



2nd ICHMS & 2nd LSC

PROCEEDING

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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

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**The 2nd International Conference of Medical & Health Sciences
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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 <i>Tri Wahyuliati</i>	2
Herbal Medicine a Holistic Approach; in Case of Food Supplement Formulation of <i>Sauropus androgynus</i> and <i>Elephantopus scaber</i> to Modulate Immune and Hormonal System in Pregnant <i>Salmonella typhi</i> Infected Mice <i>Muhammad Sasmito Djati</i>	10
Continuing Competence of Practicing Nurses in Indonesia <i>Fitri Arofiati, SKep.,Ns, MAN Ph.D</i>	19
The Influence of Neuromuscular Taping (NMT) in Walking Speed for the Patients After Ischemic Stroke <i>Umi Budi Rahayu</i>	29
Correlation between Larvae Free Number with DHF Incidence in Sleman, Yogyakarta, Indonesia <i>Tri Wulandari Kesetyaningsih, Sri Andarini, Sudarto, Henny Pramoedyo</i>	34
Correlation Interdialytic Weight Gain-Idwg towards Physical and Psychological Health to Quality of Life in Patients with Hemodialisa <i>Cecilya Kustanti, Maria Putri Sari Utami</i>	42

**The 2nd International Conference of Medical & Health Sciences
and
The 2nd Life Sciences Conference 2016**

Quality of Life in Hemodialysis Patiens with Hypertension <i>Maria Putri Sari Utami, Elsy Maria Rosa, Azizah Khoiriyati</i>	48
Environmental Housing Characteristic of Pulmonary Tuberculosis Sufferers in Slum Area <i>Iwan Stia Budi, Yustini Ardillah, Indah Purnama Sari, Dwi Septiawati</i>	55
Exploration Study in Psychological Changed on First Trimester Pregnant Women at Kembaran II Health Center, Banyumas <i>Wilis Dwi Pangesti, Dewi Ambarwati, Inggat Ratna Kusuma</i>	63
The Anxiety of Pregnant Mother with History of Abortion in Health Service 2 Banyumas Qualitative Study <i>Evicenna Naftuchah Riani, Wilis Dwi Pangesti, Diah Atmarina Yuliani</i>	72
Analysis of Infection Control Risk Assessment and Strategies to Reduce Health-Care Associated Infections in RS PKU Muhammadiyah Gamping Yogyakarta <i>Nurmalita Sari, Elsy Maria Rosa</i>	76
Health Promotion Program for Disaster Eruption of Mount Merapi Refugee in Youth Centre Sleman Distric, Yogyakarta Special Province, Indonesia <i>Novitasari Ratna Astuti</i>	91
Pap Smear is Important Screening of Cervical Cancer for Women <i>Ivanna Beru Brahma</i>	100
Analysis of Compliance on Implementing Standard Precautions on Dental Health Service at PKU Muhammadiyah Gamping Hospital of Yogyakarta <i>Maria Margaretha S Nogo Masa, Elsy Maria Rosa</i>	108
Qualitative Study of Stakeholders' Knowledge Regarding Alert Village Program in Ogan Ilir Regency <i>Asmaripa Ainy, Iwan Stia Budi</i>	123
The Influence of Parents Knowledge and Health Care Access to the Identification of Children with Hearing Impairment <i>Asti Widuri, Alazi, Muhammad Pringgo Arifianto</i>	131

