgBW or 200 mg/kgBW decrease blood glucose level in mice, but does not increase the activity of glutathione peroxidase.

Keywords: blood glucose, glutathione peroxidase, ethanol extract of chayote

THE EFFECT OF ALOE VERA GEL
ON PHLEBITIS AMONG IN-PATIENTS

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ABSTRACT

BACKGROUND: Phlebitis may cause thrombus, emboli, and infection. Aloe vera has more than 75 potentially active components, including vitamins, minerals, saccharides, amino acids, anthraquinones, enzymes, lignin, saponins, and salicylic acids. Aloe gel has been used as a remedy for skin conditions, including burns, sunburn, frostbite, psoriasis and cold sores. It has also been used for treating osteoarthritis, bowel diseases, fever, itching and inflammation. This study aimed to examine the effect of aloe vera gel to reduced phlebitis among in-patients.

SUBJECT AND METHODS: This was a quasi-experimental study using pre and post one group. A sample of 19 patients with phlebitis was selected from Wahidin Sudiro Husodo Hospital, Mojokerto, East Java. The dependent variable was phlebitis, measured by Phlebitis Scale (from the Infusion Nursing Standards of Practice 2011 S47): (1) Grade 0 = no symptoms; (2) Grade 1 = erythema at access site with or without pain; (3) Grade 2 = pain at access site with erythema and/or edema; (4) Grade 3 = pain at access site with erythema and/or edema, streak formation, palpable venous cord; and (5) Grade 4 = pain at access site with erythema and/or edema, streak formation, palpable venous cord greater than 1 in in length; purulent drainage. The independent variable was aloe vera gel. The data were analyzed by Wilcoxon test.

RESULTS: Phlebitis grade decreased significantly from mean=3.60 before aloe vera treatment to mean=1.20 after aloe vera treatment (p=0.001).

CONCLUSION: Aloe vera treatment can be used to reduce phlebitis.

Keywords: phlebitis, aloe vera

THE EFFECT OF PHYSALIS ANGULATA L ON THE EXPRESSION OF BCL-2, APOPTOSIS, AND NECROSIS AREAS IN WISTAR RAT LIVER CELLS

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ABSTRACT

BACKGROUND: Physalis angulata L, known in Indonesia as "ciplukan", is an annual shrub that belongs to the *Solanaceae* family. This plant is common in tropical and subtropical countries. Its extract or infusion has been used in many countries as popular medicine for treatments of varieties of diseases such as malaria, asthma, hepatitis, dermatitis and rheumatism. *In vitro* studies showed that purified compounds of Physalis angulata such as physalins and glycosides exhibited antitumoral activities on HA22T (hepatoma), HeLa (cervix uteri), leukemia, lung adenocarcinoma and epidermoid carcinoma of the nasopharynx KB-16 cell lines. This study aimed to examine the effect of Physalis angulata L extract on the expression of Bcl-2, apoptosis, and areas of necrosis in Wistar rat liver cells.

SUBJECT AND METHODS: This was a randomized control trial. A sample of 24 Wistar rats was divided into 4 groups: (1) Negative control group (K1); (2) Positive control group (K2) induced by CCl_4 1% without "ciplukan" extract; (3) Treatment group (P1) induced by CCl_4 1% with "ciplukan" extract 750 mg/KgBW; and (4) Treatment group (P2) induced by CCl_4 1% with "ciplukan" extract 1.500 mg/KgBW. Carbon Tetrachlorida (CCl_4) compound was used to induce liver damage, including degeneration, necrosis, free radical formation, and lipid peroxidation. The treatment lasted for 14 days. Mean difference in the expression of Bcl-2, apoptosis, and necrosis of the liver cells, were compared and tested by One Way Anova and post-hoc test.

RESULTS: The mean differences in the expression of Bcl-2 (p=0.045) and areas of necrosis (p<0.001) among the three groups (P2, P3, and P4) were statistically significant. The expression of Bcl-2 as well as areas of necrosis was lower in P3 and P4 than P2. The mean differences in apoptosis (p>0.05) among the three groups (P2, P3, and P4) were not statistically significant.

CONCLUSION: Physalis angulata L ("Ciplukan") extract treatment either 750 mg/KgBW or 1.500 mg/KgBW administered for 14 days significantly reduces the expression of Bcl-2 and areas of necrosis in rats.

Keywords: Physalis angulata L, expression of Bcl-2, apoptosis, necrosis

EFFECT OF CORN SILK-BOILED WATER ON CHOLESTEROL LEVEL IN PATIENTS WITH HYPERCHOLESTEROLEMIA IN BANDUNG, WEST JAVA

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ABSTRACT

BACKGROUND: Corn silk is a traditional medicine that has been identified to contain protein, carbohydrates, vitamins, minerals, and fiber. It also contains chemicals which might work like water pills (diuretics), and it might alter blood sugar levels, and help reduce inflammation. Corn silk has been used for bladder infections, inflammation of the urinary system, inflammation of the prostate, kidney stones, and bedwetting. It is also used to treat congestive heart failure, diabetes, high blood pressure, fatigue, and high cholesterol levels. Hypercholesterolemia is a condition characterized by an increased level of blood cholesterol >200 mg/dL. Hypercholesterolemia contributed to approximately 4.4 million or 7.9% mortality rate in the world annually. This study aimed to examine effect of corn hair-boiled water on cholesterol level in patients with hypercholesterolemia.

SUBJECT AND METHODS: This was a quasi-experimental with one group pretest-posttest design. This study was conducted in UPT Puskesmas Telaga Bodas, Bandung. A sample of 12 patients with hypercholesterolemia was selected for this study. The different in mean cholesterol level before and after treatment was analyzed using paired t-test.

RESULTS: The cholesterol level decreased from before to after treatment by 14.92 mg/dL (p=0.001).

CONCLUSION: Consumption of corn silk-boiled water can reduce blood cholesterol in patients with hypercholesterolemia.

Keywords: hypercholesterolemia, corn silk-boiled water, traditional medicine

IMMEDIATE EFFECT OF KINESIO TAPING ON FUNCTIONAL ANKLE STABILITY AMONG MALE BASKETBALL PLAYERS

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ABSTRACT

BACKGROUND: Ankle injury frequently occurs in basketball players, which can lead to a functional ankle instability. The application of kinesio taping on ankle may increase functional ankle stability. However, to date immediate effect of kinesio taping application on functional ankle stability has never been studied. The study aimed to examine the immediate effect of kinesio taping on functional ankle stability among male basketball players.

SUBJECT AND METHODS: This was a quasi-experiment, before and after intervention with no control design. A sample of 15 male basketball players in Yogyakarta was selected for this study. The dependent was functional ankle stability (balance). The functional ankle stability was measured by Star Excursion Balance Test. The independent variable was kinesio taping application. The data was analyzed by paired t-test.

RESULTS: The functional ankle stability (mean ± SD in cm) before kinesio taping application was as follows: antero lateral 69.53 ± 6.38, antero medial 68.73 ± 5.25, and posterior 67.13 ± 5.79. Twenty minutes after application of Kinesio taping, the functional ankle stability (mean ± SD) was as follows: antero lateral 72.07 ± 6.16, antero medial 71.33 ± 5.26, and posterior 69.60 ± 5.44. This increase in stability (balance) after application of kinesio taping was statistically significant (p<0.001).

CONCLUSION: The application of kinesio taping can immediately increase functional ankle stability among male basketball players.

