



PROCEEDING Surabaya International Health Conference 2017



Optimizing Health Care Quality
Through Research, Clinical
Treatment and Education

Best Western Papilio Hotel
July, 13th - 14th, 2017

ISBN 978-602-60139-5-8





PROCEEDING

Surabaya International Health Conference 2017

Optimizing Health Care Quality Through Research, Clinical Treatment and Education

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CONTENTS

Editorial Boards	i
Contents	ii
Greeting from Steering Committe	ix
Opening remarks from Rector of Nahdlatul Ulama Surabaya University	x
Conference Schedule	xii
 Plenary Sessions	
Interprofessional Collaboration In Education, Research And Practice Improving The Quality Of Health Care For A Better Future: The Implementation In Universitas Airlangga Teaching Hospital Nasronudin.....	1-2
Improving Health And Quality Of Life For People With Disability Tsan-Hon Liou	3-4
Beliefs And Practices During Pregnancy, Labor And Delivery, Postpartum And Infant Care Of Women In The Second District Of Ilocos Sur, Philippines Larguita P. Reotutar, Jousie B. Bermio.....	5-20
Contemporary Nursing Education: Challenges And Opportunities Lisa Mckenna.....	21-22
Indonesian Herbal Medicine From Traditional To Rational And Modern Phytopharmaca Handayani	23-34
Improving The Capacity Of Adult Aggregate Through The Diabetes Signs And Symptoms Management (Mandala Dm) In Srengseng Sawah Rusdianingseh.....	35-40
 Oral and Poster Presentation	
The Concept Of Nursing In The Philippines From The Perspective Of Nurses In Region I Francis Don L. Nero, Phd, RN.....	41-52
Clinical Experiences: Milestones In Nursing Education Julieta T. Guinid.....	53-64
The Local Health Care System Of The Province Of Ilocos Sur Marlou R. Savella, DPA	65-78
Detection And Characterization Of Anti-Ifn- Γ Autoantibody In Patients With Adult-Onset Immunodeficiency Syndrome Dyah Ika Krisnawati	79-80

Influence Of Disaster Preparedness Education On SDN Pacet 1 Students' Preparedness Against Disaster At Mojokerto Endang Soelistyowati, Siswari Yuniarti, Adin Mu'afiro	81-86
Phase Of Chemotherapy With Nutritional Status Of Children With Leukemia At Room Bona 2 Dr. Soetomo Hospital Kiaonarni Ongko Waluyo, Adin Mu'afiro, Irine Christiany	87-94
Dietary Pattern And Arthritis Gout Recurrence In Puskesmas Krembangan Selatan Surabaya Siswari Yuniarti, Susilo Hadi, Agus Dwi S, Endang Soelistyowati	95-98
The Analysis Of Interest To Treatment Outpatients Back Based On Management Resource Approach (Man, Money, Material, Machine, Method / 5M) Ratna Wardani	99-106
Effectiveness Of Meney Extract (Turmeric Honey) To Decrease Of Upper Respiratory Tract Infection In Age 4-5 Years In The Coastal Area South Surabaya Hidayatus Sya'diyah, Yulia Aida Wardah	107-112
Differences Of Frequency And Depth Of Basic Life Support (BlS) Compression Based On American Heart Association (Aha) 2015 Between Rule Of Five And Rule Of Ten Techniques In Semester VII At Stikes Muhammadiyah Lamongan Laboratory Suratmi, Farida Juanita	113-118
Relationship Changes In Body Image With Anxiety Pregnant Women In Ngimbang Hospital Lamongan Heny Ekawati	119-124
Consumption Of Fe-Folat With Banana To The Hemoglobin Levels And Side Effects On Pregnant Woman Faizatul Ummah	125-134
Reducing Stress (Cortisol Hormone Levels) With Stress Manajemen Of Diabates Mellitus Patients Dwiharini Puspitaningsih	135-138
Relationship Of Exclusive Breastfeeding Activities By Articles Of Ard Arrival In Children Age 6-24 Months (In Work Area Of Akbar Medika Clinic – Tambakagung- Puri - Mojokerto) Nunuk Nurhayati	139-144
The Correlation Of Stress Toward Examination With Gastritis Symptoms In XI Class students Of Senior High School Wachid Hasyim 2 Taman Sidoarjo Denis Farida	145-150

Relationship Of Previous Writing With Nutrition Status In Baby Age 0 - 6 Months In Posyandu Kalanganyar Village Sedati Sidoarjo M. Wahyu Purnomo.....	151-158
Personality Type Relationship With Smoking Behavior In Adolescent In Mtsn Pademawu, Pamekasan Madura Mohammad Shiddiq Suryadi	159-166
Effect Of Nurse Caring Behavior Against Client Satisfaction Levels In Nursing Care In Paviliun Maskin Of Waluyo Jati Hospital Kraksaan Probolinggo Dodik Hartono	167-174
The Influence Of Parent Presence In Inflective Invasive Measures Of Infusing On Recipient Acceptance Of Children Age Pre School In Children Hospital Islam Surabaya Sulastri	175-178
The Influence Of Counseling To The Mother's Knowledge About The Giving Supported Food Of Breast Feeding By Baby Led Weaning (Blw) Methode For The Baby In Ages 6 – 12 Month Old Tri Dianti Nur Wahyuningtyas	179-186
Correlation Between Aplication Of Therapeutic Communication With Patient Satisfaction In Emergency Room Islamic Hospital Surabaya Sulistyorini.....	187-194
Implementation Of Procedure Management Of Sets Of Instruments By Operating Room Nurses At The Islamic Hospital Surabaya M. Fatkan	195-200
Correlation Between Nurses Self Efficacy And Employee Engagement In The Inpatient Room Of Surabaya Islamic Hospital Imamatul Faizah, Yanis Kartini.....	201-206
The Role Of Nurses As Advocates And Communicators In The Implementation Of Informed Consent Preoperative In Cempaka Room Dr. Iskak Hospital Tulungagung Retno Ayu Yuliasuti	207-212
The Correlation Between The A Diet And The Incidence Of Pseudodemensia Happening To The Sixth Semester Students Of S1 Nursing Program Of University Nahdlatul Ulama Surabaya Riska Rohmawati.....	213-218
The Effectiveness Of Abdominal Stretching Exercise On Menstrual Pain Level In students Of Semester VIII Prodi S1 Nursing University Nu Surabaya Ratna Yunita Sari.....	219-224
Role Of The Family Relationships With Compliance Taking The Drug In Patients Of Hypertension In The Village Of The Subdistrict Duren Source Krucil Probolinggo Regency Qori Maryanto.....	225-234

