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BANDUNG MEETING ON GLOBAL HEALTH & MEDICINE

PROCEEDING

"Strengthening The Collaboration on Medical Education and Health Sciences Research for Sustainable Development"

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FOKI
FORUM KEDOKTERAN ISLAM INDONESIA

UNIVERSITAS ISLAM BANDUNG

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WELCOME REMARK FROM THE CHAIRMAN

بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

Assalammu'alaikum Wr. Wb

Dear Colleagues

The Organizing committee of FOKI and Medical Faculty of Bandung Islamic University, Warmly Welcome you the Annual Meeting of FOKI from 25th to 28th July 2018 at Hotel Harris Ciumbuleuit Bandung - Indonesia.

We have specially chosen our theme as "Strengthening The Collaboration on Medical Education and Health Sciences Research for Sustainable Development".

The aim of the meeting or conference is to share all of the member of FOKI as educators and learn from experts in medical and health care professional education some of the latest ideas, best practices adapted national & internationally.

The FOKI annual meeting has grown and strengthening over the years. The participant not only from Indonesia, but also from abroad.

We hope to see an even stronger participation in this meeting 2018. As with previous FOKI meeting, We have invited distinguished medical and healthcare professional educators to share their experiences, expertise and wisdom at the 2018 FOKI meeting.

Welcome to Bandung, the nice education, fashion, culinary, and music city.

On behalf of the organizing committee, it give me great pleasure to welcome you to the FOKI meeting.

With Best Wishes .

Wassalammu'alaikum Wr. Wb

Dr. Wawang S. Sukarya, dr., SpOG(K), MARS., MH.MKes.
Chairman of Organizing Committee

WELCOME REMARK FROM THE DEAN

بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

Assalammu'alaikum Wr. Wb.

It is an honor for us to welcome you in the Forum Kedokteran Islam Indonesia (FOKI) Annual Meeting. As the Dean of Faculty of medical Universitas Islam Bandung, I am greeting you on behalf of our campus and Unisba as a whole.

FOKI Annual meeting is an annual organization and scienti□c forum of all the Islamic Medical Faculties in Indonesia. On each year, we make breakthrough in medical education and medical research collaboration between members of the organization, therefore it is very important for us to keep the meeting to be held regularly.

This 2018, FOKI Annual meeting will be held in July 25 – 28 2018 and in conjunct with the International Conference Bandung Global Medical & Health (BGMH) 2018 as the third international conference organized by FoM Unisba. We are honored to have great international and local speakers and participants to join these events this year.

I would also like to take this opportunity to welcome the international speakers and participants to Bandung and my sincere gratitude for participating in our International conference BGMH 2018. I am con□dent with the vast research experience the speakers have, all of us would gain some new insights from the research and development perspectives thus we could bring home some thoughts.

We believe that research and collaboration opportunities are inspired by sharing faculty management strategies and research dissemination.
Last but not least, I would like to express my utmost appreciation and acknowledgement to the committee for their substantial effort in planning and organizing these events.

Welcome, once again and let us enjoy the meeting, conference and discussions ahead while enjoying the beauty and heritage of Bandung City.

Thank you.

Wassalammu'alaikum Wr. Wb

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ARTIKEL PENELITIAN

The Effect of Antiretroviral Therapy to change in CD4+ and total lymphocyte count (TLC) values in HIV Patients of RSUD Ambarawa

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Abstract

Introduction
Human immunodeficiency Virus (HIV) is a disease that requires antiretroviral (ARV) therapy. Monitoring of laboratory results is important to know a success of the therapy or to be an indicator of replacement of the therapeutic regimen while research on CD4+ and total lymphocyte counts (TLC) values in HIV patients on ARV therapy is limited, so authors are interested in conducting research on the effect of ARV therapy on changes in value CD4+ and TLC in HIV patients.

Methods
An analytic observational study with a cross-sectional approach using a total sampling technique conducted at Ambarawa Hospital against HIV patients in 2011-2015. Study inclusion criteria were ≥18 years old, receiving ARV therapy, while the exclusion criteria included pregnant HIV patients, and drop outs therapy. Research data using medical record and analyzed using paired sample T-test and One Way Anova.

Results
From 44 samples from 171 HIV patients in 2011-2015 who entered inclusion criteria. From analysis, it was found that 24 patients female sex (54,4%), 15 patients 30-39 yo (34,1%), and 20 patients in clinical stage 3 (45,5%). More than 60% of patients with TB (65.9%), used AZT+3TC+NVP combination ART (65.9%), initial CD4+ count <200 cells/mm3 (68, 2%), and initial TLC value <1200 /mm3 (77.3%). Use of ARV therapy influenced the change of CD4+ and TLC (p=0,000; p=0,000) with mean of CD4+ increase of 118,27 cells/mm3 and TLC of 252,28 cells/mm3.

Conclusion
Antiretroviral therapy has an effect on the change of CD4+ and TLC values in HIV patients.

Keywords: antiretroviral, HIV, CD4+, TLC

INTRODUCTION

Human Immunodeficiency Virus (HIV) infection causes decrease the immune system so becomes susceptible to illness and causes death.1 There is an increase in HIV cases every year and by 2016 the case increases to 33% of the total population per 100,000 population and occurs mostly in productive age and in men.2 Use of antiretroviral therapy (ARV) as a treatment in HIV cases can increase the immune system so that increase life expectancy.[3]

Monitoring of laboratory results is important to know a success of the therapy or to be an indicator of replacement of the therapeutic regimen while research on CD4+ and total lymphocyte counts (TLC) values in HIV patients on ARV therapy is limited, so authors are interested in conducting research on the effect of ARV therapy on changes in value CD4+ and TLC in HIV patients.

METHODS

An analytic observational study with a cross-sectional method, using total sampling technique, and conducted at Ambarawa Hospital which is one of the hospital of patient referral center of HIV. against HIV patients in 2011-2015. Study inclusion criteria were ≥18 years old, receiving ARV therapy, while the exclusion criteria included pregnant HIV patients, and drop outs therapy. Research data used medical record period of 2011-2015 and analyzed using paired sample T-test and one way anova.

RESULT

There were 44 people from 171 HIV patients in 2011-2015 who entered inclusion criteria. From analysis, it was found that 24 patients female sex (54,4%), 15 patients 30-39 yo (34,1%), and 20 patients in clinical stage 3 (45,5%). More than 60% of patients with TB (65.9%), used AZT+3TC+NVP combination ART (65.9%), initial CD4+ count <200 cells/mm3 (68, 2%), and initial TLC value <1200 /mm3 (77.3%) (table 1).

Table 1. Characteristics of HIV patients at Ambarawa hospital period of 2011-2015

Characteristics	N	(%)
Age (y.o)		
< 20	1	2,3
20 – 29	14	31,8
30 – 39	15	34,1
40 – 49	13	29,5
>49	1	2,3
Sex		
male	20	45,5
female	24	54,5
WHO clinical stage		
1	5	11,4
2	10	22,7
3	20	45,5
4	9	20,5
TB		
TB	29	65,9
No TB	15	34,1
ARV regimen		
AZT + 3TC + NVP	28	63,6
AZT + 3TC + EFV	4	9,1
TDF + 3TC + NVP	4	9,1
TDF + 3TC + EFV	2	4,5
FDC	6	13,6

Characteristics	N	(%)
Initial $CD4^+$ count (cell/mm^3)		
< 200	30	68,2
200 – 350	14	31,8
Initial TLC value (/mm^3)		
< 1200	34	77,3
≥1200	10	22,7

TB: tuberculosis, ARV: anti retroviral, AZT: zidovudine, 3TC: lamivudine, NVP: nevirapine,

TDF: tenofovir, EFV: efavirenz, FDC: fixed dose combination, TLC: total lymphocyte counts

From table 2, ARV therapy has an effect on CD4+ and TLC changes (p=0,000; p=0,000). There was a significant difference between CD4+ count and TLC values before and after ARV used. Mean of CD4+ count and TLC value after ARV treatment were higher than before ARV therapy with increase mean CD4+ count of 118.27 cells/ mm3 and TLC value of 252.28 /mm3.

Table 2. The effect of ARV therapy on CD4+ count and TLC value

	Mean before ARV (sel/mm^3)	Mean after ARV (sel/mm^3)	*P-Value*
CD4+	138,39	256,66	0,000
TLC	970,45	1222,73	0,000

DISCUSSION

The largest sample in this study was in the age range between 30-39 years. It is similar to previous studies shown more HIV patients at productive age.2 From this study, majority of HIVpatients were female, it is similar with previous studies,4 in particular housewives.5 More than 40% of HIV patients started ARV at clinical stage 3. It is similar to previous study6 which states that most diagnosed at advanced stage.7

Most of HIV patients were TB infection which was likely due to the lack of awareness, willingness and curiosity of the patient to perform early HIV detection so patient comes to the health care center with TB. No one used a second-line combination of ARV, this is accordance with the Ministry of Health program which requires used of first-line ARV therapy in new HIV case findings.
More than 60% of patients had a CD4+ count <200 cells/mm3 and TLC <1200 / mm3 at initial therapy due to lack of awareness of the patient against HIV disease so that HIV patients started ARVtherapy at an advanced stage. It is similar to the previous study which stated that most of the samples started ARV therapy on CD4+ <200 cells/mm3.8Top of FormBottom of Form

There is an effect of ARV therapy on the increase CD4+ count and TLC value in HIV patients. This is due to the increased immune system in HIV patients9 according to the mechanism of action of antiretroviral drugs to suppress HIV viral replication, so CD4+ and TLC will increase after first-line ARV therapy.10
Result of this study is consistent with previous studies that was changes of CD4+ count and TLC values in HIV patients undergoing ARV therapy.11 Other studies also suggest that HIV patients who received ARV therapy have elevated their CD4+ count and increase survival rate.12 Based on existing theories, increase mean of this study higher than another study that an increase ranged of CD4+ count after 1 years ARV therapy between 50-100 cells/mm3.13

CONCLUSION

Antiretroviral therapy has an effect on the change of CD4+ and TLC values in HIV patients.

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RESEARCH ARTICLE

E-LEARNING IN LABORATORY PRACTICE: A QUALITATIVE STUDY

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ABSTRACT

Introduction: Medical education in Indonesia is using the competency-based curricula. All processes are integrated into a learning system called Blok, one of them is laboratory practice. From the beginning of Faculty of Medicine, Muhammadiyah Palembang University, laboratory practice has been delivered using conventional technique. But today, we are trying to introduce the use of video as an opening of the laboratory practice (e-learning). The aim of this study was to find the benefits of e-learning in laboratory practice.
Methods: The study was a qualitative design. Study population was the students of Faculty of Medicine, Muhammadiyah Palembang University who attended one laboratory practice using both ways, conventional and e-learning. Samples was taken using total sampling technique. Data was obtained by open interview with the respondents using a question list. Interwiew was recorded using voice recorder and then transcribed into text.
Result and discussion: The result showed that 7 out of 8 respondents felt more enjoy the laboratory practice with conventional way. This condition may be caused by their learning style was not visual nor audio, so video in e-learning technique was not suitable for them.
Conclusion: There were pro and contra about the use of e-learning in laboratory practice. There should be a continuous exposure to e-learning so they can adapt to it.

Keywords: e-learning, video-based laboratory practice, medical education

INTRODUCTION

Medical education in Indonesia is using the competency-based curricula. Since 2008, Medical Faculty of Muhammadiyah Palembang University used this system. All the process are integrated such as integrated teaching, clinical skill and laboratory practice.1

Anatomy comparative is one of the laboratory practice in Department of Medical Biology is given to Blok 3 students. Since 2008, this laboratory practice had been delivered using conventional technique. The instructure explains the steps of doing the comparation between poikioterm vertebrate and homoiterm vertebrate. For batch 2017/2018, the instructure explains the steps through video online and all students have to watch the video before the laboratory practice. At the time of laboratory practice, students did the surgery of the animals and made the comparation by themselves, guided by the video. This innovation is done because Medical Faculty of Muhammadiyah Palembang University is trying to apply e-learning in medical education. E-learning is the information technology in education system and can make the impact in teaching mechanism in our faculty, such as the system and the contents2.

The aim of this study was to find the student perception about e-learning in laboratory practice.

MATERIALS AND METHODS

The study was a qualitative design which is done on January 2018. Study population was the students of Faculty of Medicine, Muhammadiyah Palembang University who attended one laboratory practice using both ways, conventional and e-learning. Samples was taken using total sampling technique with snowball sampling method. Data was obtained by open interview using a question list. Interview was recorded using voice recorder and then transcribed into text.

RESULT AND DISCUSSION

There were 8 respondents who done the interview by one interviewer. The result of the interview was summarized in table 1.

Table 1. The preference of technique use in laboratory practice

Respondent	Technique	
	Conventional	E-learning
01		√
02	√	
03	√	
04	√	
05	√	
06	√	
07	√	
08	√	

Table 1 showed that 7 out of 8 respondents enjoyed the laboratory practice in conventional way.

Table 2. Resume of the interview

Conventional laboratory practice	E-learning laboratory practice
"I really like laboratory practice using conventional technique, because it is easier for me to understand it so I can remember it easily" (Respondent 03, 21 yo, female).	*"I think it is better to watch the video right before laboratory practice"* (Respondent 01, 20 yo, male).
"The quality of sound and picture of the videos are not good. Beside that, I have myopic eyes and I do not like study by watching video" (Respondent 05, 21 yo, female)	*"I like watching video because my learning style is visual so it is help me a lot. Besides that, I can study at home by watching the videos again and again."* (Respondent 01, 20 yo, male).

One respondent who claimed that he has visual learning style enjoyed the e-learning technique because it can help him to understand the content. Different preferences may be due to different learning style. Visual learning style involve eyes in order to process the information so it will be easier to remember the video content

and easier to understand the learning objectives.3 Video as teaching tool synchronize what you hear and what they do in laboratory practice. But, video as a teaching tool sometimes has obstacles such as the clarity of the pictures and voice so the contents can be viewed easily4.

From the interview, there were 7 out of 8 respondents who enjoyed the conventional technique in laboratory practice. They need the instructor to shows them how to do the surgery of the Rana sp. and the Cavia coubaya. There are 4 types of learning style: visual, auditory, read/write, and kinesthetic.3,5,6 Students who did not prefer the e-learning laboratory practice may be have the kinesthetic or read/write learning style. Kinesthetic learning style prefers hands on practice.5 Student can be dominant in one learning style so the contents can be easily absorbed using that learning style only.3

The weakness of this study is that the respondents are students who did not pass the academic treshold so they had to repeat the previous module. Learning process is affected by cognitive, perception, emotional, and psychologic status of the student.7 Cognitive problem makes respondents can not synchronize the video content and application at laboratory so they prefer the conventional way.

CONCLUSION

There were pros and cons about the use of e-learning in laboratory practice. There should be a continuous exposure to e-learning so the students can adapt to it.

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RESEARCH ARTICLE

THE RELATION OF QUALITY SERVICE ANTE NATAL CARE (ANC) WITH PATIENTS SATISFACTION IN PUSKESMAS MRANGGEN 1 DEMAK

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ABSTRACT

Antenatal care (ANC) is care provided during pregnancy until before the birth process and also as an effort to prevent pregnancy complications. The dimensions of service quality are tangibility, responsiveness, reliability, assurance and empathy. The purpose of this study was to determine the relation between the quality of ANC services and the level of satisfaction of pregnant women. The design in this study used description analysis with a cross sectional approach. The population in this study were all pregnant women who visited Puskesmas Mranggen I Demak from September to November 2017. Sampling technique used accidental sampling with the number of respondents by 90 respondents. The tools in this study used in collecting data is the SERVQUAL questionnaire. Bivariate analysis using chi square test (X2), multivariate analysis using logistic regression. The results of the bivariate analysis show that there is a relation between the dimensions of service quality tangibility, responsiveness, reliability, assurance and empathy towards the satisfaction of pregnant women with p value of 0,000. In the multivariate analysis only 3 quality dimensions related to the satisfaction of pregnant women is tangibility with p value of 0.003 and OR 41.889 (95% CI: 3.562-492.795), reliability p value of 0.021 and OR 14.084 (IK95%: 1.488-133,329) and responsiveness p value of 0.002 and OR 60.799 (95% CI: 4,313-857,057). The conclusion in this study there is a relation between service quality and satisfaction of pregnant women and there are three dimensions that are most influential is tangibility, reliability, and responsiveness.

Kata Kunci : Quality of Service, ANC, Satisfaction, Pregnant women, SERVQUAL

BACKGROUND

Maternal morbidity and mortality is one of the problems in Indonesia. The maternal mortality rate (MMR) in Indonesia is the highest number in ASEAN.[1] The number of maternal mortality in Indonesia in 619 per 100,000 in 2015 and 711 per 100,000 in 2014. Although this number has decreased, it is still quite high. The high maternal mortality rate is caused by several factors, including the lack of access to health services, inadequate facilities in health facilities, and less professional health workers.[2]

Puskesmas is one of the first types of health care facilities that play a role in implementing health policies to achieve the highest level of health. Puskesmas is responsible for one area of government administration. Puskesmas carries out health efforts in the form of primary individual health services and primary public health services. ANC services are one of the first level of personal health services that must be held by Puskesmas.[3]

ANC examination is performed by professional health personel so that will provide good service for pregnant women. Pre-natal supervision has been shown to play a very important role in improving the mental and physical health of the mother during pregnancy.[4]

Measurement of patient satisfaction level is improving of the quality of health services. Measurement of patient satisfaction is seen from the dimensions of service quality, namely tangibility, responsiveness, reliability, assurance and empathy.[5] Research by Dalinjong in 2012 showed that the high utilization of patients caused the workload of health care providers to increase. This results in long waiting times for patients, verbal abuse, patients not physically examined, and discrimination with patients who pay directly.[6] Based on this background, the researcher intends to conduct a research entitled The Relation between ANC Service Quality and Pregnant Mother Satisfaction at Puskesmas Mranggen I Demak.

METHOD

This study is a descriptive analytic study with a cross sectional approach. The population in this study were all pregnant women who visited Puskesmas Mranggen I Demak from September to November 2017, which were 722 people. Type of this study using simple random sampling and the number of samples used slovin formula and obtained the number of samples as many as 90 people. Data collected were primary data obtained from respondents at Puskesmas Mranggen I Demak by using SERVQUAL (service quality) and secondary data about profile and report of Puskesmas Mranggen I Demak. The data then analyzed bivariate using chi square test and multivariate analysis using logistic regression test.

RESULT

1. Characteristic of Respondents

Table 1. Description of Respondents Age

Age	Frequency	Persentase
< 35	5	5,6%
20-35	74	82,2%
> 35	11	12,2%

Tabel 2. Description of Education Levels

Education Level	Frequency	Persentase
Elementery School	9	10,0%
JHS	31	34,4%
SHS	44	48,9%
College	6	6,7%

Tabel 3. Description of Job Respondents

Job Status	Frequency	Persentase
Employment	9	10%
Unemployment	81	90%

2. Description of Variables

Tabel 4. Description of Variables

Variables	Frequency	Persentase
Tangibility		
Not good	21	23,3%
Good	69	76,7%

Variables	Frequency	Persentase
Reliability		
Not good	32	35,6%
Good	58	64,4%
Assurance		
Not good	39	43,3%
Good	51	56,7%
Responsiveness		
Not good	25	27,8%
Good	65	72,2%
Empathy		
Not good	28	31,1%
Good	62	68,9%
Satisfaction		
Not good	27	30,0%
Good	63	70,0%

Based on Table 4 it is known that more than half of the respondents stated that the five dimensions of quality or quality of ANC services at Puskesmas Mranggen I were good with a percentage of 76.7% for tangibility dimensions; 64.4% for reliability dimensions, 56.7% for assurance dimensions, 72.2% for responsiveness dimensions, and 68.9% for empathy dimensions. The level of patient satisfaction for the quality of ANC services was also stated well by some respondents (70.0%).

3. Relation of Factors Affecting ANC Services with Patients Satisfaction

Table 5. Relation Factors Affecting ANC Services with Patient Satisfaction

Charac-teristic	Satisfaction		P Value
	unsatisfied	Satisfied	
Tangibility			
Not good	17	4	0,000
Good	10	59	
Reliability			
Not good	20	12	0,000
Good	7	51	
Assurance			
Not good	20	19	0,000
Good	7	44	
Respon-sivenes			
Not good	21	4	0,000
Good	6	59	
Empathy			
Not good	18	10	0,000
Good	9	53	

In the tangibility dimension, from 21 respondents who stated that the tangibility of ANC services was not good, 17 patients (81.0%) were not satisfied and 4 patients (19.0%) were satisfied. In contrast, of 69 patients who stated that the quality of good tangibility service was found 10 patients (14.5%) were dissatisfied and 59 patients (85.5%) expressed satisfaction. Chi square test results obtained p value of 0,000.

In the reliability dimension, from 32 respondents who stated that the reliability of ANC services was not good, 20 patients (62.5%) were dissatisfied and 12 patients (37.5%) were satisfied. In contrast, from 58 patients who stated that the quality of service reliability was good, 7 patients (12.1%) were dissatisfied and 51 patients (87.9%) expressed satisfaction. Chi square test results obtained p value of 0,000.

In the assurance dimension, out of 39 respondents who stated that ANC service assurance was not good, 20 patients (51.3%) were dissatisfied and 19 patients (48.7%) were satisfied. In contrast, from 51 patients who stated that the quality of good assurance services found 7 patients (13.7%) were dissatisfied and 44 patients (86.3%) expressed satisfaction. Chi square test results obtained p value of 0,000.

In responsiveness dimension, from 39 respondents who stated that responsiveness of ANC service was poor, found 21 patients (84,0%) unsatisfied respondent and 4 patient (16,0%) satisfied. In contrast to 65 patients who stated that the quality of responsiveness service was good found 6 patients (9,2%) dissatisfied and 59 patients (90,8%) expressed satisfaction. Chi square test results obtained p value of 0,000.

In the empathy dimension, of the 28 respondents who stated that empathy for ANC services was not good, 18 patients (64.3%) were dissatisfied and 10 patients (35.7%) were satisfied. In contrast, from 62 patients who stated that the quality of empathy service was good, 9

patients (14.5%) were dissatisfied and 53 patients (85.5%) expressed satisfaction. Chi square test results obtained p value of 0,000.