Keywords: kinesio taping, functional ankle stability, Star Excursion Balance Test

EFFECT OF PURPLE SWEET POTATO EXTRACT ON GLUTATHIONE PEROXIDASE IN HOUSE MICE LIVER AFTER MAXIMUM PHYSICAL EXERCISE

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ABSTRACT

BACKGROUND: Physical exercise can improve antioxidant defense system of an organism, but this process may take a long time. Heavy exercise may disrupt oxidant-antioxidant balance. Low glutathione peroxidase is a biomarker for free radicals. Plant purple sweet potato (Ipomoea batatas L.) contains high anthocyanin that may act as an antioxidant. This study aimed to determine the effect of purple sweet potato extract on the activity of glutathione peroxidase in the liver of mice (Mus Musculus) treated with maximum physical exercise (MPE).

SUBJECT AND METHODS: This was a randomized controlled trial using a sample of 24 white DD Webster strain male mice. This sample of mice was randomized into 6 groups: P1-control, P2-MPE, P3-0.5 ml purple sweet potato, P4-MPE + 0.5 ml purple sweet potato, P5-MPE + 1 ml purple sweet potato, and P6-MPE + 1.5 ml purple sweet potato. The purple sweet potatoes were given for 14 days. Difference in means of glutathione peroxidase among the study groups was tested by Kruskal-Wallis.

RESULTS: After 14 days of intervention, the level of glutathione peroxidase (mean ± SD in mU/ml) among the study groups were as follows: P1 (6.58±7.04), P2 (1.84±0.92), P3 (4.50±4.31), P4 (7.05±8.19), P5 (19.39±7.06), P6 (3.03±1.98). The highest level of glutathione peroxidase was attained in group P5 with moderate dose (1 ml) of purple sweet potato extract.

CONCLUSION: Moderate dose (1 ml) of purple sweet potato extract can effectively increase glutathione peroxidase enzyme in mice.

Keywords: maximum physical exercise, free radical, purple sweet potato, anthocyanin, glutathione peroxidase

EFFECT OF RED FRUIT OIL ON MALONDIALDEHYDE LEVEL AT MAXIMUM PHYSICAL ACTIVITY

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ABSTRACT

BACKGROUND: Maximum physical activity can produce an imbalance between reactive oxygen species and antioxidants, which may lead to tissue injury and fatigue. Malondialdehyde (MDA) is an organic compound with the formula $CH_2(CHO)_2$, and a byproduct of lipid metabolism in the body. It is a reactive electrophile species that causes toxic stress in cells and forms covalent protein adducts, called advanced lipoxidation end products (ALE). This reactive species occurs naturally and is a marker for oxidative stress. Red fruit oil (*Pandanus conoideus* Lam) contains high betacarotene and tocopherol. This study aimed to investigate the effect of red fruit oil on malondialdehyde level in maximal physical activity.

SUBJECT AND METHODS: This was a randomized-controlled trial, with pretest-posttest control group design. Thirty athletes were selected for this study and allocated into two groups. During the training program, the subjects in the experimental group consumed 5 ml of the red fruit oil every day. After the training program, all athletes performed maximum physical activity, which was measured by taking a Bleep test. Blood sample was collected before and after the test to measure the level of MDA.

RESULTS: Plasma MDA levels (mean ± SD in nmol/ml) before intervention were comparable and statistically non-significant (p>0.05) between the experimental group (1.57 ± 0.12) and the control group (1.52 ± 0.06).   Plasma MDA level (mean ± SD in nmol/ml) after intervention was lower and statistically significant (p=0.001) in the experimental group (1.11 ± 0.02) than the control group (1.64 ± 0.11).   In addition, the VO2Max after intervention was higher and statistically significant (p=0.001) in the experimental group than the control group. Red fruit oil also delayed fatigue in the experimental group longer than the control group.

CONCLUSION: Red fruit oil reduces MDA level, increases endurance, and delays fatigue during maximal physical activity in athletes.

Keywords: red fruit oil, antioxidant, malondialdehyde, maximal physical activity

VALIDATING SEARCH PROTOCOLS FOR MINING OF HEALTH AND DISEASE EVENTS ON TWITTER

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ABSTRACT

BACKGROUND: Twitter is a free social networking and micro-blogging service that enables its users to read and share information with user and media communities in messages no longer than 140-character. In the year of 2016, there were more than 24 million Indonesian twitter users sharing news, events, as well as personal feelings and experiences on Twitter. This study seeks to validate a search protocol of health related terms using real-time Twitter data which can later be used to understand if, and how, twitter can reveal information on the current health situation in Indonesia. In this validation study of mining protocols, we: 1) extracted geo-located conversations related to health and disease postings on Twitter using a set of pre-defined keywords, 2) assessed the prevalence, frequency and timing of such content in these conversations, and 3) validated how this search protocol was able to detect relevant disease tweets.

SUBJECT AND METHODS: Groups of words and phrases relevant to disease symptoms and health outcomes were used in a protocol developed in the Indonesian language in order to extract relevant content from geo-tagged Twitter feeds. A supervised learning algorithm using Classification and Regression Tree´s (CART) was used to validate search protocols of disease and health hits comparing to those identified by a team of human experts. The experts categorized tweets as positive or negative in respect to health events. The model fit was evaluated based on prediction performance.

RESULTS: 390 tweets from historical Twitter feeds and 1,145,649 tweets from Twitter stream feeds during the period July 26th to August 1st, 2016. Only twitter hits with health related keywords in the Indonesian language were obtained. The accuracy of predictions of mined hits versus expert validated hits using the CART algorithm showed good validity with AUC beyond 0.8.

CONCLUSION: Monitoring of public sentiment on Twitter, combined with contextual knowledge about the disease, can detect health and disease tweets and potentially be used as a valuable real-time proxy for health events over space and time.

Keywords: social networking, disease detection, disease early warning, digital epidemiology, big data analysis

PATH ANALYSIS: FACTORS AFFECTING PARENTING EDUCATION IN KARANGANYAR, CENTRAL JAVA

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ABSTRACT

BACKGROUND: Working parents often cause loneliness among children at home. Nurturing has often carried out by other persons. Children watched television, played video game and online game too often, so that parenting education was lacking. Parenting education is a program designed to solve this problem. This study aimed to determine the effect of maternal perception, motivation, access to information, the role of midwife, the role of cadre, the role of play group teacher, the role of family planning worker, and participation, on parenting education.

SUBJECT AND METHODS: This was a cross sectional study conducted in Karanganyar, Central Java. A sample of 108 parents who had children under 5 years old was selected for this study. The dependent variable was parenting education. The independent variables included maternal perception, motivation, access to information, the role of midwife, the role of cadre, the role of play group teacher, the role of family planning worker, and participation. The data was analyzed by path analysis model.

RESULTS: Maternal perception (b=0.18), motivation (b=0.10), access to information (b=0.19), the role of midwife (b=0.01), the role of cadre (b=0.01), the role of play group teacher (b=0.15), the role of family planning worker (b=0.07), and participation (b=0.26) had positive effect on parenting education, and they were all statistically significant (p<0.05)

CONCLUSION: Play group teacher and participation have strong effect on parenting education. Play group teachers have an important role in parenting education.

Keywords: parenting education, play group teacher

SOCIO-CULTURAL AND HEALTH TECHNICAL FACTORS AFFECTING REFERRAL SYSTEM IN EAST FLORES, EAST NUSA TENGGARA

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ABSTRACT

BACKGROUND: An effective referral system ensures a close relationship between all levels of the health technical and helps to ensure people receive the best possible care closest to home. A good referral system can help to ensure: (1) Clients receive optimal care at the appropriate level and not unnecessarily costly; (2) Hospital facilities are used optimally and cost-effectively; (3) Clients who most need specialist service can accessing them in a timely way; (4) Primary health services are well utilized and their reputation is enhanced. This study aimed to determine socio-cultural and health technical factors affecting referral system in East Flores, East Nusa Tenggara.

