PROCEEDING

The 2nd International Conference of Medical and Health Sciences (ICMHS) and
The 2nd Life Sciences Conference (LSC)
2016

"Towards a Better Quality of Life through Interdisciplinary Research"

Yogyakarta, 9th-10th December 2016
The Alana Hotel and Convention Center
PROCEEDING

The 2nd International Conference of Medical and Health Sciences (ICMHS) and The 2nd Life Sciences Conference (LSC) 2016

"Towards a Better Quality of Life through Interdisciplinary Research"

Yogyakarta, 9th-10th December 2016
The Alana Hotel and Convention Center
TABLE OF CONTENT

COMMITTEE ............................................................................................................... viii

WELCOMING SPEECH
Welcome Message from Committee ................................................................. ix
Welcome Message from Dean ........................................................................ x
Welcome Message from Rector ................................................................... xi
Welcome Message from the Head of Provincial Health Office Special Region of Yogyakarta ................................................................. xiii

KEYNOTE SPEAKER OF INTERNATIONAL CONFERENCE ......................... xv

REVIEWER ................................................................................................................. xvi

FULL ARTICLE
Diabetic Neuropathy - A Chance Towards A Better Treatment
Tri Wahyuliati ......................................................................................................... 2

Herbal Medicine a Holistic Approach; in Case of Food Supplement Formulation of Sauropus androgynus and Elephantopus scaber to Modulate Immune and Hormonal System in Pregnant Salmonella typhi Infected Mice
Muhammad Sasmito Djati .................................................................................. 10

Continuing Competence of Practicing Nurses in Indonesia
Fitri Arifiat, SKep.,Ns, MAN Ph.D ................................................................. 19

The Influence of Neuromuscular Taping (NMT) in Walking Speed for the Patients After Ischemic Stroke
Umi Budi Rahayu .................................................................................................. 29

Correlation between Larvae Free Number with DHF Incidence in Sleman, Yogyakarta, Indonesia
Tri Wulandari Kesetyaningsih, Sri Andarini, Sudarto, Henny Pramoedyo .......... 34

Correlation Interdialytic Weight Gain-Idwg towards Physical and Psychological Health to Quality of Life in Patients with Hemodialisa
Cecilya Kustanti, Maria Putri Sari Utami ........................................................... 42
Quality of Life in Hemodialysis Patients with Hypertension
Maria Putri Sari Utami, Elsye Maria Rosa, Azizah Khoriyati

Environmental Housing Characteristic of Pulmonary Tuberculosis Sufferers in Slum Area
Iwan Stia Budi, Yustini Ardillah, Indah Purnama Sari, Dwi Septiawati

Exploration Study in Psychological Changed on First Trimester Pregnant Women at Kembaran II Health Center, Banyumas
Wilis Dwi Pangesti, Dewi Ambarwati, Inggar Ratna Kusuma

The Anxiety of Pregnant Mother with History of Abortion in Health Service 2 Banyumas Qualitative Study
Evicenna Naftuchah Riani, Wilis Dwi Pangesti, Diah Atmarina Yuliani

Analysis of Infection Control Risk Assessment and Strategies to Reduce Health-Care Associated Infections in RS PKU Muhammadiyah Gamping Yogyakarta
Nurmalita Sari, Elsye Maria Rosa

Health Promotion Program for Disaster Eruption of Mount Merapi Refugee in Youth Centre Sleman Distric, Yogyakarta Special Province, Indonesia
Novitasari Ratna Astuti

Pap Smear is Important Screening of Cervical Cancer for Women
Ivanna Beru Brahmana

Analysis of Compliance on Implementing Standard Precautions on Dental Health Service at PKU Muhammadiyah Gamping Hospital of Yogyakarta
Maria Margaretha S Nogo Masa, Elsye Maria Rosa

Qualitative Study of Stakeholders’ Knowledge Regarding Alert Village Program in Ogan Ilir Regency
Asmaripa Ainy, Iwan Stia Budi

The Influence of Parents Knowledge and Health Care Access to the Identification of Children with Hearing Impairment
Asti Widuri, Alazi, Muhammad Pringgo Arifianto
The Comparison of Maternal Leukocytosis Incidence between Preterm Premature Rupture of Membranes and Premature Rupture of Membranes at Term in Panembahan Senopati Hospital Bantul Yogyakarta