The Different Healing Time Of Circumcision With Electric Cauter And Conventional Method Held In Genteng – Banyuwangi. Hirdes Harlan Yuanto	235-240
The Relationship Between Nutritional Status And Age At Menarche In The Fifth And Sixth Grade Students Of Sdn Pabean 1 Sedati Sidoarjo Rahmadanar Aditya Putri.....	241-246
The Effects Of Cupping Therapy On Level Of Dysmenorrhea In Adolescent In Rw. 06 Wonoayu Gempol Pasuruan Siti Nur Hasina.....	247-254
The Correlation Between The Nurse’s Knowledge, Attitude, And The Implementation Of Patient Safety In The In-Patient Ward Of Rumah Sakit Islam Surabaya Yanis Kartini, Rifdatul Khoirot	255-264
Relationship Between Self Efficacy With Self Adaptation On Santris Of Darussalam Tambak Madu Surabaya Islamic Boarding School Khamida, Febrianti Mas Ula.....	265-272
Influence Of Gadget On Social Personal Of Early Childhood Uliyatul Laili	273-278
The Influence Of Nutrition And Rest Against The Spending Colostrum On Postpartum Mothers Yunik Windarti	279-284
The Relationship Nutritional Status With The Menstrual Cycle And Dismenorea Incident In Midwifery Diploma Unusa Esty Puji Rahayu.....	285-292
Differences Between Massage Tui Na And Acquisit Point BL 20, BL 21 And SP 6 In Overcoming Eating Difficulty Annif Munjidah, Fritria Dwi A.....	293-300
Effectiveness Of Triple C Parenting To Caregivers Perseptions About Emotional Intellegence Development Of Children Aged 3-5 Years Old Elly Dwi Masita	301-308
Relationship Between Characteristics Of Midwife And Social Awareness In Fe Tablets Administration To Pregnant Women In Public Health Centers Agus Aan Adriansyah, nyoman Anita Damayanti, windhu Purnomo	309-316
Effectiveness Of Endorphin Massage Against Anxiety The Face Of Labor On Mother Primigravida In The Region Of Clinics Jagir Surabaya R. Khairiyatul Afiyah.....	317-324
Healthcare Seeking Behavior’s Trend Of Family Planning In Indonesia Wiwik Afridah, Nurul Jannatul Firdausi	325-346

Sangkuriang Catfish (<i>Clarias Gariepinus</i> Var) Skin Extract Activity On Fibroblast And Collagen Synthesis For Skin Burn Healing Ary Andini, Retno Handajani, Soetjipto.....	347-352
The Influence Of Play Therapy In Developing The Intelligence Of School Age Children With Mental Retardation Machmudah, Wesiana Heris Santy	353-366
Effects Of Balance Exercise And Somatosensory Stimulation On Somatosensory Response In Diabeticperipheral Neuropathy Zahra Sativani, Bambang Purwanto, Dwikora Novembri Utomo	367-374
Analysis Of Influence Factors Auotonomousness Of Hypertension Elder Based On Self Care Orem Theory Perspective In Rw 03 Wonokromo Surabaya Umdatun Soleha	375-380
Identifying Waste Using Value Stream Mapping To Accelerating Patient Flow: A Case Studi In Emergency Department Of Rsud Dr Moewardi Nurul Jannatul Firdausi; Trisasi, Lestari; Kuncoro, Harto Widodo	381-390
The Effectiveness Diabetic Foot Spa To Peripheral Blood Circulation Of DM Type 2 Patient In Puskesmas Wonokromo Surabaya Puji Astuti	391-400
The Effects Of Elderly Gymnastics On The Blood Glucose Level In The Elderly With Diabetes Mellitus Type 2 Nety Mawarda Hatmanti.....	401-406
The Effectiveness Of Baby Massage Against Appetite In Toddler Nutrition Less 1-3 Years Of Age In Work Areas The Health Grounds Sidoarjo Fauziyatun Nisa, Zaidatul Amaliyah	407-416
Internal Factrors Affecting Length Of Stay Stroke Patient In Hospital Nur Ainiyah, Siti Nurjanah.....	417-420
The Effects Of Progressive Muscle Relaxation On The Level Of Anxiety Experienced By The Primigravid Women In The Third Trimester In Bpm Ika Mardiyanti Prambon Sidoarjo Ika Mardiyanti.....	421-428
The Effectivity Of Pare Tea To Reduce The Blood Glucose Level On The Diabetes Mellitus Elderly People In Rekso Werda Intregated Health (Posyandu) Of Wonokromo Surabaya Firdaus.....	429-434
Relationship Between Self-Concept And The Intensity Of Cyber Bullying In Class XI Of Dharma Wanita Senior High School Surabaya Nur Hidayah, Anggerbayu Muhamad Farizi	435-440