SUBJECT AND METHODS: This was a cross sectional study conducted in East Flores, East Nusa Tenggara. A sample of 22 community health center, district hospital, and district health office in East Flores, East Nusa Tenggara, was selected for this study. The dependent variable was referral system. The independent variables were socio-cultural and health technical factors. Base on factor analysis, the socio-cultural factors consisted of several important indicators: (1) Referral pattern; (2) Referral culture; (3) Geographical condition; (4) Transportation; and (5) Cost. The health technical factors consisted of several important indicators: (1) Referral criteria; (2) Referral capacity; and (3) Referral model. The data were collected by a questionnaire, interview, and document review. The data was analyzed by a multiple linier regression.

RESULTS: Both socio-cultural factors (b=0.95; p=0.041) and health technical factors (b=0.99; p=0.037) had positive relationship with referral system.

CONCLUSION: Both socio-cultural factors and health technical factors are important determinants for referral system. If referral system is to be improved, then several indicators that shape both socio-cultural factors and health technical factors must be enhanced.

Keywords: referral system, socio-cultural factors, health technical factors

THE ASSOCIATION BETWEEN PATIENT SATISFACTION AND LOYALTY AT COMMUNITY HEALTH CENTER IN NGLETIH, KEDIRI, EAST JAVA

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ABSTRACT

BACKGROUND: A hospital, community health center, doctor's clinic, cannot survive without retaining patients. Otherwise it will rifle through new patients until no more exist nearby. As evidence from the US has shown, the average practice loses 50% of its patient base every five years. It costs 5 to 10 times as much money to secure a new patient than to retain an existing one. Retaining customers therefore is beneficial in the short and long run. This study aimed to investigate how patient saticfaction affects propensity to return, i.e. loyalty.

SUBJECT AND METHODS: This was a cross sectional study conducted in Kediri district, East Java. A sample of 157 patients who were not entitled for the National Health Insurance (Jaminan Kesehatan Nasional) scheme in Kediri, East Java, was selected by random sampling. The dependent variable was propensity to return (loyalty). The independent variable was satisfaction. The data was analyzed using Odds Ratio (OR) and Chi-Square.

RESULT: There was a very strong and statiscally significant link between saticfaction and loyalty. Patients who were satisfied with the health care provided were 104 times as many to return than those who were not satisfied (OR=103.90; 95%CI= 28.74 to 375.40; p<0.001).

CONCLUSION: The indicators of patient satisfaction are officers' reliability, responsiveness, assurance, tangibles, and empathy. And indicators of patient are loyalty, namely in terms of the frequency of visits, not easily switch to another clinic, recommend to others, to make a complaint, and defense. By providing services that meet patient satisfaction indicators will directly be able to create a loyal patient.

Keywords: Satisfaction, Loyalty

EFFECT OF FOOT GYM ON SENSE OF FOOT, PARESTHESIA, AND ANKLE BRACHIAL INDEX IN PATIENT WITH TYPE 2 DIABETES MELLITUS

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ABSTRACT

BACKGROUND: Peripheral arterial disease (PAD) is a complication of diabetes mellitus (DM) type 2 that is often encountered. Peripheral arterial disease is a condition characterized by atherosclerotic occlusive disease of the lower extremities. While PAD is a major risk factor for lower-extremity amputation, it is also accompanied by a high likelihood for symptomatic cardiovascular and cerebrovascular disease. The PAD can be detected by examination of Ankle-Brachial Index (ABI). Foot gym is an exercise undertaken by patient with DM to prevent foot injury, strengthen small muscle as well as thigh and calf muscles, prevent deformity, and improve joint movement. This study aimed to determine the effect of foot gym on peripheral tissue perfusion in patient with type 2 diabetes mellitus.

SUBJECT AND METHODS: This was a quasi-experiment, before and after with no control design, conducted in Pasuruan, East Java. A sample of 40 patients was selected from 68 patients with type 2 DM visiting the Family Doctor Clinic in Grati, Pasuruan, East Java. The dependent variable was peripheral tissue perfusion, consisting of: (1) Sense of foot; (2) Paresthesia; and (3) ABI. The mean score difference in the dependent variables before and after foot gym was tested by Paired t-Test.

RESULTS: Sense of right foot improved from 0.80 before foot gym to 0.70 after foot gym, and it was statistically significant (p=0.014). Sense of left foot improved from 0.75 before foot gym to 0.55 after foot gym, and it was statistically significant (p=0.046). Paresthesia of right foot decreased from 0.60 before foot gym to 0.50 after foot gym, although it was not statically significant (p=0.157). Paresthesia of left foot decreased from 0.70 before foot gym to 0.60 after foot gym, although it was not statically significant (p=0.480). ABI of right foot reduced from 0.98 before foot gym to 0.93 after foot gym, and it was statistically significant (p<0.001). ABI of left foot reduced from 0.99 before foot gym to 0.95 after foot gym, and it was statistically significant (p<0.001).

CONCLUSION: Foot gym can improve sense of foot and reduce ABI in patients with diabetes mellitus. This study does not show the effectiveness of foot gym in reducing paresthesia.

Keywords: foot gym, diabetes mellitus, sense of foot, paresthesia, Ankle Brachial Index

EFFECT OF SHOCK REPOSITION ON OXYGEN SATURATION IMPROVEMENT IN VASOVAGAL SYNCOPE CASE

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ABSTRACT

BACKGROUND: Vasovagal syncope (a.k.a. neurocardiogenic syncope) occurs when a person faints because his/her body overreacts to a certain trigger, such as the sight of blood or extreme emotional distress. The vasovagal syncope causes heart rate and blood pressure to drop suddenly, which leads to reduced blood flow to the brain and causes brief loss of consciousness. Vasovagal syncope is usually harmless and requires no treatment. But the affected person may get injured during the episode. A shock reposition may help improve oxygen saturation in vasovagal syncope case. In this reposition the patient is laid on a flat, firm, plain and shaded place. The patient clothes are loosened in order to prevent choking neck. An aroma therapy may be given to the patient. This study aimed to determine the effectiveness of giving shock reposition on improving oxygen saturation in vasovagal syncope case.

SUBJECT AND METHODS: This was a quasi-experimental study, before and after with no control design. A sample of 26 students from SMAN 1 High School, Ngoro, Mojokerto, East Java, who experienced vasovagal syncope after taking part of a ceremony, was selected for this study. The independent variable was shock reposition. The dependent variable was oxygen saturation, which was measured using finger pulse oxymeter, before and after shock reposition.

RESULTS: Oxygen saturation (mean, SD) increased from (0.93; 0.01) before shock reposition to (0.97; 0.01) after shock reposition. There was a positive and statistically significant correlation of oxygen saturation before and after shock reposition (r=0.48; p=0.014).

CONCLUSION: Providing shock reposition by laying down patient with vasovagal syncope on a flat, firm, and shaded place, can help improve oxygen saturation.

Keywords: vasovagal syncope, shock reposition, oxygen saturation

APPLICATION OF INTERPROFESSIONAL EDUCATION MODEL ON THE COGNITIVE AND SKILL COMPETENCE IN NURSING CARE FOR CHILDREN WITH MALNUTRITION AMONG STUDENTS IN PARE, KEDIRI, EAST JAVA

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Prodi D3 Keperawatan STIKES Karya Husada Kediri

ABSTRACT

BACKGROUND: Collaboration between agencies and professionals may improve the quality of child service. Interprofessional education (IPE) is a model where two or more professions in health and social care learn together during professional training with the objective to cultivating collaborative practice in patient-centered health care. There is debate about the effectiveness of IPE in enabling collaborative practice. Research has identified some evidence of effectiveness in changing attitudes. But little is known about its effectiveness on improving cognitive and clinical skill competence. This study aimed to assess effectiveness of the application of IPE model on the cognitive and skill competence in nursing care for children with malnutrition at school and clinical practice settings.