*Choirotun Jum’iyyatin Nisak, Supriyatiningsih* ................................................................. 137

Analysis of Patient Safety Culture Instrument by MaPSaF

*Arum Astika Sari, Arlina Dewi* .......................................................................................... 143

The Relationship of Fish Consumption to Cognitive Development in Students of SD Saptosari, Gunungkidul, Yogyakarta

*Dewi Ngaisyah* ...................................................................................................................... 158

Inter Professional Education and Collaborative Practice: Reflection from Health students

*Wiwik Kusumawati, Ika Setyawati, Romdzati, Likky Tiara Alphianti* ............................. 164

Steroidal Saponin in Ethanol Extract Tuber of Purple Yam (*Dioscoreaalata L.*) Decrease IL-4 Density of Blood Sera on BALB/c Mice Model Digestive Tract Allergy

*Sri Nabawiyati Nurul Makiyah, Muhaimin Rifa’i, Widodo, Muhammad Sasmito Djati* ................................................................. 173

Managerial Leadership Competence in PKU Muhammadiyah Hospital of Gamping

*Ranggit Oktanita, Qurratul Aini, Ekorini Listiowati* ....................................................... 184

Malaria Occurrence Factor Analysis Based on Elevation of Sea Surface in the District of OganKomeringUlu, South Sumatra

*Pademi Alamsyah, Chairil Anwar, Dwi Setyawati, Laila Hanum* ................................... 200

Increasing Family Involvement to Reduce of Cigarette Consumption with Participatory Learning Action (PLA) Approach

*Tri Hastuti Nur Rochimah, Salmah Orbayinah* ................................................................. 212

Air Pollution Effect to Human Health in Palembang City

*Marsidi, M.T. Kamaluddin, Fauziah N. Kurdi, Novrikasari* ............................................. 230

Identification of Patient Satisfactory Profile for Outpatient Pharmaceutical Service at Private and Government Hospital within Semarang District

*Dewi Esha Nirmala Dewi, Novita Dwi Dahliyanti* ............................................................... 241
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention of Family Nutritional Awareness to Increase Family’s Food Security</td>
<td>Fatmalina Febri, Anita Rahmiwati, Fenny Etrawati</td>
<td>249</td>
</tr>
<tr>
<td>The Effects of Exercises in Molecular Neuron Cells of Cerebellum in Congenital Hypothyroidism Rats</td>
<td>Idiani Darmawati, Marten Bhara Suryo Aji, Zulkhah Noor</td>
<td>258</td>
</tr>
<tr>
<td>The Effect of Air Freshener Exposure on Corneal Thickness of White Rat (Rattus norvegicus)</td>
<td>Yuningtyaswari, Pajar Sigit Nugroho</td>
<td>265</td>
</tr>
<tr>
<td>The Correlation between Education about Personal Hygiene and Knowledge and Attitude of Personal Hygiene of the Adolescent</td>
<td>Kusbaryanto, Wahana</td>
<td>272</td>
</tr>
<tr>
<td>The Relationship between Sports Activities and Premestrual Syndrome In SMA N 1 Sentolo, Kulon Progo</td>
<td>Fenthy Vabiella, Alfaina Wahyuni</td>
<td>277</td>
</tr>
<tr>
<td>Relationship Thyroid Status to the Physical Growth and Psychomotor Development on Children Under 2 Years in Endemic Areas of Iodine Deficiency Disorders in District Samigaluh of Kulonprogo Regency</td>
<td>Adang Muhammad Gugun, Zulkhah Noor, Jifani Rasyad, Mardylla Nur Fitriany</td>
<td>282</td>
</tr>
<tr>
<td>Baby Blood Vessel Detection-Based Touch Sensors</td>
<td>Ade Pajar Pirdianto, Anna Nur Nazila Chamim</td>
<td>299</td>
</tr>
<tr>
<td>Analysis of Factors that Influence Smokers Using Alcohol among Students in a Private University in Yogyakarta</td>
<td>Iman Permana, Gibran Ilham Setiawan</td>
<td>306</td>
</tr>
<tr>
<td>The Effectiveness of Combined Warm Water Foot Submerging and Breath Relaxation Therapy on Lowering the Blood T Pressure in Hypertensive Patients in the Work Area of Puskesmas Penumping Surakarta</td>
<td>Prima Trisna Aji, Novita Kurnia Sari, Sri Nabawiyati Nurul Makiyah</td>
<td>315</td>
</tr>
<tr>
<td>Assessment of Interprofessional Communication and Collaboration: Using Multi Methods</td>
<td>Sri Sundari Purbohadi</td>
<td>335</td>
</tr>
</tbody>
</table>
Bed Side Teaching as Effort for Decreasing Needle Stick and Sharp Injury in Clinical Practice Students of PSIK FKIK UMY
Azizah Khoiriayti, Novita Kurnia Sari ................................................................. 342