The Relationship Of Stress With The Levels Of Cortisol TB Sufferers Chilyatiz Zahroh	441-444
The Decrease Of Depression Level In Elderly With Cooking Group Therapy As Modality Therapy In Panti Werdha Surabaya Dhian Satya Rachmawati, Ari Susanti, Marlina Meiningrum	445-454
Correlation Between Dietary Intake With Protein Energy Malnutrition Of Child 1-5 Years Old In Posyandu Kenanga 3 Bulak Banteng Surabaya Astrida Budiarti, Puji Hastuti, Vita Aristiarini	455-460
Stress In Patients With Diabetes Mellitus Christina Yuliasuti, Yuana.....	461-468
The Correlation Between Gestational Age And The Incidence Of Physiological Neonates Jaundice In Rsud Dr. Mohamad Soewandhi Surabaya Dwi Ernawati	469-474
The Effect Of Brain Gym On Cognitive Function Of The Elderly In Surabaya Dini Mei W	475-480
Feeding Response Neonates Based On Gestational Age, Hypoglycemia, Hyperbilirubnemia And Infection In Surabaya Qori' Ila Saidah.....	481-488
The Event Of Maternity Blues Been Reviewed From Paritas Ibu Nifas In BPM Nanik Cholid Sidoarjo Yasi Anggasari.....	489-496
Environmental Health Management Of Cement Industry Muslikha Nourma Rhomadhoni, Friska Ayu, Rizka Novembrianto	497-502
Correlation Of Days Of Fever And The Number Of Trombositosis On Secondary And Primary Dengue Hemorrhagic Fever Infection Rahayu Anggraini	503-508
Pain Adaptation Relationship In First Stage Of The Labor With Relaxation Technique In BPM Bashori Surabaya Nur Masruroh.....	509-516
Effects Of Coffee On Prevention Of Oxidative Stress And Inflammation Induced By Cigarette Smoke In Male Rats (Rattus Norvegicus) M. Khafid.....	517-518
The Influence Psychoeducation On Menstrual Care Towards Menstrual Personal Hygiene On Female Teenagers With Mental Retardation Nurul Kamariyah, Sri Hartatik.....	519-526

Relationship Of Energy And Nutrients Adequacy On Nutritional Status Of Football Players Aged 9-12 Years Nur Amin, Yanesti Nuravianda Lestari	527-534
Correlation Of Equalization Technical To Barotrauma Events In Traditional Divers Village Kedung Cowek, District Bulak, Kenjeran, Surabaya Diyah Arini, Imroatul Farida, Rafika Rosita Sari	534-544
Body Mass Index Application Permadina Kanah Arieska, Novera Herdiani	545-550

Greeting from Steering Committe

Assalamualaikum Wr. Wb

The honorable:

1. Prof. Dr. Ir. Mohammad Nuh, DEA
2. Prof. Dr. Ir. Achmad Jazidie, M. Eng
3. Prof. Kacung Marijan, Drs., MA., Ph.D
4. drg. Umi Hanik, M. Kes.
5. Ima Nadatien, SKM., M. Kes
6. Dr. Istas Pramono, S.T., M.T.
7. Prof. Dr. Nasronudin
8. Prof. Tsan –Hon Liou,. MD., Ph. D.
9. Prof. Lisa McKenna
10. Dr. dr. Handayani, M.Kes
11. Larguita P. Reotutar, RM, RN, MATHEd, MAN, Ed.D.
12. Ns. Rusdianingseh, M.Kep.Sp.Kep.Kom
13. And all the audiences.

First of all, let's say thank you to Allah who has given us any mercies and blessings so we could join in SIHC. Let's praise our Prophet too, Muhammad SAW who already guided us to the right way so we could be here right now.

In this occasion, I'm as committees's chairman of SIHC, let me say thank you to all the participants as lecturers, practitioners and also students who's joining this International seminar that come from few cities such as Surabaya, Sidoarjo, Mojokerto, Lamongan and Filipina, and also let me say welcome to our speakers that come from some countries around the world. They are come from Philippines, Taipei and Australia, enjoy Indonesia. And let me say welcome to our keynote speaker too, Prof. Dr. Ir. M. Nuh, DEA.

In this event too, let me say thank you for all the peoples, organizations, and other field that supporting this event and make this event greatly held. The purpose of this event itself is to improve the quality of research that really needed by our nowadays's society.

Ladies and gentleman,

Let's join this International seminar quietly and hope this event will be beneficial for us. And the last, I'll ask your apologizes of all the lackness in this event.

Wassalamualaikum Wr. Wb.

Steering Commitee

Umdatus Soleha

Opening Remarks from Rector of Nahdlatul Ulama Surabaya University

Assalamualaikum Wr. Wb

The honorable:

1. Prof. Dr. Ir. Mohammad Nuh, DEA
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3. Prof. Kacung Marijan, Drs., MA., Ph.D
4. drg. Umi Hanik, M. Kes.
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6. Dr. Istas Pramono, S.T., M.T.
7. Prof. Dr. Nasronudin
8. Prof. Tsan –Hon Liou,. MD., Ph. D.
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11. Larguita P. Reotutar, RM, RN, MATHEd, MAN, Ed.D.
12. Ns. Rusdianingseh, M.Kep.Sp.Kep.Kom
13. And all the audiences.