SUBJECT AND METHODS: This was a qualitative-quantitative study using action research design, conducted in Pare, Kediri, East Java. School of Health Sciences (STIKES) Karya Husada, and Amelia Hospital, in Pare, Kediri, was selected for the application of IPE model. A sample of 16 students was selected for this study: (1) 8 from D3 Program in Nursing; (2) 4 from D3Program in Midwifery; (3) 4 D3 Program in Nutrition. The effectiveness of IPE in the two settings was assessed by in-depth interview, direct observation, and focus group discussion.

RESULTS: A. Application at Karya Husada. Cycle I: (1) Lecture, question and answer, satisfied 99.37% of the students; (2) Tutorial session satisfied 88.60% of the students; (3) Role play of actual children cases with under red line malnutrition, kwashiorkor, and obesity, proceded satisfactorily. A module was produced and reviewed by peer groups. Cycle II: Expert lecture in 3 professions (nursing, midwifery, and nutrition). 100% of the participants understood the IPE application. B. Application at Amelia Hospital. Cycle I: Workshop in nursing care for malnourished children in IPE model, which was new to the participants. Cycle II: Direct application of IPE model on malnourished children. 98.82% of the participants understood the application of clinical practice for malnourished children.

CONCLUSION: The application of IPE model consisting of lecture, question-answer, tutorial, work-shop, and direct clinical practice, involving collaboration of 3 professions (nursing, midwifery, and nutrition) can improve the cognitive and skill competence among students.

Keywords: understanding, clinical skill, inter-professional education model, action research

TOPIC VII:

SOCIAL EPIDEMIOLOGY

THE ADAPTATION MODEL OF CAREGIVER IN TREATING FAMILY MEMBER WITH SCHIZOPHRENIA IN KEDIRI, EAST JAVA

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ABSTRACT

BACKGROUND: Schizophrenia is a severe mental disorder that is characterized by impaired reality (e.g. hallucination and delusion), inability to communicate, unnatural or blunt affect, cognitive disorder (e.g. bizzare abstract thinking), and difficulty in doing daily activities. Normally, the family is most affected by the presence of people with schizophrenia. Adaptation of care giver is important in the care of family member with schizophrenia, as it sustains the process of treatment and prevents relapse of schizophrenia. This study aimed to develop an adaptation model of care giver in families with a schizophrenic member.

SUBJECT AND METHODS: This was a cross sectional study conducted in Kediri, East Java. A sample of 135 families with a schizophrenic member was selected by random sampling from 9 health centers in Kediri. The dependent variable was willingness to give care to a schizophrenic family member. The independent variables included care giver's perception, self-efficacy, self-esteem, access to community resource, and coping effort. A structured questionnaire was developed to collect the data. The data was analyzed by path analysis model.

RESULTS: Positive perception of the care giver (b=0.19; p<0.05), strong self-efficacy (b=0.22; p>0.05), access to community resource (b=0.24; p<0.05), and strong coping effort (b=12.17; p<0.05), increased willingness to care for a schizophrenic family member. In contrast, higher self-esteem of the care giver (b=-0.25; p<0.05) decreased willingness to care for a schizophrenic family member. Care giver's perception was affected by stress due to caring for a family member with schizophrenia, especially schizophrenia with aggressive behavior.

CONCLUSION: An adaptation model of caring for a family member with schizophrenia can be developed, based on finding of this study that there is positive association between perception of the care giver, self-efficacy, access to community resource, and coping effort, and increased willingness to care for a schizophrenic family member. Higher self-esteem of the care giver is negatively associated with willingness to care for a schizophrenic family member.

Keywords: schizophrenia, care giver, adaptation model

RELATIONSHIP BETWEEN SOCIAL SUPPORT AND DEPRESSION IN ELDERLY AT PANTI WERDHA MOJOPAHIT, MOJOKERTO, EAST JAVA

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ABSTRACT

BACKGROUND: Depression can occur in elderly because of feeling lonely, limited physical ability, financial dependency, and lowering self-esteem. Social support may have positive impact on alleviating depression. This study aimed to determine the relationship between social support and depression in elderly.

SUBJECT AND METHODS: This was a cross sectional study, conducted in Mojokerto, East Java. A sample of 40 elderly was selected from UPT Panti Werdha Mojopahit, Mojokerto, for this study. The dependent variable was depression. The independent variable was social support, including that received from peer (friends). Spearman correlation was used to show the relationship between variables.

RESULTS: About 40% of the elderly were lacking in social support. About 55% had depression. There was a moderate and negative relationship between social support and depression in elderly, and it was marginally significant (r=-0.35; p= 0.061). The stronger social support, the less depression the elderly had.

CONCLUSION: Social support, especially from peer, as a moderate and negative relationship with depression in elderly. Strong social support can be used to alleviate depression in the elderly.

Keywords: depression, social support, peer, elderly

DIFFERENCE IN PERSONAL HYGIENE BETWEEN ELDERLY LIVING WITH FAMILY AND THOSE LIVING IN NURSING HOME, PARE, EAST JAVA

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ABSTRACT

BACKGROUND: Elderly experience physical infirmity, brain devolution, slow metabolic rate, slow cell replacement, which eventually have inadvertent impact on cognitive capability, emotional stability, and social interacttion. Living with family allows family members to interact with and assist the elderly in daily activities. In contrast, neither family members nor neighbors can interact socially with the elderly living in the nursing home. This study aimed to determine the difference in personal hygiene between elderly living with family and those living in nursing home.

SUBJECT AND METHODS: This was a cross-sectional study conducted in sub-district Kaliombo, Jombang, Pare, East Java. A sample of 40 elderly people was selected from the community in Kediri. Another sample of 40 elderly was selected from a UPT PSLU Jombang Nursing Home, Pare, East Java. The dependent variable was personal hygiene. The independent variable was the elderly residence. The data on personal hygiene was obtained by a questionnaire. The difference in personal hygiene between the 2 groups was tested by Fisher exact chi square test.

RESULTS: Elderly living with family had better personal hygiene than those living in the nursing home, and it was statistically significant (p=0.019). Among the elderly living with family, 15 (75%) had good, 3 (15%) had fair, and 2 (10%) had poor personal hygiene. Among the elderly living in the nursing home, 5 (25%) had good, 8 (40%) had fair, and 7 (35%) had poor personal hygiene.

CONCLUSION: Elderly living with family have better personal hygiene than those living in the nursing home. Families should extend their care to their older members in older to maintain their personal hygiene.

Keywords: personal hygiene, elderly, living with family, nursing home

SPIRITUAL EXPERIENCE, DEPRESSION, AND QUALITY OF LIFE IN THE ELDERLY IN MOJOKERTO, EAST JAVA

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ABSTRACT

BACKGROUND: Elderly experience physical infirmity, brain devolution, slow metabolic rate, slow cell replacement, which eventually have inadvertent impact on cognitive capability, emotional stability, and social interaction. These natural changes may cause depression in the elderly. Spiritual experience may improve coping strategy, lower depression, and enhance quality of life. This study aimed to estimate the relationship between spiritual experience, depression, and quality of life in the elderly.