4. Factors Affecting Quality Service of ANC on Patients Satisfaction

Tabel 6. Multivariate Analysis of Factors Affecting Quality Service of ANC on Patients Satisfaction

Variable	Sig.	OR	IK95%	
			Lower	Upper
Tangibility	0,003	41,898	3,562	492,795
Reliability	0,021	14,084	1,488	133,329
Assurance	0,720	1,378	0,240	7,923
Respon-siveness	0,002	60,799	4,313	857,057
Empathy	0,926	1,106	0,134	9,159

DISCUSION

1. Relation of Quality Service of ANC with Patients Satisfaction

In the results of this study, it was found that there was a Relation between the quality of ANC services to the satisfaction of pregnant women. This was stated with a p value of 0,000. various things, namely: trained officers, personal attention to patients, pleasant staff and a comfortable waiting room.[7] According to Pohan, S. Imbolo, stated that in providing health services to get satisfaction from patients must provide quality services. Quality service is a service that always strives to meet patient expectations so that patients will always be indebted and grateful.[8]

2. Relation of Factors Affecting Quality Service of ANC on Patients Satisfaction

Relation of *Tangibles* with Patient Satisfaction

In this study tangibles associated with patient satisfaction

In this study tangibles associated with patient satisfaction with a p value of 0.000. This is in line with research conducted by Irfan et al at a government hospital in Pakistan showing a significant Relation between *tangibles* and patient satisfaction.[9] The research by Calisir et al with the modified SERVQUAL method shows that tangibles are an important factor for patient satisfaction. Tangibles dimensions such as facilities that have fulfilled the requirements, good environmental hygiene so as to provide satisfaction to patients.[10]

Relation of Reliability with Patient Satisfaction

In this study the *reliability* factor shows that there is a Relation between reliability factors on patient satisfaction with p value of 0,000. This is consistent with research conducted by Immas et al., Which found that there was a significant Relation between assurance with patient satisfaction in the City Islamic Hospital Magelang.[11] Research from Rahman et al to identify service quality factors in Bangladesh shows that reliability is significantly associated with patient satisfaction. The assessed dimensions of reliability are how the puskesmas provides ease of service, as well as the timeliness of the given schedule.[12]

Relation of Assurance with Patients Satisfaction

In this study showed a statistically significant Relation to patient satisfaction with a p value of 0.000. The research by Khamis et al ie assurance dimension significantly related to patient satisfaction.[13] The research by Sayed et al shows that assurance is related to patient satisfaction. Assurance aspects assessed are knowledge, skills and ability to instill trust in pregnant women. [14]

Relation of Responsiveness with Patients Satisfaction

In this study shows that there is a Relation between responsiveness to patient satisfaction with p value of 0,000. This is in accordance with research conducted by Simbala found that responsiveness is related to patient satisfaction.[15] Sharmila and Krishnan also conducted research at the private hospital of Chenai India and found out that responsiveness was significantly associated with patient satisfaction. The Responsiveness dimension in question is the willingness of health workers to help solve problems and accuracy in providing these responses.[16]

Relation of Empathy with Patients Satisfaction

In this study there was a significant result of 0.00. These results are in accordance with the research conducted by Al Khattab on the quality of health services that compare between private hospitals and the government in Jordan and find that aspects of responsiveness and empathy are problems found in government hospitals. The empathy aspect is an aspect that is assessed from

attitudes such as caring for the difficulties felt by pregnant women, and being able to understand what is felt by pregnant women.[17]

3. The Most Dominant Variables Associated with Patients Satisfaction

In table 6 obtained from the results of the multivariate analysis shows that there are 3 factors with p <0.05, namely tangibles, reliability and responsiveness. Responsiveness is the most dominant factor in patient satisfaction with a p value of 0.02 and has a 60 times greater chance of increasing patient satisfaction. Research from Essiam in Ghana shows that responsiveness is the most dominant factor in relation to patient satisfaction. Most of the shows give satisfied answers.[18]

CONCLUSION

In this study it can be concluded that the factors include tangible, responsiveness, reliability, assurance and empathy related to patient satisfaction and in this study tangibles, reliability and responsiveness are statistically related to patient satisfaction.

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RESEARCH ARTICLE

CHRONOTHERAPY ON HYPERTENSION PATIENTS

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Abstract
Circadian rhythms in the human body is a protection to be able to adapt to the environment. The cardiovascular system is also highly organized by time. Different types of hypertension also give a picture of different circadian patterns. Review this to see how good antihypertensive treatment, when adjusted for human circadian rhythms (chronotherapy). Chronotherapy in hypertension can be interpreted as the time of administration of anti-hypertensive drugs in accordance with circadian rhythms. This will optimize blood pressure regulation and reduce the risk of cardiovascular disease (myocardial infarction and stroke) and injury of blood vessels and organs such as the liver, brain, kidneys, eyes and other organs. Heart rate and peak blood pressure occurred between 6 am and 12 noon, at 5 pm and decreased sharply in the early morning around 3 am and occurred again at 3 pm. Most people experience nocturnal "dippers," meaning that systolic and diastolic pressures decrease by about 10 -20% at night compared to the average daytime. Some cardiovascular events occur when a person wakes up because catecholamines and rennin / angiotensin increase and thrombolytic activity shows a decrease in the morning. Cardiovascular events often occur three hours after waking, so waking time is a very dangerous time. Chronotherapy plays an important role in the treatment of hypertension. The development of new anti hypertensive drug formulas from short-acting to long-acting as well once-daily products and sustained-release formulations can help overcome critical moments. Knowledge of antihypertensive administration according to their chronic carcinoma will reduce mortality and morbidity in cardiovascular patients.

Key words: Anti hypertensive, cronotherapy, hypertensive.

KRONOTERAPI PADA PENDERITA HIPERTENSI

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Ritme sirkadian dalaam tubuh manusia merupakan proteksi agar mampu beradaptasi dengan lingkungannya. System kardiovaskular juga sangat terorganisasi oleh waktu. Berbagai tipe hipertensi juga memberikan gambaran pola sirkadian yang berbeda. Review ini untuk melihat bagaimana pemberian antihipertensi yang baik, bila disesuaikan dengan ritme sirkadian manusia (kronoterapi).
Kronoterapi dalam hipertensi dapat diartikan sebagai waktu pemberian obat anti hipertensi yang sesuai dengan ritme sirkadian. Hal ini akan mengoptimalisasikan regulasi tekanan darah dan mereduksi resiko penyakit kardiovaskular (infark miokardial dan stroke) dan injury pembuluh darah dan organ- organ seperti hati, otak, ginjal, mata dan organ- organ lainnya. Denyut jantung dan puncak tekanan darah terjadi antara 6 pagi dan 12 siang, jam lima sore dan menurun tajam pada dini hari sekitar jam 3 pagi dan terjadi lagi pada jam 3 sore. Kebanyakan orang mengalami *nocturnal "dippers,"*, artinya tekanan sistolik dan diastolic menurun sekitar 10 -20% pada malam hari dibandingkan dengan rata- rata siang hari. Beberapa kejadian kardiovaskular terjadi pada saat seseorang bangun tidur karena katekolamin dan rennin/angiotensin meningkat dan aktifitas trombolitik menunjukkan penurunan pada pagi hari. Kejadian kardiovaskular seringkali terjadi tiga jam setelah bangun, sehingga waktu bangun tidur adalah waktu yang sangat berbahaya. Kronoterapi memegang peranan penting dalam pengobatan hipertensi. Perkembangan formula baru obat antihipertensi dari short-acting ke long-acting juga once-daily products dan sustained-release formulations dapat membantu mengatasi saat kritis. Pengetahuan pemberian antihipertensi sesuai dengan kronoterapinya akan dapat menurunkan angka mortalitas dan morbiditas pada pasien- pasien kardiovaskular.

Kata Kunci: Antihipertensi, hipertensi, kronoterapi,

I. Pendahuluan

Beberapa tahun terakhir ilmu pengetahuan semakin berkembang mengenai waktu gen semua fungsi fisiologis dalam sel tunggal hewan, tumbuhan dan manusia. Tidak diragukan lagi bahwa semua subjek dibawah control waktu sirkadian. Pentingnya ritme sirkadian ini adalah memberikan pertahanan hidup yang lebih baik di dunia dengan secara kontinyu merubah kondisi lingkungannya seperti siang dan malam.(1)

Berdasarkan berbagai penelitian, system kardiovaskular juga sangat terorganisasi oleh waktu. Pada manusia, penggunaan monitoring tekanan darah ambulatory menunjukkan bahwa tekanan darah pada pasien normal dan pasien dengan hipertensi sangat tergantung oleh waktu pada seharinya. Berbagai tipe hipertensi juga memberikan gambaran pola sirkadian yang berbeda.

Kronoterapi atau kronotheurapeutik adalah suatu pemberian medikasi yang berkonsentrasi pada kebutuhan fisiologis pada waktu yang berbeda sekama pemberian dosis obat. Ini merupakan strategi baru dalam pengobatan klinis. Data epidemiologi menyebutkan bahwa miokar infark, sudden cardiac death, dan stoke insidensinya menigkat dalam beberapa jam pertama saat bangun. Sehingga untuk terapi hipertensi yang berhubungan dengan kardiovaskuler diperlukan konsentrasi obat yang lebih tinggi pada jam- jam awal setelah bangun dan konsentrasi yang lebih rendah pada saat pertengahan tidur. Saat ini terapi konvensioal telah dicoba untuk dirubah waktu pemberiannya untuk mengurangi mortality dan morbidity penyakit kardiovaskuler.

II. Pola Sirkadian Pasien Hipertensi

Pada individu yang normal , begitu pula pasien dengan hipertensi primer, umumnya tekanan darah akan mneurun pada malam hari (dippers), sedangkan pada hipertensi sekunder ritme tekanan darahnya 70% kasus tidak menurun (nondippers) atau justru malah lebih mneingkat saat malam (risers). Hal ini menjadi sangat menarik, sejak diketahui bahwa hilangnya atau tidak menurunnya tekanan darah pada malam hari mempunyai korelasi dengan kerusakan organ akhir (end-organ damage) pada jantung, serebral, vaskuler dan jaringan ginjal.(2)

Miokardiak infar fatal dan nonfatal predominan terjadi antara jam 6 pagi sampai 12 siang. Pola waktu sirkadian yang hampir sama diperlihatkan untuk *sudden cardiac death*, stroke, ventricular arrhythmias dan embolisme arterial. Gejala- gejala penyakit koroner, seperti iskemia miokard, serangan angina atau iskemia silen lebih signifikan terjadi pada siang hari sibandingkan malam hari. Dimana serangan angina dalam berbagai variasi mencapai puncaknya sekitar jam 4 pagi.(1,2)

Beberapa gambaran atau pola spesifik tekanan darah selama 24 jam berhubungan dengan progresifitas injury dari jaringan target dan pemicu dari kejadian kardiak dan cerebrovaskular. Sehingga, saat ini dikembangkan cara untuk pengobatan terbaik pasien- pasien hipertensi dengan mengacu pada pola sirkadian masing-masing individu. Perbedaaan signifikan pada perbedaan waktu pemberian dalam kinetika obat (chronokinetics) ditambah dengan efek menguntungkan dan efek sampingnya (chronodynamics) dari medikasi antihipertensi saat ini semakin diketahui.(3,4))

'...our bodily functions are well organized within a 24 h timeframe and... our body locks are in synchrony. This paradigm should... be considered in the drug treatment of hypertension.'(Björn Lemmer Expert Rev. 2007)

Kronoterapi dalam hipertensi dapat diartikan sebagai waktu medikasi atau pemberian obat anti hipertensi yang sesuai dengan waktu tertentu dalam sehari. Kronoterapi akan memberikan perawatan hipertensi yangberdasarkan profil sirkadian masing- masing pasien dan merupakan pilihan baru untuk mengoptimalisasikan tekanan darah dan untuk mereduksi resiko penyakit kardiovaskular (infark miokardial dan stroke) dan injury pembuluh darah dan organ- organ seperti hati, otak, ginjal, mata dan organ- organ lainnya. Walaupun sampai saat ini masih ada yang mempertanyakan, apakah ritme biologis sirkadian seseorang akan mempenraguhi waktu yang tepat dalam pemberian obat terhadap pasien.(3)

Janice G, Douglas MD, Divisi Hipertensi, Case Western University School of Medicine, meneliti mengenali kejadian dan hubungan antara ritme sirkadian tekanan darah dan denyut jantung yang mengikuti ritme sehari- hari. Untuk kebanyakan orang, denyut jantung dan puncak tekanan darah terjadi antara 6 pagi dan 12 siang, terdapat puncak lain pada jam lima sore dan menurun tajam pada dini hari sekitar jam 3 pagi

dan terjadi lagi pada jam 3 sore. Sirkadian ini terjadi pada pasien normal maupun pasien dengan uncomplicated hypertension pada ritme tekanan darah dan denyut jantung.[1]

Kebanyakan orang mengalami *nocturnal "dippers,"*, artinya tekanan sistolik dan diastolic menurun sekitar 10 -20% pada malam hari dibandingkan dengan rata- rata siang hari. Menurut Dr. Douglas pasien yang tidak memperlihatkan penurunan ini atau "*non-dippers*," memperlihatkan resiko yang lebih tinggi untuk kejadian kardiovaskular dan penyakit ginjal terminal.

Kerusakan target organ sangat berhubungan dengan pemeriksaan tekanan darah ambulatoar (ABPM) daripada dengan tekanan darah di klunik (BP). Pada umumnya, reduksi tekanan darah normal terjadi pada saat tidur sebesar 10 - 20% (*non-dipper pattern*) , berhubungan dengan peningkatan resiko injury organ target, terutama pada hati, otak dan ginjal. Sehingga saat ini, diduga resiko kardiovaskular dapat dipengaruhi bukan saja oleh peningkatan tekanan darah semata, tetapi juga berdasarkan variabilitas dari sirkadian tekanan darah. [3]

Gelombang atau hentakan tekanan darah dan denyut jantung pada pagi memberikan informasi penting mengenali peningkatan resiko miokardiak infark, kematian jantung mendadak, dan stroke pada jam- jam awal. Sebuah penelitian oleh Elliot menggambarkan bahwa hentakan gelombang ini berhubungan dengan peningkatan resiko sebesar 49% untuk stroke, peningkatan resiko 40% untuk serangan jantung, dan peningkatan resiko 29% untuk cardiac death. Juga terdapat efek palung atau *a trough effect* pada serangan stroke, jantung atau Terdapat banyak kontributor potensial untuk peningkatan insidensi kejadian kardiovaskular pada pagi hari. Menurut Dr. Douglas termasuk diantaranya peningkatan katekolamines, aktifitas fisik meningkat, denyut jantung lebih meningkat dan kekakuan arteri. Berdasarkan data epidemiologi, didapatkan bahwa perlu waktu yang tepat untuk pemberian antihipertensi sehingga kita dapat mencegah terjadinya hentakan gelombang tekanan darah pada pagi hari.[5]

Thomas G. Pickering, MD, D.Phil., Director, Integrative and Behavioral Cardiovascular Health Program, Mount Sinai Medical Center, New York City, menyampaikan kejadian epidemiologi untuk menghubungkan antara ritme sirkadian dan kejadian kardiovaskular, untuk kronoterapi potensial dalam mengobati hipertensi.

Dia juga mendeskripsikan suatu studi mengenai 200 pasien hipertensi ringan yang dimonitor tekannan darahnya selama 24 jam. Dilihat aktifitas pasien dan pekerjaannya. Hal ini untuk mengeliminasi kebanyakan perbedaan tekanan darah yang terlihat pada waktu- waktu tertentu. Dr. Pickering menduga bahwa faktor utama pada pola denyut jantung dan tekanan darah mngikuti siklus aktifitas dan sekitarnya.[5]

Beberapa kejadian kardiovaskular terjadi pada saat seseorang bangun tidur, Dr. Pickering menyatakan pada saat itu katekolamin dan rennin/angiotensin meningkat, tekanan darah dan denyut jantung meningkat, kontraktilitas jantung meningkat dan aggregasi trombosit juga meningkat. Semua faktor ini beresiko untuk meningkatkan strees pada endotel yang rapuh dan meingkatkan kebutuhan oksigen miokardial dan semuanya bersamaan dapat meningkatkan kejadian morbiditas akibat trombotik dan perdarahan kardiovaskular. Sementara itu, aktifitas trombolitik menunjukkan penurunan pada pagi hari. Kejadian kardiovaskular kebanyakan memperlihatkan pola yang sama dan kejadian mendadak karena jantunh meningkat hamper tiga kali lipat tiga jam setelah bangun daripada malam harinya. Sehingga waktu saat bangun tidur adalah waktu yang sangat berbahaya.[5]

Dr. Pickering juga mengatakan bahwa pada beberapa kejadian apabila pasien tetap berbaring setelah bangun di tempat tidur, hal ini bisa memperlambat puncak pada kejadian kardiovaskular.

Melihat semua hal di atas, seorang dokter sebaiknya memberikan perhatian ketika memberikan terapi antihipertensi.

Lebih lanjut lagi, setidaknya ada dua penelitian prospektif independent telah menduga bahwa tekanan darah pada saat malam hari adalah prediktor yang lebih baik mengenai resiko kardiovaskular daripada trekanan darah pada siang hari.

Umumnya uji mengenai tekanan darah berdasarkan profile baseline dari masing-masing partisipan, tanpa memperhitungkan kemungkinan perubahan- perubahan pada pola tekanan darah pasien, yang terutama berhubungan terapi antihipertensi dan usia selama pemantauan. Akan tetapi, Ambulatory Blood Pressure Monitoring in the Prediction of Cardiovascular Events and Effects of Chronotherapy (MAPEC) adalah suatu studi investigasi yang melihat perbandingan nilai- nilai

prognostik dari beberapa parameter tekanan darah (termasuk, diantaranya variabilitas tekanan darah, rasio diurnal/nocturnal, nilai diurnal dan nocturnal, slope of morning rise, dan lain- lain) dalam memprediksi morbiditaas dan mortalitas kardiovaskular dan selanjutnya melihat perubahan potensial pada pola tekanan darah sirkadian setelah kronoterapi dengan obat antihipertensi yang berhubungan dengan pola tekanan darah sirkadian.[3]

III. Obat Antihipertensi

agen antihipertensi beraksi pada satu atau lebih dari empat control anatomi berikut di bawah ini dan menghasilkan efek dengan mengintervensi mekanisme regulasi tekanan darah. Klasifikasi obat antihipertensi dikategorikan berdasarkan prinsip regulasi atau mekanisme dimana mereka beraksi. Kategori obat anti hipertensi dapat dikategorikan sebagai berikut: **(1) Diuretik:** menurunkan tekanan darah dengan menurunkan deplesi sodium tubuh dan volume darah, mungkin juga dengan mekanisme lainnya; **(2) Sympathoplegic agents:** menurunkan tekanan darah dengan menurunkan resistensi vascular perifer, menghambat fungsi kardiak dan meningkatkan pengisisan vena dalam vena kapasitasnya; **(3) Direct vasodilators:** menurunkan tekanan dengan merelaksasi otot halus vaskuler, yang kemudian melebarkan pembuluh darah resisten dan meningkatkan kapasitasnya; **(4) Agents that block production or action of angiotensin:** dan juga menurunkan resistensi vascular perifer dan juga volume darah. Obat antihipertensi mempunyai *site of action* yang berbeda, waktu paruh yang berbeda, formulasi farmasi yang berbeda dan interval dosis yangberbeda.

IV. Kronoterapi pada Hipertensi

Dr. douglas juga mengatakan bahwa managemen pasien hipertensi dapat diimprovisasi dan kronoterapi memegang peranan penting dalam hal ini. Perkembangan formula baru obat antihipertensi dari short-acting ke long-acting juga once-daily products, telah membangkitkan kemungkinan untuk mengontrol pelepasan obat-obat ini dandan waktu obat ini apabila lebih efektif.

Kesadaran dalam kemungkinan untuk menggunakan ritme sirkadian untuk membantu pengobatan hipertensi masih rendah antara dokter dan pasien. Menurut catatan Dr. Douglas, pada tahun 2002 sari 200 pelayanan primer dokter yang mengobati pasien hipertensi menemukan bahwa meski 90% dokter mengetahui tentang faktor sirkadian dapat mempengaruhi resiko stroke atau serangan jantungm akan tetapi hanya sedikit yang menganggap ritme natural tubuh ini pada saat meresepkan obat. Dan sementara 80% dokter mengetahui peningkatan resiko serangan jantung dan stroke pada awal hari atau awal pagi, hanya dua per tiga yang menyampaikan pada pasien untuk minum obat antihipertensi pada psgi hari atau ketika mereka baru bangun. Karena terdapat diskoneksi yang besar antara pengetahuan mereka mengenali ritme sirkadian dan pengaruh pemberian obat antihipertenis yang diberikan.[5]

Saat ini banyak penelitian mengenai obat anti hipertensi yang dilakukan pada waktu yang berbeda siang dan malam. Di pasaran terdapat beberapa agen 'chronotherapeutics' yang telah dipasarkan ,misalnya: Corvera HS, chronotherapeutic oral drug absorption system (CODAS)-verapamil, Cardizem LA, graded release diltiazem [GRD dan, Innopran XL™. Telah tercatat dengan baik bahwa campuran propranolol, diltiazem dan verapamil efektif menurunkan tekanan darah pada pasien hipertensi.

Umumnya, sustained-release formulations atau formula lepas lambat dibuat untuk obat pagi hari mempunyai waktu paruh relatife pendek kurang lebih 4 jam untuk membiarkan konsentrasi puncak dosis sore hari selama jam – jam dini hari [2–13]. [5] Kronotherapeutics adalah hasil dari teknologi galenik dengan penambahan aspek utnuk menjadi dosis pada sore hari.

Dalam suatu penelitian dibandingkan obat formulasi retard diberikan pagi atau sore, yang tujuannya untuk melihat mana waktu yang lebih baik. Sehingga yang di test selanjutnya hanya yang diberikan sore hari. Pada beberapa kasus juga dibandingkan dengan formula yang non retard. Selnajutnya timbul pertanyaan apakah obat antihipertensi dengan waktu paruh panjanag dan diberikan saat tidur dapat dikategorikan sebagai chronotherapeutic.[3]

Dalam satu penelitian, telah dilakukan penilaian tekana darah 24 jam setelah diberikan ACEI *(angiotensin-converting enzyme inhibitors)*, CCB (*calcium-channel blockers)* and *AT1-receptor blockers* pada pasien *dippers* dan *nondippers*. Hasil penelitian memperlihatkan bahwa CCBs (there was only onestudy with an AT1-

receptor antagonist) menurunkan tekanan darah independen dari waktu pemberian obat baik pada *dipper* maupun *non dipper*. Dosis sore CCB pada nondipper tidak hanya menurunkan tekanan darah tetapi juga menormalisasikangangguan profile tekanna dara pada pasien ini. ACEIs dapat memidifikasi profile tekanan darah selama 24 jam pada dippers dengan dosis sore dengan resiko tinggi terjadinya superdipping, yang dapat menurunkan perfusi. Data ACEIs pada nondippers belum jelas. Sayangnya tidak ada penelitian krosover (siang- malam) yang dipublikasikan . antara β-receptor antagonists dan diuretics.[3]

Berdasarkan penelitian- penelitian lain yang telah dilakukan, kronoterapi untuk obat antihipertensi lain adalah sebagai berikut di bawah ini. Pemberian nifedipine oral pada saat menjelang tidur lebih efektif daripada pemberian dosis pagi hari seklaigus juga mengurangi efek samping secara signifikan. Pemberian beta bloker Inderal yang diberikan pada malam hari, efektif menurunkan tekanan darah pada pagi harinya.

