

ISOPH 2017

Surabaya, Indonesia
November 11-12, 2017

PROCEEDINGS OF THE 2ND INTERNATIONAL SYMPOSIUM OF PUBLIC HEALTH

Achieving SDGs in South East Asia: Challenging and Tackling of Tropical Health Problems

Editors:

I Wayan Gede Artawan Eka Putra
Agung Dwi Laksono
Yulis Setiya Dewi
Nikmatur Rohmah and
Darrimiya Hidayati

Organized by
Faculty of Public Health, Universitas Airlangga



ISOPH 2017

Proceedings of the
2nd International Symposium of Public Health

Achieving SDGs in South East Asia: Challenging and Tackling
of Tropical Health Problems

Surabaya - Indonesia

November 11 - 12, 2017

Organized by
Faculty of Public Health, Universitas Airlangga

Copyright © 2018 by SCITEPRESS – Science and Technology Publications, Lda.
All rights reserved

Edited by I Wayan Gede Artawan Eka Putra, Agung Dwi Laksono, Yulis Setiya Dewi,
Nikmatur Rohmah and Darrimiya Hidayati

Printed in Portugal

ISSN: 2184-3643

ISBN: 978-989-758-338-4

Depósito Legal: 446680/18

<http://conference.fkm.unair.ac.id>

conference@fkm.unair.ac.id

BRIEF CONTENTS

ORGANIZING COMMITTEES	IV
PROGRAM COMMITTEE	VII
FOREWORD	IX
CONTENTS	XI

ORGANIZING COMMITTEES

EXECUTIVE COMMITTEE

Tri Martiana, Dean of Public Health Faculty, Universitas Airlangga, Indonesia
Santi Martini, Vice Dean I, Public Health Faculty, Universitas Airlangga, Indonesia
Thinni Nurul Rochman, Vice Dean II, Public Health Faculty, Universitas Airlangga, Indonesia
Ira Nurmala, Vice Dean III, Public Health Faculty, Universitas Airlangga, Indonesia

STEERING COMMITTEE

Nyoman Anita Damayanti, Coordinator of Doctoral Program of Health Science, Public Health Faculty, Universitas Airlangga, Indonesia
Hari Basuki Notobroto, Secretary of Doctoral Program of Health Science, Public Health Faculty, Universitas Airlangga, Indonesia
Atik Choirul Hidajah, Coordinator of Quality Control Group of Doctoral Program of Health Science, Public Health Faculty, Universitas Airlangga, Indonesia
Lilis Sulistyorini, Secretary of Quality Control Group of Doctoral Program of Health Science, Public Health Faculty, Universitas Airlangga, Indonesia

CHAIRMAN

Rachmad Suhanda, Lecturer at Universitas Syiah Kuala, Indonesia

SECRETARY

Qurnia Andayani, Public Health Empowerment Foundation-YAPIKMA, Indonesia
Anita Dewi Prahastuti Sujoso, Lecturer at Universitas Negeri Jember, Indonesia

TREASURER

Nur Baharia Marassabesy, Lecturer at Politeknik Kesehatan Kemenkes Maluku, Indonesia
Widia Shofa Ilmiah, Lecturer at STIKES Hafshawaty Pesantren Zainul Hasan, Indonesia
Dian Fristyawati, Officer at Universitas Airlangga, Indonesia

SECRETARIAT

Emi Kosvianti, Lecturer at Universitas Muhammadiyah Bengkulu, Indonesia
Sufyan Anwar, Lecturer at Universitas Teuku Umar, Indonesia
Laila Nurayati, Officer at Universitas Airlangga, Indonesia
Ratna Maya Paramita, Officer at Universitas Airlangga, Indonesia

EVENT ORGANIZER

Tri Anjaswati, Lecturer at Politeknik Kesehatan Kemenkes Malang, Indonesia
Masruroh Hasyim, Lecturer at Universitas Pesantren Tinggi Darul Ulum, Indonesia
Maria Florentina Nining Kosad. S.Kep., Lecturer at Politeknik Kesehatan Kemenkes Kupang, Indonesia
Muhammad Suhron, Lecturer at STIKES Ngudia Husada Madura, Indonesia

TRANSPORTATION, PLACE AND TOOLS

Ilyas Ibrahim, Lecturer at Universitas Bumi Hijrah Tidore, Indonesia
Yoyok Bekt Prasetyo, Lecturer at Universitas Muhammadiyah Malang, Indonesia
Umbar, Officer at Universitas Airlangga, Indonesia
Puji Sudaryanto, Officer at Universitas Airlangga, Indonesia
Edi Suryonoto, Officer at Universitas Airlangga, Indonesia

PUBLICATION, DOCUMENTATION AND DECORATION

Nasrun Pakaya, Lecturer at Universitas Negeri Gorontalo, Indonesia
Wahyudi Iffani, Coordinator of Health Facility Security Center Medan, Indonesia
Sugeng Mashudi, Lecturer at Universitas Muhammadiyah Ponorogo, Indonesia

SCIENTIFIC

I Wayan Gede Artawan Eka Putra, Lecturer at Universitas Udayana, Indonesia
Tara Singh Bam, Regional Advisor at The Union, Singapore
Febi Dwirahmadi, Lecturer at Griffith University, Brisbane, Australia
Muhammad Miftahussurur, Lecturer at Universitas Airlangga, Indonesia
Ferry Effendi, Lecturer at Universitas Airlangga, Indonesia
Yuni Sari Amalia, Lecturer at Universitas Airlangga, Indonesia
Iman Harymawan, Lecturer at Universitas Airlangga, Indonesia
Agung Dwi Laksono, Researcher at Health Ministry, Indonesia
Yulis Setiya Dewi, Lecturer at Universitas Airlangga, Indonesia
Nikmatur Rohmah, Lecturer at Universitas Muhammadiyah Jember, Indonesia
Darimiyya Hidayati, Lecturer at Universitas Trunojoyo, Indonesia

SPONSORSHIP

Heru Suswojo, Universitas Airlangga, Indonesia
Sigit Nurfianto, Coordinator of Yasmin Mother and Child Hospital Palangkaraya, Indonesia
Fauzan Adima, Coordinator at Kediri Health Office, Indonesia
Nuryadi, Lecturer at Universitas Negeri Jember, Indonesia
Mirrah Samiyah, Coordinator of Rizani Hospital Probolinggo, Indonesia

RELATIONSHIP

Suharmanto, STIKES Yarsi Mataram, Indonesia
Abu Khoiri, Lecturer at Universitas Negeri Jember, Indonesia
Retno Adriyani, Lecturer at Universitas Airlangga, Indonesia

CONSUMPTION

Erlina Suci Astuti, Lecturer at Politeknik Kesehatan Kemenkes Malang, Indonesia
Agustina Abuk Seran, Lecturer at Politeknik Kesehatan Kemenkes Kupang, Indonesia
Rahayu Listianingsih, Officer at Universitas Airlangga, Indonesia