First of all, praise belongs to Allah SWT who has given mercy and grace so we can attend at Surabaya International Health Conference. Peace and blessing are always praised to the great prophet of Muhammad who has guided us on the right way. I would like to thank to all speakers, from Australia, Taipei, Philippines and Indonesia.

Ladies and Gentlemen,

I need to convey that Surabaya International Health Conference, which is organized by UNUSA, is aimed to improve the knowledge and quality of educators' research in multidiscipline. National development capital is a quality human resource that has healthy physical, mental, social and has an optimal productivity. To produce the human resources that have healthy physical, mental, social and have optimal productivity, it needs continuous maintenance and health improvement efforts. On the other hand, rapid changes and global developments greatly affect the various orders in the community, especially in the health field.

These changes include the modern movement of community, increasing opportunities to improve higher education, increasing income and public awareness of the law and creating more critical society. These conditions affect the health services where the critical community wants a quality service and provided by professional personnel. This situation implies that health workers should be able to meet international standards in providing health services.

Ladies and Gentlemen,

To overcome these conditions, there are some efforts which can be performed through continuing education, establishing health service system professionally, and improving organization. In addition, health workers must have professional skills, intellectual and technical capability and

sensitive to socio-cultural aspects, have a broad insight and science and technology development. In order to gain a broad insight, it can be reached by doing research and disseminating research results in scientific forums such as International seminars / conferences. In this event, there will also be a signing of MoA between Medical faculty of Nahdlatul Ulama University and TMU.

Ladies and Gentlemen,

I would like to thank to all people who have supported this event so it can run well. Let's follow this event comfortably; hopefully this event will be useful for all of us. Finally, I would like to express an apology if there is a lack of this event, and I congratulate to all participants to join it.

Wassalamu'alaikum Wr. Wb.

Universitas Nahdlatul Ulama Surabaya
Rector

Prof. Dr. Ir. Achmad Jazidie., M.Eng.

CONFERENCE SCHEDULE
SIHC NAHDLATUL ULAMA UNIVERSITY OF SURABAYA
Best Western Papillio Hotel Surabaya
13-14 July 2017

DAY 1, 13th July 2017

07.00 – 08.00	Registration
08.00 – 08.10	Welcoming Show (Pendet Dance by UNUSA's Student Activities Unit of Sendratasik)
08.10 – 08.15	Opening Ceremony (MC : Ika Mardiyanti, SST, M.Kes & Mira Nirmala Gita, Amd.Keb)
08.15 – 08.20	Indonesia Raya Anthem
08.20 – 08.30	Holy Qur'an Reading (M. Nasyik : Prodi D-IV Analisis Kesehatan)
08.30 – 09.00	Opening Speechs <ul style="list-style-type: none"> - Speech from Secretary of Research and communities services departement (Chilyatiz Zahroh, S.Kep.Ns, M.Kep) - Speech from Rector of Nahdlatul Ulama University of Surabaya (Prof.Dr.Ir.Achmad Jazidie, M.Eng)
09.00 – 09.10	MoA FK -TMU
09.10 – 09.15	Opening Pray (M. Khafid, S.Kep.Ns, MSI)
09.15 – 09.50	Keynote Speaker Prof. Dr. Ir. Mohammad Nuh, DEA
09.50 – 10.00	<ul style="list-style-type: none"> - Certificate & Souvenir Given to Keynote Speaker - Opening Poster Presentation Sessions
10.00 – 10.15	Coffee Break
10.15 – 10.25	Dance Performance (Kembang Pesisir dance)

Plenary Session I

10.20 – 10.55	Speaker 1 (Prof.Dr.Nasronudin, dr., Sp.PD., K-PTI., FINASIM)
10.55 – 11.30	Speaker 2 (Tsan-Hon Liou M.D., Ph.D)
11.30 – 12.00	Plenary Discussion (Moderator : Mujad Didien Afandi, S.S, M.Pd)
	Certificate & Souvenir Given to Speakers
12.00 – 12.20	Poster Presentation
12.20 – 13.30	Prayer, Lunch and Check in

Plenary Session II

13.30 – 14.05	Speaker 3 (Dr. Handayani, dr., M.Kes)
14.05 – 14.40	Speaker 4 (Rusdianingseh, S.Kep.Ns., M.Kep,Sp,Kom)
14.40 – 15.15	Speaker 5 (DR. Larguita Pasion Reotutar, MN)
15.15 – 15.45	Plenary Discussion (Moderator : Tiyas Saputri, S.S, M.Pd)
	Certificate & Souvenir Given to Speakers
15.45 – 15.55	Closing

DAY 2, 14th July 2017

07.00 – 08.00	Registration
08.00 – 08.35	Speaker 6 (Prof. Lisa McKenna)
08.35 – 08.50	Discussion (Moderator : Tiyas Saputri, S.S, M.Pd)
Oral Presentation I	
08.50 – 10.00	Room 1 (Moderator : dr. Herdian)
	Room 2 (Moderator : Endah Budi, S.TP, M.PH)
	Room 3 (Moderator : Difran Nobel, S.Kep.Ns, M.Kep)
	Room 4 (Moderator : Mira Nirmala Gita, Amd.Keb)
10.00 – 10.15	Coffe Break
Oral Presentation 2	
10.15 – 11.00	Room 1 (Moderator : dr. Herdian)
	Room 2 (Moderator : Endah Budi, S.TP, M.PH)
	Room 3 (Moderator : Difran Nobel, S.Kep.Ns, M.Kep)
	Room 4 (Moderator : Mira Nirmala Gita, Amd.Keb)
11.00 – 11.30	Closing Ceremony (MC) Announcement The Best Poster and oral participant Certificate Given for Participant
11.30 – 12.30	Prayer, Lunch & Check Out