**The 2nd International Conference of Medical & Health Sciences
and
The 2nd Life Sciences Conference 2016**

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 <i>Choirotun Jum'iyatin Nisak, Supriyatningsih</i>	137
Analysis of Patient Safety Culture Instrument by MaPSaF <i>Arum Astika Sari, Arlina Dewi</i>	143
The Relationship of Fish Consumption to Cognitive Development in Students of SD Saptosari, Gunungkidul, Yogyakarta <i>Dewi Ngaisyah</i>	158
Inter Professional Education and Collaborative Practice: Reflection from Health students <i>Wiwik Kusumawati, Ika Setyawati, Romdzati, Likky Tiara Alphianti</i>	164
Steroidal Saponin in Ethanol Extract Tuber of Purple Yam (<i>Dioscoreaalata L.</i>) Decrease IL-4 Density of Blood Sera on BALB/c Mice Model Digestive Tract Allergy <i>Sri Nabawiyati Nurul Makiyah, Muhaimin Rifa'i, Widodo, Muhammad Sasmito Djati</i>	173
Managerial Leadership Competence in PKU Muhammadiyah Hospital of Gamping <i>Ranggit Oktanita, Qurratul Aini, Ekorini Listiowati</i>	184
Malaria Occurrence Factor Analysis Based on Elevation of Sea Surface in the District of OganKomeriungUlu, South Sumatra <i>Pademi Alamasyah, Chairil Anwar, Dwi Setyawan, Laila Hanum</i>	200
Increasing Family Involvement to Reduce of Cigarette Consumption with Participatory Learning Action (PLA) Approach <i>Tri Hastuti Nur Rochimah, Salmah Orbayinah</i>	212
Air Pollution Effect to Human Health in Palembang City <i>Marsidi, M.T. Kamaluddin, Fauziah N. Kurdi, Novrikasari</i>	230
Identification of Patient Satisfactory Profile for Outpatient Pharmaceutical Service at Private and Government Hospital within Semarang District <i>Pramitha Esha Nirmala Dewi, Novita Dwi Dahliiyanti</i>	241

**The 2nd International Conference of Medical & Health Sciences
and
The 2nd Life Sciences Conference 2016**

Intervention of Family Nutritional Awareness to Increase Family's Food Security <i>Fatmalina Febri, Anita Rahmiwati, Fenny Etrawati</i>	249
The Effects of Exercises in Molecular Neuron Cells of Cerebellum in Congenital Hypothyroidism Rats <i>Idiani Darmawati, Marten Bhara Suryo Aji, Zulkhah Noor</i>	258
The Effect of Air Freshener Exposure on Corneal Thickness of White Rat (<i>Rattus norvegicus</i>) <i>Yuningtyaswari, Pajar Sigit Nugroho</i>	265
The Correlation between Education about Personal Hygiene and Knowledge and Attitude of Personal Hygiene of the Adolescent <i>Kusbaryanto, Wahana</i>	272
The Relationship between Sports Activities and Premenstrual Syndrome In SMA N 1 Sentolo, Kulon Progo <i>Fenthy Vabiella, Alfaina Wahyuni</i>	277
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 <i>Adang Muhammad Gugun, Zulkhah Noor, Jifani Rasyad, Mardylla Nur Fitriany..</i>	282
Baby Blood Vessel Detection-Based Touch Sensors <i>Ade Pajar Pirdianto, Anna Nur Nazila Chamim</i>	299
Analysis of Factors that Influence Smokers Using Alcohol among Students in a Private University in Yogyakarta <i>Iman Permana, Gibran Ilham Setiawan</i>	306
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 <i>Prima Trisna Aji, Novita Kurnia Sari, Sri Nabawiyati Nurul Makiyah</i>	315
Assessment of Interprofessional Communication and Collaboration: Using Multi Methods <i>Sri Sundari Purbohadi</i>	335

**The 2nd International Conference of Medical & Health Sciences
and
The 2nd Life Sciences Conference 2016**

Bed Side Teaching as Effort for Decreasing Needle Stick and Sharp Injury in Clinical Practice Students of PSIK FKIK UMY <i>Azizah Khoiriyati, Novita Kurnia Sari</i>	342
The Relationship between Working Period and Cholinesterase Blood Levels among Pesticides-Spraying Workers in the Oil Palm Plantation <i>Restu Dewi Lestari, Merry Tiyas Anggraini</i>	350
The Effect of Interpersonal Relationship toward Birth Satisfaction <i>Hema Dewi Anggraheny</i>	356
Effect of Early Mobilization Education of The Level Anxiety and Independence of Patients After Total Knee Replacement in Hospital <i>Amik Muladi, Sagiran, Azizah Khoiriyati</i>	363
The Effect of Normal Dose Extract Gempur Batu Kejibeling (<i>Strobilanthus crispus.BL</i>) to the Histological of Rat's Digestive Tract <i>Yoni Astuti, Ali Usodo Mulyo, Harminani</i>	371
Effectiveness of Alcohol 70%, Clorhexidine Gluconate 4% Soap and Irgasan DP 300 as Hand Sanitizers in Reducing Bacterial Growth <i>Inayati, Pinter Hartono</i>	377

**The 2nd International Conference of Medical & Health Sciences
and
The 2nd Life Sciences Conference 2016**

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and
The 2nd Life Sciences Conference 2016**

**Chair person of The 2nd International Conference of Medical and
Health Sciences and The 2nd Life Sciences Conference 2016**



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 Permana, M.Kes, Ph.D.