Kurva dosis respon, *therapeutic coverage*, dan efikasi doxazosin GITS secara bermakna tergantung pada waktu sirkadian pada saat pemberian obat.

Pemberian valsartan pada saat waktu tidur, kebalikan saat tejaga, menghasilkan improvisasi rasio diurnal-nokturnal tekanan darah, meningkatkan persentase pasien yang terkontrol, dan secara signifikan mereduksi eksresi albumin urinaria pada pasien hipertensi.

Penelitian yang dilakukan Dr. Pickering dan White et al, menemukan bahwa pemberian formula baru berupa delayed-release verapamil pada pasien pada jam 10 pagi, dapat menahan lonjakan tekanan darah pada pagi hari. Study lain mengenali obat lepas lambat, graded-release diltiazem (GRD), terbukti bahwa saat obat ini diberikan malam harinya dapat mencegah terjadinya lonjakan tekanan darah pagi hari. GRD didesain untuk dikonsumsi malam hari dan efek puncaknya terjadi pagi hari, dimana hal ini sinkron dengan fluktuasi natural tubuh dalam tekanan darah. Pada dosis 360 mg yang dimakan malam hari, terdapat data signifikan pada tekanan darah yang lebih besar antara jam 6 pagi dan siang daripada obat tersebut diminum pagi hari.Dengan dosis sore hari, lonjakan tekanan darah pagi hari lebih disupresi lagi dari pada dengan dosis yang diberikan pagi hari.

Percobaan dengan CO-ER verapamil membuktikan bahwa obat ini tidak terlalu berefek pada pasien dipper tetapi menurunkan tekanan darah pada psien non dipper saat malam. Mendekati pola dipping yang normal yang seharusnya hal ini menguntungkan (*Am J Cardio*l 1997:80; 469). Tekanan darah yang terjadi pada pasien non dipping tidak terllau berlebihan. Dr. Cushman menyatakan walaupun formula antihipertensi saat ini mempunyai resiko yang adekuat. Dan kejadian stoke atau serangan jantung banyak terjadi pada pagi hari, akan tetapi obat harus bekerja sepanjang hari.[5]

Trend saat ini berkembang pada pembuatan formula kerja lambat atau long-acting formulations , yang dapat diberikan satu kali sehari. Dengan obat ini kita mempunyai konsentrasi plasma yang halus dan juga kontol tekanan darah selama 24 jam yang terkendali dan secara teori mencegah penurunan tekanan darah yang terlalu rendah pada malam hari.Hal ini juga meningkatkan kepatuhan pasien minum obat.

Tujuan utamanya adalah menemukan obat yang efeknya parallel dengan pola kenaikan dan penurunan tekanan darah diurnal. Tetapi yang masih menjadi masalah adalah, kapan waktu yang tepat untuk memberikan berbagai medikasi. Dalam “overwhelming majority” dari percobaan hipertensi, Dr. Cushman mengatakan bahwa obat sebaiknya diberikan pagi hari jika merupakan formula satu kali sehari.[5]

The CONVINCE Trial adalah studi jangka panjang pertama untuk meneliti obat yang khusus didesign untuk mencegah lonjakan tekanan darah pada pagi hari. Peneliti membandingkan CO-ER verapamil dengan hydrochlorothiazide atau atenolol. Sementara hasilnya masih diteliti.

Strategi terapi pada hipertensi resisten termasuka didalamnya adalah penambahan obat lain atau merubah obat dengan tujuan untuk mendapatkan kombinasi yang sinergis. Kebanyakan pasien mengkonsumsi semua obatnya dengan dosis pagi hari. Telah dievaluasi pengaruh pola sirkadian tekanan darah paada modifikasi waktu pemberian obat tanpa membah jumlah obat yang diresepkan. Yang diteliti adalah 250 orang pasien hipertrensi yang mendapat tiga macam obat dengan dosis tunggal di pagi hari.Pasien- pasien tersebut dibagi 2 kelompok, kelompok pertama merubah salah satu obat tetapi mempertahankan ketiga obat pada pasi hari atau mendapat perlakukan yang sama tetapi mendapat obat baru pada saat menjelang tidur.

Tekanan darah kemudian diukur selama

48 jam sebelum pengobatan dan setelah 12 minggu terapi. Hasilnya tidak ada efek pada tekanan darah ambulatorar ketika semua obat dimakan pada saat bangun. Tekanan darah ambulatory menurun secara signifikan (9.4/6.0 mm Hg for systolic/diastolic blood pressure; *P*<0.001) dengan penambahan satu obat saat tidur. Penurunan ini semakin lebar pada malam hari (nocturnal) daripadadiurnal. Kemudian, hanya 16% pasien menurun saat baseline, 57% menurun setelah terapi.

Hasil dari evaluasi ini mengindikasikan bahwa pada hipertensi resisten waktu pengobatan akan lebih penting untuk control tekanan darah dan untuk memodel pola tekanan darah sirkadian dari pada hanya sekedar merubah kombinasi obat.[4]

Pasien diabetes yang disertai dengan hipertensi adalah golongan dengan resiko paling tinggi untuk terjadinya infark miokard yang silent. Biasanya disertai dengan penebalan dinding jantung atau hipertropi. Pada pasien seperti ini tekanan darah malam dan pagi hari harus selalu dievaluasi. Pada pasien dengan diabetes tipe 2, tekanan darah pagi hari dan lonjakan yang sering terjadi pada tekanan darah pagi hari lebih sering terjadi pada pasien dengan mikroalbuminuria daripada tanpa albuminuria. Penelitian lain menyebutkan bahwa tekanan darah pagi >130/85 mmHg mempunyai resiko untuk terjadi komplikasi yang lebih besar. Pada prakteknya, sulit untuk memeriksa tekanan darah pasien diabetes selama 24 jam.

Kuriyama, et all, mencoba untuk memberikan terapi antihipertensi unik untuk pasien diabetes dengan nefropaty. Pengobatan tersebut yang disebut juga sebagai *cocktail medication*, dapat diberikan sebagai berikut: memberikan calcium chanel bloker dan atau tanpa diuretic pada pagi hari, angiotensin reseptor bloker pada sore hari, bersamaan dengan alpha1- bloker pada saat menjelang tidur. Terapi ini berhasil menurunkan tekanan darah pada pagi hari dan menurunkan sekresi protein urin.terapi ini berdasarkan pengaruh hormonal, simpatis, dan system rennin yang aktif pada pagi hari dan dikombinasi dengan kronoterapi untuk menghasilkan terapi yang memuaskan. Penelitian lain menyebutkan bahwa angiotensin reseptor bloker long acting dan alpha 1 bloker saat tidur atau angiotensin converting enzim juga berhasil menurunkan tekanan darah pagi hari.[7]

V. Tantangan dalam kronoterapi

Seorang dokter sebaiknya mulailah mempertimbangkan agent chronotherapeutic. Tidak diragukan bahwa dini hari dalah jam dengan resiko kardiovaskular yang tingngi. Sangatlah penting untuk melihat profile tekanan darah selama 24 jam yang benar.

Selanjutnya chronotherapeutic jangan hanya dimarketkan semakin besa, kita harus selalu ingat bahwa fungsi tubuh kita terorganisasi secara baik selama 24 jam dan jam tubuh kita terjadi secara singkron. Paradigma ini harus diinggat dalam perawatan hipertensi.[3]

Wiiliam C. Cushman,, Professor of Preventive Medicine and Medicine, University of Tennessee Health Science Center, Memphis, mendiskusikan tantangan penggunaan kronoterapi pada pasien dengan hipertensi.

Tiga perempat pasien dengan hipertensi essensial yang tidak diobati mengalami penurunan (dippers) sementara sekitar 20% non-dippers. Ada kelompok lain pada pasien tua dengan hipertensi, mengalami, the extreme dippers, dimana tekanan sistoliknya turun lebih dari 20% dibandingkan tingkat sehari- hrinya. Beberapa studi menghubungkan extreme dipping dengan end-organ damage, termasuk infark serebral silent termasuk area putin, deteriorasion penglihatan. Akan tetapi menurut Dr. Cushman, hal ini belum jelas apakah ini merupakan akibat atau penyebab penurunan tekanan darah yang terjadi. Akan tetapi kerusakan serebrovaskular silent dan neuropaty iskemik optic anterior merupakan resiko potensial dari penurunan tekanan darah yang terlalu rendah pada malam hari.

Pada pasien yang Non-dippers, pada satu sisi menunjukkan resiko yang lebih tinggi mengenali kerusakan organ target dan kejadian kardiovaskular dibandingkan pasien dengan normal dipper, sehingga diduga terdapat keuntungan bila menurunkan tekanan darah pada malam hari pada pasien non dipper untuk membentuk pola yang mendekati

Kita harus waspada karena banyak pasien minum obat antihipertensi pada malam hari, walaupun kebanyakan formula diminum pada pagi hari. Hal ini terutama berbahaya untuk pasien dengan “excessive dipping at night,”. Kronoterapi antihipertensi didesain untuk mendapatkan efek puncak setelah periode beresiko pada malam hari.

Penelitian di Jepang, membandingkan kemungkinan stroke-free survival pada pasien dengan berbagai tipe tekanan darah, hasilnya pasien dipper dan non-dipper memperlihatkan survival efek yang hamper sama, sementara kondisinya memburuk pada pasien dengan extreme dipper dan memburuk pada "risers"(*Hypertens* 2001;38:852). Risers, adalah sebagian kecil pasien yang mengalami peningkatan tekanan darah pada malam hari, yang mempunyai resiko stroke dan kejadian kardiovaskular yang lebih besar.

Kronoterapi untuk hipertensi dapat menyebabkan akibat yang berbahaya menurut Dr. Pickering. Obat harus mempunyai formulasi spesifik sesuai dengan pola tekanan darah pasien secara individual pada saat mendesign obat tersebut.

Apabila obat dengan formulasi pembeian satu kali sehari, diberikan pada malam hari, dokhawatirkan obat tersebut akan menurunkan tekanan darah padaa malam harinya terlalu rendah sehingga efek pagi harinya justru tinggal sedikit. Memberikan semua obat pada sore hari juga bukan merupakan hal yang tepat. Dr. Cushman menyatakan, terdapat tiga golongan yaitu dippers, non-dippers, dan excessive dippers yang harus diperhatikan untuk mendapatkan efek maksimal dari kronoterapi.

Agen Kronoterapi memberikan hasil yang lebih baik dalam mengoptimalisasikan tekanan darah, ummnya pada psien yang beresiko tinggi, kebanyak pada lansia, pasien dengan gangguan renal, pasien yang sensitive garam, dan yang lainnya lagi.[2,3,5]

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RESEARCH ARTICLE

Determination of Hospital Strategic Program Priority by Using Analytical Hierarchy Process

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Abstract
Hospitals have an important role as a health service subsystem. Service programs carried out by hospitals produce many programs that must be prepared and implemented by the hospital. It is necessary to prioritize the strategic program so that the resources owned by the hospital can be utilized optimally. Along with the development of science and technology, a variety of analytical tools developed that can be used to determine the priority scale of a program. Analytical Hierarchy Process (AHP) is one model of analysis in decision making. Each program is compiled and then labeled. Each program is analyzed using Saaty Scale against other programs. The results of the analysis are arranged in the AHP matrix then sorted based on the results of the calculation from the highest to the lowest score. Based on the results of the analysis using AHP, it was found that the strategic program with the highest calculation results was the Development of Marketing Programs.

Kata kunci: Analytical Hierarchy Process , Hospital, Strategic,

Abstrak
Rumah Sakit memiliki peran penting sebagai salah satu subsistem pelayanan kesehatan. Program pelayanan yang dilakukan oleh rumah sakit menghasilkan banyaknya program yang harus disusun dan dilaksanakan oleh rumah sakit. Dibutuhkan penentuan prioritas program strategis agar sumber daya yang dimiliki oleh rumah sakit dapat dimanfaatkan secara optimal. Seiring dengan berkembangnya ilmu pengetahuan dan teknologi, maka berkembang berbagai perangkat analisis yang dapat digunakan untuk menentukan skala prioritas sebuah program. *Analytical Hierarchy Process* (AHP) merupakan salah satu model analisis dalam pengambilan keputusan. Setiap program disusun kemudian diberikan label. Setiap program dianalisis dengan menggunakan Saaty's Scale terhadap program yang lain. Hasil analisis disusun dalam matriks AHP kemudian diurutkan berdasarkan hasil penghitungan dari skor tertinggi hingga terendah. Berdasarkan hasil analisis dengan menggunakan AHP diperoleh bahwa program strategis dengan hasil perhitungan tertinggi adalah Pengembangan Program Pemasaran.

Kata kunci: *Analytical Hierarchy Process*, Rumah Sakit, Strategis,

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Introduction

Health is one of the most complex problems in today's modern world. According to Blum (1974) there are four main factors that determine the degree of public health, namely: behavior, environment, health services and heredity, which can be broken down into secondary and tertiary factors.

Another factor that causes increasingly complex health problems is the advancement of science and technology in the field of public health and medicine, which has provided various alternatives that can be used to solve health problems that occur in the community.

To solve the problems faced by the community, it is necessary to develop health programs. This health program is carried out by health institutions including health service institutions such as clinics, community health centers, and hospitals.

Hospitals have an important role as a health service subsystem. Health services provided by hospitals include medical services, medical support services, care services, and various other services. The many forms of service programs carried out by hospitals result in many programs that must be prepared and implemented by the hospital. Due to the limited resources available, it is necessary to determine program priorities. One method for determining program priorities can use Analytical Hierarchy Process.

Analytic Hierarchy Process (AHP) is an approach model that provides opportunities for health program planners and managers to be able to build ideas or ideas and define existing problems by making assumptions and then getting the solutions they want .

The use of the AHP method applies intelligently to a complex mathematical approach but is based on a qualitative approach that can be accepted by all stakeholders and program managers. To get the most out of a program, the first step is to choose and determine the right priorities and then implement them correctly.

The purpose of this study is to determine the priority program that is the most effective and efficient, with analytical methodology using the decision-making system of the AHP model.

Method

AHP is a mathematically based procedure that is very good and suitable for the conditions of evaluating qualitative attributes. These attributes are mathematically quantitative in a set of paired comparisons. AHP advantages are compared to others because of the hierarchical structure, as a consequence of the selected criteria, to the most detailed sub-criteria. Taking into account the validity up to the tolerance limit of inconsistencies of various criteria and alternatives chosen by decision makers (Saaty, 1990). Because it uses input from human perception, this model can process qualitative and quantitative data. So the complexity of the problems around us can be approached well by this AHP model. In addition AHP has the ability to solve multi-objective and multi-criteria problems based on the comparison of preferences of each element in the hierarchy. So this model is a comprehensive decision-making model.

The working principle of Analytical Hierarchy Process (AHP) has several steps. These stages include factor identification, hierarchy preparation, priority setting, and priority weighting. Factor identification is done to determine the causal factors. The hierarchy or structure of decisions is made to describe the system elements or alternative decisions identified. Priority determination is done by pairwise comparison, which is comparing each element with other elements at each hierarchical level in pairs so that the level of element importance is obtained in the form of qualitative opinions. To quantify the qualitative opinion, a rating scale is used so that the value of opinions will be obtained in the form of numbers (quantitative). Priority weights show the results of AHP pairwise comparisons in priority weights that reflect the importance of elements in the hierarchy.

Results and Discussion

There are several steps needed to determine program priorities:

1. Determine priority values

Usually people find it easier to say that Program A is more important than Program B, Program B is less important than Program C, but has difficulty mentioning how important Program A is compared to Program B or how important the Program B is compared to Program C. Therefore it is necessary to make conversion table of priority statements into numbers. Program priority value scale table as in this table:

Table 1 Scale of Program and Definition

Scale	Importance
1	Equal Importance
3	Slightly more Importance
5	Materially more Importance
7	Significantly more Importance
9	Absolutely more Importance
2, 4, 6, 8	Compromise values

2. Develop and Define Programs

To simplify the analysis, then each program is represented with letters, because there are 11 program items to be proposed then there are programs with labels from A to K.

Table 2 Program and Label

No.	Program	Label
1.	Addition of Service Items	A
2.	Building Renovation	B
3.	Build Cafetaria and Shop	C
4.	Cooperation with Primary Care Center	D
5.	Operational Efficiency	E
6.	Develop Marketing Program	F
7.	Cooperation with Government	G
8.	Improvement of Data Collection System	H
9.	Utilization of Information Technology	I
10.	Workshop & Training Program	J
11.	Recruit New Doctors	K

3. Comparing Each Program

Then make a comparison table of priority of each program by comparing each program. The process of comparing between programs obtained program priority values. The way to fill it is to analyze the priority between line programs compared to the column program. In practice, what is needed is only analyzing the program priorities listed below on the diagonal line.

Table 3 Priority Comparison of Each Program

	A	B	C	D	E	F	G	H	I	J	K
A	1	5	1	0,2	0,2	0,143	0,333	0,2	1	0,333	0,25
B	0,2	1	0,5	0,143	0,111	0,111	0,2	0,2	0,5	1	0,2
C	1	2	1	0,25	0,143	0,125	0,5	0,333	0,333	0,5	0,333
D	5	7	4	1	0,333	0,333	3	2	5	7	4
E	5	9	7	3	1	0,333	5	3	7	5	5
F	7	9	8	3	3	1	7	5	7	7	5
G	3	5	2	0,333	0,2	0,143	1	0,333	3	3	0,2
H	5	5	3	0,5	0,333	0,2	3	1	3	4	1
I	1	2	3	0,2	0,143	0,143	0,333	0,333	1	0,5	0,333
J	3	1	2	0,143	0,2	0,143	0,333	0,25	2	1	0,333
K	4	5	3	0,25	0,2	0,2	5	1	3	3	1

4. Determining Program Weight

Next is to determine the weight for each program, this weight value ranges from 0 - 1. The total weight for each column is 1. How to calculate weight is the number in each box divided by the sum of all numbers in the same column.

Table 4 Determination of the Weight of Each Program

	A	B	C	D	E	F	G	H	I	J	K
A	0,028	0,098	0,029	0,022	0,034	0,05	0,013	0,015	0,03	0,01	0,014
B	0,006	0,02	0,014	0,016	0,019	0,039	0,008	0,015	0,015	0,031	0,011
C	0,028	0,039	0,029	0,028	0,024	0,043	0,019	0,024	0,01	0,015	0,019
D	0,142	0,137	0,116	0,111	0,057	0,116	0,117	0,147	0,152	0,216	0,227
E	0,142	0,176	0,203	0,333	0,171	0,116	0,195	0,22	0,213	0,155	0,283
F	0,199	0,176	0,232	0,333	0,512	0,348	0,272	0,366	0,213	0,216	0,283
G	0,085	0,098	0,058	0,037	0,034	0,05	0,039	0,024	0,091	0,093	0,011
H	0,142	0,098	0,087	0,055	0,057	0,07	0,117	0,073	0,091	0,124	0,057
I	0,028	0,039	0,087	0,022	0,024	0,05	0,013	0,024	0,03	0,015	0,019
J	0,085	0,2	0,058	0,016	0,034	0,05	0,013	0,018	0,061	0,031	0,019
K	0,114	0,098	0,087	0,028	0,034	0,07	0,195	0,073	0,091	0,093	0,057

5. Determine Weight and Priority Value

Next is looking for weight values for each program. By summarizing each priority weight value in each row of the table divided by the number of programs. So that the weight of each program is obtained. Next is looking for weight values for each program. The trick is to summarize each priority weight value in each row of the table divided by the number of programs.

Table 5 The Weight of Each Program Based on Priority Scale

No.	Program	Initial	Score	%	Priority
1.	Develop Marketing Program	F	0,2865	28,65	I
2.	Operational Efficiency	E	0,2005	20,05	II
3.	Cooperation with Primary Care Center	D	0,1398	13,98	III
4.	Improvement of Data Collection System	H	0,0882	8,82	IV
5.	Recruit New Doctors	K	0,0853	8,53	V
6.	Cooperation with Governance	G	0,0564	5,64	VI
7.	Workshop & Training Program	J	0,0368	3,68	VII
8.	Utilization of Information Tech	I	0,0321	3,21	VIII
9.	Addition of Service Items	A	0,0313	3,13	IX
10.	Build Cafetaria and Shop	C	0,0255	2,55	X
11.	Building Renovation	B	0,0176	1,76	XI
	Total		1	100	

So that the total weight of all programs = 1 (100%) in accordance with the weighting rules in which the total number of weights must be 100. Table 5 shows that by using the AHP method, all alternative problem solving (programs) can be determined well. From this analysis, it was found that the Develop Marketing program (28.65%) was the first priority, then the Operational Efficiency (20.05%) and the

program which was the last priority was Building Renovation (1.76%).

Conclusion

Based on the discussion in the previous section, it can be concluded that the Analytic Hierarchy Process (AHP) method can be used to prioritize hospital programs. Stakeholders will easily understand program priority setting by using the AHP method.

Based on the AHP method, the program that gets the first priority is the Develop Marketing Program, followed by Operational Efficiency and most recently based on the priority scale is the Building Renovation program.