SUBJECT AND METHODS: This was a cross sectional study, conducted in Mojokerto, East Java. A sample of 100 elderly was selected by random sampling from 18 villages in Mojokerto. The exogenous variable in this study was spiritual experience, which was measured by a set of questionnaire. The endogenous mediating variable was the rate of depression, which was measured by Geriatric Depression Scale (GDS). The quality of life in the elderly was measured by Index Barthel. Psychological wellbeing and social relationship were measured by a structured questionnaire. The relationships among variables were estimated using Structural Equation Model (SEM) run in AMOS.

RESULTS: The spiritual experience had negative effect on depression, and it was statistically significant (p=0.004). Larger spiritual experience reduced depression level. In turn depression level had negative effect on quality of life, and it was statistically significant (p=0.003). Deeper depression reduced quality of life.

CONCLUSION: Spiritual experience can reduce depression and enhance quality of life in the elderly.

Keywords: spiritual experience, depression, quality of life, elderly

ASSOSIATION BETWEEN COGNITIVE LEVEL, INDEPENDENCE IN DAILY LIVING ACTIVITIES, AND DEPRESSION AMONG THE ELDERLY IN A NURSING HOME, SURAKARTA, CENTRAL JAVA

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ABSTRACT

BACKGROUND: Various physical, psychological, and social problems arise in the elderly due to the degenerative process. One of the common problems experienced by the elderly is depression. Increased life expectancy does not seem to balance with quality of life. Quality of life among the elderly does not generally improve with the prolonged life expectency. This study aimed to examine the assosiation between cognitive level, independence in activities of daily living, and depression, among the elderly in a nursing home.

SUBJECT AND METHODS: This was a cross sectional study, conducted in Surakarta, Central Java. A sample of 40 elderly was selected at random from Dharma Bhakti Nursing Home, Surakarta. The dependent variable was deperession. The independent variables included cognitive level and independence in daily living activities. Depression was measured by Geriatric Depression Scale. Cognitive level was measured by Mini Mental Status Examination. Independence in daily living activities was measured by Barthel's Index instrument. The data was analyzed using multiple linear regression model.

RESULTS: Depression in the elderly was negatively associated with cognitive level (b=-0.26; p=0.024) and independence in daily living activities (b=-0.25; p=0.001). Adjusted R^2=0.42; overall p=0.001.

CONCLUSION: There are relationships between cognitive level, independence in daily living activities, and depression among the elderly. Depression among the elderly can be minimized by empowering the elderly so as to make them more independent in daily living activities as well as keeping their brain active.

Keywords: depression, cognitive, activities of daily living, elderly

BAZNAS SOCIAL RESPONSIBILITY AND FREE HEALTH PROGRAM IN KARANGANYAR, CENTRAL JAVA

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ABSTRACT

BACKGROUND: Free health program in Karanganyar District, Central Java, have not been implemented optimally by the government. The community did not feel the expected benefits from this program. However, there has been an increasing awareness among moslems in Karanganyar to channel their income and wealth with zakat, infak, and sodaqoh, in order to help the poor in the community. Baznas is an instutional fund collected and accumulated by moslems to be distributed and utilized by the poor segment of the community. This fund can be used to finance free health care program. This study aimed to describe BAZNAS as social responsebility in the form of health program in Karanganya, East Java.

SUBJECT AND METHODS: This was a qualitative study conducted in Karanganyar, East Java. The data were collected by interview, observation, and document review.

RESULTS: BAZNAS was a form of social responsibility that has some positive impacts on the community as follow: 1) Build confidence; 2) Strengthen solidarity; 3) Expand network; 4) Maximize fund collection; and 5) Redistribute income and wealth within a community.

CONCLUSION: BAZNAS can be used as sources of financing free health care program for the poor in the community. It enhances solidarity and fairness of income distribution within the community.

Keywords: BAZNAS, social responsibility, free health care

PARTICIPATION PATTERN OF PEOPLE WITH HIV/AIDS IN THE PEER SUPPORT GROUP IN EAST KALIMANTAN

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ABSTRACT

BACKGROUND: The presence of peer support group is deemed important as it is expected to support people with HIV/AIDS, in terms of emotional, informational, instrumental, and financial support. Empowerment of people with HIV/AIDS may enhance their participation in peer support group. This study aimed to describe participation pattern of people with HIV/AIDS in the peer support group, in East Kalimantan.

SUBJECT AND METHODS: This was a qualitative study using case study approach, carried out in Samarinda, East Kalimantan, from January to August 2015. Key informants were selected purposively, which included people with HIV/AIDS and peer support group management. The data were collected by direct observation, in-depth interview, and focus group discussion. Content analysis was used to analyze qualitative data.

RESULTS: People with HIV/AIDS involved in the peer support group in various phases of activity, including planning, advocacy, monitoring, and using information available at the peer support group to prevent HIV/AIDS transmission and opportunistic infection. There were 2 patterns of support for people with HIV/AIDS: (1) Direct support by non-government organization (advocacy and common activities); (2) Indirect support by the government and private sector (provision of facilities, budget fund, and healthy public policy).

CONCLUSION: Support from the government, private sector, and non-government organization have shown to enhance participation of people with HIV/AIDS in the peer support group. The government and private sector are suggested to involve people with HIV/AIDS in various peer group activities, such as campaign and health education. The government and the private sector are also suggested to support budget that can be managed by the peer group, and to facilitate creative and productive economic activities that support independence of people with HIV/AIDS.

Keywords: people with HIV/AIDS, empowerment, peer support group, government, private sector

SOCIAL ENVIRONMENT, WATCHING VIOLENCE PROGRAM IN TELEVISION, AND THE TENDENCY OF BULLYING AMONG PRIMARY SCHOOL STUDENTS IN KUDUS, CENTRAL JAVA

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ABSTRACT

BACKGROUND: Bullying is unwanted, aggressive, and usually repeated behavior among school aged children that involves a real or perceived power imbalance. Bullying includes actions such as making threats, spreading rumors, attacking someone physically or verbally. In line with Albert Bandura's social cognitive theory, children are surrounded by many influential models in the society, such as parents within the family, characters on children's television, friends within peer group, and teachers at school. These models provide examples of behavior to observe and imitate, including pro and anti-social. In the past two decades there have been an increasing number of television programs that demonstrate violence and bullying. This may have tremendous impact on children behavior by imitation. This study aimed to examine the relationship between social environment, watching violence program in television, and the tendency of bullying among primary school students.

SUBJECT AND METHODS: This was a cross-sectional study conducted in Kudus, Central Java. A sample of 81 students was selected from Grade 1-6 of the primary schools in Kudus, Central Java. The dependent variable was the act of bullying. The independent variables included social environment and watching violence and bullying programs in television. A structured questionnaire was developed to collect the data. The data was analyzed using Odds Ratio and Chi Square.

RESULTS: There was positive relationship between poor social environment and bullying among primary school children. Children living in a poor social environment were 3.25 times more likely to do bullying than living in a good social environment (OR=3.25; 95%CI=1.28 to 8.30; p=0.012). There was positive relationship between watching violence and bullying programs in television and the act to bullying among primary school children. Children watching violence and bullying programs in television were 1.60 times more likely to do bullying than watching good program (OR=1.60; 95%CI=0.68 to 4.00; p=0.273).

CONCLUSION: Living in a poor social environment and watching violence and bullying programs in television increase the risk of bullying among primary school children. Albert Bandura's social cognitive theory on the role of learning a new behavior by imitation from the social environment is supported in this study.

Keywords: social environment, watching television, violence, bullying, school children

INDONESIAN AND WESTERN PERSPECTIVES ON SHACKLING THE MENTALLY ILL

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ABSTRACT

BACKGROUND: Mental illness has become a serious problem in Indonesia. Many people with severe mental disorders remain untreated or drop out of the care service system and eventually end up being shackled. Although attention to human right in Indonesia has grown, physical restraint of people with mental disorders remains prevalent. This study aimed to compare the Indonesian and Western perspectives pertaining to shackling the mentally ill.