The Relationship between Working Period and Cholinesterase Blood Levels among Pesticides-Spraying Workers in the Oil Palm Plantation
Restu Dewi Lestari, Merry Tiyas Anggraini ......................................................... 350

The Effect of Interpersonal Relationship toward Birth Satisfaction
Hema Dewi Anggraheny ....................................................................................... 356

Effect of Early Mobilization Education of The Level Anxiety and Independence of Patients After Total Knee Replacement in Hospital
Amik Muladi, Sagiran, Azizah Khoiriayti ........................................................... 363

The Effect of Normal Dose Extract Gempur Batu Kejibeling (Strobilanthus crispus.BL) to the Histological of Rat's Digestive Tract
Yoni Astuti, Ali Usodo Mulyo, Harminani .......................................................... 371

Effectiveness of Alcohol 70%, Clorhexidine Gluconate 4% Soap and Irgasan DP 300 as Hand Sanitizers in Reducing Bacterial Growth
Inayati, Pinter Hartono ......................................................................................... 377
### Committee of ICMHS & LSC 2016

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor</td>
<td>dr. Ardi Pramono, Sp.An, M.Kes</td>
</tr>
<tr>
<td>Chair</td>
<td>dr Iman Permana, M.Kes, Ph.D</td>
</tr>
<tr>
<td>Partner</td>
<td>Dr Zahid Iqbal, Ph.D</td>
</tr>
<tr>
<td>Secretary</td>
<td>Winnie Setyonugroho, S.Ked, MT, Ph.D</td>
</tr>
<tr>
<td>Secretariat</td>
<td>dr Bramantyas Kusuma H, M.Sc</td>
</tr>
<tr>
<td></td>
<td>Futuh Hidayat, SEI</td>
</tr>
<tr>
<td></td>
<td>Elida Tri Grahani, SE</td>
</tr>
<tr>
<td>Treasury</td>
<td>dr Hidayatul Kurniawati, M.Sc</td>
</tr>
<tr>
<td>Scientific section</td>
<td>Dr dr Ikhlas M Jenie, M.Med, Sc</td>
</tr>
<tr>
<td></td>
<td>Dr Sri Nabawiyati Nurul Makiyah, S.Si, M.Kes</td>
</tr>
<tr>
<td></td>
<td>Lia Fitriana, SP</td>
</tr>
<tr>
<td>Programme section</td>
<td>dr Ika Setyawati, M.Sc</td>
</tr>
<tr>
<td></td>
<td>dr Imaniar Ranti, M.Sc</td>
</tr>
<tr>
<td></td>
<td>dr Ahmad Ikliludin, SpM</td>
</tr>
<tr>
<td>Publication and Documentation section</td>
<td>dr April Imam Prabowo</td>
</tr>
<tr>
<td></td>
<td>Arif Hadianto, ST</td>
</tr>
<tr>
<td>Logistic and Transportation</td>
<td>dr Muhammad Kurniawan, M.Sc</td>
</tr>
<tr>
<td></td>
<td>Aris Nuryanta, SH</td>
</tr>
<tr>
<td></td>
<td>Muhammad Ma'rifatullah Katiga Putra</td>
</tr>
<tr>
<td></td>
<td>Dwi Hatmo Budi, S.IP</td>
</tr>
<tr>
<td>Fund Raiser</td>
<td>dr Maria Ulfa, MMR</td>
</tr>
<tr>
<td></td>
<td>dr Akhmad Syaiful Fatah Husein, SpAn</td>
</tr>
</tbody>
</table>
Welcome to Jogja, sugeng rawuh!