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RESEARCH ARTICLE

RISK FACTORS ANALYSIS OF WORK RELATED STRESS TO THE FORMAL SECTOR EMPLOYEES IN SEMARANG CITY

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ABSTRACT

Introduction: *Work related stress is a condition experienced by workers in completing their work so that it affects the emotional response, thinking process and physical condition of workers.The data showed in.February 2012, there were 120.4 million workers in Indonesia was dealing with work related stress. Work related stress could make people got some impact such as sleep disorder and headache, coronary heart and hypertension, absenteeism or regularly staying away from work and the accidents in the working environment. The research aims is to analyze work related stres risk factors in formal sector employees in Semarang.*

Methods: *This research was an observational analytic study with cross sectional approach. The measuring tools used was NASA-TLX questionnaire to measure mental work load, Life Event Scale questionnaires to measure work stress and questionnaires to measure interpersonal relationship, role of individuals and career development. The data was taken during November-December 2017. The samples were taken by cluster random sampling technique in accordance with the inclusion and exclusion criteria of 30 civil servants in South Semarang Sub-district Office, 15 members of Indonesian National Police (Polri) staff of Police Headquarterin Semarang and 15 Indonesian National Armed Forces (TNI) officers of the Military Oditurat II-10 Semarang. Bivariate analysis using spearman test and chi-square test. Multivariate analysis using ordinal regression test.*

Summary of Result: *Rank spearman test and chi-square test showed that the variable of age (p=0,000), work period (p=0,000), mental workload (p=0,000) and interpersonal relation (p=0,002) had significant relation with work stress incident, whereas individual role (p=103) and career development (p=0,893) had no relation with work stress occurrence. The variable of working period was the most influential variable of stress incidence with the value of p = 0,024 and OR value of exp (1.521) = 4,576.*

Conclusion: *There is a meaningfull relationship between age, work period, mental workload and interpersonal relationships to work-related stress events. There is no relationship between individual roles and career development to workplace stress issue. The variable of working period is the most influential variable of the occurrence on work-related stress.*

Keywords*: work related stress, civil servant, Indonesian National Police, Indonesian National Armed Forces (TNI)***.**

BACKGROUND

Stress is an accumulation of emotional and physical response as the effect of individual inability during the adaptation with the surrounding environment.[1]Workplace stress is a stressed condition experienced by a worker in completing his or her work. It influences the emotional response, thinking process, and the physical condition which may reduce working performance, efficiency, and productivity.[2] A survey by *Northwestern National Life*showed that 40% of American workers experience occupational stress.[3] On the other hand, a report from *the National Institute of Occupational Health and Safety* (NIOSH) showed that there were two studies about workplace stress level in America. The first study was done by *the Familiar and Work Institute* showed that 26% of the workers often experienced workplace stress. On the other hand, the second study conducted by *Yale University* showed that 20% of the workers experienced the workplace stress.[4] In Indonesia, the workplace with the massive number of workers is commonly the formal sector workplace. The Central Bureau of Indonesia in Semarang reported that in 2006, there were 311,241 (38.4%) formal workers. The formal sector workers are also in a risk of workplace stress. The *National Safety Council* stated that the job with the high risk of workplace stress included civil servant, pilot, journalist, nurse, teacher, and fireman.[5] One of the workplace stress risk factors comes from everyone. It is also called individual stressor which involves age, sex, nutrition status, working period, health condition, double role, personality type, and personal experience. Besides, the other factor may come from the group stressor, which contributes to workplace stress caused by the workplace situation or condition, such as excessive workload, career development, a bad relationship among colleagues, senior, junior, and the organizational stressor. [6]

Based on the background explained above, the writer is interested to conduct a research entitled "Analysis of Workplace Stress Risk Factors on Formal Sector Employee in Semarang" which is aimed to analyze the individual and group risk factors related to the workplace stress experienced by formal sector employee in Semarang.

RESEARCH METHOD

This research was conducted from September to December 2017 in Semarang. It was a descriptive analytic research with cross-sectional approach. A survey was used as the method for collecting the data. In this research, 135,477 formal sector employees in Semarang was determined as the population of the research. 95,457 of it were civil servant, army, and cop. For the sample, cluster sampling was taken as a technique in choosing the sample. It obtained 60 sample which included 30 civil servants, 15 armies, and 15 cops. It was in accordance with the determined inclusion and exclusion criteria. The inclusion criteria were the formal sector employee including civil servant, army, and cops (staff) in Semarang, agreed to be the respondent for the research, has been working for ≥ 5 months. On the other hand, the exclusion criteria involved mentally healthy and do not have any heart diseases risk. The data gained from the research was primary data in the form of a questionnaire and interview. The data gained then being inputted to the computer, processed, and analyzed. The analysis, including univariate, bivariate, and multivariate analysis was assisted by *SPSS v19.0 for windows*.

RESULT

Univariate Analysis

Table 1, 2, 3, 4, 5, 6, and 7 are the frequency distribution and sample percentage table respectively based on age, working period, mental workload, interpersonal relationship, individual role, career development, and stress from work.

Table 1

No	Age	Frequency	Percentage (%)
1.	Adolescent	12 respondents	20%
2.	Adult	33 respondents	55 %
3.	Elderly	15 respondents	25%
	Total	60 respondents	100%

Table 2

No	Working Period	Number of respondents	Percentage (%)
1.	short working period	18 respondents	30%
2.	intermediate working period	7 respondents	11.7%
3.	long working period	35 respondents	58.3%
	Total	60 respondents	100%

Table 3

No.	Mental workload	Number of respondents	Percentage (%)
1.	Underload	19 respondents	31.7%
2.	Optimal load	11 respondents	18.3%
3.	Overload	30 respondents	50%
	Total	60 respondents	100%

Table 4

No	Interpersonal relationship	Number of respondents	Percentage (%)
1.	Bad	22 respondents	36.7%
2.	Good	38 respondents	63.3%
	Total	60 respondents	100%

Table 5

No	Individual Role	Number of respondents	Percentage (%)
1.	Inactive	19 respondents	31.7%
2.	Active	41 respondents	68.3%
	Total	60 respondents	100%

Table 6

No	Career Development	Number of respondents	Percentage (%)
1.	Unsatisfying	34 respondents	56.7%
2.	Satisfying	26 respondents	43.3%
	Total	60 respondents	100%

Table 7

No	Stress from work	Number of respondents	Percentage (%)
1.	No stressful	18 respondents	30%
2.	Lightly Stressful	40 respondents	66.7%
3.	Highly stressful	2 respondents	3.3%
	Total	60 respondents	100%

Bivariate Analysis
The bivariate analysis was aimed to find out the correlation between the determined variables.

a. The correlation between age and workplace stress

Table. 8 The correlation between age and workplace stress case

Variable	Rank Spearman correlation coefficient (ρ)	p
Workplace stress	0.533	0.000

The table above showed the correlation between age and workplace stress case. Nevertheless, the rank Spearman correlation coefficient (ρ)was 0.533 with p 0.000. it meant that there was a significant correlation between age and workplace stress case on formal sector employee in Semarang.

b. The correlation between working period and workplace stress

Tabel.9.The correlation between working period and workplace stress case

Variabel	Rank spearman correlation coefficient (ρ)	p
Working period Workplace stress	0.677	0.000

The table above showed the correlation between working period and workplace stress case using rank Spearman correlation test. The coefficient value of rank spearman correlation was 0.677 with p was 0.000. it meant that there was a significant correlation between the working period and the workplace stress case on formal sector employee in Semarang.

c. The correlation between mental workload and workplace stress

Tabel.10.The correlation between mental workload and workplace stress case

Variabel	rank spearman correlation coefficient (ρ)	p
Mental workload Workplace stress cases	0.512	0.000

The table above showed the correlation between mental workload and workplace stress case using rank Spearman correlation test. The coefficient value of rank spearman correlation was 0.512 with p was 0.000. it meant that there was a significant correlation between mental workload and the workplace stress case on formal sector employee in Semarang.

d. The correlation between interpersonal relationship and workplace stress case

Table. 11 The correlation between interpersonal relationship and workplace stress case

Variable	Workplace stress								P
	Not Stressful		Lightly Stressful		Highly Stressful		Total		
	N	%	N	%	N	%	N	%	
Interpersonal relationship									
Bad	1	4.5	21	95.5	0	0.0	22	100.0	0.002
Good	17	44.7	19	50.0	2	5.3	38	100.0	

the table above showed the result of chi-square analysis on the correlation between interpersonal relationship and workplace stress case that p = 0,002 (<0,05). It meant that there was a correlation between interpersonal relationship and workplace stress case on formal sector employee in Semarang.

e. The correlation between individual role and workplace stress case

Table.12 The correlation between individual role and workplace stress case

Variable	Workplace stress								P
	Not stressful		Lightly stressful		Highly stressful		Total		
	N	%	N	%	N	%	N	%	
Individual role									
Not active	9	47.4	10	52.6	0	0.0	19	100	0.103
Active	9	22.0	30	73.2	2	4.9	41	100	

The table above showed the chi-square analysis on the correlation between individual role and workplace stress case. It gained p = 0.103 (>0.05) so that it could be concluded that there was no correlation between individual role and workplace stress case in Semarang.

f. The correlation between individual role and workplace stress case

Table.13 The correlation between career development and workplace stress case

Variable	Workplace stress								P
	Not Stressful		Lightly stressful		Highly stressful		Total		
	N	%	N	%	N	%	N	%	
Career development									
Unsatisfying	11	32.4	22	64.7	1	2.9	34	100.0	0.893
Satisfying	7	26.9	18	69.2	1	3.8	26	100.0	

The table above showed the chi-square analysis on the correlation between individual role and workplace stress case. It gained p = 0.893 (>0.05) so that it could be concluded that there was no correlation between career development and workplace stress case in Semarang.

To find out which variable influence workplace stress the most on formal sector employee in Semarang, multivariate analysis was used in a form of ordinal logistic regression.

Table.14 Multivariate analysis of ordinal logistic regression on age, working period, mental workload, interpersonal, individual role, career development, and workplace stress.

Variable	p-value	Coefficient of Determination
Age	0.091	0.731
Working period	0.024	
Mental workload	0.037	
Interpersonal relationship	0.037	
Individual role	0.081	
Career development	0.858	

The table above showed that the most influential variable was the variable with a p-value <0,05. The significantly influential variable was working period (p = 0.024), mental workload (p = 0.037)

and interpersonal relationship (p = 0.037), with Negelkerke coefficient of determination of 0.731 or 73.1%. It meant that was the working period, mental workload, and interpersonal relationship variables generally influence the workplace stress on formal sector employee in Semarang at 73.1%.

CONCLUSION

Based on the research finding about analysis of workplace stress risk factors on formal sector employee in Semarang, it could be concluded that there was a significant correlation between age, working period, mental workload, and interpersonal relationship with the stress in the workplace on the formal sector employee in Semarang with coefficient of determination at 73.1%.

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RESEARCH ARTICLE

STEM CELL TRANSPLANTATION THERAPY AS AN EFFORT OF HEALTHCARE IN ISLAMIC LAW PERSPECTIVE

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ABSTRACT

The advancement of medical science and technology is highly developed today, including stem cell transplantation therapy as a new hope for treating a variety of diseases that could no longer treat conservatively and operatively. In developing stem cell transplantation as a cure of disease shall be following applicable health law, bioethics, morality, and religion, especially Islamic law.
The purpose of this research is to determine the view of Islamic law in the implementation of stem cell transplantation therapy. This research using normative juridical approach, with the primary data source is the secondary data. Arranged in a qualitative descriptive study. Against the problem under study is the policy of the law, bioethics, and Islamic law in the implementation of stem cell transplantation therapy as well as matters relating to the issue based on Al Qur'an and As-Sunnah.
The results of the study according to Islamic Law mentions the therapeutic use of stem cell transplants can only be carried out for healing illness and rehabilitation of health, as well as prohibited to use for reproductive purposes using stem cells derived from non- embryonic. The stem cells should not derive from human embryonic stem cells. Implementation of stem cell transplantation therapy according to Islamic law basically to be able to maintain the interest of life by protecting and maintaining human being.
Keywords: Stem cell transplant, Islamic law

TERAPI TRANSPLANTASI SEL PUNCA SEBAGAI UPAYA PELAYANAN KESEHATAN PERSPEKTIF HUKUM ISLAM

ABSTRAK

Kemajuan ilmu pengetahuan dan teknologi kedokteran dewasa ini sangat berkembang, diantaranya terapi transplantasi sel punca sebagai harapan baru untuk mengobati berbagai penyakit yang sudah tidak dapat diobati lagi secara konservatif maupun operatif. Dalam mengembangkan transplantasi sel punca sebagai penyembuhan suatu penyakit harus sesuai dengan hukum kesehatan yang berlaku, bioetik, moral dan agama khususnya hukum Islam.
Tujuan penelitian ini adalah untuk mengetahui pandangan hukum Islam terhadap pelaksanaan terapi transplantasi sel punca sebagai upaya pelayanan kesehatan di Indonesia. Penelitian ini menggunakan pendekatan yuridis normatif, dengan sumber data utama adalah data sekunder. Penelitian disusun secara deskriptif kualitatif. Terhadap masalah yang diteliti yaitu hukum Islam dalam pelaksanaan terapi transplantasi sel punca serta hal-hal yang berkaitan dengan masalah tersebut dilakukan pengkajian dengan berpedoman pada Alqur'an dan Assunnah.
Hasil penelitian menurut hukum Islam menyebutkan penggunaan terapi transplantasi sel punca hanya dapat dilakukan untuk tujuan penyembuhan penyakit dan pemulihan kesehatan, serta dilarang digunakan untuk tujuan reproduksi dengan menggunakan sel punca yang berasal dari non embrionik. Sel punca tidak boleh berasal dari sel punca embrionik. Pelaksanaan terapi transplantasi sel punca menurut hukum Islam pada dasarnya harus dapat memelihara kepentingan hidup dengan menjaga dan memelihara kemashlahatan manusia.
Kata kunci : Transplantasi Sel Punca, Hukum Islam

Indonesia recognizes the existence of Islamic law either legally constitutional, formal juridical and normative. Islamic law based on the juridical constitutional article 29 paragraph (1) of the Act of 1945 which states "the State based on the divinity of the Almighty." Hazairin interprets the article above that in the Republic of Indonesia; it should not happen or apply something that is contrary to the rules of Islam for Muslims, as well as for other people.

Al-Qur'an and Sunnah are the primary source of law in Islam, all matters relating to life including health, science and technology in general contained in the Qur'an and Sunnah.

ىَّتَح ْمِهِسُفنَأ ِيفَو ِقاَفآلاِ يف ْمِهيِرُنَس ءِيَشِلُكِ ىَلَع ُهَّنَأ َكِّبَرِب ِفكَي ْمَلَو َأ َّقَحلاِ ْنَأ ْمُهَّنَأ ٌديِهَش

We will show them Our signs in the horizons and within themselves until it becomes clear to them that it is the truth. But is it not sufficient concerning your Lord that He is, over all things, a Witness? (QS Al Fushilat:53)

Rasulullah s.a.w. said:

ُةَّحِصلا ِساَنلا َنِم ٌريِثَك اَمِهيِف ٌنُوبُغْم ِناَتَمْعِن ُغاَرَفلاَو

"Two favors are often overlooked by most humans is a health and leisure."

(Al-Bukhari Hadith history of Ibn Abbas)

Law in Islam has a two-dimensional perspective. First, tsubut dimension, the Shari'a universal and become a unifying principle activity of Muslims worldwide. Second, dimensions taghayyur, the product of human thought in understanding the Shari'ah (Ijtihad) which is called fiqh. This second dimension gives the possible differences for the law that rules every region inhabited by Muslims, depend on each political backgrounds, historical, sociological and cultural. Here Ijtihad becomes a necessity in the sense of an effort to translate the messages of universal law so that it becomes a proper configuration that can address the problem of law developed in the community.

Globalization with its various aspects requires Islamic law to be able to answer a wide range of legal issues that not previously exist. The relationship between legal theory and changes in society in the era of globalization is an essential issue in the philosophy of law. Minister of Religious Affairs, Suryadharma Ali affirmed that the fatwa could make Islam shalihun li kulli zaman wa makan (adaptable to the situation and condition of the era). "The fatwa is an Islamic intellectual treasure which very distinctive and functioned properly until now. For some social change phenomena that need a fatwa to provide legal certainty, the fatwa will always be present on time with the substance fulfilling to the needs of Muslim communities. "

The ulama have devised a set of methodologies to interpret the verses and hadith to get closer to the intentions of ruling the law on the one hand and put the tuning result by the fact that exist in the community on the other. A systematic framework of that principle, first introduced by Imam al-Shafi'i (150-204 H). In general, the reasoning methods can divide into three patterns, Bayani pattern (the study of semantics), ta'lili pattern (determination 'illat), and the pattern istishlahi (nash-based public benefit considerations).

One source of stem cells in question is embryonic cells. Embryonic stem cells can grow into different types of cells in the body, except the ovum and sperm. With its ability, embryonic stem cells become the most flexible to use. However, the human embryonic stem cell research violated ethical boundaries because to start creating lines of stem cells (stem cell line), then it will usually sacrifice human embryos.

What can be achieved with technology may not necessarily be accepted by religion and law in society. Transplantation therapy is a problem of ijtihad because there is no explicit legal basis in the Qur'an and Hadith and also a relatively complicated problem involving many fields of study, then this issue should be analyzed by using the multidisciplinary approach method, such as medicine, biology, law, ethics, and religion to obtain a proportional and fundamental ijtihadi conclusions of law.

ةَظِعْوَم ْمُكَتَءآَج ْدَق ُساَنلاِ اَهُّيَأَي ْنَيِنِمْؤُمْلِّل ةَمْحَرَو ىًدُهَو ِروُدُّصلاِ يف اَمِّل ءِافِشَو ْمُكِّبَّر ْنِّم ٥٧

O mankind, there has to come to you instruction from your Lord and healing for what is in the breasts and guidance and mercy for the believers. (QS. Yunus 57)

The Prophet said:

"Allah has create the disease and the cure, as well as Allah has made the cure for every disease. Then you have to seek for the cure and do not seek treatment with the prohibited one " (HR. Abu Dawud from Abud Darda` Allaah 'anhu)

Imam Ahmad has narrated the hadith of Anas Ra that has been said, that the Prophet said:

:لوُقَي أسَنَأ ُتْعمَس
ّزَع َّللا ّنإ َلاَق َّمَلسَو ِهْيَلَع ُّللا ىّلَص ِّللا َلوُسَر ّنإ
اوَوادَتَف َءاَوّدلا َقَلَخ َءاَدلا َقَلَخ ُثْيَح ّلَجَو

"Allah Exalted and Almighty each time creating a disease, he also create a cure. then you must seek for the cure

According to Maskun, although fiqh is a product of human thought, it was categorized as a shari'a as long as it assessed by reference to the Qur'an and Sunnah both through qiyas and maslahah. Mujtahid with qiyas bring furu 'to nash, while with the

maslahah he tried to pay attention to the interests of human life.

Maslahah in human life manifested in two forms: first to result in benefits, goodness, and pleasure for human, and second, avoid humankind from destruction and evil. The benchmarked to determine the cost and benefit in the case of stem cell transplantation therapies tailored to what is becoming a basic necessity for human life.

When viewed concerning legislation and Islamic law, there are no clear and complete provisions for the application of stem cell therapy. This research is expected to provide contributions to the development of Islamic law, especially the law and regulation of stem cell transplantation therapy so that there is a definite legal certainty in the health care effort in Indonesia.

Methods

The approach used is a normative juridical approach and descriptive analysis method. This study uses secondary data as the primary data sources and primary data in the form of interviews with resource persons who are experts in their fields as supporting data.

Data analysis technique used is a qualitative normative analysis that can not be measured or judged directly by the numbers. Analysis of secondary data qualitatively based on the theory of law and legal doctrine contained in the mind frame, then applied deductively to problem identification of this study, which will then drawn a conclusion that could answer the problems that became problems in this thesis.

RESULT

The provisions of Islamic law in stem cell transplantation therapy as a health care efforts in Indonesia.

According to Jumhurul Ulama, maslahah mursalah can be a source of Islamic law legislation if it meets the following requirements:

a. The Maslahah must be "maslahah that haqiqi" not only based on prejudice of a real benefit means that fostering a law based on the benefit that really can bring benefit and refused mazdarat. However, mere prejudice for their benefit or prejudice their rejection of mazdarat, then coaching such laws base on wahm (prejudice) only and not based on correct Shari'ah.
b. The benefit of a universal benefit, not the benefit of the special, either for an individual or a particular group, because the benefit must use by many people and can refuse mudarat against them.
c. he benefit does not conflict with the benefit contained in al-Quran and al-Hadith either zahir or bathin. Therefore, it is not considered a benefit that is in contradiction with the texts as part equate boys with women in the division of the inheritance, although the division equation postulates equality in the division.

From the above provisions can be formulated that maslahah mursalah can be used as a legal basis and can be applied in everyday actions when it has qualified as mentioned above, and maslahah is a real benefit, not limited to the benefit that is still prejudiced, which can draw a benefit and refused mudarat. Moreover, maslahah contains benefit in general by having access to a comprehensive and does not deviate from the goals contained in the Qur'an and Hadith.

In some religions, a human embryo is a human form in the shape of conception, while for other religions is important is the moment of inspiration, when the embryo develops and obtaining soul. Islamic countries have also been involved in stem cell research, among them Iran which started in 2003. In majority Muslim countries, research on the embryo is affected religious belief that human life begins only after the blowing of the soul into the fetus; approximately 120 days after its creation. Islamic Law Council of North America said that the embryos used for stem cell research outside of the body it is not possible to be human. The controversy in the Muslim world is to create embryos for research purposes.