SUBJECT AND METHODS: This was a systematic review. The data were mined from news, research and studies pertinent to restrained mentally ill patients. Literature was searched from Google scholar, BMC, BMJ, and the Cochrane library. The key words used in the English language were "shackling and schizophrenia", and "restraint and mental illnesses". The Indonesian words included "pemasungan gangguan jiwa". Searches were conducted until August 2015, resulting in 45 articles that consisted of 36 research articles and 9 non-research articles. Two of the 45 articles were duplicate.

RESULTS: The theme of shackling in Indonesian perspective consists of: (1) Misguided perception of families and communities on people with mental illnesses (PMI); (2) Family and community treatment of PMI; (3) Lack of continuity in service programs between psychiatric hospitals, community health centers, and communities. The theme of shackling in Western perspective consists of: (1) The impacts of restraint and shackling; (2) Restraint and shackling prevention; (3) There are no studies on the advantages of physical restraint.

CONCLUSION: Research and news obtained from Indonesian articles consist of misguided perception pertaining to PMI and their treatment. Western articles include the impact of shackling PMI and prevention. It is essential to empower communities to raise awareness on mental illness and to provide correct information on treatment and the obligation to prevent shackling the mentally ill persons in Indonesia.

Keywords: shackling, restraint, schizophrenia, mental health

NEED ASSESSMENT AND EFFECT OF SEX EDUCATION ON AWARENESS AND KNOWLEDGE AMONG PRIMARY SCHOOL STUDENTS IN KLATEN, CENTRAL JAVA

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ABSTRACT

BACKGROUND: Lack of knowledge in reproductive health and weak parental control may have undesired impact on children. There appeared the need of sex education and teaching in reproductive health for school children. This study aimed to investigate the need and effect of sex education on awareness and knowledge in reproductive health among primary school students.

SUBJECT AND METHODS: This was a qualitative study conducted in Klaten, Central Java. Some students from Kanisius Primary School, Jombor, Klaten, were selected as study subjects. The intervention in this study was sex education and reproductive health class, integrated with science, physical education, and religion classes. The data were collected by in-depth interview and observation.

RESULTS: School children under study expressed the need for sex education and reproductive health, in order to inform and to raise awareness on these topics among them. In Kanisius Primary School under study, sex education and teaching in reproductive health were integrated with science, physical education, and religion classes. Qualitative evaluation showed that sex education and teaching in reproductive health had been able to increase awareness in sexual problem, increase knowledge in reproductive organs, reproductive health, and sexually-transmitted diseases. They were more knowledgeable on how to anticipate sexual harassment and to prevent sexually-transmitted diseases. They were also aware of the need to avoid pornography.

CONCLUSION: There is a need of integrated sex education and teaching in reproductive health among school children. This sex education and teaching in reproductive health can improve knowledge in reproductive health, increase awareness of sexual issues, and anticipate sexual harassment among primary school students.

Keywords: sex education, reproductive health, sexual harassment, school children

CHANGES IN PHYSICAL FUNCTION, MENTAL STATUS, AND INDEPENDENCE IN DAILY ACTIVITIES OF OLDER PEOPLE IN WIROBRAJAN, YOGYAKARTA

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ABSTRACT

BACKGROUND: The increasing population of older people in Indonesia induces research to understand their characteristics and changes over time. These data are needed to develop appropriate health programs for older people. This study aimed to assess changes in the physical function, mental status, and independence in daily activities of older people within six months.

SUBJECTS AND METHODS: This was a cohort study conducted in Yogyakarta, Indonesia, from August 2015 to February 2016. Study subjects were 30 older people aged 60-81 years in Wirobrajan, Yogyakarta. This study used Get Up and Go Test (GUG), Borg Scale and Berg Balance Scale to assess physical function, Mini Mental State Examination (MMSE) and Hopkins Verbal Learning Test (HVLT) to assess mental status, and Activities of Daily Living (ADL) as well as Instrumental Activities of Daily Living (IADL) to assess independence in daily activities. The data were measured twice with six month interval. The data were analyzed using paired t-test, Wilcoxon test and cluster analysis.

RESULTS: Statistical analysis showed: 1) A statistically significant decline in physical function as assessed in the GUG (p = 0.001) and BERG Balance Scale (p <0.001); 2) No statistically significant changes in MMSE and HVLT; 3) A significant decline in IADL (p = 0.002) compared to the data of the previous six months. Cluster analysis did not show a clear pattern of individual changes. The changes on individual level were more varied, with most subjects showed decline, but some demonstrated improvement in physical function, mental status or independence in daily activities.

CONCLUSION: There was a significant decline in physical function and independence in daily activities in older people compared to the previous six months. Varied individual changes showed that older people did not change in a uniform way and similar rate. Further study to assess changes over longer time is needed for development of appropriate health programs for older people in Indonesia.

Keywords: older people, physical function, mental status, activities of daily living, Indonesia

GENOTYPE IDENTIFICATION AND ANALYSIS OF RISK FACTOR OF HEPATITIS A IN SMPN 29 AND SMP UNESA 2 SURABAYA

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ABSTRACT

BACKGROUND: Hepatitis A is a health problem in the world, including Indonesia. The prevalence and distribution of hepatitis A had been increased since 2011 resulted in the endemic status of hepatitis A in Indonesia. Hepatitis A outbreak in 2013 occured in 6 provinces about 495 cases, the highest in East Java about 287 cases. In Surabaya increase in the last 3 years about 21 cases in 2013, 40 cases in 2014, and 59 cases in 2015. This study aimed to identification of hepatitis A virus (HAV) genotype and analyzed of risk factor of hepatitis A in SMPN 29 and SMP Unesa 2 Surabaya.

SUBJECT AND METHODS: This was a case-control study conducted in SMPN 29 and SMP Unesa 2 Surabaya, East Java. Study subject were 50 (33 cases and 17 controls). The sampling technique was consecutive sampling. The dependent variable was hepatitis A. The independent variables included habit of washing hands, habit of carelessly snack, and knowledge. The data was analyzed by a multiple logistic regression.

RESULTS: This study showed that sub-genotype HAV is IA. The incidence of hepatitis A related with habit of washing hands (OR=8.70; 95%CI 1.87 to 40.44; p=0.006), habit of carelessly snack (OR=12.08; 95%CI 1.42 to 102.96; p=0.023). The factor do not significantly in this study is students' knowledge (p=0.531).

CONCLUSION: Sanitation inspection obtained sources of clean water and a school cafeteria does not appropriate health requirements, as well as school toilet has risk. Sources of clean water, school toilets, and the school cafeteria customized with health standards, as well as the need to conduct regular counseling about the behavior of clean and healthy living.