PROGRAM COMMITTEE

- Rachmad Suhandha**, Universitas Syiah Kuala, Indonesia
- Sanju Kumar Singh**, Tribhuvan University, Kathmandu, Nepal
- Gurushankar K.**, Kalasalingam University, Krishnankoil, Tamilnadu, India
- Qurnia Andayani**, Public Health Empowerment Foundation-YAPIKMA, and Universitas Airlangga, Indonesia
- Anita Dewi Prahastuti Sujoso**, Universitas Negeri Jember, Indonesia
- Nur Baharia Marassabesy**, Politeknik Kesehatan Kemenkes Maluku, Indonesia
- Widia Shofa Ilmiah**, STIKES Hafshawaty Pesantren Zainul Hasan, Indonesia
- Dian Fristyawati**, Universitas Airlangga, Indonesia
- Emi Kosvianti**, Universitas Muhammadiyah Bengkulu, Indonesia
- Sufyan Anwar**, Universitas Teuku Umar, Indonesia
- Laila Nurayati**, Universitas Airlangga, Indonesia
- Ratna Maya Paramita**, Universitas Airlangga, Indonesia
- Tri Anjaswati**, Politeknik Kesehatan Kemenkes Malang, Indonesia
- Masruroh Hasyim**, Universitas Pesantren Tinggi Darul Ulum, Indonesia
- Maria Florentina Nining Kosad. S.Kep.**, Politeknik Kesehatan Kemenkes Kupang, Indonesia
- Muhammad Suhron**, STIKES Ngudia Husada Madura, Indonesia
- Ilyas Ibrahim**, Universitas Bumi Hijrah Tidore, Indonesia
- Yoyok Bekt Prasetyo**, Universitas Muhammadiyah Malang, Indonesia
- Umbar**, Universitas Airlangga, Indonesia
- Puji Sudaryanto**, Universitas Airlangga, Indonesia
- Edi Suryonoto**, Universitas Airlangga, Indonesia
- Nasrun Pakaya**, Universitas Negeri Gorontalo, Indonesia
- Wahyudi Iffani**, Universitas Airlangga, and Health Facility Security Center Medan, Indonesia
- Sugeng Mashudi**, Universitas Muhammadiyah Ponorogo, Indonesia
- I Wayan Gede Artawan Eka Putra**, Universitas Udayana, Indonesia
- Agung Dwi Laksono**, Universitas Airlangga, and Health Ministry, Indonesia
- Yulis Setiya Dewi**, Universitas Airlangga, Indonesia
- Nikmatur Rohmah**, Universitas Muhammadiyah Jember, Indonesia
- Darimiyya Hidayati**, Universitas Trunojoyo, Indonesia
- Heru Suswojo**, Universitas Airlangga, Indonesia
- Sigit Nurfianto**, Universitas Airlangga, and Yasmin Mother and Child Hospital Palangkaraya, Indonesia
- Fauzan Adima**, Universitas Airlangga, and Kediri Health Office, Indonesia
- Nuryadi**, Universitas Negeri Jember, Indonesia
- Mirrah Samiyah**, Universitas Airlangga, and Rizani Hospital Probolinggo, Indonesia
- Suharmanto**, STIKES Yarsi Mataram, Indonesia
- Abu Khoiri**, Universitas Negeri Jember, Indonesia
- Retno Adriyani**, Universitas Airlangga, Indonesia
- Erlina Suci Astuti**, Politeknik Kesehatan Kemenkes Malang, Indonesia
- Agustina Abuk Seran**, Politeknik Kesehatan Kemenkes Kupang, Indonesia
- Rahayu Listianingsih**, Universitas Airlangga, Indonesia

FOREWORD

The point of Sustainable Development Goals (SDGs) has been determined in the consistent meeting in all countries. The health sector position is one of the key components in achieving the indicators. Special attention to the health sector focuses on community nutrition, national health systems, access to reproductive health and family planning and sanitation and clean water.

Based on that, Southeast Asian countries are seen as important part in formulating strategic and policy efforts to improve the effectiveness and efficiency of achieving the various goals of the SDGs. Therefore, the Doctoral Program of Health Science, Faculty of Public Health, Universitas Airlangga held The 2nd International Symposium of Public Health. This remarkable event is in collaboration with Faculty of Medicine, Widya Mandala Catholic University Surabaya and Magister Program of Public Health, Jember University. It's an honour to present **“Achieving SDGs in South East Asia: Challenging and Tackling of Tropical Health Problems”**.

We have tried to give our best contributing of our knowledge in the field of public health especially our contribution to help the problems on tropical health, health equity and quality of health care, clinical and community relationship to enhance public health, emerging and re-emerging diseases, nutrition-enhancing as strategic investment, global strategy framework for food security and nutrition, environmental and occupational health and mental health for achieving SDGs in South East Asia.

The aim of this symposium is to disseminate knowledge and share it to the public, especially in the scientific community, such as academics and practitioners in the field of health. The symposium focusing on formulation of policy recommendations for related parties to accelerate the achievement of the target of SDGs in the field of health. The results of this symposium are also expected to be an input for policy makers, from various levels in formulating programs to accelerate the SDGs goals' achievement. This international symposium will help us, to grasp and share more knowledge especially in public health science.

At last, we would like to acknowledge for all parties which are provide the valuable materials as well as financial support for the successful symposium. As chair of organizing committee, I would also like to say deep thank you for all committees; my colleagues, and also students in faculty of Public Health Universitas Airlangga, who have been working to be part of a solid team and amazing committee.

I am looking forward to seeing you at ISoPH in the near future.

Rachmad Suhandu
Chairman of the Committee

CONTENTS

PAPERS

FULL PAPERS

- Analysis of Predisposing, Enabling and Reinforcing Factors Against Breast-Self Examination (BSE) Behavior
Febri Endra Budi Setyawan 5
- The Effect of Pumice Stone Media in Reducing Pollutant Load in Grey Water by Using Anaerobic Biofilter
Muhammad Al Kholif and Muhamad Abdul Jumali 10
- The Performance of Algae-Bacteria to Improve The Degree of Environmental Health
Rhenny Ratnawati, Indah Nurhayati and Sugito 17
- Children Under Five Pneumonia Vulnerability Zone Based on House Physical Determinant Factors Using Geographical Information System Approach in Sawahlunto City
Masrizal, Riska Arini Rusdi and Onetusfisi Putra 24
- Effectiveness of F75 and Positive Deviance Towards Weight Increase in Children Under Five With Malnutrition
Indria Nuraini, Nyna Puspita Ningrum and Setiawandari 31
- Analysis Of Marketing Strategy And Marketing Mix On New Patient Visit Of Specialistic Polyclinic
Muhadi and Winda Lusia 37
- Social Support, Types of Personality, Workload, and Responsibility Become Job Stressors for Hospital Based-Nurses
Laela Hasanah, Laili Rahayuwati and Kurniawan Yudianto 41
- Hazardous Waste Identification and Management at Fire Assay Laboratory Based on Indonesian Government Regulation
Arif Susanto, Edi K Putro and Purwanto Purwanto 46
- Severely Underweight Determinants of Children Under Five
Rr. Vita Nur Latif, Teguh Irawan and Wahyuningsih 52
- Increase of Monooxygenase Activity in Aedes Aegypti Population in Kedungwuni Timur Subdistrict Pekalongan Regency
Nor Istiqomah, Jaya Maulana and Suharti 59
- The Relationship of Performance Expectancy, Effort Expectancy, and Social Influence on Behavioural Intention to Online Registration System of Health Institutional Service in Surabaya
Eka Wilda Faida 63
- Analysis of Smoking Behaviour Based on Sex among Junior High School Students
Diah Wijayanti Sutha 67
- The Effectiveness of Fish Oil Containing Omega-3 Fatty Acids in Improving Quality of Life of Asthmatic Outpatients in Surabaya
Amelia Lorensia, Rivan Virlando Suryadinata and Aulia Nila Sari 72