The ulama who support the permissibility of stem cell transplantation found that transplantation should understand as a

form of charitable service to fellow Muslims. Their establishment of organ and stem cell transplantation can be summarized as follows:

1. Public Welfare (al-mashlahah)
   Permissibility of organ transplants should be limited to the following provisions:
   - The stem cell transplant is the best treatment
   - The degree of success of the procedure is thought to be high.
   - There is consent of the donor stem cells to be transplanted or of his heirs.
   - Physicians who do it are competent experts in the field.
   - Recipients of the organ transplant surgery have notified on the following implications.
2. Altruism (al-itsar)
   Al-Maidah verse 2 has advocated Muslims to cooperate with each other and strengthen their fraternal bond. Thus, based on the values above, the action of a living person to be a donor of stem cell transplant for himself or others who urgently need has to be viewed as an act of altruism of people who realize that they have something useful for others. Based on the results of interviews with Miftah Farid as Chairman of the Majelis Ulama Indonesia Jawa Barat, his opinion on stem cell transplantation therapy in outline is as follows:

   To seek a treatment is an obligation

يِف امَّل ءٓاَفِشَو مُكِّبَّر نِّم ةَظِعوَّم مُكتَءٓاَج دَق سُاَّنلٱ اهَّيَأٓي
٥٧ نَينِمؤُملِّل ةَمحَرَو ىدُهَو رِودُصلٱ

O mankind, there has to come to you instruction from your Lord and healing for what is in the breasts and guidance and mercy for the believers. (QS. Yunus 57)

Prophet said:

"Allah has create the disease and the cure, as well as Allah has made the cure for every disease. Then you have to seek for the cure and do not seek treatment with the prohibited one "

(HR. Abu Dawud from Abud Darda` Allaah 'anhu)

Imam Ahmad has narrated the hadith of Anas Ra that has been said, that the Prophet said:

لُوقَي اَسَنَأ تُعْمِس:

ّزَع َهّللا ّنإ َلاَق َمّلَسَو ِهْيَلَع ُهّللا ىّلَص ِهّللا َلوُسَر ّنإ
اوَداَدَتَف َءاوّدلا َقَلَخ َءاّدلا َقَلَخ ُثْيَح ّلَجَو

"Allah Exalted and Almighty each time creating a disease, he also create a cure. then you must seek for the cure

Stem cell transplantation therapy is the best treatment when there is no other alternative with a lower risk for the disease. The Quran states that Islam does not justify someone to put himself in danger, without trying to find a medical and non-medical cure, including efforts to transplant, which gave hope to survive and be healthy again. (Al-Quran surah Al-Baqarah verse 195)

يِف امَّل ءٓاَفِشَو مُكِّبَّر نِّم ةَظِعوَّم مُكتَءٓاَج دَق سُاَّنلٱ اهَّيَأٓي
نَينِمؤُملِّل ةَمحَرَو ىدُهَو رِودُصلٱ

Say, "Have you seen what Allah has sent down to you of provision of which you have made [some] lawful and [some] unlawful?" Say, "Has Allah permitted you [to do so], or do you invent [something] about Allah ?" (QS Yunus : 59)

ىَلإِ مُكيِديَأِب اوُقلُت اَلَو ِهَّللٱ ِليِبَس يِف اوُقِفنَأو
١٩٥ نَينِسحُملٱ ُّبِحُي َهَّللٱ َّنإِ ۚاوُنِسحَأو ِةَكُلهَّتلٱ

“And spend in the way of Allah and do not throw [yourselves] with your [own] hands into destruction [by refraining]. And do good; indeed, Allah loves the doers of good.” (QS Al Baqarah : 195)

دِجسَملٱ ِنَع مُكوُّدَص نَأ ٍموَق ُنأَنَش مُكَّنَمرِجَي اَلَو......
اَلَو ىَوقَّتلٱو ِرِّبلٱ ىَلَع اوُنَواَعَتَو ْاوُدَتعَت نَأ ِمارَحلٱ
ُديِدَش َهَّللٱ َّنإِ َهَّللٱ اوُقَّتٱو ِنَوٰدُعلٱو ِمثِإلٱ ىَلَع اوُنَواَعَت
٢ ِباَقِعلٱ

And cooperate in righteousness and piety, but do not cooperate in sin and aggression. And fear Allah ; indeed, Allah is severe in penalty. (QS. Al Maidah : 2)

1. Furthermore, it is forbidden to transplant animal organ on humans, such as pig heart valves or kidneys, in this case, is unlawful, from qaidah fiqh:
   مُيرْحّتلا ِءاَيْشَألْا يِف لُصْألْا “
   Basically everything that is forbidden ".

2. The law of transplantation of organ is allowed following the provisions of Shari'a, such is not derived from human embryos and not for trading purposes.

Conclusion:

The implementation of stem cell transplantation therapy according to Islamic law should be able to maintain the interest of life by protecting and maintaining mashlahah in human, although there is no detailed fatwa concerning stem cell transplantation concerning ijtihad using Islamic legal reasoning patterns istishlahi allow stem cell transplantation therapy. Both these laws have restrictions regarding stem cells transplantation and agree that transplantation therapy using stem cells are non-embryonic is allowed do in Indonesia as long as all meet the standards/guidelines and arrangements/ regulations exist in Indonesia, while embryonic stem cells pluripotent and totipotent banned because it is disturbing human dignity.

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RESEARCH ARTICLE

The Effect of Antiretroviral Therapy to change in $CD4^+$ and total lymphocyte count (TLC) values in HIV Patients of RSUD Ambarawa

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Abstract

Introduction

Human immunodeficiency Virus (HIV) is a disease that requires antiretroviral (ARV) therapy. Monitoring of laboratory results is important to know a success of the therapy or to be an indicator of replacement of the therapeutic regimen while research on $CD4^+$ and total lymphocyte counts (TLC) values in HIV patients on ARV therapy is limited, so authors are interested in conducting research on the effect of ARV therapy on changes in value $CD4^+$ and TLC in HIV patients.

Methods

An analytic observational study with a cross-sectional approach using a total sampling technique conducted at Ambarawa Hospital against HIV patients in 2011-2015. Study inclusion criteria were ≥18 years old, receiving ARV therapy, while the exclusion criteria included pregnant HIV patients, and drop outs therapy. Research data using medical record and analyzed using paired sample T-test and One Way Anova.

Results

From 44 samples from 171 HIV patients in 2011-2015 who entered inclusion criteria. From analysis, it was found that 24 patients female sex (54,4%), 15 patients 30-39 yo (34,1%), and 20 patients in clinical stage 3 (45,5%). More than 60% of patients with TB (65.9%), used AZT+3TC+NVP combination ART (65.9%), initial $CD4^+$ count <200 cells/mm^3 (68, 2%), and initial TLC value <1200 /mm^3 (77.3%). Use of ARV therapy influenced the change of $CD4^+$ and TLC (p=0,000; p=0,000) with mean of $CD4^+$ increase of 118,27 cells/mm3 and TLC of 252,28 cells/mm3.

Conclusion

Antiretroviral therapy has an effect on the change of $CD4^+$ and TLC values in HIV patients.

Keywords: antiretroviral, HIV, $CD4^+$, TLC

Introduction

Human Immunodeficiency Virus (HIV) infection causes decrease the immune system so becomes susceptible to illness and causes death.[1] There is an increase in HIV cases every year and by 2016 the case increases to 33% of the total population per 100,000 population and occurs mostly in productive age and in men.[2] Use of antiretroviral therapy (ARV) as a treatment in HIV cases can increase the immune system so that increase life expectancy.[3]

Monitoring of laboratory results is important to know a success of the therapy or to be an indicator of replacement of the therapeutic regimen while research on $CD4^+$ and total lymphocyte counts (TLC) values in HIV patients on ARV therapy is limited, so authors are interested in conducting research on the effect of ARV therapy on changes in value $CD4^+$ and TLC in HIV patients.

METHODS

An analytic observational study with a cross-sectional method, using total sampling technique, and conducted at Ambarawa Hospital which is one of the hospital of patient referral center of HIV. against HIV patients in 2011-2015. Study inclusion criteria were ≥18 years old, receiving ARV therapy, while the exclusion criteria included pregnant HIV patients, and drop outs therapy. Research data used medical record period of 2011-2015 and analyzed using paired sample T-test and one way anova.

RESULT

There were 44 people from 171 HIV patients in 2011-2015 who entered inclusion criteria. From analysis, it was found that 24 patients female sex (54,4%), 15 patients 30-39 yo (34,1%), and 20 patients in clinical stage 3 (45,5%). More than 60% of patients with TB (65.9%), used AZT+3TC+NVP combination ART (65.9%), initial $CD4^+$ count <200 cells/mm^3 (68, 2%), and initial TLC value <1200 /mm^3 (77.3%) (table 1).

Table 1. Characteristics of HIV patients at Ambarawa hospital period of 2011-2015

Characteristics	N	(%)
Age (y.o)		
< 20	1	2,3
20 – 29	14	31,8
30 – 39	15	34,1
40 – 49	13	29,5
>49	1	2,3
Sex		
male	20	45,5
female	24	54,5
WHO clinical stage		
1	5	11,4
2	10	22,7
3	20	45,5
4	9	20,5
TB		
TB	29	65,9
No TB	15	34,1
ARV regimen		
AZT + 3TC + NVP	28	63,6
AZT + 3TC + EFV	4	9,1
TDF + 3TC + NVP	4	9,1
TDF + 3TC + EFV	2	4,5
FDC	6	13,6
Initial $CD4^+$ count (cell/mm^3)		
< 200	30	68,2
200 – 350	14	31,8
Initial TLC value (/mm^3)		
< 1200	34	77,3
≥1200	10	22,7

TB: tuberculosis, ARV: anti retroviral, AZT: zidovudine, 3TC: lamivudine, NVP: nevirapine, TDF: tenofovir, EFV: efavirenz, FDC: fixed dose combination, TLC: total lymphocyte counts

From table 2, ARV therapy has an effect on $CD4^+$ and TLC changes (p=0,000; p=0,000). There was a significant difference between $CD4^+$ count and TLC values before and after ARV used. Mean of $CD4^+$ count and TLC value after ARV treatment were higher than before ARV therapy with increase mean $CD4^+$ count of 118.27 cells/mm^3 and TLC value of 252.28 /mm3.

Table 2. The effect of ARV therapy on $CD4^+$

count and TLC value

	Mean before ARV (sel/mm³)	Mean after ARV (sel/mm³)	*P-Value*
CD4+	138,39	256,66	0,000
TLC	970,45	1222,73	0,000

DISCUSSION

The largest sample in this study was in the age range between 30-39 years. It is similar to previous studies shown more HIV patients at productive age.[2] From this study, majority of HIVpatients were female, it is similar with previous studies,[4] in particular housewives.[5] More than 40% of HIV patients started ARV at clinical stage 3. It is similar to previous study[6] which states that most diagnosed at advanced stage.[7]

Most of HIV patients were TB infection which was likely due to the lack of awareness, willingness and curiosity of the patient to perform early HIV detection so patient comes to the health care center with TB. No one used a second-line combination of ARV, this is accordance with the Ministry of Health program which requires used of first-line ARV therapy in new HIV case findings. More than 60% of patients had a $CD4^+$ count <200 cells/mm3 and TLC <1200 / mm^3 at initial therapy due to lack of awareness of the patient against HIV disease so that HIV patients started ARVtherapy at an advanced stage. It is similar to the previous study which stated that most of the samples started ARV therapy on $CD4^+$ <200 cells/mm^3.[8]Top of FormBottom of Form

There is an effect of ARV therapy on the increase $CD4^+$ count and TLC value in HIV patients. This is due to the increased immune system in HIV patients[9] according to the mechanism of action of antiretroviral drugs to suppress HIV viral replication, so $CD4^+$ and TLC will increase after first-line ARV therapy.[10]

Result of this study is consistent with previous studies that was changes of $CD4^+$ count and TLC values in HIV patients undergoing ARV therapy.[11] Other studies also suggest that HIV patients who received ARV therapy have elevated their $CD4^+$ count and increase survival rate.[12] Based on existing theories, increase mean of this study higher than another study that an increase ranged of $CD4^+$ count after 1 years ARV therapy between 50-100 cells/mm^3.[13]

CONCLUSION

Antiretroviral therapy has an effect on the change of $CD4^+$ and TLC values in HIV patients.

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RESEARCH ARTICLE

Foreign Doctors Practices in Indonesia Health Services Reviewed from Authority Theories

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Abstract

ASEAN Economic Community or AEC has made trading goods, services, and investments without geographical boundaries. However, AEC in health services is merely knowledge sharing, standardization, and accreditation of some health services and there have not been any experts exchanges, since foreign doctors basis to do medical care is competence and legal aspect according to laws and regulations. The regulations have made foreign doctors difficult to do practices in Indonesia. Nevertheless, some of them have conducted practices that have suffered patients. The research objective was to analyze regulations for foreign doctors in Indonesia reviewed from authority theories. This study was analytical descriptive using normative juridical method. The result shows regulations controlling foreign doctors obligations, i.e Undang-Undang Nomer 13 Tahun 2003 regarding Employment, Undang-Undang Nomer 29 Tahun 2004 about Doctors Practices, Undang-Undang Nomor 36 Tahun 2009 about Health, Undang-Undang Nomor 6 Tahun 2011 about Immigration. Some regions i.e. Special Capital Region of Jakarta have made local regulations controlling foreign doctors, i.e. Peraturan Daerah Provinsi DKI Jakarta Nomor 4 Tahun 2009 about Health System, and Peraturan Daerah Provinsi DKI Jakarta Nomor 6 Tahun 2004 about Employment. Those Regulations have fulfilled authority theories. H.D Stout stated that authority is every right and obligation explicitly given by law makers to public legal subjects. According to laws and regulations, foreign doctors have to fulfill strict requirements to legally give health services. However, lack of supervision and light punishments given to law breakers has given an opportunity for foreign doctors to do illegal practices in Indonesia. To conclude, there have not been any special regulations to control foreign doctors in Indonesia.

Keywords : Doctor, Foreign, Health, Authority

Introduction

In this globalization era, numerous countries are working together, and so are countries of *Association of Southeast Asian Nations* (ASEAN), and one of its actions was making *ASEAN economic community* atau AEC.[1] With AEC existence, there have been trading goods, services, capitals, and investments without geographical boundaries.[2] At the moment, AEC in health services is merely knowledge sharing, standardization, and accreditations of some health services, i.e. local health centers (puskesmas) and hospitals, and yet there have not been any experts exchanges in health services.[3] Besides competence, foreign doctors basis to do medical care is legal and regulations.

Objective

This study was to analyze regulations for foreign doctors in Indonesia reviewed from authority theories.

Method

This study was analytical descriptive, a study describing and elaborating several existing conditions and facts regarding foreign doctors practices in Indonesia health services.[4] The method used was juridical normative method, an approach or study in law using approaches/ theories/concepts methods and analysis methods included in dogmatic law.[5] The data was taken from primary materials of law, which are all laws created and/or officially made by a government institution, and/or a government body as upholding those laws must be done firmly and legally by government officials. In addition, this study also used secondary law materials, which are all information about law applied today or having been applied before in other countries, i.e. law books, law journals, scientific reports about law, scientific articles of law, seminars and workshops materials, and draft laws, and also tertiary law materials, i.e. materials mentioned in law dictionaries, other publications regarding law, and other similar materials.[6] Those law materials were gathered using documentary study, a study to review documents relating to laws and regulations, and to existing documents.[7] According to the method, which was analytical descriptive, data analysis was a qualitative approach towards primary and secondary data. The analytical descriptive included positive law content, an activity done to determine the content or meaning of regulations that becomes a reference to solve legal conflicts as the object of the study.[4]

Results

Both in the center and in the region, there are regulations controlling obligations that have to be fulfilled by foreign doctors to give medical care in Indonesia. The regulations are as follow, Undang-Undang Nomer 13 Tahun 2003 about Employment, i.e. Pasal 42,43,44,45,46, 47,48 and 49; Undang-Undang Nomer 29 Tahun 2004 about Medical Practices i.e. Pasal 31,32, 33, 34 and 35; Undang-Undang Nomor 36 Tahun 2009 about Health Services i.e. Pasal1; Undang-Undang Nomor 44 Tahun 2004 about Hospitals i.e. Pasal 14; Undang-Undang Nomor 6 Tahun 2011 about Immigration i.e. Pasal 8,9, 10, 13, 39,40,44,48,52,53,55,61,63,116,119,121,122,123 . In certain regions, some regulations have been made to control foreign doctors, i.e. Special Capital Region of Jakarta has made Peraturan Daerah Provinsi Daerah Khusus Ibu Kota Jakarta Nomor 4 Tahun 2009 about Health System, i.e. Pasal 42. The government of Special Capital Region of Jakarta has also issued regulations for foreign workers, i.e. Peraturan Daerah Propinsi Daerah Khusus Ibu Kota Jakarta Nomor 6 Tahun 2004 about Employment, i.e. Pasal 24, 25, 26, 27, 28, 29, 30.

Discussion

Those regulations are according to authority theories. According to H.D Stout, authority is rights and obligations explicitly given by law makers to public law subjects.[4] According to Bagir Manan, authority in legal is not the same as power (macht). Power only describes rights to do or not to do. In law, authority is both rights and obligations. [8] P. Nicolai stated that rights were a freedom to do or not to do certain actions or according to another party to do certain actions, while rights included necessity to do or not to do certain actions.[5] According to Indroharto, authority is the right to do something. However, the right to do that must still be in the limit of (limited by) what is stated in positive law.[9] Based on regulations in Indonesia, requirements to be fulfilled by foreign doctors to give medical care are quite strict. However, lack of supervision

and light punishments given to the law abiding actions have given an opportunity to do illegal practices in Indonesia.

Conclusion

Medical care to patients given by foreign doctors has not yet been controlled specifically and in details in the regulations, both in the center and in the region.

Advice

1. Urgently making regulations controlling foreign doctors, regarding procedures for stays, working permit, and alsosubstantial matters regarding foreign doctors competence.
2. The need to conduct one stop supervision, by creating a joint body that includes Ministry of Health, Ministry of Manpower and Transmigration, Immigration, and Ministry of Home Affairs, so that the regulations are not overlapping and there is no passing the buck, shifting responsibility to others or blaming others for the responsibility.

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RESEARCH ARTICLE

HOMEOPATHIC PNEUMOCOCCINUM TREATMENT ON *STREPTOCOCCUS PNEUMONIAE* INFECTION IN BALB/C MICE

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Abstract

Introduction: Gram-positive bacteria, *Streptococcus pneumoniae* (*S. pneumoniae*) is a major human pathogen that caused from life-threatening diseases to acute, mild, self-limiting infections such as pneumonia, meningitis, sepsis, and acute otitis media. Common treatments for *S. pneumoniae* infections are β-lactams, vancomycin, macrolides and respiratory fluoroquinolones. Although these treatments have shown to have good results for *S. pneumoniae* infection treatment, they are also known to develop bacterial resistance over the time. Therefore this study was conducted to investigate the effectiveness of Pneumococcinum as homeopathic medicine for *S. pneumoniae* infection. *Methods:* Male BALB/c mice with age of 6-8 weeks were divided into three groups (n=7) which are Pneumococcinum, positive control and negative control. Wild-type of *S. pneumoniae* with CFU of 10^8 was intranasally given to the mice prior treatment. After positive S. pneumoniae infection, Pneumococcinum group was administered with Pneumococcinum 1M orally for 8 days, whereas the positive control was administered with amoxicillin and negative control was not treated. Then CFU was counted and behavioral activity was observed. *Results:* Homeopathic Pneumococcinum showed antibacterial response by decreasing CFU count of *S. pneumoniae* simultaneously with changes of behavioral activity. These results are at par with group treated with amoxicillin. *Conclusion:* Based on current study, Pneumococcinum has potential antibacterial activity by inhibiting the growing of *S. pneumoniae*, but future study need to be conducted to investigate its mechanism of action.

Introduction

Homeopathy was introduced in the 18th century by a German physician Dr. Samuel Hahnemann. He discovered that Cinchona (Peruvian bark) can produce similar symptoms of malaria which is effective on treating malaria, instead of the bitterness of the bark as being claimed by other physician at that time. He asserted on this theory after he experimented on himself repeated doses of Cinchona until some symptoms like malaria developed. [1] Currently, homeopathy has been practiced and accepted worldwide in clinics, hospitals and sports sector. [2] With homeopathy medicines, the physicians are being able to treat many cases of acute and chronic diseases such as infectious diseases, allergy, eczema, migraine and many more. [3] Several studies have been done including infectious diseases that caused by streptococcosis, *Escherichia coli*, *Pseudomonas aureus*, *Klebsiella pneumonia*, *Staphylococcus aureus* and Coagulus negative Staphylococcus, [4] however lack of study on *Streptococcus pneumoniae* was noticed.

Gram-positive bacteria, *Streptococcus pneumoniae (S. pneumoniae)* is a major human pathogen that caused life-threatening diseases to acute, mild, self-limiting infections such as pneumonia, meningitis, sepsis, and acute otitis media. Common treatments for *S. pneumoniae* infections are β-lactams, vancomycin, macrolides and respiratory fluoroquinolones. Although these treatments have shown to have good results for S. pneumoniae infection treatment, they are also known to develop bacterial resistance over the time. [5] Homeopathy is one of a complementary treatment that has potential in treating infectious diseases. Therefore this study was conducted to investigate the effectiveness of Pneumococcinum as homeopathic medicine for *S. pneumoniae* infection.

Methodology

Animal ethics of this study was approved by Institutional Animal Care and Use Committee (IACUC) of University Putra Malaysia (UPM) with reference number UPM/IACUC/AUP-R003/2017. Wild-type *S. pneumoniae* of human origin on blood agar plate was purchased from UKM Kesihatan Sdn. Bhd., Malaysia. The *S. pneumoniae* was grown in autoclaved Muller-Hinton broth before intranasally given to mice. Male BALB/c mice with age of 6-8 weeks were acclimatized for a week before starting the study. Mice were allowed to food and water *ad-libitum* and the room was maintained in a 12 hour light-dark cycle with room temperature at 22 ± 2C.

Intranasal infection of S. pneumoniae

Each mice was infected with 15µl of $2x10^8$ CFU wild-type *S. pneumoniae* before divided into groups. To prevent unnecessary pain and lessen uncomfortable condition of the mice, mice were restrained using restrainer to secure and immobilize them. *S. pneumoniae* was delivered using micropipette into both nares evenly and slowly. [6]where it can reside, multiply and eventually overcome host defences to invade to other tissues of the host. Establishment of an infection in the normally lower respiratory tract results in pneumonia. Alternatively, the bacteria can disseminate into the bloodstream causing bacteraemia, which is associated with high mortality rates(2 The next day, sample was taken via oral swab and *S. pneumoniae* infection was identified through standard identification of *S. pneumoniae* where alpha hemolysis colony, optochin susceptibility, and bacitracin resistant were observed on horse blood agar; and gram positive diplo-cocci morphology identification by microscopic analysis. [7]

Treatments

After infected, mice were divided into three groups with different procedure as in Table 1. Pneumococcinum group was administered with Pneumococcinum 1M orally for 8 days, whereas the positive control was administered with amoxicillin and negative control was not treated.