**THE EFFECTIVITY OF PARE TEA TO
REDUCE THE BLOOD GLUCOSE LEVEL OF THE ELDERLY
PEOPLE WITH DIABETES MELLITUS IN REKSO WERDO INTEGRATED
HEALTH POST (POSYANDU) OF WONOKROMO SUBDISTRICT SUROBOYO**

Firdaus

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Abstract

Diabetes can spread throughout the ages, from children to the elderly. The benefit of pare for diabetes can effectively decrease blood sugar level. The purpose of this study was to determine the effectiveness of giving Pare tea on the decrease of blood sugar level in the elderly Integrated Health Post (Posyandu) of ReksoWerdo RW 03 WonokromoSubdistrict Surabaya. The study design was a Quasy-Experiment, with its population of all diabetes mellitus patients in ReksoWerdo Integrated Health Post (Posyandu), RW 3, WonokromoSubdistrict Surabaya. The sample was 19 people, divided into 2 groups: 10 treated group and 9 control group that were taken by probability sampling of simple random sampling technique. The independent variable was giving pare tea (Tere), and the dependent variable was blood sugar level. The data collection instrument was the observation sheet. The data processing included editing, coding, processing, cleaning, and tabulating. The data were analyzed by using Mann-Whitney test with $\alpha < 0.05$. The result showed that most of the treatment group experienced a decrease in blood sugar levels, while for the control group that did not drink pare tea, half of the respondents experienced an increase in blood sugar levels. The result of the analysis using Mann-Whitney Test obtained $p = 0.001 < \alpha (0.05)$, so H_0 was rejected, it means that Pare Tea (TERE) was effective to decrease blood sugar level. Pare Tea (TERE) was effective to decrease blood sugar level, so it is suggested for the respondents to consume pare tea to prevent continual diabetes.

Keywords: *Pare Tea, Blood sugar level*

INTRODUCTION

Indonesia's health development is directed to achieve health problem solving for healthy living for every citizen in order to realize optimum health status. Health problems can be affected by lifestyle, diet, work environment, exercise and stress. Lifestyle changes, especially in big cities, lead to increased prevalence of degenerative diseases, such as heart disease, hypertension, hyperlipidemia, diabetes mellitus (DM) and others (Waspadji, 2009).

Diabetes Mellitus is a chronic disease taking year, if not well controlled, will lead to various complications both acute and chronic. The basic abnormality of

this disease is the lack of the hormone insulin.

Global status report on NCD World Health Organization (WHO) in 2010 indicated that 60% was the cause of death of all ages in the world, due to non-communicable diseases. DM was ranked the 6th cause of death. About 1.3 million people died from diabetes and 4 percent died before the age of 70 years. In Year 2030 it was estimated that DM ranks the 7th cause of death in the world. While for Indonesia it was estimated that in 2030 the number of DM sufferers would reach 21.3 million people (depkes, 2015). Based on the results of interviews conducted at

posyandu Posyandu Lansia Rekso Werdo RW 3 Wonokromo Village Surabaya there were 20 elderly who suffered from Diabetes Mellitus disease.

One of the ingredients which raise blood sugar level was the ingredient which contained Polypeptide P. Polypeptide P could be found in Pare. From the discovery of the university-of-Nahdlatul Ulama Surabaya students in 2016, granted fund for research with the title "Tere (Tea Pare insulin like)" so that the food can be preferred in the community especially diabetic patients who require more insulin, therefore the pare was processed into pare tea.

Pare tea is a processed product practically consumable. It is a new, thoughtful, and necessary breakthrough utilizing natural ingredients. It was done to meet the increased needs of human life, especially in the field of health. This is the pare plant (*Momordica charantia*) that has the potential to treat diabetes (Badan POM, 2004). Pare functions as the treatment of Diabetes. The benefit of Pare for Diabetes is to effectively lower blood sugar levels. This is because the polypeptide content has almost the same structure with the hormone insulin. In the body, this hormone will work to lower blood sugar levels when blood sugar levels rise

According to the researcher, this tea was feasible was tested to find out its effectiveness, because the lifestyle of diabetics, especially regarding consuming foods, could affect the healing process and inhibit the ability of daily life activities. In accordance with the above background the researcher was interested in conducting the research on the effectiveness of Pare on the decrease in blood sugar levels of the elderly with Diabetes Mellitus

RESULTS

1. Distribution of respondents based on blood sugar level before being treated with tere (Teh Pare)
 - a) Treated Group

Table 1 Distribution of respondents based on blood sugar level before being treated with Tere (Teh Pare) for those of the treated group at Posyandu Lansia Rekso Werdo RW 3 Kelurahan Wonokromo Surabaya

Subject	Blood sugar level (mg/dl)	Frequency	Percentage (%)
Treated	<200	4	40
Group	>200	6	60
Total		10	100

Table 1 showed that of the respondents of Treated Group before treated with tere (Teh Pare) most (60%) of the respondents had blood sugar level of >200 mg/dl

b) Control Group

Table 2 Distribution of respondents based on blood sugar level before treated with tere (Teh Pare) for those of Control group at Posyandu Lansia Rekso Werdo RW 3 Kelurahan Wonokromo Surabaya

Subjects	Blood sugar level (mg/dl)	Frequency	Percentage (%)
Control Group	<200	6	66,7
	>200	3	33,3
Total		9	100

Table 2 shows that for Control Group before being treated with (Teh Pare), most (66,7%) of the respondents had blood sugar level of <200 mg/dl.