The Ability of Schizophrenic Patients to Perform Productive Activities in Family and Community <i>I Gusti Ayu Rai Rahayuni, I Ketut Alit Adianta and Kadek Buja Harditya</i>	79
Quality of Life of Caregivers of Stroke Patients <i>Nikmatul Fadilah, Minarti and Asnani</i>	85
The Implementation of Posyandu for Preconception Women in Banggai District Starting at the Office of Religious Affairs (KUA) to Meet the SDGs's Target in Banggai Regency, Central Sulawesi <i>Lucy Widasari, Maisuri T. Chalid, Nurhaedar Jafar and Abdul Razak Thaha</i>	91
The Effectiveness of Little Doctor Training to Improve Knowledge, Attitude and Skills at Early Age <i>Yunita Puspita Sari Pakpahan, Isa Ma'rufi and Ristyia Widi Endah Yani</i>	97
Analysis of The Policy Implementation in Inpatient Primary Health Center's Services in Jember <i>Moch. Riza Herwanto, Isa Ma'rufi and Farida Wahyu Ningtiyas</i>	105
Analysis Of The Elderly's Individual Characteristics As An Effort To Improve The Quality of Life <i>Yudhiakuari Sincihu and Galuh Nawang Prawesti</i>	113
Effectiveness of JSJ (Jin Shin Jyutsu) Massage and Acupressure at Points of LR 3 (Taichong) and LR 2 (Xingjiang) in Reducing Blood Pressure of Pregnant Mothers with Preeclampsia <i>Ika Mardiyanti and Yasi Anggasari</i>	122
Theory of Planned Behaviour Application in Healthy Market Program in Bantul Regency Indonesia <i>Hariza Adnani, AA. Subiyanto, Diffah Hanim and Endang Sutisna Sulaeman</i>	126
The Description of Quality of Life of the Elderly Using WHOQOL-BREF <i>Nurnaningsih Herya Ulfah and Endah Retnani Wismaningsih</i>	133
The Effect of Heating Temperature on Flow rate and Moisture Content in Granules of Toxic Compound in the Mixture of Betel Leaves (Piper betle) and Srikaya Seeds (Annona squamosa) Extract <i>Dian Ratna Elmaghfuroh, Isa Ma'rufi and Dwi Wahyuni</i>	141
Eliminating Time-Wasting Process at Outpatient Pharmacy for Better Patients' Experience in A Government Hospital in Indonesia <i>A. Y. Milasari, F. D. Rachmat and T. Lestari</i>	145
Effort in Increasing Knowledge and Enviromental Health about Leptospirosis <i>Novendy, Rhegi Isdiara Fairuz, Ronald Salim, Tanty Notavia and Muhammad Faridzi Fikri</i>	153
Maternal Nutritional Status and Low Birth Weight: A Prospective Cohort Study <i>Azrimaidaliza, Kusharisupeni, Abas Basuni and Diah M. Utari</i>	158
The Correlation of Sanitary Conditions, Food Handler's Hygienic Practices, and Eschericia coli Contamination of Pecel Tumpang in Kediri City, Indonesia <i>Gading Giovani Putri and Yoanita Indra Kumala Dewi</i>	163
Characteristics of Children With Type 2 Diabetes Mellitus: Hospital Based Study <i>Azrimaidaliza, Idral Purnakarya and Rozaliny Asri</i>	169
Designing Enterprise Architecture of Patient-Centered Mobile Child and Maternity Health Services <i>Royana Afwani, Andy Hidayat Jatmika and Nadiyahari Agitha</i>	174
Nutritional Management in Pulmonary Tuberculosis with Severe Protein Energy Malnutrition <i>Dewa Ayu Liona Dewi and Nurpudji A Taslim</i>	181

Dedication Activity in Public Society for Detection and Diabetic Mellitus Treatment with Public Organization <i>Slamet Rihadi</i>	187
Analysis on Policy of JKN Implementation in Jember Regency <i>Yennike Tri Herawati</i>	193
Emotion Focused Coping: - Spirituality and Depression Symptoms in People Living with HIV <i>Ardiana Priharwanti and Nur Lu'lu Fitriyani</i>	197
Implementation of Maternal Health Data Processing of Computerization for Preventing the Case of Maternal Mortality by Midwives at Puskesmas in Supporting SDG's Achievements <i>Maryani Setyowati and Vilda Ana Viera Setyawati</i>	202
Prevalence and Correlation Between Overweight and Hypertension among Adults <i>Ahmad Hidayat, Mohamad Anis Fahmi and Ningsih Dewi Sumaningrum</i>	209
Family Care Empowerment in Reducing Maternal and Infant Mortality Rate: A Success Story <i>Novianti Indah Fatmawati, Ratna Dwi Wulandari and Tito Yustiawan</i>	213
Risk Characteristics of Non-Carcinogenic Benzene Exposure With IgA Workers in Shoes' Industrial Home, Surabaya <i>Abdul Rohim Tualeka, Nima Eka Nur Rahmania and Moch. Sahri</i>	221
Index Predictive of Drug Resistant Tuberculosis (MDR-TB) on Tuberculosis Patients <i>Ariska Putri Hidayathillah, Chatarina Umbul W and Hari Basuki N</i>	227
An Effort for Increasing The Coverage of Stimulation Detection and Growth Intervention Program in Primary Care <i>Awliyana Rislaputri and Rachmat Hargono</i>	232
ARM (Anjungan Registrasi Mandiri) as Innovation of Front Line Service in a Hospital <i>Dhody Rofsanjani, Qurnia Andayani and Djazuli Chalidyanto</i>	239
Adolescent Health Information-seeking Behaviour over the Internet <i>Diah Indriani, Mahmudah and Soenarnatalina Melaniani</i>	243
Environmental Health and Leptospirosis Infection in the Society of the Endemic Area Kabupaten Sampang Madura <i>Dina Fitriana Rosyada and Ririh Yudhastuti</i>	249
Health Problems Among Shoemakers Related to the Exposure to Glue Solvents Used <i>Erwin Dyah Nawawinetu, Abdul Rohim Tualeka and Dani Nasirul Haqi</i>	254
Acceptance Analysis of an INFOBIDAN Application to Improve a Midwife's Competency in a Remote Area <i>Eska Distia Permatasari, Nyoman Anita Damayanti, Nuzulul Kusuma Putri and Ratna Dwi Wulandari</i>	260
The Role of Parents, Teachers, and the Media in Increasing Awareness of Sexual Abuse Prevention for School Children in Banyuwangi <i>Ira Nurmala, Desak Made Siniha Kurnia Dewi and Jayanti Dian Eka Sari</i>	266
Community-Based Health Effort for Elderly to Raise Awareness of Constipation Problem for Elderly in Madiun City <i>Linta Meyla Putri, Amelia Dyah Kartika Sari and Nuzulul Kusuma Putri</i>	271