Table 1 Grouping and its respective treatment

Groups	Description	Procedure
1	Negative control	Infected with 15 µl of *S. pneumoniae*
2	Positive control	Infected with 15 µl of *S. pneumoniae* + Amoxicillin 50mg/kg/day
3	Treatment group	Infected with 15 µl of *S. pneumoniae* + Pneumococcinum 1M 50µl/25g/ tds

Colony forming unit (CFU) analysis

Oral swab of mice was collected on Day 1, 4 and 8 to measure *S. pneumoniae* presence by CFU count. The oral sample was spread all over the surface of horse blood agar then incubated at 37˚C for eighteen hours. Formation of colonies was confirmed as *S. pneumoniae* by identification of standard colony morphology and characteristic hemolysis. A colony was taken into autoclaved Muller-Hinton broth then incubated at 37˚C for twenty-four hours. One milliliter of *S. pneumoniae* was serially diluted ten-fold, and from each tube 1 ml of diluted *S. pneumoniae* was taken out and plated onto horse blood agar then the plates were incubated at thirty-seven degree Celsius. After eighteen hours, CFU's number was counted visually. [7]

Behavioral assessment

The behavioral assessment was adopted from a study titled 'Comprehensive Observational Assessment' by Samuel Irwin. [8]the pattern profile of various classes of pharmacologic agents and their members can be identified and differentiated, and the relative specificity of their actions defined. The method is applicable to a wide range of investigative goals. Inter- and intra-observer reliability studies have shown it to meet the pragmatic requirements for research.", "author" : [{ "dropping-particle" : "", "family" : "Irwin", "given" : "Samuel", "non-dropping-particle" : "", "parse-names" : false, "suffix" : "" }], "container-title" : "Psychopharmacologia", "id" : "ITEM-1", "issue" : "3", "issued" : { "date-parts" : [["1968"]] }, "page" : "222-257", "title" : "Comprehensive observational assessment: Ia. A systematic, quantitative procedure for assessing the behavioral and physiologic state of the mouse", "type" : "article-journal", "volume" : "13" }, "uris" : ["http://www.mendeley.com/documents/?uuid=46f2503b-8f0c-4af6-a9b8-2a6a986f2d75"] }], "mendeley" : { "formattedCitation" : "[8]", "plainTextFormattedCitation" : "[8]", "previouslyFormattedCitation" : "[8]" }, "properties" : { "noteIndex" : 0 }, "schema" : "https://github.com/citation-style-language/schema/raw/master/csl-citation.json" } Specific items that being focused in this study were ruffled fur and lethargy. The assessment was done by observing the ruffled fur and scoring the lethargy of mice for eight days post-infection. Scoring was graded as shown in the Table 2.

Table 2 Scoring of behavioral assessment

Assessments	Score	Description
Ruffled fur	0	Absent
	1	Present
Lethargy	0	None
	1	Lethargy +
	2	Lethargy ++
	3	Lethargy +++

Results & discussion

Started on Day 1 post-infection, negative control, positive control and Pneumococcinum group were positively infected with 2.24 x 10^8 CFU of *S. pneumoniae* (Figure 1). All groups showed presence of ruffled fur (Figure 2) and the lethargy grading (Figure 3) were lethargy2+, lethargy1+ and lethargy1+, respectively. On Day 4 post-infection, the CFU analysis for negative control, positive control and Pneumococcinum group were decreased to 2.18 x 10^6, 2.05 x 10^2 and 2.2 x 10^4, respectively. Ruffled fur was presence in all groups and lethargy grading were lethargy2+, lethargy3+ and lethargy2+, respectively. On Day 8 post-infection, CFU analysis of positive control group was cleared from *S. pneumoniae* infection, whereas negative control and Pneumococcinum group were 2.01 x 10^5 and 2.31 x 10^2, respectively. Ruffled fur were absent in all groups. Positive control group showed none lethargy observation however, negative control and Pneumococcinum group still had lethargy with grade lethargy1+.

The changes of behavior in treatment groups during the study showed parallel results with CFU analysis. Pneumococcinum group (10^2) showed more reliable outcome with consistent decrease compared to non-treatment group which is negative control group (10^5). In current study, infected groups were at the peak of lethargy around Day 2 until Day 5 post infection and at the same time affected their locomotor activities. Similar reaction was found in previous study by Puchta et al. (2014) where *S. pneumoniae* infection started to

show symptoms on Day 3 until Day 5 post-infection and this is when the highest level of neutrophils level was found. [6]where it can reside, multiply and eventually overcome host defences to invade to other tissues of the host. Establishment of an infection in the normally lower respiratory tract results in pneumonia. Alternatively, the bacteria can disseminate into the bloodstream causing bacteraemia, which is associated with high mortality rates(2 Even though behavior of negative control group started to show slow spatial in their cage, the CFU analysis was still high (10^5). Positive results of current study on Pneumococcinum group gave a scientific insight on treating gram-positive bacteria, specifically *S. pneumoniae* infection. In previous study reported by Jadhav (2017) showed gram-negative bacteria, *Staphylococcus aureus* was successfully inhibited by homeopathic medicine, Mercurius solubilis in their in-vivo study. [9] Hence, homeopathic medicines showed interesting results on acting as antibacterial medicine.

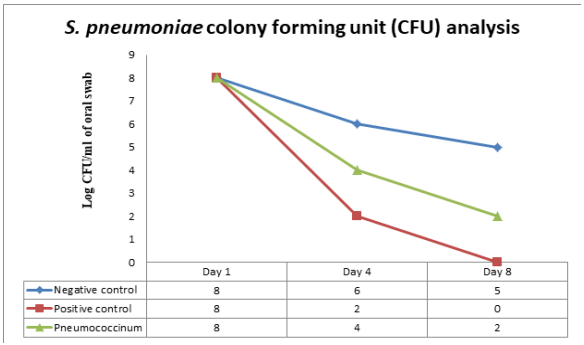

Figure 1 Log of CFU on Day 1, 4 and 8 post infection.

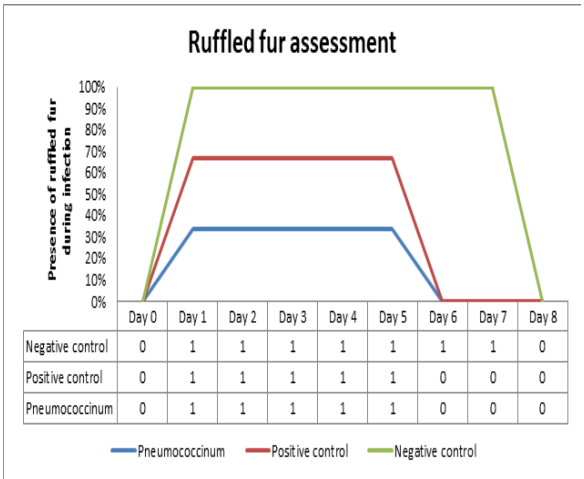

Figure 2 Observational assessment on ruffled fur for 8 experimental days.
0-absent;
1-present.

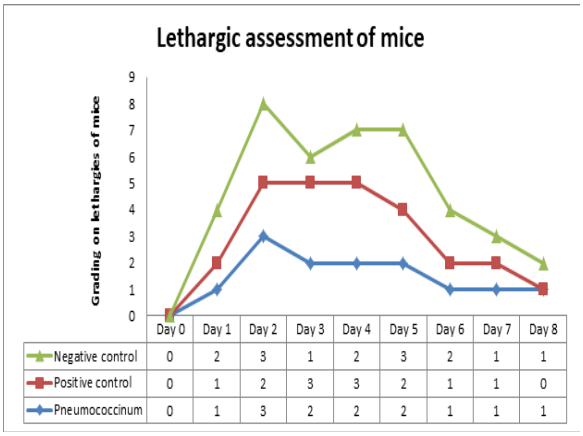

Figure 3 Observational assessment of lethargies in all three groups during studies.
0-none;
1-lethargy+;
2-lethargy++;
3-lethargy+++.

Conclusion

Based on current study, homeopathic medicine Pneumococcinum showed antibacterial potential by inhibiting the growing of *S. pneumoniae* by decreasing the CFU counts and simultaneously giving positive result on behavioral assessment. Yet future study needs to be conducted to investigate its mechanism of action.

Acknoweledgement

We would like to express our gratitude to CRGS for funding the studies. Thanks to CGSRC staff and Faculty Veterinary Medicine UPM for their assistance.

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RESEARCH ARTICLE

Scabies and Pediculosis in Pesantren A Study on Pesantren Lifestyle

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ABSTRACT
Pesantren as a means of educating the public is expected to be an excellent example in all aspects including the health sector. However, in West Java, there is still the term "Budug and Kutuan" because of the incidence of diseases caused by parasites Sarcoptes scabiei hominids varieties and Pediculosis humanis still high in the pesantren. The purpose of this community service was to educate santri on scabies, and pediculosis is scoping in one of the pesantren in Ciwidey-Bandung regency. The aim was for the students understand and practice the behavior of clean and healthy life to avoid the disease. Education about etiology, life cycle, transmission, treatment, and prevention gave by Faculty of Medicine Unisba staff and student using interactive talk show method. The screening conducted on 98 students consisting of 68 males (69%) and 30 females (31%) age 12-26 years with an educational background ranging from 7-11 grade. The results showed 23 students (24%) experienced scabies with the highest incidence in grade 7 age 12-14 years, especially male santri 11 people (48%) and the lowest incidence in grade 9 with age 15-16 years (0%). The incidence of pediculosis found in 22 santri (23%) of 98 people examined and 100% occurred in female santri.
Pesantren visited is one of the Eco-pesantren in Ciwidey-Bandung regency which has developed cultivation on 360 kinds of plants. Scientific contributions from various faculties of medicine, pharmacy, agricultural technology and government and private institutions are needed to find more creative and innovative thinking and more effective funding to try to develop medicinal plants that can help to overcome the problems of scabies and pediculosis in pesantren.
Keywords*: Pesantren, Pediculosis, Scabies, Screening*

ABSTRAK
Pesantren sebagai sarana mencerdaskan masyarakat diharapkan sebagai contoh yang baik dalam segala aspek termasuk bidang kesehatan. Namun di daerah Jawa Barat masih terdapat istilah "Santri Budug dan kutuan" karena angka kejadian penyakit yang disebabkan parasit *Sarcoptes scabiei varietas hominis* dan *Pediculosis humanis* masih tinggi di pesantren. Tujuan pengabdian masyarakat berupa sosialisasi dan penjaringan penyakit *scabie*s dan *pediculosis* di salah satu pesantren di Ciwidey-kabupaten Bandung, dengan sasaran para santri dapat memahami dan mempraktekan perilaku hidup bersih dan sehat sehingga terhindar dari peyakit tersebut. Sosialisasi penyakit berupa penjelasan tentang etiologi, siklus hidup parsit, penularan, pengobatan dan pencegahan dilakukan oleh tim dosen dan mahasiswa FK Unisba menggunakan metode *talk show* interaktif. Penjaringan dilakukan terhadap 98 santri yang terdiri dari 68 orang (69%) laki-laki dan 30 orang (31%) perempuan dengan rentang usia 12-26 tahun dengan latar belakang pendidikan mulai kelas 7–11. Diperoleh hasil 23 orang santri (24%) mengalami *scabies* dengan kejadian tertinggi pada kelas 7 dengan usia 12-14 tahun sebanyak 16 orang (70%), terutama santri laki-laki 11 orang (48%) dan kejadian terendah pada kelas 9 dengan usia 15-16 tahun (0%). Kejadian pedikulosis ditemukan pada 22 orang santri (23%) dari 98 orang yang diperiksa dan 100% terjadi pada santri perempuan.
Pesantren yang dikunjungi adalah salah satu ekopesantren di Ciwidey-kabupaten Bandung yang sudah mengembangkan budi daya sekitar 360 jenis tanaman. Diperlukan kontribusi berbagai bidang keilmuan baik dari fakultas kedokteran, farmasi, teknologi pertanian dan institusi pemerintah dan swasta untuk menemukan pemikiran yang lebih kreatif dan inovatif serta penyaluran dana yang lebih efektif untuk mencoba mengembangkan tanaman obat yang bisa membantu penanggulangan masalah penyakit *scabies* dan *pediculosis* di pesantren.
Kata Kunci: Penjaringan, Pesantren, *Pediculosis, Scabies*,

PENDAHULUAN

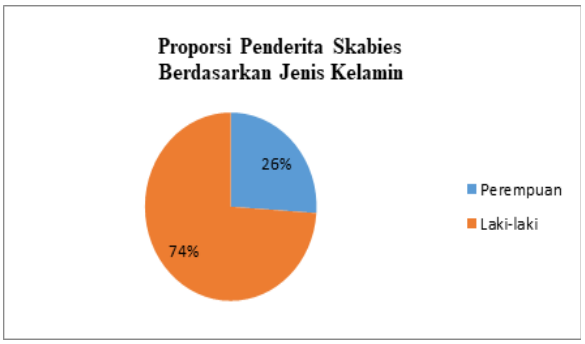
Jawa Barat merupakan daerah agamis dengan jumlah pesantren sekitar 12.000, dan sekitar 475 pesantren berada di daerah kabupaten Bandung. Pesantren sebagai sarana mencerdaskan masyarakat pada umumnya terbagi menjadi 2 jenis yaitu pesantren salafi dan khalafi. Pesantren salafi adalah pesantren yang menggunakan basis pengajaran dengan istilah kitab kuning sedangkan pesantren khalafi menggabungkan pengajaran kitab kuning dengan mata pelajaran sekolah umum seperti halnya siswa sekolah dasar, sekolah menengah pertama dan sekolah menengah atas. Tujuan keduanya pada umumnya sama adalah membantu mencerdaskan generasi pelanjut bangsa yag berguna bagi agama, masyarakat dan negara. Diharapkan lulusannya dapat sebagai contoh yang baik dalam segala aspek termasuk bidang kesehatan. Namun di Jawa Barat masih terdapat istilah "Santri Budug dan kutuan" karena angka kejadian penyakit yang disebabkan infestasi parasit *Sarcoptes scabiei varietas hominis* (penyakit *scabies* atau budug) dan *Pediculosis humanis* (penyakit *pediculosis* atau kutuan) masih tinggi. Penyakit akibat infestasi parasite tersebut termasuk *Neglected Tropical Diseases* (penyakit daerah tropis dan di negara sedang berkembang yang terbengkalai) masih banyak ditemukan terutama pada masyarakat yang bertempat tinggal berkelompok seperti masyarakat pesantren. Hal ini sangat erat kaitannya dengan perilaku hidup bersih dan sehat (PHBS), baik secara individu maupun kebersamaan dan kebersihan lingkungannya. Tujuan survey ini adalah suatu bentuk kepedulian dalam bentuk pengabdian masyarakat fakultas kedokteran UNISBA untuk mensosialisasikan PHBS dan penjaringan kejadian penyakit *scabies* dan *pediculosis* di salah satu ekopesantren khalafi di wilayah Ciwidey kabupaten Bandung.

METODE

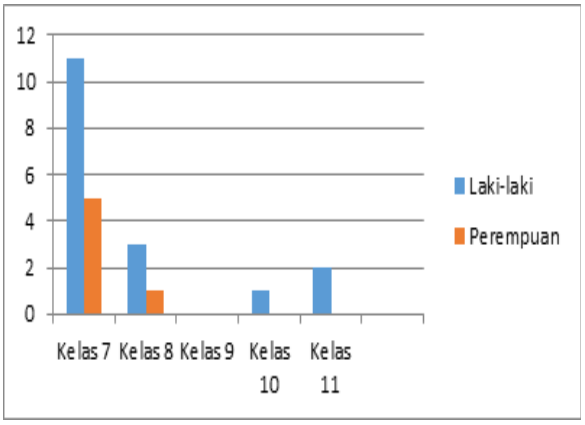
Survey penjaringan kesehatan khususnya penyakit scabies dan pediculosis dilakukan terhadap para santri dan sosialisasi dalam bentuk *talk show* interaktif pada tanggal 25 Maret 2018 ke salah satu ekopesantren khalafi di daerah Ciwidey-kabupaten Bandung.

HASIL

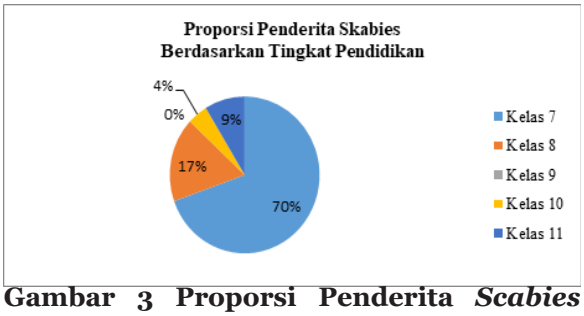
Penjaringan berupa pemeriksaan fisik dilakukan terhadap 98 santri yang terdiri dari 68 orang (69%) laki-laki dan 30 orang (31%) perempuan dengan rentang usia 12-26 tahun dengan latar belakang pendidikan mulai kelas 7–11, hal ini dapat dilihat pada Gambar 1–4. Diperoleh hasil 23 orang santri (24%) mengalami *scabies* dengan kejadian tertinggi pada kelas 7 dengan usia 12-14 tahun sebanyak 16 orang (70%), terutama santri laki-laki 11 orang (48%) dan kejadian terendah pada kelas 9 dengan usia 15-16 tahun (0%). Kejadian pedikulosis ditemukan pada 22 orang santri (23%) dari 98 orang yang diperiksa dan 100% terjadi pada santri perempuan, hal ini dapat dilihat pada Gambar 5–6.



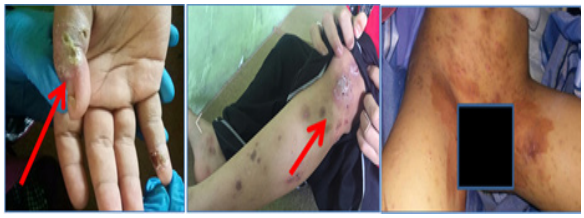
Gambar 1 Proporsi Penderita *Scabies* Berdasarkan Jenis Kelamin



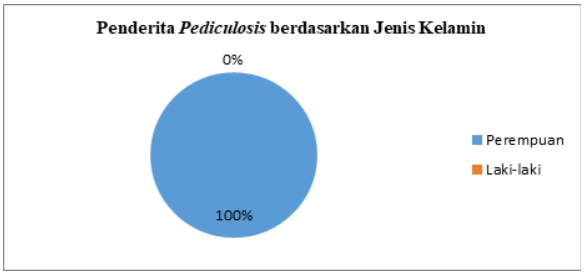
Gambar 2 Jumlah Penderita *Scabies* Berdasarkan Tingkat Pendidikan



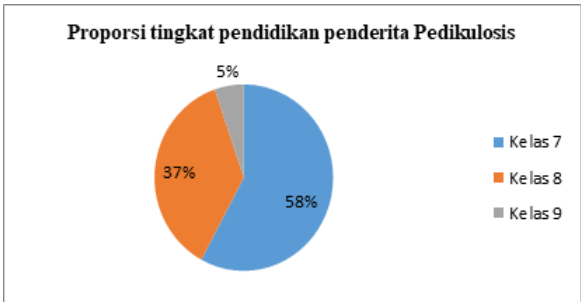
Gambar 3 Proporsi Penderita *Scabies* Berdasarkan Tingkat Pendidikan



Gambar 4 Temuan Skabies pada Berbagai Lokasi pada Tubuh Santri



Gambar 5 Proporsi Penderita *Pediculosis* Berdasarkan Jenis Kelamin



Gambar 6 Proporsi Penderita *Pediculosis* Berdasarkan Tingkat Pendidikan

PEMBAHASAN

Dari hasil yang diperoleh menunjukkan bahwa kejadian scabies di pesantren ini lebih tinggi (24%) dari temuan sebelumnya yang menyatakan bahwa angka kejadian penyakit kudis/ infestasi skabies di Indonesia, terendah di Sulawesi Selatan dan tertinggi di Jawa Barat, berkisar antara 5,6%—12,95%.[1] Hal ini harus mendapatkan perhatian yang lebih tinggi, karena kejadian scabies sangat erat kaitannya dengan pelaksanaan PHBS pribadi dan komunitas juga lingkungan sekitarnya atau higiene yang masih buruk. Penyakit dapat tertular melalui kontak langsung, misalnya berjabat tangan dan tidur bersama atau kontak tidak langsung, misalnya pakaian, handuk, seprai dan bantal.[1-2] Kejadian *scabies* paling tinggi terjadi pada kelompok usia kelas 7 anatara 13-14 tahun, hal ini menunjukkan bahwa kelompok usia ini memerlukan perhatian khusus karena masih peralihan antara usia kanak-kanak ke usia remaja, dengan kemapuan berfikir dan kemandirian yang belum matang.

Angka kejadian *pediculosis* ditemukan terjadi pada 23% santri yang terdiri dari 100% pada santri perempuan, hal ini lebih rendah dari penelitian sebelumnya yang menemukan angka kejadian pediculosis yaitu 71,3% putri yang tinggal di asrama di Yogyakarta.[3] Hal ini memerlukan perhatian khusus juga, karena angka kejadian *pediculosis* yang 100% pada santri wanita menunjukkan bahwa kebersihan kulit kepala dan rambut masih diabaikan sehingga memerlukan bimbingan dan pengarahan agar hal ini dapat ditanggulangi dengan benar. Sehingga moto “Kebersihan sebagian dari iman “ dapat direalisasikan di pesantren.

Pesantren yang dikunjungi merupakan ekopesantren yang selain memberikan pengajaran masalah agama, juga mengajarkan santrinya bercocok tanam dan mengolah hasil pertaniannya dengan hasil sekitar 360 jenis tanaman di lahan seluas 14 hektar. Mengingat sumber daya alam daerah tersebut yang subur dan menghasilkan berbagai hasil pertanian yang beraneka ragam, perlu difikirkan untuk menemukan inovasi dan terobosan yang lebih kreatif untuk pengembangan tanaman obat di lahan perkebunan dan pertanian ekopesantren tersebut yang dapat membantu pemberantasan penyakit akibat parasit yang masih banyak terjadi di pesantren tersebut.

KESIMPULAN

Penyakit *scabies* terjadi pada 23 orang santri (24%) dengan kejadian tertinggi pada kelas 7 dengan usia 12-14 tahun (70%), terutama santri laki-laki 11 orang (48%) dan kejadian terendah pada kelas 9 dengan usia 15-16 tahun (0%). Kejadian pedikulosis ditemukan pada 22 orang santri (23%) dari 98 orang yang diperiksa dan 100% terjadi pada santri perempuan.

REKOMENDASI

Diperlukan kerjasama berbagai pihak, antara pihak pesantren, pemerintah dalam hal ini dinas kesehatan dan dinas pendidikan dan dinas kementrian agama, institusi pendidikan seperti hal nya fakultas kedokteran, fakultas farmasi dan fakultas teknologi pertanian untuk menciptakan terobosan pembuatan tanaman obat yang dapat dipakai untuk pemberantasan penyakit parasit yang ada di pesantren. Hal ini dapat direncanakan sebagai aplikasi *Academic health system* dan Tri dharma perguruan tinggi.