**The 2nd International Conference of Medical & Health Sciences
and
The 2nd Life Sciences Conference 2016**

**Dean of Faculty of Medicine and Health Sciences,
Universitas Muhammadiyah Yogyakarta**



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, FKIK 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

dr. Ardi Pramono, M.Kes, Sp.An.

**The 2nd International Conference of Medical & Health Sciences
and
The 2nd Life Sciences Conference 2016**

Rector of Universitas Muhammadiyah Yogyakarta



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 havefastened the transformation of medicine and health science into the different and more complex stage.

**The 2nd International Conference of Medical & Health Sciences
and
The 2nd Life Sciences Conference 2016**

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

**The 2nd International Conference of Medical & Health Sciences
and
The 2nd Life Sciences Conference 2016**

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);

The 2nd International Conference of Medical & Health Sciences and The 2nd Life Sciences Conference 2016

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

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and
The 2nd Life Sciences Conference 2016**

**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 Arofati

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 Elephantopuscaberto modulate immune and hormonal system in pregnant Salmonella typhi infected mice"

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and
The 2nd Life Sciences Conference 2016**

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)
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13. Dr. drg. Tita Ratya Utari, Sp. Ort (Universitas Muhammadiyah Yogyakarta, Indonesia)
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15. Dr. Elsy Maria Rosa, M.Kep (Universitas Muhammadiyah Yogyakarta, Indonesia)
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19. Dra. Lilis Suryani, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
20. Drh. Tri Wulandari K, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
21. Dr. dr. Wiwik Kusumawati, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
22. Sabtanti Harimurti, S.Si., M.Sc., Ph.D., Apt. (Universitas Muhammadiyah Yogyakarta, Indonesia)

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and
The 2nd Life Sciences Conference 2016**

**SPEAKER OF
INTERNATIONAL CONFERENCE**

ICMHS-O-1-41

**The Relationship of Fish Consumption to Cognitive Development in
Students of SDSaptosari, Gunungkidul, Yogyakarta**

Dewi Ngaisyah

Universitas Respati Yogyakarta

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Abstract

The lack of Omega 3 contained food intake is one of the known factors that causes poor nutritional status as well as hinders cognitive development. Fish contains high Omega 3. Cognitive development is related to movements that is affected by such skilled neural activities as learning and thinking skills while absorbing the study materials delivered by the schools (Nurjanah, 2008). This research aims to find out the relationship of Omega 3 intake to cognitive development in students of SD Saptosari, Gunungkidul. This study is an observational study, completed with *Cross Sectional* design, that is conducted in SD Saptosari, Gunungkidul, Yogyakarta. The data was gathered in the period of March to September, 2016. The respondents of the study were elementary school students. The bivariate testing used in the study involved Linear Regression testing. The average consumption of Omega 3 was 74.09 ± 7.81 and the average cognitive development was measured through the marks the students got, that was 75.01 ± 7.88 . The correlation testing showed an average relationship ($r = 0.274$) between the two variables. The linear regression testing showed a significant relationship ($p = 0.006$), with 0.075 determining coefficient. The regression formula was $\text{Cognitive Development} = 54.563 + 0.276 \text{ Omega 3}$, meaning that the cognitive development reaches 0.276 with every 1 mg Omega 3 consumption. The conclusion is there is a relationship between Omega 3 consumption and cognitive development in students of SD Saptosari, Gunungkidul, Yogyakarta. It is suggested to improve the potential of the cognitive skills of SD Saptosari students through fish consumption as the source of Omega 3.

Keywords: cognitive skills, fish consumption, Omega 3

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INTRODUCTION

Brain growth and development occur during the prenatal period up to 2 years. Lack of consumption of food containing protein is one of the factors that causes malnutrition and impedes cognitive development. Fish is a source of food that contains Omega 3.¹

Fish is a relatively cheap source of Omega 3's for the community. Based on data from the fishery production, it can be estimated that the average availability of fish per capita per year is 20 kg. When it is calculated, geographically, the availability of fish per capita in Saptosari is somewhat large. However, this large availability of fish is not reflected in real consumption of fish in the community.²