“Pak YM is very active once awoken the community. . . .”: The Role of A Community Leader in Community Empowerment at A No-Drugs Village in Surabaya City <i>Devy Mulia Sari and Muji Sulistyowati</i>	275
Phlebitis in Muhammad M. Dunda Hospital, District of Gorontalo, Observational Study <i>Nasrun Pakaya and PPI Muhammad M. Dunda Hospital Gorontalo</i>	283
Breastfeeding among First Time Mothers <i>Nurhasmadiar Nandini, Djazuli Chalidyanto, Widodo J. Pudjirahardjo and Nuzulul Kusuma Putri</i>	286
Monitoring and Evaluation of E-DHF Program Usage in Pasuruan City East Java Indonesia <i>Sri Widati, Rachmah Indawati and Lucia Y. Hendrati</i>	290
Association Between Gathering Activity and Obesity in Adolescents in Surabaya, Indonesia <i>Suharmanto and Windhu Purnomo</i>	297
Lifestyle, Workload and Work Stress Associated with Blood Pressure of Health Officer on The Class 1 Port Area of Tanjung Perak, Surabaya <i>Tri Martiana, Merryana Adriani, Diah Indriani, Mufatihatul Aziza Nisa and Andhika Nugraha</i>	303
Dietary Pattern of Households with Maternal and Child Double Burden of Malnutrition in East Java, Indonesia <i>Trias Mahmudiono and Perla Reyes</i>	309
Evaluation of Program Ship Examination For Disease Prevention in Port Health Office Class III, Manokwari <i>Yohana Yosevine Usmany, Trianta Wati, Yohanes Rapa' Patari and Rachmat Hargono</i>	314
Tuberculosis Control Management: Implementation of DOTS (Directly Observed Treatment Short) Strategy in Achieving The Target of SDG's 2030 <i>Luqman Nur Hakim, Globila Nurika and Roro Azizah</i>	320
Success Story of "TERANGI BUMI": A Blood Donor Program for Maternity Death Prevention <i>Martha Wahani Patrianty, Ratna Dwi Wulandari and Tito Yustiawan</i>	324
HNR (Home for Nutrition Recovery) As Innovation in Accelerating The Handling of Malnutrition <i>Richa Agustine Sundoko, Ratna Dwi Wulandari and Tito Yustiawan</i>	332
The Relationship Between Post Natal Care, Education, Knowledge, and The Exclusive Breastfeeding on Housewives <i>Sinta Dewi Lestyoningrum, Mulya Widiyaning Tiyas, Ira Nurmala and Ratna Dwi Wulandari</i>	338
Model of Potential Strengthening and Family Roles in Improving Family Members for ODGJ Adaptability <i>M. Suhron, Sitti Sulaihah and Ahmad Yusuf</i>	344
Measurement of Cost of Quality as Effort to Build Awareness of Importance of Quality and Strategy of Resilience in Health Care Facilities <i>Tri Astuti Sugiyatmi and Djazuli Chalidyanto</i>	352
Quality of Diphtheria Surveillance System in the East Java Provincial Health Office <i>Riky Hamdani and Atik C. Hidayah</i>	360
The Relationship Between Anxiety and Hypertension in the Elderly <i>Riza Fikriana</i>	368

Health Problem Analysis of HIV/AIDS in the Health Office of Pasuruan District <i>Wardiansyah Naim, Chatarina Umbul Wahjuni and Supaat Setia Hadi</i>	372
The Quality System of Early Warning, Alert, and Response System (EWARS) in The South Kalimantan Province, Indonesia <i>Dian Muspitaloka Hikmayati and Atik Choirul Hidajah</i>	379
The Safe Duration of Benzene Exposure in the Motor Workshop Area <i>Erick Caravan K. Betekeneng, Abdul Rohim Tualeka, Mahmud Aditya Rifqi and Nurhayati Saridewi</i>	386
Measuring The Quality of Renal Care Using Information System Design: An Early Warning System to Improve Health Care Quality <i>Umi Khoirun Nisak, Aditiawardana, Arief Wibowo and Hari Basuki Notobroto</i>	391
Evaluation of Dengue Hemorrhagic Fever Surveillance System <i>Kusuma Cutwardani, Atik Choirul Hidajah and Sigunawan</i>	396
Community Resilience as a Recovery Method for Psychiatric Patients: A Meta-Study <i>Retno Lestari and Ah Yusuf</i>	403
Evaluation of an Epidemiologic Investigation and Risk Factors Study of Leptospirosis Disease <i>Sholikah, Atik Choirul Hidajah and Bambang Wuryono Kartika</i>	409
Obstacles and Solutions for Tuberculosis Screening Among People With Diabetes Mellitus in Denpasar, Bali, Indonesia - A Need Assessment <i>IWG Artawan Eka Putra, PAS Astuti, IMK Duana, IK Suarjana, KH Mulyawan, NMD Kurniasari, IBG Ekaputra, A Probandari and CU Wahjuni</i>	414
Nutritional Status, Body Fat Percentage, Hemoglobin Level and Physical Fitness in A Football Athlete <i>Ratna Candra Dewi, Nanda Rimawati and Lutfhi Abdil Khuddus</i>	419
Compassion in Interprofessional Health Education is a Lagged Trigger to Quality Health and Well-being <i>Simon Martin Manyanza Nzilibili and Qurnia Andayani</i>	425
Exploring the Role of NGOs' Health Programs in Promoting Sustainable Development in Pakistan <i>Septi Ariadi, Muhammad Saud and Asia Ashfaq</i>	430
Correlation Knowledge, Attitude and Actions with Health Complaints from Exposure of Pesticides on Horticultural Farmers <i>Andree Aulia Rahmat, Eska Distia Permatasari and Retno Adriyani</i>	436
Description of Anthrax Outbreak Investigation in Pacitan District in 2017 <i>Veronika Ofong, Chatarina U. W and Supaat</i>	442
Epidemiology of Measles in the Gresik District of Eastern Java Province from 2014 to 2016 <i>Asrul Kaimudin, Atik Choirul Hidajah and Bambang Wuryono Kartika</i>	447
Analysis of Factors That Affect Family Centered Empowerment while Caring for Children with Leukemia <i>Yuni Sufyanti Arief, Nursalam, IDG Ugrasena and Shrimarti R. Devi</i>	453
Zinc Status and Cadmium Exposure in Stunted Children Aged from 24 to 59 Months: A Cross Sectional Study <i>Sulistiyani, Leersia Yusi R., Ninna Rohmawati, Ruli Bahyu Antika, Bambang Wirjatmadi and Merryana Adriani</i>	457