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RESEARCH ARTICLE

RISK FACTORS ANALYSIS OF WORK RELATED STRESS TO THE FORMAL SECTOR EMPLOYEES IN SEMARANG CITY

M. Riza Setiawan[1] Merry Tiyas Anggraini[2] Titik meliasari[3]

ABSTRACT

Introduction: *Work related stress is a condition experienced by workers in completing their work so that it affects the emotional response, thinking process and physical condition of workers.The data showed in.February 2012, there were 120.4 million workers in Indonesia was dealing with work related stress. Work related stress could make people got some impact such as sleep disorder and headache, coronary heart and hypertension, absenteeism or regularly staying away from work and the accidents in the working environment. The research aims is to analyze work related stres risk factors in formal sector employees in Semarang.*

Methods: *This research was an observational analytic study with cross sectional approach. The measuring tools used was NASA-TLX questionnaire to measure mental work load, Life Event Scale questionnaires to measure work stress and questionnaires to measure interpersonal relationship, role of individuals and career development. The data was taken during November-December 2017. The samples were taken by cluster random sampling technique in accordance with the inclusion and exclusion criteria of 30 civil servants in South Semarang Sub-district Office, 15 members of Indonesian National Police (Polri) staff of Police Headquarterin Semarang and 15 Indonesian National Armed Forces (TNI) officers of the Military Oditurat II-10 Semarang. Bivariate analysis using spearman test and chi-square test. Multivariate analysis using ordinal regression test.*

Summary of Result: *Rank spearman test and chi-square test showed that the variable of age (p=0,000), work period (p=0,000), mental workload (p=0,000) and interpersonal relation (p=0,002) had significant relation with work stress incident, whereas individual role (p=103) and career development (p=0,893) had no relation with work stress occurrence. The variable of working period was the most influential variable of stress incidence with the value of p = 0,024 and OR value of exp (1.521) = 4,576.*

Conclusion: *There is a meaningfull relationship between age, work period, mental workload and interpersonal relationships to work-related stress events. There is no relationship between individual roles and career development to workplace stress issue. The variable of working period is the most influential variable of the occurrence on work-related stress.*

Keywords*: work related stress, civil servant, Indonesian National Police, Indonesian National Armed Forces (TNI)****.***

BACKGROUND

Stress is an accumulation of emotional and physical response as the effect of individual inability during the adaptation with the surrounding environment.[1]Workplace stress is a stressed condition experienced by a worker in completing his or her work. It influences the emotional response, thinking process, and the physical condition which may reduce working performance, efficiency, and productivity.[2] A survey by *Northwestern National Life*showed that 40% of American workers experience occupational stress.[3] On the other hand, a report from *the National Institute of Occupational Health and Safety* (NIOSH) showed that there were two studies about workplace stress level in America. The first study was done by *the Familiar and Work Institute* showed that 26% of the workers often experienced workplace stress. On the other hand, the second study conducted by *Yale University* showed that 20% of the workers experienced the workplace stress.[4] In Indonesia, the workplace with the massive number of workers is commonly the formal sector workplace. The Central Bureau of Indonesia in Semarang reported that in 2006, there were 311,241 (38.4%) formal workers. The formal sector workers are also in a risk of workplace stress. The *National Safety Council* stated that the job with the high risk of workplace stress included civil servant, pilot, journalist, nurse, teacher, and fireman.[5] One of the workplace stress risk factors comes from everyone. It is also called individual stressor which involves age, sex, nutrition status, working period, health condition, double role, personality type, and personal experience. Besides, the other factor may come from the group stressor, which contributes to workplace stress caused by the workplace situation or condition, such as excessive workload, career development, a bad relationship among colleagues, senior, junior, and the organizational stressor. [6]

Based on the background explained above, the writer is interested to conduct a research entitled "Analysis of Workplace Stress Risk Factors on Formal Sector Employee in Semarang" which is aimed to analyze the individual and group risk factors related to the workplace stress experienced by formal sector employee in Semarang.

RESEARCH METHOD

This research was conducted from September to December 2017 in Semarang. It was a descriptive analytic research with cross-sectional approach. A survey was used as the method for collecting the data. In this research, 135,477 formal sector employees in Semarang was determined as the population of the research. 95,457 of it were civil servant, army, and cop. For the sample, cluster sampling was taken as a technique in choosing the sample. It obtained 60 sample which included 30 civil servants, 15 armies, and 15 cops. It was in accordance with the determined inclusion and exclusion criteria. The inclusion criteria were the formal sector employee including civil servant, army, and cops (staff) in Semarang, agreed to be the respondent for the research, has been working for ≥ 5 months. On the other hand, the exclusion criteria involved mentally healthy and do not have any heart diseases risk. The data gained from the research was primary data in the form of a questionnaire and interview. The data gained then being inputted to the computer, processed, and analyzed. The analysis, including univariate, bivariate, and multivariate analysis was assisted by *SPSS v19.0 for windows*.

RESULT

Univariate Analysis

Table 1, 2, 3, 4, 5, 6, and 7 are the frequency distribution and sample percentage table respectively based on age, working period, mental workload, interpersonal relationship, individual role, career development, and stress from work.

Table 1

No	Age	Frequency	(%)
1	Adolescent	12 respondents	20%
2	Adult	33 respondents	55 %
3	Elderly	15 respondents	25%
	Total	60 respondents	100%

Table 2

No	Working Period	Number of respondents	Percentage (%)
1.	short working period	18 respondents	30%
2.	intermediate working period	7 respondents	11.7%
3.	long working period	35 respondents	58.3%
	Total	60 respondents	100%

Table 3

No.	Mental workload	Number of respondents	Percentage (%)
1.	Underload	19 respondents	31.7%
2.	Optimal load	11 respondents	18.3%
3.	Overload	30 respondents	50%
	Total	60 respondents	100%

Table 4

No	Interpersonal relationship	Number of respondents	Percentage (%)
1.	Bad	22 respondents	36.7%
2.	Good	38 respondents	63.3%
	Total	60 respondents	100%

Table 5

No	Individual Role	Number of respondents	Percentage (%)
1.	Inactive	19 respondents	31.7%
2.	Active	41 respondents	68.3%
	Total	60 respondents	100%

Table 6

No	Career Development	Number of respondents	Percentage (%)
1.	Unsatisfying	34 respondents	56.7%
2.	Satisfying	26 respondents	43.3%
	Total	60 respondents	100%

Table 7

No	Stress from work	Number of respondents	Percentage (%)
1.	No stressful	18 respondents	30%
2.	Lightly Stressful	40 respondents	66.7%
3.	Highly stressful	2 respondents	3.3%
	Total	60 respondents	100%

Bivariate Analysis
The bivariate analysis was aimed to find out the correlation between the determined variables.

a. The correlation between age and workplace stress

Table 8 The correlation between age and workplace stress case

Variable	Rank Spearman correlation coefficient (ρ)	p
Age Workplace stress	0.533	0.000

The table above showed the correlation between age and workplace stress case. Nevertheless, the rank Spearman correlation coefficient (ρ)was 0.533 with p 0.000. it meant that there was a significant correlation between age and workplace stress case on formal sector employee in Semarang.

b. The correlation between working period and workplace stress

Tabel 9 The correlation between working period and workplace stress case

Variabel	Rank spearman correlation coefficient (ρ)	p
Working period Workplace stress	0.677	0.000

The table above showed the correlation between working period and workplace stress case using rank Spearman correlation test. The coefficient value of rank spearman correlation was 0.677 with p was 0.000. it meant that there was a significant correlation between the working period and the workplace stress case on formal sector employee in Semarang.

c. The correlation between mental workload and workplace stress

Tabel.10.The correlation between mental workload and workplace stress case

Variabel	rank spearman correlation coefficient (ρ)	p
Mental workload Workplace stress cases	0.512	0.000

The table above showed the correlation between mental workload and workplace stress case using rank Spearman correlation test. The coefficient value of rank spearman correlation was 0.512 with p was 0.000. it meant that there was a significant correlation between mental workload and the workplace stress case on formal sector employee in Semarang.

d. The correlation between interpersonal relationship and workplace stress case

Table. 11 The correlation between interpersonal relationship and workplace stress case

Variable	Workplace stress								P
	Not Stressful		Lightly Stressful		Highly Stressful		Total		
	N	%	N	%	N	%	N	%	
Interpersonal relationship									
Bad	1	4.5	21	95.5	0	0.0	22	100.0	0.002
Good	17	44.7	19	50.0	2	5.3	38	100.0	

the table above showed the result of chi-square analysis on the correlation between interpersonal relationship and workplace stress case that p = 0,002 (<0,05). It meant that there was a correlation between interpersonal relationship and workplace stress case on formal sector employee in Semarang.

e. The correlation between individual role and workplace stress case

Table.12 The correlation between individual role and workplace stress case

Variable	Workplace stress								P
	Not stressful		Lightly stressful		Highly stressful		Total		
	N	%	N	%	N	%	N	%	
Individual role									
Not active	9	47.4	10	52.6	0	0.0	19	100	0.103
Active	9	22.0	30	73.2	2	4.9	41	100	

The table above showed the chi-square analysis on the correlation between individual role and workplace stress case. It gained p = 0.103 (>0.05) so that it could be concluded that there was no correlation between individual role and workplace stress case in Semarang.

f. The correlation between individual role and workplace stress case

Table.13 The correlation between career development and workplace stress case

Variable	Workplace stress								P
	Not Stressful		Lightly stressful		Highly stressful		Total		
	N	%	N	%	N	%	N	%	
Career development									
Unsatisfying	11	32.4	22	64.7	1	2.9	34	100.0	0.893
Satisfying	7	26.9	18	69.2	1	3.8	26	100.0	

The table above showed the chi-square analysis on the correlation between individual role and workplace stress case. It gained p = 0.893 (>0.05) so that it could be concluded that there was no correlation between career development and workplace stress case in Semarang.

To find out which variable influence workplace stress the most on formal sector employee in Semarang, multivariate analysis was used in a form of ordinal logistic regression.

Table.14 Multivariate analysis of ordinal logistic regression on age, working period, mental workload, interpersonal, individual role, career development, and workplace stress.

Variable	p-value	Coefficient of Determination
Age	0.091	0.731
Working period	0.024	
Mental workload	0.037	
Interpersonal relationship	0.037	
Individual role	0.081	
Career development	0.858	

The table above showed that the most influential variable was the variable with a p-value <0,05. The significantly influential variable was working period (p = 0.024), mental workload (p = 0.037) and interpersonal relationship (p = 0.037), with Negelkerke coefficient of determination of 0.731 or 73.1%. It meant that was the working period, mental workload, and interpersonal relationship variables generally influence the workplace stress on formal sector employee in Semarang at 73.1%.

CONCLUSION

Based on the research finding about analysis of workplace stress risk factors on formal sector employee in Semarang, it could be concluded that there was a significant correlation between age, working period, mental workload, and interpersonal relationship with the stress in the workplace on the formal sector employee in Semarang with coefficient of determination at 73.1%.

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RESEARCH ARTICLE

The Presumptive Role of Takotsubo Syndrome as Collateral Damage Inflicted by Mass Population Stress Events

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Key Words: Takotsubo cardiomyopathy, Broken heart, Stress-induced cardiomyopathy, Acute heart failure, Catecholamine cardiotoxicity, Happy heart syndrome, Apical ballooning, InterTak Registry

BACKGROUND
Takotsubo syndrome- The acquired cardiomyopathy that has recently gained popularity as 'Broken heart syndrome' can be described as an acute left ventricular systolic dysfunction presented mostly in postmenopausal women followed by intense stressful event, but its exact pathophysiology remains unclear. The term first came into existence in early 1990's in Japan as reported by Hikaru Sato et. al. Initially originated from Japanese '*octopus trap'* because of its distinctive resemblance in shape with the left ventricle in systole. TTC being an unconventionally rare, under recognized syndrome has emerged out as a momentous form of acute cardiac failure over the last decade. Several researches have been revolving around it to quantify its extensive damage on the heart. Clinical diagnosis of takotsubo is largely misguiding due to its inevitable similarity with ACS, but in the absence of evident coronary obstruction in angiographic presentation. Although, there is substantial elevation of cardiac biomarkers like troponin and natriuretric peptide (pro-BNP and NT- pro-BNP) which are major diagnostic keys in differentiating TTS from MI.

METHODOLOGY
The aim of this retrospective observational study is to investigate and establish the epidemiological events of takotsubo during mass population stress (taking into account the tragic events of Malaysia Airlines Flight 370 and MH17 and the recent fall of UMNO during 2018 election period); to contribute sufficient statistical data on the International Takotsubo Registry to fill in the gaps lacking geographic variation and demographic profile due to limited literature on TTC from Asian countries.

SUGGESTIVE FINDINGS
It's rationally conceptualized that TTS cases reported under stressful scenario would be higher in comparison to control, which would help determine cardiovascular complications, misdiagnosed cases, recurrent TTC and mortality rates.

CONCLUSION
Recent studies suggest that TTC isn't rare anymore, but awareness is required to facilitate better management mostly in emergency department. As it presents with catecholamine toxicity and enhanced nitric oxide signalling; providing incorrect treatment would eventually harm the patient. Therefore, acknowledging the overall effect it has on patient's heart is certainly important.

CLINICAL IMPLICATIONS
This research would facilitate improved cardiovascular care and provide better diagnostic aids to detect relevant cases.

Introduction

Takotsubo Syndrome- The acquired cardiomyopathy that recently gained popularity as 'Broken Heart Syndrome' is a rare clinical entity and can be described as an *acute left ventricular systolic dysfunction*.

- The term first came into existence in the early 1990's in Japan as reported by Hikaru Sato et. al.
- Presented mostly in postmenopausal women followed by an intense stressful event, though the exact pathophysiology remains elusive. Takotsubo syndrome (TTS) is typically provoked by negative stressors such as grief, anger, or fear leading to a broken heart. However, the role of positive emotions like joy or surprise triggers another phenomenon known as the Happy heart syndrome.
    - It has been referred that one of the earliest cases was observed by specialist Dr. Y.J. Akashi at the Hiroshima City Hospital in Japan.
    - Takotsubo was recognised and classified as acquired cardiomyopathy by the American Heart Association in 2006.
- Initially originated from the Japanese '*octopus trap*' derived the name due to its distinctive resemblance in shape with the left ventricle in systole.

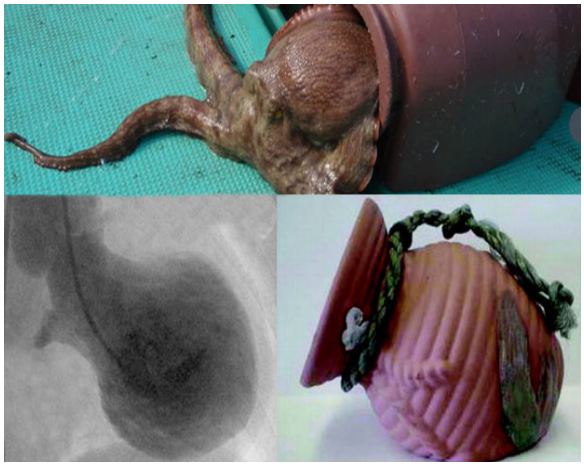

Figure 1: LV changing shape into Japanese octopus's trapping pot

- TTS being an unconventionally rare, under recognized syndrome has emerged out as a momentous form of acute cardiac failure over the last decade. Several researches have been revolving around it to quantify its extensive damage on the heart; most recent study being funded by the British Heart Foundation.
- The International Takotsubo Registry (InterTAK Registry) established in Zurich, 2011 works in collaboration with several other cardiovascular centers around the world and closely monitors the takotsubo patients.
    - Other terms used to describe the condition:
        - Stress Induced Cardiomyopathy (SICM)
        - Apical Ballooning Syndrome (Transient left ventricular)
        - Ampulla Cardiomyopathy

Incidence

It has been speculated that approximately 2% of the patients initially suspected with acute coronary syndrome are ultimately identified with TTC. An estimate based on the 2008 Nationwide Inpatient Sample (representing 20% of USA community hospitals) yielded 6,837 patients with a TTC discharge diagnosis. According to Minneapolis Heart Institute experience, the number of cases has progressively increased since 2001 now up to 50 cases annually, compared with approximately 120/year for women with ST-segment elevation acute myocardial infarction (MI), a ratio of 2.4:1 *(Sharkey SW et al. 2014)*

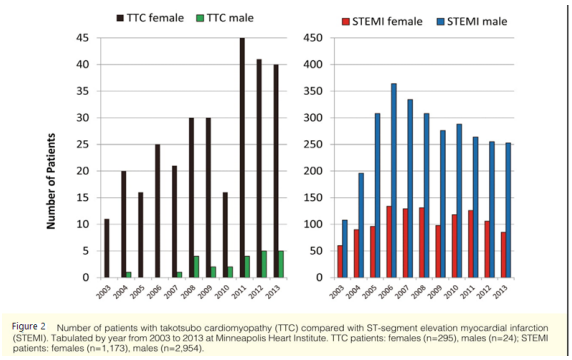

Figure 2 Number of patients with takotsubo cardiomyopathy (TTC) compared with ST-segment elevation myocardial infarction (STEMI). Tabulated by year from 2003 to 2013 at Minneapolis Heart Institute. TTC patients: females (n=295), males (n=24); STEMI patients: females (n=1,173), males (n=2,954).

Types of Takotsubo Cardiomyopathy

1. Apical, 81.7%
    - Systolic apical ballooning of the LV reflecting depressed mid and apical segments, with hyperkinesis of the basal walls.

2. Midventricular, 14.6%
    - Ventricular hypokinesis is restricted to the mid-ventricle with relative sparing of the apex.

3. Basal, 2.2%
    - Hypokinesis of the base with sparing of the mid-ventricle and apex (reverse or inverted Takotsubo).

4. Focal 1.5%
    - Characterized by dysfunction of an isolated segment (most commonly the anterolateral segment) of the LV.

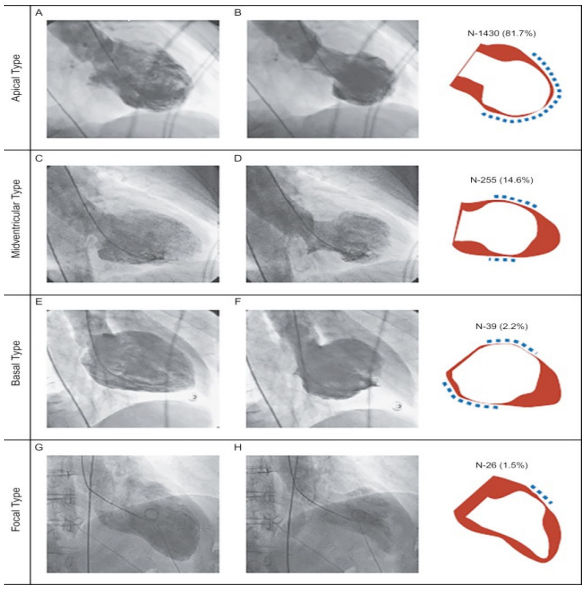

Figure 3: Representing the four types of takotsubo cardiomyopathy
Image Source: Templin C, Ghadri JR, Diekmann J, Napp LC, Bataiosu DR, Jaguszewski M, et al.
Clinical features and outcomes of Takotsubo (stress) cardiomyopathy.
N Engl J Med. 2015;373 (10):929–38.

Clinical Diagnosis

Clinical diagnosis of takotsubo syndrome is largely misguiding due to its inevitable similarity with acute coronary syndrome, but in the absence of evident coronary obstruction in an angiographic presentation. Although there is substantial elevation of cardiac biomarkers like troponin and natriuretric peptide (pro-BNP and NT- pro-BNP) which are the major diagnostic keys in differentiating TTS from myocardial infarction.

- Symptoms include: Precordial pain and dyspnea similar to the findings in the acute coronary syndrome. In rare cases, patients may develop palpitations, nausea, vomiting, syncope and cardiogenic shock.
- Risk factors: Precipitating events mostly include emotional or physical stress but it can also occur without any specific trigger or symptom. Psychiatric and neurological disorders may contribute in the development of stress-induced cardiomyopathy or act as predisposing factors.
- Age and gender: Previous study reports suggest that elderly female patients are usually more affected by the condition.
- Ventricular morphology: Apical ballooning found through ventriculography and echocardiography.
- ECG: ST elevation may be observed immediately after the event. T waves progressively become negative in various leads and the QT interval progressively lengthens. These changes gradually improve, but the T waves may remain negative for months. Pathological Q waves and alterations of the QRS voltage may be observed in the acute phase.

Pathophysiology

The exact etiology and pathogenesis of takotsubo syndrome remains speculative but various hypothesis have been put forward over the years. Proposed mechanisms include:

- Coronary microvascular dysfunction
- Coronary artery spasm
- Catecholamine-induced myocardial stunning
- Reperfusion injury following acute coronary syndrome
- Myocardial microinfarction and abnormalities in cardiac fatty acid metabolism

Currently, catecholamine-induced cardiotoxicity and microvasculature dysfunction are the most supported theories. As the condition is often preceded by a stressful trigger, its suggestive that an adrenaline surge leads to catecholamine cardiotoxicity and myocardial stunning, resulting in acute heart failure.

Treatment and Prognosis

The optimal treatment for TTC is mostly supportive and initial management should be directed towards treating the myocardial ischemia. Cardiac stimulants are used in 20%-40% of the patients with TCM. It is of utmost

importance to avoid treatment with nitrites or inotropic drugs in these cases. The exact length of treatment has not been clearly defined but it's best to continue until the LV function normalizes. Patients with takotsubo cardiomyopathy usually have a good prognosis, about 96% cases have a full recovery with time. But according to a recent paper published by Journal of the American Society of Echocardiography it has been deduced that the disease has much long lasting damaging effects on the hearts of sufferer; as the heart's muscle are replaced by fine scars, which reduces the elasticity of the heart and prevent it from contracting properly.

Methodology

The aim of this retrospective observational study is to investigate and establish the epidemiological events of takotsubo during mass population stress events taking into account the following three scenarios:

- The mysterious disappearance of Malaysia Airline Flight 370
  March 8, 2014
- The downing of the Malaysian Airlines Flight MH17 in Ukraine
  July 17, 2014
- The recent fall of UMNO in the 14th Malaysian General Elections
  9 May 2018

Strategically assess the cardiac cases reported on these particular events, that is the number of admissions recorded as MI or takotsubo for a 1-month period and compare them with exact control days but of consecutive years except in case of the last general election which would be a 3-week finding initiating 14-days prior to the election day and lasting 7-days after the announcement of results.