For the second time, the Faculty of Medicine and Health Sciences Universitas Muhammadiyah Yogyakarta is going to conduct the 2nd International Conference of Medical and Health Sciences (ICMHS) this December in vibrant Yogyakarta, Indonesia. This year we are going to collaborate with the Life Sciences Society of Pakistan for their 2nd Life Sciences Conference (LSC) with Dr. Zahid Iqbal as the general secretary.

This year’s conference theme “Towards a better quality of life through interdisciplinary research” will be celebrating an era of seamless interdisciplinary integration and collaboration in scientific innovations with the involvement of more extensive topics and disciplines in the conference. We aim to exhibit the products of that kind of approach in solving challenges, improving the quality of life, and creating sustainable developments.

We are happy to announce that our conference is filled with Invited speakers from Pakistan, United States of America, Uni Emirates Arab, Malaysia and Indonesia. Presentations will be conducted in oral as well as poster that covers topics from medicine, public health, dentistry, pharmacy, biomedical to agriculture. To put more credibility to the conference we are collaborating with Isra Medical Journal and the Asian Journal of Agriculture and Biology to publish selected papers from the event. Other paper will be published in the ISBN Proceeding book.

The last but not least, enjoy the conference, start networking and sharing ideas, and let immerse yourself to the heritage cultural ambient of Jogja, sumonggo!

Yogyakarta, 1st December 2016

dr. Iman Permama, M.Kes, Ph.D.
Assalamu’alaikum Wr. Wb.

Science, especially in the areas of health and life growing more rapidly. We need to work together in the research of various disciplines to the advancement of science and to provide benefits to human life.

After successfully organized international scientific meeting last year, the Faculty of Medical and Health Sciences Universitas Muhammadiyah Yogyakarta, held the second scientific meeting ICMHS along with “2nd Life Sciences Conference”. In this second scientific meeting, FKI K UMY collaborates with various researchers, among others from Pakistan, Malaysia, and the United States. Taking the theme “Towards a better quality of life through interdisciplinary research” we hope to establish cooperation with various parties to be able to contribute ideas to the civilization of human life.

Finally, we congratulate the scientific meeting in the city of Yogyakarta Indonesia. Enjoy the beautiful city of Yogyakarta with priceless historical relics. We hope that this meeting can run smoothly and provide benefits to the advancement of knowledge.

Wassalamu’alaikum Wr. Wb.

Yogyakarta, 1st December 2016

Assalaamu’alaikum Wr. Wb.

Ladies and Gentlemen,

Welcome to the 2nd International Conference on Medical and Health Science in conjunction with the 2nd Life Sciences Conference 2016

Welcome to Yogyakarta City of Tolerance

Our Faculty of Medicine and Health Sciences has been doing such international conference almost every year for the last ten years. This and other previous conferences are the things that supporting our vision as an excellence and Islamic university, a young and global university. We will always try to keep monitoring the development of science through sending more lecturers to do the sabbatical leave overseas, doing international research collaborations and also the international conference. Each department should do this strategy of internationalization so that each department has its own network. Faculty of medicine and health science is one of the most progressive units in implementing this strategy by inviting international experts on a regular basis. This program will certainly strengthen our vision.

International conference on medicine and health sciences is a smart choice to offer our lecturers access to the most recent development of the subjects. The participants will also gain the same knowledge and latest information on medicine and health sciences. As everyone knows that the development of science and technology are faster today compared to the previous period. Information technology, computer, and other development have fastened the transformation of medicine and health science into the different and more complex stage.
Cellular technology, for instance, can be used for several functions including those that directly impacts our daily life. There is no long distance call anymore today because cellular phone can do everything we need to contact other people far from where we stand anytime anywhere. People will finally innovate cellular phone for the sake of personal health services. We will in the future using our simple cellular phone to detect our body temperature, blood pressure, even how much fat we have in our body and how much it is supposed to be. We may also be able to check the health of our body without leaving our house and order medicine without going into the drug store. Everything is almost possible as long as we think hard for the better of people in the future. Enjoy the conference and don’t forget to visit our rich tourist destinations, mountains, beaches or caves (underground waterways).