Malnutrition case in Saptosari from year to year is still high. The prevalence of chronic malnutrition, which is stunting, in Saptosari is quite high at 48.2%.³ Data of the prevalence of malnutrition showed that Saptosari still has a quite high number in this phenomenon. Child development is psychophysical changes as a result of the maturation process of both physical and psychological functioning of children supported by environmental factors and learning process within a certain time towards maturity. Child development consists of motoric, language, speech, and social development. Gross motor development associated with movements that are influenced by the skills of large muscles, such as the activities during extracurricular activities. In the other hand, fine motor skills are associated with movements that are affected by the skills of the delicate nerves such as the ability to learn and think in receiving lessons in school.⁴

Optimal and balanced nutrition is indispensable for the development of the nerves system. Impaired brain development may affect the level of intelligence as well as the quality of Human Resources (HR). Children's school period is a very sensitive period in which malnutrition can affect the growth of the brain as well as intelligence growth disorders. Human Resources who are physically tough, mentally strong and have a vibrant health determine the success of national development of a nation. A major concern in human resource development is to prepare the young generation through early coaching, through such health efforts from early age.⁵

Several factors to be considered in an attempt to realize high quality of human resources are nutrition, health, education, information, technology and other services. Among those factors, nutritional factors are most important role in children's growth process. Omega 3 acts as brain's fatty acids. Essential fatty acids are nutrients that must be fulfilled.⁶

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MATERIALS AND METHODS

This research is an observational study, using Cross Sectional research design. The independent variable is the consumption of fish. The dependent variable is the cognitive development of school children. This research was conducted in the Saptosari sub-district, Gunung Kidul, Yogyakarta. The data were collected from May to August 2016.

The population in this research was students of SD Saptosari, Gunung Kidul, Yogyakarta. It was 435 in total based on the master data of students in SD Saptosari, Gunung Kidul, Yogyakarta. The samples used were as many as 100 people. The samples in this study is based on Stratified Sampling method. This because SD Saptosari consists of several classes, and the sample was obtained from the representation of each class proportionately.

The primary data in this study is the Omega-3 consumption gained from fish as natural ingredients using Food Frequency Questionnaire (FFQ). The subject were asked to recall food that had been consumed daily, weekly, and monthly. The results then were recorded by the interviewer. Four Nutritional Sciences enumerator students assisted during the data collection. The school children's cognitive abilities data measurement was obtained from their learning achievement. Correlation Regression test was used in bivariate analysis to determine the relationship between fish consumption and cognitive abilities.

RESULTS

The study was conducted from March to October, 2016. This study had the students of SD Saptosari, Gunungkidul, Yogyakarta as the respondents. The respondents were sought based on their age and gender. The measured variables were Omega 3 consumption and cognitive development. The following Table 1. presents the univariant analysis of the respondents' characteristics.

Table 1. The Characteristics of Respondents on Gender

Gender	N	%
male	53	53
female	47	47

This study made use of samples that fulfilled the inclusion criteria. Most of them were of male gender, with 53 respondents. The imbalance in terms of proportion was obvious, with 47% female respondents as a comparison.

**The 2nd International Conference of Medical & Health Sciences
and
The 2nd Life Sciences Conference 2016**

Table 2. The Characteristics of Respondents on Age

Age	Mean Median	SD	Minimum Maximum
	10.19 10.00	0.787	9 12

The results of the analysis on characteristics based on the respondents' age on average was 10 years old ($SD \pm 0,787$). The youngest respondent was 9 years old, and the oldest respondent was 12 years old.

Table 3. The Average Consumption of Omega 3 and the Cognitive Development of the Respondents

Variable	Mean Median	SD	Minimum Maximum
Omega3 consumption (mg)	74.09 75	7.81	51.98 89
Cognitive development	75.01 77	7.88	51 89

It is derived from Table 3. that the average consumption of Omega 3 from such natural source as fish that were consumed by the respondents was $74,09 \pm 7,81$ mg per day. The following Table 5 presents the bivariant analysis of the study.