The Reduced Pain in Patients With Knee Osteoarthritis Related to the Quality of Life Improvement of The Physical Domain <i>Carolus Aldo Windura, Yudhiakuari Sincihu, Nunung Nugroho and Rachmad Suhandu</i>	462
Limited Resources and Complicated Procedures - Maternal Health Problems of Urbant Migrants in Region <i>Nuzulul Kusuma Putri, Ratna Dwi Wulandari and Nyoman Anita Damayanti</i>	468
The Consequences - Financing Prompt Treatment Until Terminal of HIV AIDS in Universal Health Coverage <i>Ernawaty, Nuzulul Kusuma Putri and Lilis Masyfufah</i>	473
Interprofessional Collaboration as The Most Essential Solution in Decreasing Maternal and Child Death <i>Nyoman Anita Damayanti, Ratna Dwi Wulandari, Nuzulul Kusuma Putri, Darmawan Setijanto, Muhammad Ardian Cahya Laksana and Charity Hartika Listiyani</i>	477
Urban Settlements in The Context of Healthy City <i>Oedojo Soedirham</i>	483
The Correlation Between Pregnant Mother Class Participation and Completeness Status of Plenary Health Service Visit (K4) at Working Area of Puskesmas Sukabumi in Probolinggo Municipality <i>Luluk Muyassaroh, Sri Hernawati and Farida Wahyu Ningtiyas</i>	488
Effect of Diabetes Gymnastics and Nutrition Counseling on Lowered Blood Glucose Levels in Patients With Diabetes Mellitus Type II in Jatilawang Puskesmas in Banyumas Regency <i>Susi Tursilowati, Lulu Nisa Nur' Aprillia and Astidio Noviardhi</i>	495
Post Natal Care (PNC) Service With The Level of Postpartum Mother's Satisfaction in The Working Area of Sukomulyo Puskesmas in Gresik <i>Hani Habibah and Yunita Dyah Fitriani</i>	502
Role of Hypertension to Chronic Kidney Disease Incidents <i>Fauziah Elytha, Roma Yuliana and Abdiana</i>	507
Self-Disclosure of Adolescents about Unwanted Pregnancy to Their Partners and Parents: A Qualitative Study in Cetral Java Indonesia <i>Aprianti, Zahroh Shaluhiyah and Antono Suryoputro</i>	512
Management and Development of Human Resources to Improve The Quality of X Hospital Services in Universal Health Coverage Era <i>Christyana Sandra</i>	518
The Relationship between Various Coronary Heart Diseases (CHD) Factors and the Health Literacy of Patients <i>Fauziah Elytha, Ratno Widoyo and Yulia Fanesis</i>	523
Analysis of The Implementation of Local Public Service Agency Policy on The Quality and Performance of Hospital Services <i>Shelvy Haria Roza and Inge Angelia</i>	529
The Relationship Between Parents' Knowledge about Children's Need of Playing and The Growth of Children Aged 3-4 Years at Kawisto Village in Duduk Sampeyan District Gresik Regency <i>Yuyun Farihatin and Setya Purbasari</i>	535

The Safety Test of Granular Bioinsecticide Mixture of Betel Leaves (Piper betel) and Srikaya Seeds (Annona squamosa) Extract to Non Targetted Organism <i>Dia Qori Yaswinda, Dwi Wahyuni and Erma Sulistyaningsih</i>	540
Dimension of Nurses Responsiveness in Improving Health Quality Service Based On SERVQUAL Concept <i>Mohammad Henri Wahyono, Ancah Caesarina and Sebastiana Viphindrartin</i>	546
Child Marriage's Representation of Maternal Output to Premature Delivery Incidence in RSUD dr. Doris Sylvanus Hospital Palangka Raya, Indonesia <i>Sigit Nurfianto, Qurnia Andayani and Nyoman Anita Damayanti</i>	551
Risk Index of Infarct Stroke based on Modifiable Risk Factors <i>Santi Martini, Kuntoro, M. Hasan Machfoed and Joewono Soeroso</i>	557
Bio-Psycho-Socio-Cultural Approach Training Towards Drug Abuse and HIV-AIDS Prevention Among Teenagers <i>Margaretha, Santi Martini and Yulis Setya Dewi</i>	563
Care Culture of Pregnant Mothers <i>Agustina Abuk Seran, Stefanus Supriyanto and Alberth M. Bau Mali</i>	570
Best Practice of Patient-Centered Care Implementation at Universitas Airlangga Hospital Indonesia <i>Purwaningsih, Nasronudin, Nyoman Anita Damayanti and Imam Subadi</i>	578
Patient Safety Incident Reporting Analysis Based on Integrity and Commitment Team in Inpatient <i>Heru Suswhojo and Nyoman Anita Damayanti</i>	583
Four Forms of Social Support for 3-6 Years Old Child's Caregivers <i>Qurnia Andayani</i>	589
Occupational Exposure to Green Tobacco Sickness among Tobacco Farmers in Jember, East Java, Indonesia <i>Anita Dewi Prahastuti Sujoso and Tri Martiana</i>	596
Early Marriage and Cultural Stigma of Madurese Young Woman Based on Review of Socio-Ecological Factors <i>Tri Anjaswarni, Nursalam, Ah Yusuf, Sri Widati and Tutik Herawati</i>	603
Belief, Self-Efficacy and Other Predictors of Adherence to ART Among Women Living with HIV <i>Widia Shofa Ilmiah, Mochammad Bagus Qomaruddin, Selvi Ulva Aisah Nurhadi Putri and Nova Iswardani</i>	610
Five Pillars of "Pro-Sehat DT" For Strengthening The Community Empowerment <i>Qurnia Andayani and Sudarmadji</i>	617
Analysis of The Influence of Service Quality to Outpatient's Satisfaction at Pharmacy Installation of Kaliwates Hospital <i>Hindun Mardiyana, Isa Ma'rufi and Zarah Puspitaningtyas</i>	622
Family's Support, Coping Mechanism, Disability and Depression Among Elderly in Rural Area <i>I Wayan Suardana, Ah Yusuf and NLK Sulisnadewi</i>	627
Enforcing the Services of Prolanis Based on Strategic Management Approach in Wonopringgo, Pekalongan Regency <i>Yuniarti, Etika and Dewi Nugraheni R. M.</i>	634

The Quality System of Early Warning, Alert, and Response System (EWARS) in The South Kalimantan Province, Indonesia

Dian Muspitaloka Hikmayati¹ and Atik Choirul Hidajah²

¹Student of Field Epidemiology Training Program, Faculty of Public Health, Universitas Airlangga, Kampus C, Jl. Mulyorejo, Surabaya (60115), Indonesia

²Epidemiology Departement, Faculty of Public Health, Universitas Airlangga, Kampus C, Jl. Mulyorejo, Surabaya (60115), Indonesia

dian.muspitaloka.hikmayati-2015, atik-c-h}@fkm.unair.ac.id

Keywords: EWARS, evaluation study, surveillance system

Abstract: EWARS is a system to monitor the trend of potential disease outbreaks each week and provide a warning signal (alert). South Kalimantan is one of the provinces in Indonesia that implements EWARS. Evaluation of system performance and weakness was needed to improve EWARS quality in the South Kalimantan Province. It was an evaluation study with input, process and output approaches to EWARS that were implemented at a provincial level from the 1st until the 39th week in 2017. Data was collected through interviews, document studies, and observations in two Public Health Centers (PHC), the District and Provincial Health Offices. There was no problem in input components such as the availability of facilities and funds in all the districts, but there were still some untrained PHC officers. Evaluation of process components showed that only 94% of PHC submitted the reports and only 79% submitted timely reports. Evaluation of output components found that only 40% of alerts have been verified, weekly analyses were not created, monitoring of reporting and alert responses have not been done intensively. The weaknesses on the input, process, and output components were expected to contribute to the low quality of the EWARS implementation.

1 INTRODUCTION

The threat of outbreaks will not disappear without a series of responses from the national and international levels. The World Health Organization (WHO), through International Health Regulation (IHR) 2005, requires each member state to develop, strengthen and maintain basic surveillance and response skills at all administrative levels in order to detect, report and address potential public health risks to the Public Health Emergency of International Concern (PHEIC) as early as possible, at least five years since the enforced IHR (WHO, 2008).

Indonesia has ratified the IHR and must follow and enforce the regulation. Therefore, the Ministry of Health of the Republic of Indonesia cooperates with WHO and the United States Center for Disease Control and Prevention (US CDC) establishing a system in early detection and response to potential disease outbreaks known as the Early Warning Alert and Responses System (EWARS) (MoH, 2015).