Thank you
Wassalaamu’alaikum Wr. Wb.

Prof. Dr. Bambang Cipto, MA
Keynote Speech

by Head of Provincial Health Office Special Region of Yogyakarta in International Conference of Medical and Health Sciences and Life Sciences Conference

The Alana Hotel and Convention Center, Yogyakarta, December 9-10, 2016

The honorable:
- Rector of Muhammadiyah University of Yogyakarta,
- The Dean of Medical and Health Sciences Muhammadiyah University of Yogyakarta,
- The chairman of organizing committee of the international conference of medical and health,
- Distinguished guests and colleagues.

Assalamu’alaikum Warahmatullahi Wabarakatuh,

First of all, we thank God for His blessings that today we may attend the International Conference of Medical Health Towards a Better Quality of Life Through Interdisciplinary Research in Yogyakarta.

My distinguished colleagues,
In Indonesia National Long Term Development Plan (2005-2024), the Indonesian Ministry of Health have determined a paradigm shift that have governed health services in health development plan. There has been a shift from Curative Health Services to Preventive and Promotive Health Services.

Recently, Indonesia suffers from a triple burden of diseases as health development challenges. The triple burden of diseases are: 1) the backlog of common infections, undernutrition, and maternal mortality; 2) the emerging challenges of non-communicable diseases (NCDs), such as cancer, diabetes, heart disease; and 3) mental illness, and the problems directly related to globalization, like pandemics and the health consequences of climate change.

Dear colleagues,
Here are some data that show several health problems in Indonesia:
1. Maternal mortality rate in 2015 is 4,809 cases, infant mortality rate in 2015 is 22,267 cases;
2. Regarding to children under the age of five, the national stunting rate is 37.2% which consists of 18% for very short dan 19.2% for short (Riskesdas 2013);
3. HIV testing coverage is 14% dan antiretroviral (ARV) therapy coverage is 65.58% (Directorate General of Disease Control and Prevention Ministry of Health, 2015);
4. Tuberculosis (TB) notification rate in 2015 is 73.5% and tuberculosis treatment success rate is 72% (Directorate General of Disease Control and Prevention Ministry of Health, 2015).

Distinguished guests,
Indonesia Health Development Program in 2015-2019 strengths in improving human quality life through Health Indonesia Program with family approach. The Indonesian Ministry of Health issued The Minister of Health Regulation (Permenkes) No. 39 Year 2016 as a Guideline of Implementation of Health Indonesia Program with Family Approach. This program has 12 main indicators as markers of a family health status. Currently, many health programs have been implemented by Indonesian Ministry of Health, Provincial Health Offices, and District Health Offices. However, many health problems, some as mentioned above, still become health burdens. We may ask a question whether the programs that we conducted have answered the health problems we have in Indonesia.
It would be better if all health programs that we implement based on scientific health research, especially interdisciplinary research. The research should be related to detection, prevention, and treatment of diseases or problem solving for better health.
My dear colleagues,
Being a province with speciality, Special Region of Yogyakarta placed Traditional Medicine as one of the priority programs in Provincial Medium Term Development Plan (2017-2022). We still encounter many challenges in developing Traditional Medicine, especially in providing services which are based on scientific evidence.
Distinguished colleagues,
We look forward to results of interdisciplinary research which would support health problem solving, especially by developing traditional medicine in Yogyakarta. We believe that collaboration in interdisciplinary research would improve quality of human life.
Finally,
Thank you for your attention. We wish you a successful conference.

Wassalamu’alaikum Warahmatullahi Wabarakatuh,

On behalf of
the Head of Provincial Health Office
Special Region of Yogyakarta

Drg. Pembajun Setyaningastutie, M.Kes
SPEAKER OF
INTERNATIONAL CONFERENCE

Zahid Iqbal
Al-Nafees Medical College Isra University Islamabad Campus Islamabad, Pakistan
“One Health Program for Public Health Benefit”

Prof. Dr. Abdul Khaliq
Professor, Department of Agronomy, University of Agriculture, Faisalabad
“Role of Agriculture in Poverty Alleviation of Rural Areas”

Fitri Arofatı
Universitas Muhammadiyah Yogyakarta, Indonesia
“Continuing Professional Development of Practicing Nurses in Indonesia”