Table 4. Analysis of Correlation Regression of Omega 3 Consumption to Cognitive Development

Variable	<i>r</i>	<i>R</i> ²	Line Equation	<i>P</i> value
Omega 3	0.274	0.075	$Cognitive = 54.563 + 0.276$ <i>Omega 3</i>	0.006

DISCUSSION

The correlation of the consumption of Omega 3 taken from natural food source such as fish to cognitive development showed an average correlation (0.274) and positive outcome, which means that the higher the consumption of Omega 3 that comes from natural food source such as fish, the higher the cognitive development of the respondents. The coefficient value with 0.075 value means that the formulated line equation of the regression could explain the 7.5% of the cognitive development variation or that the line equation was enough to explain the cognitive development variable. In another word, the consumption of Omega 3 that comes from natural food source as fish contributed 7.5% ($R^2 = 0.075$) on children's cognitive development, while the rest comes from other factors. The statistical analysis showed a significant correlation of the

The 2nd International Conference of Medical & Health Sciences and The 2nd Life Sciences Conference 2016

consumption of Omega 3 that comes from natural sources such as fish to the cognitive development of the respondents ($p=0.006$).

As the line equation was formulated, the study then could predict the variable of the respondents' cognitive development from the Standard Error of the Estimate, with 7.62. The Z value was formulated from table Z with validity points at 95% with $Z = 1.96$, so the variation was formulated as $1.96 \times 7,62 = \pm 14.935$. Results of the study showed the average consumption of Omega 3 was 74 g, which predicts the cognitive development as the following: $\text{Cognitive Development} = 54.563 + 0.276 (74) = 74.987$. It means that every 74 g Omega 3 consumption may lead to 60.052 to 89.922.

The respondents' cognitive development was seen through the average grades they get at the school. The average grades of 100 respondents were 75.01 ± 7.88 . Based on the standard of passing grade dictated by the Ministry of Education and Culture, the mark have way passed the minimum passing grade of elementary school students' grades.

The data on consumption of Omega 3 coming from such natural food source as fish were gathered from an interview, using FFQ, in which it was confirmed that all the tracked down the kind of fish consumed were of natural food source and were of various kind of fish. The results of the analysis showed that the average consumption of omega 3 taken from natural food souces was 74.09 ± 7.81 mg per day.

The most consumed fish were mackarels and tunas. These fish have much more Omega 3 than any other fish.

The results of the bivariant analysis of the correlation regression showed the p-value at 0.006. It was then concluded that there was a correlation of consuming Omega 3 from natural sources such as fish to the cognitive developments of the students of SD Saptosari, Gunungkidul, Yogyakarta. The regression equation showed that cognitive development would mean that the cognitive skills improved by 0.275 in every 1 mg consumption of Omega 3. The linear correlation of the consumption of Omega 3 harvested from natural food sources such as fish to the cognitive development having a positive outcome means that the greater the consumption of Omega 3, the richer the respondents' cognitive development.

Omega 3 helps to form spingomielins and is a structural component of mielins. EPA helps to form the cell membranne. When EPA and DHA constructed enough spingomielins in the brain, the brain would send signals to the axons and then mielins would enhance the speed of the said signals sent by the brain. Then, neurotransmitter takes over according to the brain's order, so it results in faster and better motoric development of the body. On the other hand, if there are less EPA and DHA found in the brain, the cell membrannes died, therefore the signals sent by the brain to the axons do not flow fluently. As a result, the neurotransmitter does not work and the body moves

The 2nd International Conference of Medical & Health Sciences and The 2nd Life Sciences Conference 2016

slowly, as does the motoric development of the body. Neurotransmitter functions as the messenger of the nervous system. It is necessary for it gets a food from AA and DHA, especially in the last trimester, post-pregnancy and early age of the children. Lack of these two essential fat acid as the child is born correlates with light weight, small heads and small placentas. As a result, the development of the central nervous system and the cognitive in the future would be affected.⁶

The consumption of Omega 3 harvested from fish correlates positively to the improvement of cognitive development of school-age children. Cognitive development covers four aspects. They are maturity, experience, social transmission and equilibration. Other factor that also affects the cognitive development of the children is the fat that comes from fish. It is known that fat correlates to the development and the growth of brain cells. The kind of fat that played a role in the process of growth and development of the brain is Omega 3 fat acid.⁷

CONCLUSION

Average Consumption of Omega 3 from fish natural ingredients is 74.09 mg (SD ± 7.81). Average children's cognitive development seen from the results obtained in school learning achievement is 75.01 mg (SD ± 7.88). There is a positive relationship between the consumption of Omega 3 from natural ingredients like fish with cognitive development ($p = 0.006$). The consumption of Omega 3 from fish contributed 7.5% in affecting the children's cognitive development.

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