EWARS is the strengthening of the outbreak early warning system in Indonesia that aims to monitor the trend of potential outbreak disease, stimulating the control of potential outbreak diseases, minimize morbidity or mortality related outbreaks, early detection efforts of potential outbreak diseases. This system is able to provide web-based information and provide early warning signal, called alerts, if the reported disease is exceeding a threshold value (MoH Republic of Indonesia, 2013).

South Kalimantan is one of the provinces in Indonesia that has been implementing EWARS since 2016. The accuracy percentage of EWARS or the percentage of Public Health Centers (PHCs) that submitted a timely report in 2016 was 78.31%, while the percentage of alert verification was 45%. The accuracy and percentage of alert verification or alert signal that has not reached the indicator is 80% and 70% respectively.

The accuracy of the report was related to the system accuracy. It is important to provide

actionable information in situation awareness and response management (Lu et al., 2018). A higher accuracy of the report can increase the speed of detected outbreak alerts (Saleh et al., 2015). In addition, a low percentage of alert verification may result in late or non-detectable outbreaks.

Evaluation of the surveillance system needs to be done to assess the quality of the existing systems. It was an important activity in the policy making process that can help to improve the performance and productivity associated with health programs (Sosin, 2003). In an effort to identify problems with EWARS and to improve the completeness and accuracy of EWARS reports in South Kalimantan Province, it was necessary to monitor and evaluate the EWARS in the South Kalimantan Province.

2 METHODS

This research used the evaluation study design. The subjects of this research were the EWARS components consisting of input, process and output. The input components were funds, communication facilities, transportation facilities, guidelines and reporting for the implementation of EWARS, and human resources. The process components consisted of the timeliness of reporting (accuracy), the completeness of reporting, and analysis. The output components consisted of alert verification, dissemination, and feedback procedures through weekly summary reports (bulletin).

There were four respondents, including one informant of a surveillance officer from both the Provincial Health Office and the District Health Office, and two health center surveillance officers. Data was obtained through interviews, document studies on recording and reporting documents of EWARS from the 1st until the 39th week in 2017 and observing the availability of facilities and the EWARS web-system. The instruments used were questionnaires and tape recorders.

Data analysis was done descriptively. The results obtained were compared with the EWARS National Guidelines, Decree of the Minister of Health of the Republic of Indonesia No. 1116/Menkes/SK/VIII/2003 about Guidelines for the Implementation Of The Epidemiology Surveillance System, the Strategic Plan of the Ministry of Health of the Republic of Indonesia 2015-2019, and guidelines for evaluating public health surveillance systems by CDC in 2001.

3 RESULTS

3.1 Input Components

Evaluation of the implementation of EWARS began with the assessment of input components such as human resources, methods (guidelines and reporting form), Machine (Facility), and funds. An overview of the input component in the South Kalimantan Province can be seen in Table 1.

Table 1: The description of input components on the implementation of EWARS in South Kalimantan province, 1st-39th week in 2017.

No	Input Components	Description
1.	Funds	Fund are available from the national budget and region budget for Provincial and district health office
		Fund are available from the Fund operating expenses for PHC
2.	Communication Facilities	Available
3.	Transportation Facilities	Available
4.	Guidelines and reporting for the implementation of EWARS	Available
5.	Human Resources	Surveillance officers of Provincial Health Office and District Health Office have met the education and skills qualification
		There are surveillance officers in PHC that have not met the skills qualification.

3.1 Process Components

Evaluation was continued by assessing the procedures in implementing EWARS. The flow of EWARS implementation in South Kalimantan Province can be seen in Figure 1.

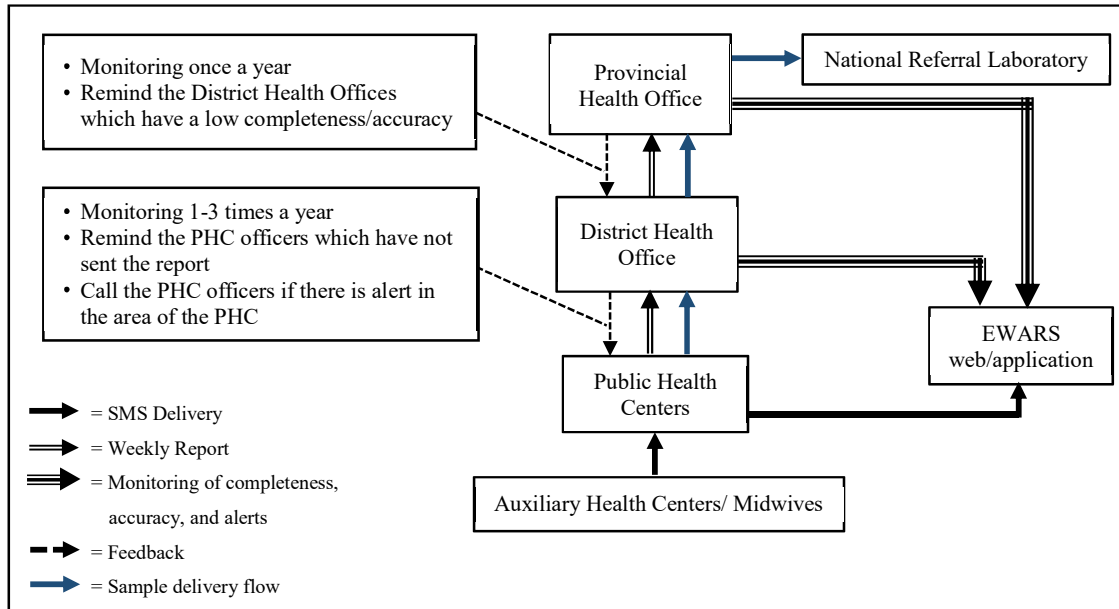


Figure 1: The flow of EWARS implementation in South Kalimantan province, 1st-39th week in 2017.

Figure 1 shows that the flow of EWARS Implementation starts from the delivery of Short Message Service (SMS) by Auxiliary Health Centers or Midwives to PHC. The PHC officer combines data from Auxiliary Health Centers or Midwives with clinic visits' data in the PHC and reports through SMS to the EWARS system.

The indicator of completeness and accuracy in the EWARS is 80% or more. The completeness and accuracy of EWARS in South Kalimantan Province can be seen in Table 2.

Table 2: The completeness and accuracy of EWARS in south Kalimantan province in 2016 and 2017 (until week 39th 2017).

No	District	Completeness (%)		Accuracy (%)	
		2016	2017	2016	2017
1	Balangan	92	92	75	69
2	Banjar	94	100	84	86
3	Barito Kuala	100	98	90	81
4	Hulu Sungai Selatan	94	94	35	70
5	Hulu Sungai Tengah	79	80	77	76
6	Hulu Sungai Utara	100	99	79	84
7	Kota Baru	67	85	59	70
8	Tabalong	81	98	73	88
9	Tanah Bumbu	98	97	97	97

10	Tanah Laut	87	99	83	82
11	Tapin	100	97	88	76
12	Banjar Baru City	100	100	100	98
13	Banjarmasin City	95	93	78	55
South Kalimantan Province		91.31	94.77	78.31	79.38

Source: EWARS 2017

The completeness of the EWARS Report in South Kalimantan until the 39th week in 2017 was known to have achieved the completeness target (94%). Table 2 shows that the District with the highest percentage of completeness (100%) were Banjar and Banjarbaru City, while the district with the lowest percentage completeness (80%) was Hulu Sungai Utara District.