Tri Wahyuliati
Universitas Muhammadiyah Yogyakarta, Indonesia
“Diabetic Neuropathy - A Chance Towards A Better Treatment”

Mohammad Khalid Ashfaq
University of Mississippi, USA
“Natural Products –Use or Misuse”

Muhammad Mukhtar
American University of Ras Al Khaimah, United Arab Emirates
“Emerging Biotechnologies and Genomic Medicines in Human Health and Well-Being”

Muhammad Sasmito Djati
Brawijaya University Malang, Indonesia
“Herbal Medicine a Holistic Approach: in case of food supplement formulation of Sauropusandrogynus and Elephantopusscaberto modulate immune and hormonal system in pregnant Salmonella typhi infected mice”
REVIEWER

1. Dr. Zahid Iqbal, Ph.D (Isra University, Islamabad, Pakistan)
2. Prof. Dr. Abdul Khaliq (University of Agriculture, Faisalabad)
3. Dr. Mohammad Khalid Ashfaq, DVM, DTVM, MS, Ph.D (University of Mississippi, USA)
4. Dr. Muhammad Mukhtar, Ph.D (American University of Ras Al Khaimah, United Arab Emirates)
5. Dr. Ir. Muhammad Sasmito Djati, MS. (Brawijaya University Malang, Indonesia)
6. Fitri Arofiati, S.KeP., Ns., MAN., Ph.D (Universitas Muhammadiyah Yogyakarta, Indonesia)
7. Dr. SN Nurul Makiyah, S.Si., M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
8. dr. Iman Permana, M.Kes, Ph.D (Universitas Muhammadiyah Yogyakarta, Indonesia)
9. Dr. dr. Ikhlas M. Jenie, M.Med, Sc (Universitas Muhammadiyah Yogyakarta, Indonesia)
10. Dr. dr. Arina Dewi, M.Kes, AAK (Universitas Muhammadiyah Yogyakarta, Indonesia)
11. dr. Oryzati Hilman, M.Sc, CMFM (Universitas Muhammadiyah Yogyakarta, Indonesia)
12. Dr. Dra. Yoni Astuti, M.Kes, Ph.D (Universitas Muhammadiyah Yogyakarta, Indonesia)
13. Dr. drg. Tita Ratya Utari, Sp. Ort (Universitas Muhammadiyah Yogyakarta, Indonesia)
14. Dr. dr. Tri Wahyuliati, Sp.S, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
15. Dr. Elsy Maria Rosa, M.Kep (Universitas Muhammadiyah Yogyakarta, Indonesia)
16. Dr. dr. Titiek Hidayati, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
18. Dr. dr. Sri Sundari, M.Ke (Universitas Muhammadiyah Yogyakarta, Indonesia)
19. Dra. Lilis Suryani, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
21. Dr. dr. Wiwik Kusumawati, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
The 2nd International Conference of Medical & Health Sciences and The 2nd Life Sciences Conference 2016

SPEAKER OF INTERNATIONAL CONFERENCE
The 2nd International Conference of Medical & Health Sciences and 
The 2nd Life Sciences Conference 2016

ICMHS-P-1-32

The Relationship between Working Period and Cholinesterase Blood Levels among Pesticides-Spraying Workers in the Oil Palm Plantation

Restu Dewi Lestari ¹, Merry Tiyas Anggraini ²*
¹) Muhammadiyah Semarang University Indonesia, restudewilestari.unimus@gmail.com.
²) Muhammadiyah Semarang University Indonesia
*Email: merry.tyas@gmail.com

Abstract

Background: Cholinesterase is an enzyme that has a role to move glands, muscles and nerves harmoniously and organized. This enzyme is a form of biological catalysts that is located within the body tissue. If the Cholinesterase activity of body tissue is decreased, it will cause body poisoning. Cholinesterase levels in the body are affected by pesticide exposure. The longer working period needed, the spraying is more often done. The longer working period the more pesticides are absorbed in the body. Aims: Analyze the relationship between the time of working period with cholinesterase blood levels among pesticides sprayer workers in palm oil plantation. Methods: This research is an analytic observational study with cross sectional approach which analyzed by chi square test. Primary data obtained from the laboratory tests with spektorfotometer on cholinesterase blood levels. This data is also resulted from interview used a questionnaire towards pesticides-spraying workers in the oil palm plantations PT. Agro Bukit KotawaringinTimur. Results: The chi square test among 102 samples showed that the p-value = 0.241 (> 0.05), means that there is no relationship between working period and cholinesterase blood levels. Conclusion: There is no relationship between working period and cholinesterase blood levels among pesticides-spraying workers in the oil palm plantation.