2. Distribution of respondents based on blood sugar level after being treated with tere (Teh Pare)
 - a) Treated Group

Table 3 Distribution of respondents based on blood sugar level after being treated with tere (Teh Pare) for those of Treated Group in Posyandu Lansia

Rekso Werdo RW 3 Kelurahan
Wonokromo Surabaya

Subject	Blood sugar level			Total
	decrease	remain	rise	
Treated Group	7 (70%)	3 (30%)	0 (0%)	10 (100%)

Table 3 shows that of 10 respondents of post Treated Group having treatment of tere (Teh Pare) most (70%) of them experienced a decrease in blood sugar level.

b). Control Group

Table 4 Distribution of respondents based on blood sugar after being treated with tere (Teh Pare) for those of Control Group at Posyandu Lansia Rekso Werdo RW 3 Kelurahan Wonokromo Surabaya

Subject	Blood sugar level			Total
	decrease	remain	rise	
Cintrial Group	0 (0%)	4 (40%)	5 (50%)	9 (100%)

Table 4 shows that of 9 respondents of post Control Group with treatment of tere (Teh Pare) half (50%) of the respondents experienced a rise in blood sugar level.

- Effectiveness of consuming teh pare (tere) on the blood sugar level of the elderly with Diabetes at RW 03 Kelurahan Wonokromo Surabaya

Table 5 shows that of 10 respondents drinking tere most (70%) of them experienced a decrease in blood sugar level, whereas of the 9 respondents not drinking tere most (55,6%) of the respondents experienced an increase in blood sugar level.

Table 5 Tabulation of cross treatment of tere on blood sugar level of the elderly with Diabetes Melitus at Posyandu Lansia Rekso Werdo RW 3 Kelurahan Wonokromo Surabaya

treatment of tere	Blood sugar level			Total
	decrease	remain	rise	
Treated with tere (Teh Pare)	7 (70%)	3 (30%)	0 (0%)	10 (100%)
Not treated with tere (Teh Pare)	0 (0%)	4 (44,4%)	5 (55,6%)	9 (100%)

Based on the result of statistical test of *Mann-Whitney* using SPSS with a significance of $\alpha = 0,05$ showed the value of $p = 0,001$ in which $p < \alpha$, so H_0 was rejected, meaning the treatment with tere was effective to decrease the blood sugar level of the elderly with diabetes melitus at Posyandu Lansia Rekso Werdo RW 3 Kelurahan Wonokromo Surabaya.

DISCUSSION

Blood sugar levels before consuming of tea pare (tere) (pre test)

On table 1 showed that before the treatment of pare (tere) tea, from 10 respondents, the most respondents (60%) had blood sugar > 200mg / dl, while control group (66,7%) had sugar Blood < 200mg / dl.

Factors that affect blood sugar levels are; age, lack of exercise, too much consuming foods, high stress, emotion, and the impact of the drugs. (Fox & Kilvert, 2010). These factors cause high blood sugar levels so that increasing the risk of diabetes mellitus complications.

The first factor that affects the blood sugar level is age, more people getting old are more risky of occurrence of organ function disorder especially at production of hormones that the body needs. Based on the research, it showed

that the respondents, both of the treatment group and the control group, aged over 66 years. Elderly experiences many physical changes, especially the impairment of organ function. The impairment of organs which is associated with diabetes is reducing of insulin hormone production, moreover the elderly also experiences resistance of insulin. Guyton & Hall's (2014) said that insulin resistance of type 2 Diabetes Mellitus (DM) patients tends to increase at age above 30 years. This due to reducing of tissues of the body's sensitivity of insulin.

The second factor is exercise. Exercise is an helpful effort to increase tissues' sensitivity to insulin. During exercising, muscle cells will increase the need for glucose, so that cell absorption of glucose will increase and stimulate the pancreas to increase insulin production. This research indicated that 80% respondents of treatment group and 100% of control group actively conducting exercise. According to Corwin (2009) exercise will burn calories in the body. The movements during exercise requires sources of energy: glucose or sugar. Regular exercise means the process of burning sugar is also regular. Exercise also increases the use of glucose so that blood glucose levels will be going down. Exercises which conducted by respondents in this research are gymnastics. They are conducted twice a month on the first 2 weeks.

The third factor is the amount of consumed food. The increase of the amount of consumed food affects the blood glucose levels so it is important to do a diet for people who have diabetes mellitus. Diabetics can eat all foods but it is important to pay attention to the amount or size, restrain sugar and fat sometimes also restrain the consumption of salt. The results of the study showed that from 10 respondents in the treatment group, 60% of the respondents did not

do diet or do meal management by reducing sweet and fatty foods, while in the control group, 55.6% respondents also did not do diet or do meal management

Meal management is as a pillar of diabetes control, it also prevent the occurrence of complications other diseases such as hypertension, myocardial infarction or other diseases. Food consists of carbohydrates, proteins, and fats. Glucose is primarily sourced from carbohydrates although protein and fat can also raise glucose. Carbohydrates are parsed down into glucose and get into the bloodstream so that blood glucose will increase. The pancreas continually releases insulin. The pancreas is an endocrine gland that has a langerhans islets. Langerhans islets has four different types of cells: alpha cells (secreting glucagon hormones), beta cells (secreting insulin), delta cells (secreting somatostatin). After eating, glucose increases in the blood circulation and insulin secretion by the pancreas also increases. The main task of insulin is to regulate the transport of glucose from the blood into the cells so that glucose in the blood falls.