The accuracy of reporting in South Kalimantan Province until the 39th week in 2017 was known to have not reached the target, that is, as much as 79% (<80%) (MoH, 2003). Table 2 also shows that the 5 districts and 1 city have not reached the target of EWARS accuracy were Balangan, Hulu Sungai Selatan, Hulu Sungai Tengah, Kota Baru, Tapin, and Banjarmasin City.

3.3 Output Components

Implementation of feedback to the PHC by District Health Offices in South Kalimantan Province was conducted in accordance with each program plan at the District Health Office. While the feedback activity in Provincial Health Office to District Health Office were done once in a year. This study also found that surveillance officers in District and

Provincial Health Office did not create weekly bulletins. The absence of a weekly bulletin caused the absence of dissemination of information that should be done by the Provincial Health Office to District Health Office.

An indicator in the output of the EWARS system is the percentage of alerts verification or responded alerts. The description of EWARS situation in South Kalimantan Province can be seen in Table 3.

Table 3: Description of alert signal in south Kalimantan province, 1st-39th week in 2017.

No	District	Total of Alert	Verified Alert				
			n	%	Outbreak	<24 hours	% 24 hours
1.	Balangan	36	33	3	0	1	2.8
2.	Banjar	44	35	9	4	4	9.1
3.	Barito Kuala	53	23	43	0	23	43.4
4.	Hulu Sungai Selatan	47	0	0	0	0	0
5.	Hulu Sungai Tengah	44	29	66	0	29	65.9
6.	Hulu Sungai Utara	12	3	17	0	2	16.7
7.	Kota Baru	81	41	32	0	26	32.1
8.	Tabalong	117	26	19	2	22	18.8
9.	Tanah Bumbu	79	3	0	0	0	0
10.	Tanah Laut	35	29	80	0	28	80
11.	Tapin	4	0	0	0	0	0
12.	Banjar Baru City	96	75	77	1	74	77.1
13.	Banjarmasin City	105	2	1	0	1	1
	South Kalimantan Province	753	299	39.7	7	210	27.9

Table 3 shows that the alert verification percentage in South Kalimantan Province 1st week to 39th week in 2017 was 39.7% or less than 75%, so it has not reached the target of verification alert in 2017. Table 2 also shows that verified alerts were less than 24 only by 27.9%. The low alert response indicates less optimal use of EWARS data for early detection of outbreaks.

4 DISCUSSION

4.1 Input Components

Input components in Table 1 showed funds, communications facilities, transportation facilities, EWARS implementation guidelines and reporting forms, and surveillance officers at Provincial Health Offices and District Health Office are available or qualify for surveillance implementation. Surveillance officers at PHC level still do not meet the skill qualification because they still have to be trained for EWARS implementation. The presence of unreported health center surveillance officers is known from a surveillance officer at the PHC of

Banjar Indah who stated that he has served as a surveillance officer for 2 years, but has not been trained by Banjarmasin District Health Office and South Kalimantan Provincial Health Office.

The quality of human resources cannot be separated from the participation of training that can help and improve the performance of officers. Training can improve the knowledge of the surveillance officers about EWARS (Priyontika, 2016). Although PHC have the guidelines of EWARS implementation, further directives by the District Health Office are urgently needed by the surveillance officers of PHC.

4.2 Process Components

The results of the comparison between the implementation of EWARS in South Kalimantan Province with the standard operation procedures in the EWARS guidelines from the Ministry of Health show that there were two procedures that were not done on district and province level. The District Health Office should record the data from the PHC and report the data to the province via email, while the Provincial Health Office should

also record the data from the District Health Office and report the data to the Ministry of Health via email. Those procedures were not done because the surveillance officers stated that web of EWARS has been able provide data that was reported by PHC.

Data records by district and provincial surveillance officers can be used as a backup database in case of errors or failures in the EWARS web. In addition, district and provincial surveillance officers can monitor the PHCs that have neither provided data, nor have they sent data timely. Therefore, data retrieval and export file submissions by District Health Offices and Provincial Health Offices should be done using this procedure.

Indicators in process components of surveillance are accuracy and completeness. Completeness and accuracy are measured at district, provincial and national levels. Completeness is assessed from the number of PHCs that send SMS, while accuracy is assessed from the number of PHCs that send SMS timely within the week of EWARS.

The low accuracy of reporting is related to the sensitivity of the surveillance system. According to CDC (2001), sensitivity is intended with the ability of the system to be able to capture accurate information data. Sensitivity can be considered through two levels:

- At the case reporting level, sensitivity refers to the proportion of disease cases detected by the surveillance system.
- The ability to detect outbreaks is measured, including the ability to monitor changes in the number of cases over time.

The lateness of reporting data by the PHC as a reporting unit in the EWARS system can cause the low accuracy of the system in providing disease case information in the area of PHC. The late reported cases can also cause the delay of alerts that emerged as an early warning for early detection of outbreaks as well as delayed outbreak predictions, displayed by the EWARS system.

The accuracy and completeness of reporting and signaling alerts in the EWARS were further supervised by the Provincial Health Office and the District Health Office. According to the EWARS Implementation Guidelines (2013), this monitoring is conducted so that surveillance officers at the Provincial Health Office and District Health Offices can notify the PHC if there is an alert in the work area of the PHC and can recall the PHC which has not yet reached the indicators of completeness and accuracy.

The lack of accuracy can be caused by lateness or the wrong format of SMS delivery by PHC. It was known that, if SMS was successfully sent by PHC officers in EWARS, it would get a reply from the system, while there are officers who have sent SMS, but have no reply. The absence of a reply from the EWARS system can be caused by the inappropriate SMS format.

Further directions by District Health Officers are required, especially for surveillance officers in PHC who have constraints in implementing the EWARS procedures such as text message or Short Message Service (SMS) and also conducted an evaluation of system components and attributes of EWARS on a PHC Level. This evaluation should be conducted in accordance with their method, scope, and objectives (Klaucke, 1992). Evaluations are also required to provide data to answer specific questions that are required for management and decision making (Hscc, 2004).

Report monitoring has been conducted at the Provincial and District levels. Communications on reporting reminders and alert notifications were done through the *WhatsApp* application and telephone. However, the intensity of reminders and alerts notifications were different in each District.

Differences in the intensity of reporting reminders were known from the differences between the North Banjarbaru PHC and Sungai Besar PHC, which is the working area of Banjarbaru City Health Office with the Banjar Indah PHC, which is itself the working area of the Banjarmasin City Health Office. The Banjarbaru City Health Officer made a reporting reminder for PHC in his area intensively or continuously and contacted the officers who had not collected the report or sent the SMS directly, while the Banjarmasin City Health Officer did not intensively remind him about the PHC in his working area. The non-intensive recall of this reporting resulted in PHC staff forgetting to send an SMS and resulted in low reporting accuracy in Kota Banjarmasin (55%).