Keywords: Cholinesterase blood levels, working period.
INTRODUCTION

Industrial era and the rapid advancement of technology today, causing problems later in increasingly complex industry. Current technology is expected to improve the welfare, either directly or indirectly have a negative impact on the health and safety work. For achieve maximum degree of health workers in order to increase production which is based on human efficiency and productivity in production, the efforts to prevent and control the incidence of occupational diseases, both physical and psychological, poisoning, and infections are important factors to achieve the above objectives.¹

Pesticides use in palm oil industry has an important role in improving the welfare of the community in the field of industrial modern. Pesticides are toxic substances that have a negative impact on the body causing acute and chronic poisoning risk by lowering the activity of cholinesterase in the blood. Cholinesterase is an enzyme that has a role to glands, muscles and nerves harmoniously and organized. This enzyme is a form of biological catalysts that is located within the body tissue. If the Cholinesterase activity of body tissue is decreased, it will cause body poisoning. Cholinesterase levels in the body are affected by pesticide exposure. The longer working period needed, the spraying is more often done. The longer working period the more pesticides are absorbed in the body. Increasing the number of pesticides in the body will decrease the cholinesterase blood level. ¹,²

Research from (FAO) World Health Organization in 1992 said that acute poisoning occurs in as many as 214 farmers for two years, this was due to ignorance of the dangers of pesticides farmers. Data from the Department of Health in 1996 on the monitoring of pesticide poisoning organophosphate and carbamate in 27 provinces in Indonesia found farmers who suffered severe poisoning 1.3%, 9.98% moderate intoxication, mild poisoning 26.89% and 61.82% normal cholinesterase levels.³ The aims of this research is to analyze the relationship between the time of working period with cholinesterase blood levels among pesticides spraying workers in palm oil plantation.

MATERIALS AND METHODS

This research is an analytic observational study with cross sectional approach which analyzed by chi square test. Primary data obtained from the laboratory tests with spectrophotometer on cholinesterase blood levels. This data is also obtained from interview used a questionnaire towards pesticides-spraying workers in the oil palm plantations PT. Agro Bukit KotawaringinTimur, Central Kalimantan, Indonesia. This research use simple random sampling technique with 102 respondents of pesticides spraying workers that appropriate with the inclusion and exclusion criteria.
Inclusion criteria: pesticide sprayers workers in palm oil company PT Agro Bukit East Kotawaringin, willing to be respondents, have worked at least 6 months. Exclusion criteria: not permanent workers, at the time the study was not present, do not use protective equipment when spraying, age below 18 years.

RESULTS

PT. Agro Bukit east Kotawaringin has a number of pesticide sprayers workers 176 people of the whole estate locations. The number of workers each Sungai Lenggana estate ie as many as 50 people, Sungai Binti Estate as many as 27 people, Sawahan many as 58 people, and the real Tanah putih as many as 41 people. The overall distribution of spraying workers pesticides by age workers, as many as 28 people 21-30 years, 31-40 years as many as 85 people, as many as 48 people 41-50 years, 51-60 years as many as 15 people.

Table 1. Distribution of Respondents.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>97</td>
<td>95.10</td>
</tr>
<tr>
<td>Men</td>
<td>5</td>
<td>4.90</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>6</td>
<td>5.88</td>
</tr>
<tr>
<td>SD</td>
<td>62</td>
<td>60.78</td>
</tr>
<tr>
<td>SMP</td>
<td>24</td>
<td>23.53</td>
</tr>
<tr>
<td>SMA/SMK</td>
<td>10</td>
<td>9.80</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sungai Binti Estate</td>
<td>17</td>
<td>16.67</td>
</tr>
<tr>
<td>Tanah Putih Estate</td>
<td>17</td>
<td>16.67</td>
</tr>
<tr>
<td>Sungai Lenggana Estate</td>
<td>26</td>
<td>25.49</td>
</tr>
<tr>
<td>Sawahan Estate</td>
<td>42</td>
<td>41.18</td>
</tr>
</tbody>
</table>