The fourth factor that affects blood sugar is drugs. Drugs are the fourth pillar in diabetes control. Drugs can help to stimulate the pancreas to produce insulin or it work by stimulating cells to respond to glucose. In this research, 88,9% of respondents in control group and 70% of respondents in treatment group did not consume drug. The drug for diabetics is known as a hypoglycemic drug. Hypoglycemic drugs have two classes namely sulfonylurea and biguanid. Sulfonylureas decrease blood sugar by stimulating insulin secretion from inside of the pancreatic beta cells, but this drug is not given during the night because it can cause hypoglycemia during sleep.

Blood sugar levels after consuming of tea pare (tere)(post test). Blood sugar levels in elderly with

diabetes mellitus at Posyandu Elderly Rekso Werdo RW 3 Wonokromo Village Surabaya change after consuming pare (tere) tea, especially in the treatment group. This research (in table 3) shows that after being given pare tea, 70% of 10 respondents in treatment group experiences decreasing blood sugar level, while from 55,6% of 9 respondent in control group experience increasing blood sugar level.

Treatment by consuming of pare tea (tere) can be used in controlling blood sugar levels, this is because pare plants are estimated containing hypoglycemic bioactive compounds that are charantin. These compounds are classified as phytosterols or complex glycosides. Extract of pare is estimated may increase the rate of cell metabolism through increasing and using glucose by target cells whose effects are antidiabetic (Utami et al, 2003)

In the control group, respondents did not experience changes in blood sugar levels but increasing blood sugar levels, this is because respondents only do gymnastics two times a month without controlling the consumption of food and drink

Meanwhile, In the treatment group, respondent who consumed the pare tea experienced decreasing blood sugar levels, this is because charantin and insulin polypeptide (insulin-like polypeptide) which are contained by the fruit, have components that resemble to sulfonylurea (The oldest and most widely used as antidiabetic drugs). The benefits of charantin is to stimulate the beta cells of the body's pancreas glands to produce more insulin, besides increasing the deposit of glycogen sugar in the liver.

The process of making TERE (Pare Tea) is quite easy and simple. The process of making Pare tea is the same as making simplisia in general. They way are wet sorting, washing, slicing, drying, dry sorting and packaging. This research was done in RW 03

Wonokromo Village Surabaya by giving pare tea for once a day in 2 weeks. The way to serve pare tea were boiled water 250 cc, put pare tea dip into the glass / cangkir, poured hot water into the gelas / cangkir, stirred until turned greenish, TERE (pare tea) was ready to serve.

Effectiveness of Stress Management (Benson Relaxation) on the decrease of blood sugar level in elderly with diabetes mellitus at Posyandu Lansia Rekso Werdo RW 3 Wonokromo Village Surabaya

The result of the research by using Man Whitney Test to treatment group before and after giving pare tea (tere) showed effectiveness of pare tea (tere) on blood sugar level of diabetes mellitus patients which is seen of value of $\alpha = 0,05$ got $\rho = 0,001$ Where $\rho < \alpha$ then H_0 is rejected means the giving of pare tea (Tere) effective against the degression of blood sugar levels in RW 03 Wonokromo Village Surabaya.

Giving of tea pare (tere) is an action that can be used to control sugar levels. The content of pare affects the metabolism of glucose. According to the POM (2004) pare accelerate the release of glucose by increasing glucose metabolism or incorporating it into fatty deposits. This is the activity of charantin that stimulates the beta cells of the pancreas gland of the body to produce more insulin, The pare effect in decreasing blood sugar of mice is also estimated similar to the mechanism of insulin (Primary, 2011).

It is suggested that the family should be able to control the elderly's sugar level and provide pare tea (tere) to reduce the risk of continuing illness

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BODY MASS INDEX APPLICATION

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Abstract

Body Mass Index (BMI) is a measure of body fat based on height. BMI is a measurement of body weight based on height and weight. Although BMI does not actually "measure" the percentage of body fat, it is a useful tool to estimate a healthy body weight based on height. Due to its ease of measurement and calculation, it is the most widely used diagnostic indicator to identify a person's optimal weight depending on his height. BMI "number" will inform someone if they were underweight, normal weight, overweight, or obese. However, due to the wide variety of body types, the distribution of muscle and bone mass, etc., it is not appropriate to use this as the only or final indication for diagnosis. Ideal Weight Application (IWa) is a BMI Application which can make someone to know their body fat easier. IW Apps is application based on Adobe Flash which can run in Personal Computer. The purpose of this application is to help someone being success in their diet program.

Keywords : Body Mass Index (BMI), Height, Weight, Body fat

INTRODUCTION

Body Mass Index (BMI) is a person's weight in kilograms divided by the square of height in meters. A high BMI can be an indicator of high body fatness. BMI can be used to screen for weight categories that may lead to health problems but it is not diagnostic of the body fatness or health of an individual. BMI is used as a screening tool to indicate whether a person is underweight, overweight, obese or a healthy weight for their height. If a person's BMI is out of the healthy BMI range, their health risks may increase significantly. BMI values are age-independent and the same for both sexes. However, BMI may not correspond to the same degree of fatness in different populations due to different body proportions. BMI is one type of tool to help

health professionals assess the risk for chronic disease. It is also important to understand other risk factors.