Results

- After successful data collection, a thorough statistical analysis has to be done to interpret the results.
- It's rationally conceptualized that TTS cases reported under the stressful scenarios would be higher in comparison to the control, which would in turn help to determine:
  - Cardiovascular complications
  - Misdiagnosed cases
  - Recurrent cases
  - Mortality and morbidity rates
- Thus, it would contribute sufficient statistical data on the International Takotsubo Registry to fill in the gaps lacking geographic variation and demographic profile due to limited literature available on TTS from the Asian countries.

Discussion

Why is takotsubo related research so important?

- One of the issues with misdiagnosis of TTS as a heart attack is that people are getting wrong treatment which is ineffective or in some cases, harmful.
- According to recent findings TTS is initiated by adrenaline, hence people with physical or emotional stress can experience it and also have enhanced nitric oxide signaling. So if we use a treatment that contains nitric oxide it could harm the patient (e.g. nitroglycerin is usually used in patients suffering a heart attack so it's certainly not recommended treatment for tako patients)
- It's about understanding what they are suffering from and not giving them the incorrect treatment as this would only worsen symptoms or have fatal consequences.

Conclusion

Takotsubo cardiomyopathy, a unique yet increasingly recognized type of primary acquired cardiomyopathy which mimics acute coronary syndrome and is characterized by left ventricular systolic dysfunction mostly confined to the apical region.

- Recent studies suggest that TTS isn't rare anymore, but awareness is required to facilitate better management mostly in emergency department.
- Due to its strange resemblance in clinical presentation with that of myocardial infarction, it becomes an even more challenging disease that needs to be diagnosed and treated accordingly.
- As it presents with catecholamine toxicity and enhanced nitric oxide signalling; providing incorrect treatment would eventually harm the patient Therefore, acknowledging the overall effect it has on patient's heart is certainly important.
- This study would enable physicians and

cardiovascular clinicians to obtain a better understanding of the condition through conventional assessment and investigation of the factors responsible for the damage.

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RESEARCH ARTICLE

Limfadenitis Tuberkulosis di Rumah Sakit Rujukan Tingkat Tiga Jawa Barat

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Abstract

Tuberculosis lymphadenitis is one of the most common extra pulmonary of tuberculosis. This is local manifestations of systemic disease from tuberculosis. In our country, Indonesian tuberculosis incidence is increasing every year, which will have an impact on the incidence of tuberculous lymphadenitis. The proportion of tuberculosis in each country is different. In 2016 based on the survey results, Indonesia ranked second in the world with the most cases of TB after India, which was ranked first in the world. The purpose of this study was to find out if there were diseases in hospitals in West Java. This research is a descriptive study, using a cross-sectional approach. The research data came from medical records of lymphadenitis patients using histopathology at the Anatomy Pathology Departemen of level three referrals in *West Java, from January 2017 to December 2018. Generally and the incidence of lymphadenitis tuberculous lymphadenitis in 2017 (372) compared to 2016 (348) there were 720 patients diagnosed with lymphadenitis , which consists of 400 TB lymphadenitis patients, 285 non-specific lymphadenitis, and 35 granuloma lymphadenitis. The number of female TB lymphadenitis patients (257) is more than that of male patients (143). The most age group is 21-30 years, especially in women, while the KGB location is most often cervical. In conclusion :The incidence of tuberculosis lymphadenitis increases in 2017.*

Keywords: *Charactristic, incidence, tuberculosis lymphadenitis.*

Abstrak

Limfadenitis tuberkulosis merupakan salah satu tuberkulosis ekstraparu yang paling sering terjadi, dan merupakan manifestasi lokal dari penyakit sistemik tuberkulosis. Isidensi tuberkulosis setiap tahun terus meningkat, yang akan berdampak kepada insidensi limfadenitis TBC. Proporsi terhadap tuberkulosis di setiap negara berbeda-beda. Pada tahun 2016 berdasarkan hasil survey, Indonesia menempati urutan kedua dunia dengan kasus terbanyak kejadian TB setelah India, yang berada di urutan pertama dunia. Tujuan dari penelitian ini adalah mengetahui insidensi dan karakteristik limfadenits tuberkulosis di rumah sakit rujukan tingkat tiga di Jawa Barat. Peneltian ini merupakan penelitian deskriptif, dengan menggunakan pendekatan potong lintang. Data penelitian berasal dari *medical record* pasien limfadenitis yang diperiksa histopatologi di Bagian Patologi Anatomi RSUP Hasan Sadikin dari Januari 2017 sampai Desember 2018. Hasil penelitian penunjukkan Insidensi limfadenitis secara umum dan limfadenitis TBC mengalami peningkatan pada tahun 2017 (372) dibandingkan dengan tahun 2016(348) Terdapat 720 pasien yang didiagnosis limfadenitis, yang terdiri dari 400 pasien limfadenitis TBC, 285 limfadenitis non spesifik, dan 35 limfadenitis granuloma. Jumlah pasien limfadenitis TBC wanita (257) lebih banyak dari pada pasien laki-laki (143). Kelompok usia yang paling banyak terinfeksi adalah 21-30 tahun, terutama pada wanita, sedangkan lokasi KGB yang paling sering adalah servikal. Kesimpulan : Insidensi limfadenitis tuberkulosis meningkat pada tahun 2017.

Kata kunci : limfadenits tuberkulosis, karakteristik

Pendahuluan

Limfadenitis tuberkulosis (limfadenitis TBC) merupakan manifestasi lokal dari penyakit sistemik.[1,2] Penyakit tersebut dapat terjadi selama tuberkulosis primer atau merupakan reaktifasi dari fokus infeksi dorman atau perluasan/ekstensi langsung dari fokus kontinuitatun. Infeksi dapat menyebar dari tempat primer ke kelenjar getah bening regional. Dari nodul limfatikus regional dapat terus menyebar melalui sistem limfatik ke kelenjar getah bening yang lain, dan melalui kelenjar getah bening dapat mencapai aliran darah, kemudian dapat menyabar ke seluruh organ. Kelenjar getah bening hillus, mediastinal, dan paratrakheal merupakan kelenjar getah bening pertama tempat penyebaran mtb dari parenkim paru-paru.[2]

Keterlibatan kelenjar getah bening supraklavikula merupakan manifestasi dari penyebaran dari parenkim paru, karena merupakan drainase limfatik dari organ tersebut. Lymphadenitis tuberkulosis servikalis dapat merupakan penyebaran dari fokus primer dari tonsil, adenoid sinusoid atau osteomyelitis dari tulang ethmoid.[1]

Limfadentis TBC merupakan penyakit tuberkulosis ekstraparu yang paling sering terjadi.[1] Proporsi terhadap tuberkulosis di setiap negara berbeda-beda. Pada tahun 2016 berdasarkan hasil survey, Indonesia menempati urutan kedua dunia dengan kasus terbanyak kejadian TB setelah India di urutan pertama dunia. Berdasarkan perkiraan jumlah penduduk Indonesia + 250 juta, setiap tahun ditemukan 1 juta lebih kasus TB Paru baru dengan angka kematìan sebesar 100.000 orang/tahun atau 273 orang per hari, hal ini menunjukkan bahwa Indonesia saat ini dalam kondisi darurat TB.[3,4] Peningkatan angka kejadia tuberkulosis nasional, diduga akan meningkatkan angka kejadian limfadenitis TBC di Indonesia. Berdasarkan pemikiran tersebut diatas, maka penelitian ini dilakukan untuk mengetahui angka kejadian lmfadenitis TBC di salah satu Rumah Sakit Rujukan tingkat tiga di Jawa barat.

Metode

Penelitian ini adalah penelitian deskriptif dengan rancangan *cross sectional*. Data pada penellitan ini berasal dari *medical record* pasien yang didiagnosis limfadenitis berdasarkan hasil pembacaan sediaan preparat di Bagian Patologi Anatomi RSUP Hasan Sadikin dari Januari 2016 sampai Desember 2018. Dari data tersebut diidentikasi tipe limfadenti,dan karekateristik usia, jenis kelamin, dan lokasi KGB yang terinfeksi.

Hasil

Setelah dilakukan identifikasi data berdasarkan tahum kejadian, jenis kelamin, usia, lokasi kelenjar yang terifeksi dan tipe limfadenitis didapatkan data sebagai berikut.

Tabel 1. Insidensi Limfadenitis pada Tahun 2016 dan 2017

Diagnosis	2016	2017	Total
Limfadenitis Non Spesifik	130	155	285
Limfadenitis Granuloma	22	13	35
Limfadenitis TBC	196	204	400
Total	348	372	720

Tabel 1 menunjukkan bahwa insidensi limfadenitis non spesifik dan TBC pada tahun 2017 meningkat dari tahun sebelumnya. Insidensi limfadenitis TBC merupakan tipe limfadenitis paling banyak terjadi pada tahun 2016 dan 2017.

Tabel 2. Insidensi Limfadenitis Berdasarkan Jenis Kelamin

Diagnosis	Laki-laki	Wanita	Total
Limfadenitis Non Spesifik	138	147	285
Limfadenitis Granuloma	13	22	35
Limfadenitis TBC	143	257	400
Total	294	426	720

Tabel 2 menunjukkan sebaran tipe limfadenitis berdasarkan jenis kelamin, data tersebut menunjukkan bahwa wanita yang menderita limfadenitis lebih banyak dari pada

laki-laki pada semua tipe limfadenitis.

Tabel 3 Limfadenitis Berdasarkan Usia dan Jenis Kelamin

Kelompok Umur	Limfadenitis TBC		Total
	Laki-laki	Wanita	
0 - 10	42	33	75
11 - 20	28	40	68
21 - 30	25	72	97
31 - 40	18	43	61
41 - 50	15	33	48
51 - 60	4	25	29
61 - keatas	11	11	22
Total	143	257	400

Tabel 3 menunjukkan sebaran limfadenitis TBC berdasarkan umur pasien, tabel tersebut menunjukkan bahwa secara umum insidensi limfadenitis TBC paling banyak pada kelompok umur 21-30, begitu juga pada, sedangkan pada laki-laki kelompok umur 0-11 tahun.

Tabel 4 Distribusi Limfadenitis Granuloma

Umur	Limfadenitis Granuloma-Non TBC	Limfade-nitis TBC	Total
Auricula	1	12	13
Axilla	4	15	19
Servikal	16	314	330
Subman-dibula	3	22	25
Submental	3	11	14
Supraclav-icula	8	26	34
Total	35	400	435

Tabel 4 menunjukkan bahwa pada kedua jenis limfadenitis tersebut lokasi KGB terinfeksi paling banyak adalah pada servikal.

Diskusi

Hasil penelitian ini menunjukkan pada tahun 2017 angka kejadian limfadenitis TBC meningkat dibandingkan dengan tahun sebelumnya. Peningkatan tersebut sesuai dengan angka kejadian tuberkulosis yang cenderung meningkat setiap tahun, baik secara regional, maupun secara Nasional. Belum ada angka kejadian limfadentis TBC yang pasti, tetapi WHO melaporkan bahwa di Asia Tenggara angka kejadian TBC ekstrapulmonal sebesar 17% dari seluruh kasus TBC, dan limfadenitis merupakan bagian dari TBC ekstrapulmonal yang paling sering terjadi. Angka tersebut di setiap negara berbeda-beda, yang paling tinggi adalah Benua Mediterania Barat, yaitu sebesar 23% dari seluruh kasus TBC.[1,3]

Limfadenitis TBC merupakan salah satu bagian dari tipe limfadenitis granuloma yang spesifik disebabkan oleh Mikrobacterium tuberkulosis, sedangkan limfadenitis granuloma lain bisa disebabkan oleh jamur, toksopalsma,shipilis , daln alin-lain.[5] Insidensi Limfadnitis TBC pada penelitian ini paling banyak terjadi, dibandingkan limfadenitis granuloma yang lain. Perbedaan isidensi kedua jenis limfadentis terssebut sangat tinggi, yaitu 400 dan 35 kejadian, bahkan dibandingkan dengan tipe non spesifik (285) pun limfadenitis TBC lebih tinggi .

Limfadenitis lebih banyak diderita oleh wanita pada semua tipe, terutama limfadenitis TBC (257), hampir dua kali lipat dari laki-laki (147). Secara umum puncak insidensi limfadenits TBC tertinggi terjadi pada kelompok umur 21-30 tahun, sama seperti pada kelompok wanita. Pada laki-laki berbeda dengan wanita, puncak insidensi terjadi pada kelompok usia 0-10 tahun. Hasil penelitian ini sesuai dengan hasil penelitian sebelumnya, yaitu Handa di India pada tahun 2009.

Limfadenitis granuloma paling banyak menginfeksi KGB servikal, pada kedua tipe, hal ini sesuai dengan penelitian Handa di India pada tahun 2009, seperti yang disebutkan oleh Mohapatra pada tahun 2009.[1,2]

Simpulan

Limfadenits tuberkulosis merupakan limfadenitis yang paling banyak terjadi, terutama pada wanita. Kelompok usia yang paling banyak mengalami limfadenitis TBC adala 21-30 tahun. Kelenjar yang paling sering terifeksi adalah KGB di servikal.

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RESEARCH ARTICLE

Association Between Body Mass Index (BMI) and Lung Function Capacity in Roof Tiles Workers

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Excessive body mass index (BMI) potentially decreasing lung function due to thoracic cage compression by overt fat tissue and increased blood pooling in pulmonary vascular bed. However, several studies showed lack of consistency in relationship between BMI and lung function. This study was aimed to predict the relationship between BMI and lung function capacity. The study design was cross sectional, conducted in a roof tiles factory in Cirebon between 2018 January to June. The result of this study concluded that BMI could predict lung function (P value of model 0,01). It has -0,55 coefficient, therefore lower the BMI will be followed by lesser lung function capacity. This study design can not see the temporal relationship between exposure and outcome, hence the longitudinal study is needed to analyze the causal relationship correctly.

Keywords: BMI, lung functions, worker

Hubungan Indeks Massa Tubuh (IMT) Terhadap Kapasitas Fungsi Paru pada Pekerja Industri Genteng

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Indeks massa tubuh (IMT) berlebih secara patofisiologis akan menyebabkan penurunan fungsi paru dikarenakan kompresi dinding dada oleh lemak berlebih dan perubahan distribusi darah di pembuluh darah paru, namun dalam beberapa penelitian hubungan tersebut tidak konsisten. Penelitian ini bertujuan untuk mengetahui hubungan antara IMT dengan kapasitas fungsi paru pada pekerja industri genteng. Penelitian ini adalah suatu studi populasi analitik observasional dengan pendekatan potong lintang (*cross sectional),* dilakukan di salah satu industri genteng di Cirebon pada bulan Januari-Juni 2018. Hasil analisis regresi logistik disimpulkan bahwa IMT merupakan prediksi fungsi pernafasan yang signifikan secara statistik (nilai P model 0,01). Nilai koefisien IMT -0,55 dimana semakin rendah IMT maka akan semakin buruk fungsi parunya. Disain yang dipilih dalam penelitian ini tidak memperlihatkan *temporal relationship* antara pajanan dan luaran, sehingga perlu penelitan *longitudinal* lanjut terhadap subyek dengan fungsi pernafasan baik untuk memperlihatkan hubungan sebab akibat yang lebih valid.

Kata kunci: Fungsi paru, IMT, pekerja

Introduction

The effects of obesity on lung function values are inconsistent in most of the researches, some of theme showing no effects[1] and the other ones showing significant effects[2]. This gap could be explained by the wide variations in ethnicity among population or the differences method of these studies.

Obesity usually results in decreased compliance of respiratory system leading to decline in lung volumes resulting mostly in a restrictive type of ventilatory defect. Excessive fat causes the compression of thoracic cage. Increased pooling of blood in pulmonary vasculature mainly play a role towards reduction in respiratory compliance [3]. Researchers have linked BMI to changes in lung function [4]. Association between BMI and pulmonary function has been previously examined and BMI has been reported to be negatively associated with values for dynamic lung volumes including forced vital capacity (FVC) and forced expiratory volume in first second (FEV1)[5].

Method

The research subjects were employees of roof tiles factory that fulfill inclusion and exclusion criteria. The inclusion criteria were aged between 19-50 years old and willing to participate as subject participant. Participant who had lung disease history and symptoms of TBC were excluded. The chosen location was in Cirebon, in a traditional roof tiles factory and all the samples were unfortunately smoking, regardless their sex and their age. All of the workers were eligible to join the study, and there were 30 of them.

Eligible participants were given informed consent, then interviewed regarding their characteristic. Spirometer examination was conducted to assess their lung function. Complete line listing was filled by the information gathered from interview and spirometer examination. Normal distribution assumption was performed to numerical variables before proceeded to the next analysis'.

Result

Table 1 illustrates the height median is 158 cm with body weight in 53 kg, lung functional vital capacity (FVC) 89.5 and body mass index (BMI) 21.66. However, there is subject with BMI 33.81 and FVC 89.5. Normal distribution assumption test was conducted in all variables (including controlled variable "age") and there was one variable, which is BMI, that has P value lesser than significant value (alpha=0.05). Therefore, the BMI was then transformed into variable that fit normal assumption the most. FVC variable was transformed into dichotomous category (normal and restrictive) in order to fit into logistic regression. Two controlled variables, those are sex (male and female) and working department (furnace and non-furnace department), also in dichotomous category.

Table 1. Variable Distribution Frequency

Variable	Median	Min	Max	Mean	SD
Body height	158	140	179	159.47	10.17
Body Weight	53	45	94	56.27	9.29
FVC	89.5	63.5	133	90.97	15.25
BMI	21.66	17.18	33.81	22.12	3.22

Table 2. Normal Distribution Assumption Test

S-Wilk	P
Age	0.21
FVC	0.66
BMI	0.00

There were seven restrictive subjects and the rest were in normal lung function category (23 subjects). Males were the most prominent sex in restrictive group and most of the subjects in the restrictive group were working in furnace department. There were no employee that had normal lung function in furnace department. The P value that has significant value was generated in cross tabulation between working department and lung function, hence there was a significant relationship between two of them. On the other hand, sex, was having the P value that larger than 0.05 but lesser than 0.30, thus can be included in multivariate analysis using logistic multiple regression. Correlation analysis were conducted

to find co-linearity between all predictor variables and yet there were no Pearson's correlation scores that larger than 0.80. In summary, the independent variables that included into further analysis were BMI, sex, and working department.

Table 3. Cross tabulation of Lung Function and Sex

	Sex		Total	P
	Female	Male		
Normal	11	12	23	
Restrictive	1	6	7	0.19
Total	12	18	30	

Table 4. Cross Tabulation of Lung Function and Working Department

	Working department		Total	P
	Non furnace	Furnace		
Normal	23	0	23	
Restrictive	2	5	7	0.00
Total	25	5	30	

Table 5 describes the initial model with all variables join the analysis. However, there is an analysis error in working department variable due to a cell with zero value. That is very unfortunate because furnace department is confirmed, both scientifically and statistically, as a culprit in debilitating lung function. The final conclusion in table 5 shows that there were no significant relationship (P chi sq 0.72) between independent variables and lung function. The backward variable selection was conducted to get robust and parsimonious model.

The final conclusion shows that there was a significant relationship (P Chi Sq 0.01) between BMI and the lung function, where 21% (pseudo R squared 0.21) variance of lung function was controlled by BMI. Interesting part is, that coefficient which BMI had was negative (-0.55), which means there was negative correlation, whenever BMI increasing will be followed by normal lung function.

Table 5. Preliminary Model of Risk Factors that Controlling The Lung Function

Lung Function	Coefficient	SE	z	P(Z)	P Chi Sq	Pseudo R sq
BMI	-0.28	0.41	-0.69	0.49		
Sex	-0.56	1.72	-0.33	0.74	0.72	0.04
Working Department		Omitted				
Constant	4.07	9.33	0.44	0.66		

Table 6. Final Model of Risk Factors that Controlling The Lung Function

Lung Function	Coefficient	SE	Z	P(Z)	P Chi Sq	Pseudo R sq
BMI	-0.55	0.26	-2.13	0.03	0.01	0.21
Constant	10.55	5.39	1.96	0.05		

Discussion

Previous research reported significantly higher values of baseline pulmonary function in males [6,7]. This gender difference reported by others is likely to be attributed to the fact that men tend to have bigger lungs for same height when compared with females. Muscularity in men is another contributing factor to higher values of pulmonary function among men [8]. This is in contrast to some of the researchers who have reported measured volumes in liters, which tend to be higher in males compared with females [6]. It is important to note that lung volumes reported as percentage of predicted value are a linear variable related to lung compliance. The proposed added advantage

of using percent predicted values of lung function is a possible adjustment for the effects of age and gender on measured lung volumes in litres, which are affected by an individual's gender and age[12]. Observing the same phenomenon, Osch-Balcom et al. reported that raw values of FVC and FEV1 were higher in men but after adjustment for age, percent predicted values were higher among women[9].

Chen et al. detected positive association of BMI with FVC and FEV1 in normal weight Canadians but negative association among overweight and obese subjects [10]. Rasslan et al. found no significant correlation between pulmonary function and BMI among a sample of Brazilians [11]. Moreover, Koziel et al. reported positive association of BMI with lung function among both males and females in Poland [12]. Correlation of BMI with lung function is very diverse and complicated as reported by various researchers across various populations. Thus, exact nature of difference of lung functions among subjects in different BMI groups and gender in different ethnic groups remains difficult to interpret. Proposed mechanisms for link between obesity and pulmonary dysfunction include changes in wide ranging mechanisms including respiratory mechanics, respiratory muscle function, respiratory resistance, lung volumes, work of breathing and gaseous exchange [131].

This study concluded that there was a significant relationship between BMI and the lung function, regardless their working department. However, there is interesting fact that the BMI coefficient is negative, that greater BMI will be followed by normal lung function (the coding in this study coded restrictive lung function as 1 and normal lung function as 0), which is an opposite fact to theory mentioned above in the introduction. This condition is similar to chronic obstructive pulmonary disease (COPD) patient which losing their weights due to elevated basal metabolic rate (BMR) to cope difficulty in breathing[14] . However, this study is a cross-sectional study with temporal relationship limitation that we can not see which one is come first, the predictor or the outcome variable.

Due to lack of consistence in recent studies above, it is crucial to conclude relationship between BMI and lung function longitudinally in subjects without restrictive lung problem, followed in certain periods until significant changes in lung function occurred. Cohort study in a routine general check-up for roof-tile factory workers is needed to take conclusion correctly.

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