Differences in the implementation of alert notification by District Health Offices in South Kalimantan were known from different alert notifications by the Banjarbaru City Health Office and Banjarmasin City Health Office. Each alert signal in the work area of Banjarbaru City Health Office will be sent to the PHC officer, while the surveillance officer of Banjar Indah PHC in Banjarmasin city never got any information about alert signals or early warnings from the Banjarmasin City Health Office. This was in line with the absence of alerts verified by Banjar Indah PHC, while

EWARS data showed that Banjar Indah PHC has 4 measles alerts.

The speed of alert notification by the District Health Office to the PHC is related to timeliness in the EWARS system. Timeliness in the surveillance system reflects the speed of the steps or procedures in the surveillance system, starting from the emergence of disease events, reporting cases of disease by the reporting unit, receiving information by authorized health authorities, and preventive and control implementation (CDC, 2001).

The provision of an alert signal can be accessed by the District Health Office and Provincial Health Office through a EWARS application, so the speed of the verification alert by PHC is related to speed of District Health Office in giving notification to PHC to verify the alert. The lateness of notice by the District Health Office in South Kalimantan Province may result in the late verification of alerts and delayed control of disease cases and outbreaks.

4.3 Outputs Components

The output of EWARS implementation in Kalimantan Province is compared to the standard operating procedure of EWARS implementation from the Ministry of Health of the Republic of Indonesia in 2013. Procedures that were not carried out in accordance with EWARS guidelines are District and Provincial surveillance officers who make weekly summary reports or weekly bulletins. This was not done because the officers stated that a EWARS application can display alert information and analysis in the form of a graph or tabulation that can be accessed by PHC and the District Health Office.

The weekly bulletin that should be provided by the District Health Office to the PHC and by the Provincial Health Office to the District Health Office contains alert and analytical information as well as including recommendations for controlling a suspected outbreak and the previous week's activity results to control the outbreak. It is important to have recommendations of outbreak control activities and the results of the previous week's activities in controlling outbreaks, especially for PHC and district health offices as reference material in controlling outbreaks. The existence of written recommendations is also important as they are a form of coordination between PHC and District/City Health Office and Provincial Health Office.

The low percentage of this alert verification in Table 3 was related to the alert notification that was not carried out by the District Health Office to the

PHC or the verification of alerts that are not conducted by the PHC. The information regarding alert signals or early warnings that were not conducted was known by the Banjarmasin City Health Office which did not notify the alert at the Banjar Indah PHC which is a PHC in its working area. The notification of alerts by the Banjarmasin City Health Office is in line with the verification of alerts that only amounted to 2 verifications (1%) of the 105 alerts that appeared.

Verification of alerts is the stage before the control activities such as taking specimens, handling cases, to control the occurrence of outbreaks (Ministry of Health, 2013). Non-verification of alerts causes no control of cases and increases the risk of outbreaks. The late verification of alerts is related to the sensitivity of a surveillance system. According to Nelson and Sifakis (2007), a well-sensitized surveillance system is not only to monitor disease trends, but also to control the occurrence of outbreaks or to evaluate interventions.

In addition to the evaluation of these output components, the Provincial Health Office also needs to improve the monitoring and evaluation function on Provincial, District, and PHC levels. Evaluation activities are expected to oversee the general aspects that allow for common recommendations. Evaluation on surveillance systems should be complemented by an attribute assessment followed by a complete list of attributes that cover both the epidemiology and also the social and economic aspects. A special instrument is then needed that can be used practically in the evaluation (Calba *et al.*, 2015).

5 CONCLUSIONS

The EWARS system in South Kalimantan Province has input components such as recording and reporting facilities, communication tools, guidelines, funds, facilities and infrastructure in accordance with the indicators, while surveillance officers in PHC are not suitable with the indicators. In addition, it was known that the process components include the completeness has reached the target, while the accuracy of the EWARS report has not reached the indicators and the implementation of data records and reports from the District Health Office and Provincial Health Office has not been conducted. The output components, such as the percentage of alert verification, have not reached the indicators and the weekly bulletin from the District Health

Office and the Provincial Health Office have not been created.

ACKNOWLEDGEMENTS

- Provincial Health Office of South Kalimantan;
- District Health Office of Banjarbaru;
- Banjar Indah Public Health Center;
- Banjarbaru Utara Public Health Center;
- Sungai Besar Public Health Center;
- FETP of Universitas Airlangga;
- Sub-Directorate of Surveillance;
- Outbreak Response of Ministry of Health Republic of Indonesia.

REFERENCES

- Calba, C. *et al.*, 2015. 'Surveillance systems evaluation: A systematic review of the existing approaches', *BMC Public Health*, 15(1), pp. 2–13. doi: 10.1186/s12889-015-1791-5.
- CDC, 2001. 'Updated guidelines for evaluating public health surveillance systems: recommendations from the Guidelines Working Group.', *MMWR. Recommendations and reports: Morbidity and mortality weekly report. Recommendations and reports*, 50(RR-13), pp. 1-35–7. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/18634202>.
- Doughlas N Klaucke, 1992. *Evaluating public health surveillance systems*. Edited by M. R. Halperin W, Baker EL. New York: Van Nostrand Reinhold.
- Fred Sun Lu, Suqin Hou, Kristin Baltrusaitis, Manan Shah, Jure Leskovec, Rok Sosic, Jared Hawkins, John Brownstein, Giuseppe Conidi, Julia Gunn Josh Gray, Anna Zink, M. S., 2018. 'Accurate Influenza Monitoring and Forecasting Using Novel Internet Data Streams: A Case Study in the Boston Metropolis Accurate Influenza Monitoring and Forecasting Using Novel Internet Data Streams: A Case Study in the Boston Metropolis', *JMIR PUBLIC HEALTH AND SURVEILLANCE*, 4(1), pp. 1–18. doi: 10.2196/publichealth.8950.
- HHSC, 2004. *Framework and Tools for Evaluating Health Surveillance Systems Public Health Canada, Health*. Available at: http://www.phac-aspc.gc.ca/php-ppsp/pdf/i_Surveillance_Evaluation_Framework_v1.pdf.
- Ministry of Health Republic of Indonesia, 2003. *The Minister of Health Republic of Indonesia Decree No.1116/Menkes/SK/VIII/2003 about The Guidelines For The Implementation of Epidemiology Surveillance System*. Jakarta: Ministry of Health Republic of Indonesia.
- Ministry of Health Republic of Indonesia, 2015. *Guidelines for Early Warning and Response Systems*. Jakarta: Ministry of Health Republic of Indonesia. Available at: <http://www.depkes.go.id/article/view/1422/menkes-buka-pertemuan-who-asia-tenggara--bahas-penanggulangan-penyakit-tidak-menular-.html>.
- Organization, W. H., 2008. *World Health Organization Outbreak Communication Planning Guide 2008*. 2008 Edition. Geneva: the WHO Document Production Services.
- Priyontika, B., 2016. *Early Warning Alert And Response System (EWARS) As an Effort of Early Detection of Outbreaks (KLB) at Public Health Centers in Jember District*. Jember.
- Saleh, M., Budi, I. S. and Purba, I. G., 2015. 'Evaluation of Implementation of Early Warning Alert And Response System Program at Tulang Bawang District Health Office of Lampung Province in 2012', *Jurnal Ilmu Kesehatan Masyarakat*, 6(2), pp. 134–144.
- Sosin, D. M., 2003. 'Draft framework for evaluating syndromic surveillance systems.', *Journal of urban health: bulletin of the New York Academy of Medicine*, 80(2 Suppl 1), pp. i8-13. doi: 10.1007/PL00022309.