BMI calculation has been done online and also manually. Creation of BMI applications that can not be run online can also be created using various existing applications. In this research, BMI calculations were based on adobe Flash. Ideal Weight Apps (IWa) is a BMI calculation application that enables users to know their weight category according to the WHO criteria. This application is easy to use because it does not require internet connection and installation to Personal Computer (PC). It's just by copying the file and run it on the PC.

METHODS

BMI is not accurate enough to be used as a diagnostic tool. However, it is used as a screening tool to identify potential weight problems in adults.

A person may have a high BMI, yet to determine if this excess weight is a health risk, a health care provider would need to complete further assessments such as:

- Skinfold thickness measurements
- Evaluations of diet
- Physical activity
- Family history
- Other appropriate health screenings.

The calculation of BMI is based on the following formulas:

$$\text{Weight (kg) / Height (m)}^2$$

With the metric system, the formula for BMI is weight in kilograms divided by height in meters squared (kg/m²). Since height is commonly measured in centimeters, divide height in centimeters by 100 to obtain height in meters. This application is based on Adobe Flash.

Table 1 : Classification BMI

Classification	BMI (Kg/m ²)
<i>Underweight</i>	<18.5
Normal	18.5 – 24.99
Overweight	≥25
Obese	≥30

Source: WHO 2004

DISCUSSION

This application is named Ideal Weight application (IWA). Here's the interface on this application. The interface consists of 3 views. Namely the initial menu, the main menu and close menu. Here is the screenshot of the display of the application.



Figure 1. Initial Menu

The action script used in the GO button is as follows:

```
on(release){
    nextFrame();
}
```

}

For full display, the following action script is given

```
fscommand("fullscreen",true);
mySound =new Sound();
stop();
```

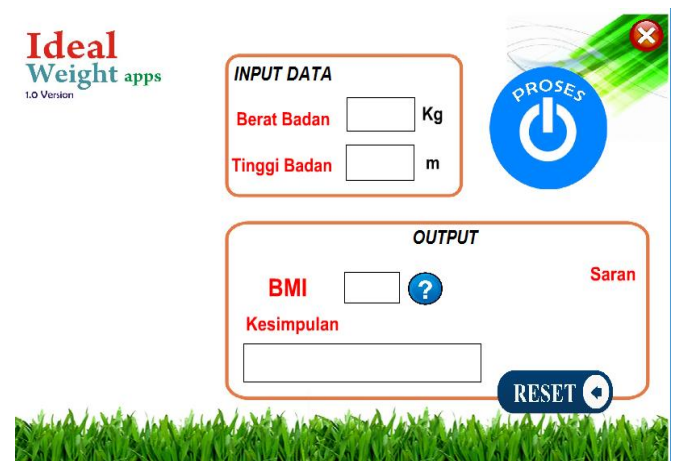


Figure 2. Main Menu

In the process button, the action script given are:

```
on(release){
    bmi = number(bb)/number ((tb*tb));
    if (bmi<18.5){
```

hasil = "Underweigt/Kurus"
saran = "Sebaiknya mulai
menambah berat badan dan mengkonsumsi
makanan berkarbohidrat di imbangi dengan olah
raga"

```

_root.mySound.attachSound("kurus.mp3
");
_root.mySound.start(0,1);
    arek._visible = true;
    }
    else
    if((bmi>18.5) and (bmi<24.99)){
    hasil = "Normal"
    saran = "SELAMAT, berat badan
anda termasuk kategori ideal. Pertahankan untuk
terus hidup sehat dan pola makan yang
seimbang"

```

```

_root.mySound.attachSound("normal.mp
3");
_root.mySound.start(0,1);
    arek._visible = true;
    }
    else
    if((bmi>25) and (bmi<29.99)){
    hasil = "Overweight/Kegemukan"
    saran = "Sebaiknya hindari
makanan berlemak dan mulailah meningkatkan
olahraga seminggu minimal 2 kali"

```

```

_root.mySound.attachSound("gemuk.mp
3");
_root.mySound.start(0,1);
    arek._visible = true;
    }
    else {
    hasil = "Obesitas"
    saran = "Sebaiknya segera
membuat program menurunkan berat badan
karena obesitas tidak baik bagi kesehatan"

```

```

_root.mySound.attachSound("obesitas.mp3");
    _root.mySound.start(0,1);
    arek._visible = true;
}
}

```

In the Reset button, the action script given are:

```
on (release) {
```

```

    arek._visible = false;
    tb = ""
    bb = ""
    hasil = ""
    saran = ""
    bmi = ""
}

```



Figure 3. Close Menu

In the Close button, the action script given are:

```

on (press, keyPress "<PageDown>") {
    fscommand("quit","true");
}

```

This application has been tested on social events organized by Nahdlatul Ulama University Surabaya in Wonokromo Surabaya community. The use of IWa feels very beneficial because the community finally find out whether they are categorized as having normal, underweight, overweight or obesity.



Figure 4. Tested Application in Wonokromo Surabaya



Figure 5. Social Event organized by Universitas Nahdlatul Ulama Surabaya using IWA

CONCLUSION

1. IWA is easy to use because it does not require internet connection and installation to Personal Computer (PC).
2. IWA is a screening tool to identify potential weight problems in adults.

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Surabaya International Health Conference
July, 13th - 14th, 2017