Mean ± std dev

Age

38.79 ± 8.12
Tabel 2. Working Period

<table>
<thead>
<tr>
<th>Working period</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 months - 5 years</td>
<td>28</td>
<td>27,5</td>
</tr>
<tr>
<td>6 – 10 years</td>
<td>71</td>
<td>69,6</td>
</tr>
<tr>
<td>&gt; 10 tahun</td>
<td>3</td>
<td>2,9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>102</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 3. The Relationship between working period and cholinesterase blood levels

<table>
<thead>
<tr>
<th>Normal</th>
<th>Cholinesterase Levels</th>
<th>Blood Levels</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>working period</td>
<td></td>
<td>p</td>
<td></td>
</tr>
<tr>
<td>6 month - 5 years</td>
<td>% 89,3%</td>
<td>10,7%</td>
<td>100%</td>
</tr>
<tr>
<td>6 - 10 years</td>
<td>% 97,2%</td>
<td>2,8%</td>
<td>100%</td>
</tr>
<tr>
<td>&gt; 10 years</td>
<td>% 100%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>N 97</strong></td>
<td><strong>5</strong></td>
<td><strong>102</strong></td>
</tr>
<tr>
<td>%</td>
<td>95,1%</td>
<td>4,9%</td>
<td>100%</td>
</tr>
</tbody>
</table>

**DISCUSSION**

In this study it was found that working period sprayers do not become one of the factors associated with decreased of cholinesterase blood levels of workers, it is mean that the cholinesterase level experienced by respondents who worked as a pesticide sprayer is not shown to correlate directly with working period. It is based on data obtained that p-value = 0,241 (> 0,05), which means that there is no significant relationship between working period with cholinesterase blood levels.

In this research found no decrease in cholinesterase blood levels but found increased of cholinesterase blood levels in 5 respondents (4.9%). Increased cholinesterase blood levels considered not meaningful due to poisoning caused by pesticides exposure have resulted in a decrease in cholinesterase blood levels. There was no relationship between working period and cholinesterase blood levels among pesticides-spraying workers. This result is influenced by several factors such as age, sex, health status, endurance, nutrition, level of body weakness, genetic factors, conditions synergies of chemicals, and the endocrine status. These factors can influence the onset of pesticides poisoning. The proper use of PPE, wind direction before spraying and cleaning themselves after spraying also may prevent the pesticides poisoning of workers. In this study, elevated levels of blood cholinesterase in pesticides spraying
workers are affected by the immune system and good nutrition in workers. Additionally when finished spraying, workers usually clean themselves by bathing so that cases of pesticides poisoning can be prevented and minimized because of characteristic of the pesticides is a soluble water substances.\textsuperscript{5,6}

Some studies showed that working period affect cholinesterase blood levels where exposure to pesticides is ongoing more dangerous than intermittent exposures at the same time. So that past exposure must be considered if there is a risk of new exposure, because the spray is exposed for a long time and repeatedly can cause chronic poisoning of workers. The entry of pesticides into the body can cause a decrease in cholinesterase blood levels where a decrease in erythrocyte cholinesterase levels can last for 1-3 weeks, while a decrease in cholinesterase activity in platelets can take 12 weeks or 3 months.\textsuperscript{4}

When a workers exposed to pesticides, cholinesterase in the blood will bind pesticides that enter the body are irreversible. This will cause a decrease in cholinesterase levels. If there is a decrease in cholinesterase levels, it can be said to occur in result of poisoning by pesticide exposure. But also need to be considered, a decrease in cholinesterase levels can also occur in diseases affecting the liver such as hepatitis, acute and chronic can lower cholinesterase levels of 30% to 50%. While the circumstances were further serosis hepatic and liver tumors or other tumors that are in the liver can decrease the activity of the enzyme cholinesterase by 50% to 70%.\textsuperscript{7}

CONCLUSION

There was no relationship between working period and cholinesterase blood levels among pesticides-spraying workers in the oil palm plantation PT. Agro Bukit Kotawaringin Timur, Central Kalimantan, Indonesia.

REFERENCES