Keywords: hepatitis A, genotype, risk factors, Surabaya

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Oral Presentation Schedule
Date   : Thursday, September 15, 2016
Ruang : Oral Presentation A
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NO	TIME	SOCIAL EPIDEMIOLOGY (1)	BEHAVIORAL EPIDEMIOLOGY (2)	INFECTIOUS DISEASE EPIDEMIOLOGY (3)	MATERNAL AND CHILD HEALTH (4)	ENVIRONMENTAL HEALTH (5)	OTHERS (6)
1	08.00-08.20	Nama: Byba Melda Suhita Judul: The Adaptation Model of Caregiver in Treating Family Member With Schizophrenia in Kediri	Nama: Dimol Sok Judul: The determinants of inappropiate use of antibiotics among working age population in Western Cambodia	Nama: Ketut Indra Purnomo Judul: Factors Associated Mosquito Larvae Eradication and Early Management of Dengue Hemorrhagic Fever Among Poor Community in Lokapaksa Village, Buleleng, Bali	Nama: Endah Suprihatin Judul: Perception and Expectation on the "Alert Village" Program Among High Risk Pregnant Women in Lumajang, East Java	Nama: Shaharuddin MS Judul: Fluoride Level in Drinking Water in Federal Territory of Labuan, Malaysia	Nama : Aditya Lia Ramadona Judul : Validating Search Protocols for Mining of Health and Disease Events on Twitter
2	08.20-08.40	Nama : Abdillah Wahab, Oedoyo Sudirham Judul : Relationship Between Social Support and Depression in Elderly at Panti Werdha Mojopahit, Mojokerto	Nama : Moh. Zainol Rachman Judul : Experience of Dissociative Trance Disorder in Adolescents	Nama: Komang Hendra Setiawan Judul: Qualitative Study on Pet-Related Human Behaviour and Other Risk Factors of Rabies in Buleleng, Bali	Nama : Brivian Florentis Yustanta Judul : The Effect of Massage on Weight Gain and Sleep Duration among Infants in Kediri East Java	Nama: Mikkel Brandon Quam Judul: Climate Services For Infectious Disease Control: A Nexus Between Public Health Preparedness and Sustainable Development, Lessons Learned From Long-Term Multi-Site Time-Series Analysis of Dengue Fever in Vietnam	Nama : Ancilla Cherisha Illinantyas Judul : Comparison of Sensitivity Between Universal and Targeted Screening Methods For Detection of Diabetes Mellitus Among Tuberculosis Patients in Resource-Poor Settings

3	08.40-09.00	Nama : Lilik Ma'rifatul Azizah Judul : Spiritual Experience, Depression, and Quality of Life in the Elderly in Mojokerto	Nama: Endang Sutisna Sulaeman Judul: Application of Social Marketing in Active Case Finding of Tuberculosis: Evidence From Indonesia	Nama: Lilik Zuhriyah Judul: Community-Based Ecosystem Approach in Controlling Dengue Hemorrhagic Fever Vector	Nama: Noor Hidayah Judul: Relationship Between Lactation and Post-Partum Uterine Involution in Srikandi Husada Clinic, Kudus	Nama: Vong Pisey Judul: Factors Associated With Chemical Pesticide Use Among Farmers in Eastern Part of Cambodia	Nama : Fajar Apollo Sinaga Judul : Effect of Red Fruit Oil on Malondialdehyde Level at Maximum Physical Activity
4	09.00-09.20	Nama : Ninik Nurhidayah Judul : Assosiation Between Cognitive Level, Independence in Daily Living Activities, and Depression Among The Elderly in A Nursing Home, Surakarta	Nama: Heni Hastuti/ Widana Primaningtyas Judul: The Association Between Body Mass Index, Religion Index, Media, And Body Image In Adolescents	Nama: Rinaldi Daswito Judul: Spatio-Temporal Analysis of Dengue and Weather Variables in Yogyakarta	Nama: Haerawati Idris, Judul: Socio-Economic and Demographic Factors Affecting Contraceptive Use in Women: Evidence From the Indonesian National Socioeconomic Survey (Susenas)	Nama: Haris Setyawan Judul: The Corelation Betweeen Exposure to Carbon Monoxide and Hemoglobin Level Among Street Food Vendors at Gladag Market, Surakarta	Nama : Raihanantu Binqali Ruzain Judul : The Effect of Awkward Posture on Work-Related Musculoskeletal Disorder Among Hospital Workers in Pekanbaru Riau
5	09.20-09.40	Nama : Budi Irwansyah Judul : Participation Pattern of People with Hiv/Aids in The Peer Support Group in East Kalimantan	Nama: Phuwasin Buakate Judul: Caffeine Beverage Consumption Behavior Among Working Age Group in Khon Kaen Province, Thailand	Nama: Apris Lemo Isu, Pius Weraman, Intje Picauly Judul: Factors Associated With The Incidence Of Measles In Timor Tengah Selatan District, Nusa Tenggara Timur	Nama : Nurul Kurniati Judul : Relationship between Workplace Support and Breastfeeding Self-Efficacy Working Mothers in Puskesmas Jetis Yogyakarta	Nama: Ipop Sjarifah, Judul: Correlation Between Blood Carbon Monoxide and Vital Capacity Among Street Food Vendors at Gladag Food Market, Surakarta	Nama : Isyana Miranti K Judul : Association Between Hscrp Levels and Glycemic Control With Total Interatrial Conduction Time in Type 2 Diabetes Mellitus Patients
	09.40-10.00	**Coffee Break**					
6	10.00-10.20	Nama : Anny Rosiana Masithoh Judul : Social Environment,	Nama: Indah Kusmindarti Judul: The Effectiveness of	Nama : Triani Marwati Judul : Effect of Perception, Attitude, Patient Safety	Nama: Ida Untari Judul: Menstrual Cycle Irregularity and Body	Nama: Sulistyawati Judul: A Spatio-Temporal Analysis of Dengue Fever	Nama : Jekson Martiar Siahaan Judul : Effect of Ethanol Extract of

		Watching Violence Program in Television, and the Tendency of Bullying Among Primary School Students in Kudus	Accupunture Therapy on Weight Reduction Among Obese Patients in Mojokerto, East Java	Policy, Stakeholder Support, and Health Promotion, on Infection Prevention Effort in Hospital	Mass Index Among Secondary School Students in Sragen, Central Java	Transmission in Yogyakarta City, Indonesia	Chayote on The Activity of Glutathione Peroxide and Blood Sugar in Mice with Hyperglycemia
7	10.20-10.40	Nama : Arif Widodo Judul : Indonesian and Western Perspectives on Shackling the Mentally ILL	Nama: Nida Amalia Judul: The Relationship Between Exposure to Anti-Smoking Campaign, Knowledge, Family Support, and Smoking Habit, Among Male Workers in East Borneo, Indonesia	Nama : Rusnoto Judul : Risk Factors for Tuberculosis among Out-Patients At Community Health Center in Kudus, Central Java	Nama : Noer Saudah, Binarti Judul : Experiential Learning Care to Increase Maternal Ability in Caring Premature Infants	Nama : Isna Qadrijati Judul : The Effect of Pesticides Counseling on Knowledge and Personal Hygiene among Rice Farmers in Sukoharjo, Central Java	Nama : Binarti Dwi Wahyuningsi Judul : The Effect of Aloe Vera Gel on Phlebitis Among In-Patients
8	10.40-11.00	Nama : Prima Dewi Kusumawati Judul : Difference in Personal Hygiene Between Elderly Living with Family and Those Living in Nursing Home, Pare, East Java	Nama : Made Kurnia Judul : Health-Related Sexual Behavior Among Transgenders in Singaraja, Bali	Nama : Endy Julianto Judul : Efficacy of Albendazole, Albendazole-Levamisole and Mebendazole-Levamisole Againts Soil-Transmitted Helminth Infection in School Children, Deli Serdang, North Sumatera	Nama : Sri Mulyani Judul : Access to Information, Socio-Cultural Factor, and Their Relationship with Readiness to Provide Exclusive Breastfeeding Among Pregnant Women	Nama : Indasah Judul : Effect of Community Lead Total Sanitation on Personal Hygiene and Latrine Ownership	Nama : Yulisetyaningrum Judul : The Effect of Physalis Angulata L on the Expression of Bcl-2, Apoptosis, and Necrosis Areas in Wistar Rat Liver Cells
9	11.00-11.20	Nama : Franciscus Xaverius Wartoyo Judul : Need Assessment and Effect of Sex Education on Awareness and Knowledge among Primary School Students in Klaten,	Nama : Feny Tunjungsari Judul : Relative Effectiveness of Gamexan And Permethrine as Anti-Scabies, Controlling for Gender and Personal Hygiene	Nama : Andiyatu Judul : Infectivity and Genetic Polymorphism of Anopheles Maculatus and An. Vagus in Diverse Endemicity Malaria Areas in the Kokap Sub-District of	Nama : Noor Cholifah Judul : Maternal Age, History of Disease, Nutritional Status in Pregnancy, and Their Association with Low Birth-Weight in Aisiyah Hospital, Kudus	Nama : Rita Dian Pratiwi Judul : Socio-Economic and Environmental Risk Factors of Tuberculosis in Wonosobo, Central Java, Indonesia	Nama : Budiman Judul : Effect of Corn Silk-Boiled Water on Cholesterol Level in Patients with Hypercholesterolemia in Bandung, West Java

No.	Time	Central Java	Education	Kulon Progo			
10	11.20-11.40	Nama : Maria Meiwati Widagdo Judul : Changes in Physical Function, Mental Status, and Independence in Daily Activities of Older People in Wirobrajan, Yogyakarta	Nama : Tita Hariyanti Judul : Implementation of Collaborative and Cooperative Methods to Stimulate Creativity of Posyandu Cadres	Nama : Hanna S. I. Kawulur Judul : The Case of Malaria and its Relationship to Vectorial Capacity of *Anopheles Farauti* Laveran (Diptera: Culicidae) on Coastal Ecosystem (Biak Numfor Regency) of Papua Province	Nama : Noor Azizah Judul : Type of Information Source and The Quality of Knowledge in Post Delivery Contraception Among Pregnant Women	Nama: Masrizal Judul: Spatial analysis and the determinants of mosquito vector of filariasis in the endemic areas of West Sumatera	Nama : Mufa Wibowo Judul : Immediate Effect of Kinesio Taping on Functional Ankle Stability among Male Basketball Players
11	11.40-12.00	Nama : Samsi Judul : Baznas Social Responsibility and Free Health Program in Karanganyar, Central Java	Nama : Suratini, Catur Sari Nurmaninatri Judul : Effect of Counseling with Multimedia Video on Clean And Healthy Behavior Among Elementary School Students in Bantul, Yogyakarta	Nama : Tri Ratnaningsih Judul : Association between Feeding Pattern and Nutritional Status among Toddlers, in Jombang, East Java	Nama : Sri Karyati Judul : The Relative Effectiveness of Benson's Relaxation Therapy, Al Quran Murotal Therapy, and Group Communication in the Reduction Of Anxiety in Pregnant Women Before Labor	Nama : Fiashriel Lundy Judul : Effect of Health Education on Maternal Knowledge and Child Nutritional Status among Children Under Three Years Old With Undernutrition, in Pasuruan, East Java	Nama : Ayu Elvana Judul : Effect of Purple Sweet Potato Extract on Glutathione Peroxidase in House Mice Liver After Maximum Physical Exercise
NO.	TIME	BEHAVIOR EPIDEMILOGY/ MATERNAL AND CHILD HEALTH	BEHAVIORAL EPIDEMIOLOGY	NUTRITIONAL EPIDEMIOLOGY	MATERNAL AND CHILD HEALTH	NUTRITIONAL EPIDEMIOLOGY/ OTHERS	OTHERS
12	12.00-12.20	Nama:Edy Suyanto Judul: Social Cognitive Theory: The Relation-ship Between Know-ledge, Environmental	Nama: Rosdiana Judul: Self-Efficacy to Refrain from Drug Addiction Relapse among Post Drug Rehabilitation	Nama : Harun Al Rasyid Judul : Sodium, Fat, and Cholesterol Contents in East Java Traditional Food	Nama : Indanah Judul : Maternal and Infant Factors Associated with Breastfeeding in a Hospital Rooming-In	Nama : Sahridayanti Nainggolan Judul : Pizza and Humburger Consumption as Risk Factors for Overweight in	Nama : Tri Sunarsih Judul : Path Analysis: Factors Affecting Parenting Education in Karanganyar, Central Java

		Observation, Outcome Expectation, Self-Efficacy, and Preventive Behavior of Overweight in Adolescent	Residents in Tanah Merah, Samarinda		Ward System, Kudus, Central Java	Adolescents in Jambi	
13	12.20-12.40	Nama: Emyk Windartik Judul: effect of yoga exercise on blood pressure reduction in the elderly	Nama: Sitti Nur Djannah Judul: Social Cognitive Theory and Premarital Sex Among Adolescents in Yogyakarta	Nama: Rika Nailuvar Sinaga Judul: Phytochemical Screening and Test of Antioxidant Activity in the Extract of Mangosteen Rind	Nama : Novendy Judul : Effect of Health Education and "Pregnant Mother Awareness Movement" on Knowledge and Community Participation in Safe Motherhood, in Tangerang, Banten	Nama : Neny Triana Judul : Application of Interprofessional Education Model on The Cognitive and Skill Competence in Nursing Care for Children with Malnutrition among Students in Pare, Kediri, East Java	Nama : Rafael Paun Judul : Socio-Cultural and Health Technical Factors Affecting Referral System in East Flores, East Nusa Tenggara
	12.40-13.30	Lunch					
14	13.30-13.50	Nama : Sri Anik Rustini Judul : Effect of Coping Strategy and Gangrene Complication on the Level of Stress in Patients with Diabetes Mellitus, at Adi Husada Hospital, Surabaya	Nama : Ratih Dewi Yudhani Judul : Mobile Phone Dependency among High School Students in Rural Area, Central Java	Nama : Rizki Mustika Riswari Judul : Gender, Diet, and Metabolic Syndrome in Adolescents in Malang, East Java	Nama : Rukmini Judul : Association Between Maternal Education, Family Income, and Infant Development, in Community Health Center Peneleh, Surabaya	Nama : Ana Zakiyah Judul : Effect of Shock Reposition on Oxygen Saturation Improvement in Vasovagal Syncope Case	Nama : Sandu Siyoto Judul : The Association between Patient Satisfaction and Loyalty at Community Health Center in Ngletih, Kediri, East Java
15	13.50-14.10	Nama : Lilis Maghfuroh Judul : Effect of Brain Button on the Development of Pre-School Children in	Nama : Linda Yunitasari Judul : Smoking Cessation and Non-Smoking Public Area: A Case	Nama : Risya Cilmiaty Judul : Dental Maturity, Oral Hygiene and Height of Junior High School Students in Goiter	Nama : Lestari Judul : Aeffect of Oxytocin Massage on Labor Duration and Uterine Involution at		Nama : Tavip Dwi Wahyuni Judul : Effect of Foot Gym on Sense of Foot, Paresthesia, and Ankle Brachial Index in Patient with Type 2

		Lamongan, East Java	Study in Bantul, Yogyakarta	Endemic Area in Karanganyar Regency	Independent Midwivery Practice Sri Hastuti Surabaya		Diabetes Mellitus
16	14.10-14.30			Nama : Ummi Kalsum Judul : A New Alternative Quac-Stick to Predict the Risk of Chronic Energy Deficiency in Malay Indonesian Women (18-49 Years)	Nama : Indrian Nuraini Judul : The Quality of Care at the Independent Midwifery Clinics, Surabaya		Nama: Florentina Sustini Judul: Genotype Identification and Analysis of Risk Factor of Hepatitis A