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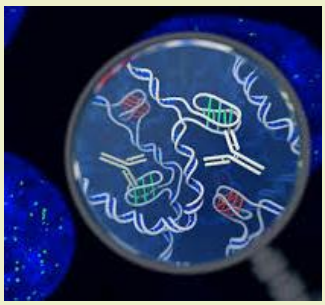

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ORIGINAL ARTICLE

The Response Time of Trauma and Non Trauma Patients Handling in Emergency Room Surabaya

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ABSTRACT

Background: Emergency room is one of the unit services in hospitals that provide first services in patients with threat of disability or even death. Emergency room is a service unit in a hospital with 24 service hours for 7 days in a week. The high risk and working hours in the emergency room requires the medical personnel that have good response times in the triage room. To compare response time of medical personnel when handling trauma and non-trauma patients in the emergency room.
Methods: A non-experimental, quantitative research method using analytic observational. The population of this study was a patient in the emergency room of Soetomo hospital Surabaya. The amount of the sample was 244 which was divided into 41 trauma cases and 203 non trauma cases.
Results: Response time of patients with trauma injuries that include quick category (< 5 minutes) amounted to 35 patients and 6 patients in slow category (> 5 minutes) with average response times of trauma patients was 6.244 minutes. Response time of patients with non-trauma injuries that include the quick category (< 5 minutes) amounted to 161 patients and 42 patients in the slow category (>5 minutes) with average response times of non-trauma patients was 3.722 minutes. The p-value response times of medical personnel in dealing with trauma and non-trauma patients is 0.374 (> 0.05) which means there was no difference in response times from medical personnel in handling trauma and non-trauma patients.
Conclusion: There was no difference in the response time of medical personnel in trauma and non-traumatic patients handling (p>0,05). Overall, it was found that the average emergency room's response time at Soetomo hospital was 4.15 minutes, still meeting the applicable standards.

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Introduction

The Emergency Room is one of the service units in the hospital that provides first services to patients with threats of disability and even death. Based on data from the Directorate General of Medical Services at the Ministry of Health, in 2007 the number of hospitals in Indonesia were 1,033 with a yearly number of visits as many as 33,094,000, while visits to the emergency room in one year were 4,402,205 (13.3% of the total visits at the hospital).[1]

Emergency room is a hospital service unit with 24 hours service time for 7 days a week. The high risk and emergency working hours require medical personnel to have an accurate and fast response time. The response time is calculated from the time the patient arrives at the emergency room gate until is served by medical personnel with a maximum time limit of <5 minutes.[2]

In emergency services, there are still many cases that are not handled quickly and precisely, both at the location of the incident and in the hospital. The management of emergency patients still found delays in services because of the hospital administrative and financial reasons. Emergency patients often have to wait for the administrative process was finished before getting service.[3]

The most cases that often occur in the emergency room are trauma and non-trauma. Trauma as defined by the American Heritage Dictionary is an injury, particularly that caused by a sudden physical injury. Traumatic injury cases, for example motor vehicle accidents, burn, drowning, etc. While non-traumatic injuries such as failure of the central nervous system, cardiovascular, respiratory, and hypoglycemia that can cause death in a short time between 4-6 minutes, takes a relatively faster time to prevent biological death if the brain is deprived of oxygen within 8 -10 minutes as in the case of total airway obstruction and cardiac arrest.[4]

Basically, both traumatic and non-traumatic injuries require the same response time. Unlike triage system, which is a process of classifying patients based on the type and level of severity of their condition.[5]

The standard response time certainly affects the patient's condition, the response time can also be used as an evaluation of the hospital's performance in carrying out emergency services. Therefore, it is important to know the response time of the Soetomo Hospital's Emergency Room in treating patients with traumatic and non-traumatic wounds.

Methods

This research design was observational with retrospective study conducted in Dr. Soetomo hospital Surabaya. The number of ethical clearance was 565/Panke.KKE/IX/2017. This study used a comparative study to examine differences in response time for medical personnel in treating trauma and non-trauma patients in Soetomo Hospital's Emergency Room. The sample in this study were all patients who came to the Soetomo Hospital's Emergency Room which were recorded when the patient arrived and received treatment in the medical record. Data were taken from Emergency Room's medical records, with a purposive sampling technique from 10-15th October 2017. Traumatic injuries are injuries that cause a loss of continuity tissue, causing physical injury to the patient. Non-traumatic wounds are

injuries that do not cause loss of tissue continuity, so these injuries cause the patient to be physically fine. Most cases in IRD, non-traumatic injuries are cases of it involving vital signs such as heart failure and respiratory failure. Fast response time if □ 5 minutes measured from when the patient arrives at the IRD until he gets action from medical personnel. Slow response time if □ 5 minutes measured from when the patient arrives at the IRD until he gets action from medical personnel. The data was analyzed with a comparative statistical test between 2 variables in 2 independent sample groups (Chi-square test).

RESULTS

This study collected 244 samples with the following description

3.1 Demographic Sample

Tabel 1. Age Distribution

Age	(n)	(%)
0 - 5 year	39	16
5 -11 year	16	6,6
12-25 year	44	18
26-45 year	51	20,9
46-65 year	75	30,7
> 65 year	19	7,8
Total	244	100

It was found that the largest number of age groups was the elderly (46-65 years) were 75 patients (30.7%). Then followed by the adult age group (26-45 years) were 51 patients (20.9%). Then, in the adolescent age group (15-25 years) were 44 patients (18%). In the toddler age group (0-5 years) were 39 patients (16%). Followed by the elderly age group (> 65 years) were 19 patients (7.8%). The age group with the least number was in the children age group (5-11 years) which were 16 patients (6.6%).

Tabel 2. Sex Distribution

Sex	(n)	(%)
Male	127	52
Female	117	48
Total	244	100

It was found that the number of male patients was 52% with a total of 127 patients. Meanwhile, the number of female patients was 48% with 117 patients. Characteristic of Response Time on Trauma dan Non Trauma Patients

Tabel 3. Type of Patient

Triage Color Code	(n)	(%)
Trauma	41	16,8
Non Trauma	203	83,2
Total	244	100

It was found that the number of non-traumatic patients was greater (83.2%) with a total of 203 patients. While the number of trauma patients was 16.8% with a total of 41 patients.

The number of patients based on the response time of medical personnel were divided into 2 categories: fast (≤ 5 minutes) and slow (> 5 minutes) can be presented in the following table.

Tabel 4. Sampel Distribution based on Response Time

Variabel	(n)	(%)
Fast	196	80,3
Slow	48	19,7
Total	**244**	**100**

Based on the number of patients included in the medical personnel response time category, it can be seen that most of the patients were included in the fast category (80.3%) of 196 patients, while others were included in the slow category (19.7%) of 48 patients.

Tabel 5. Distribution of Response Time on Trauma dan Non Trauma Patients

Triage Color	Response Time		Mean of Response Time
	Fast	Slow	
Trauma	35	6	6,244 minute
Non Trauma	161	42	3,722 minute
Total	196	48	4,15 minute

Based on the table above, it can be seen that patients with trauma categories including fast response time are 35 patients and 6 patients are slow with an average response time of medical personnel of 6.244 minutes. There were 161 patients with non-trauma category including fast response time and 42 patients late with an average response time of medical personnel of 3,722 minutes.

The results of the comparative test using the Chi-square test obtained a p- value of 0.374 (>0.05). This indicates that there are no significant differences between the response time of medical personnel in trauma and non-trauma patients handling.

Discussion

This research was conducted at Soetomo hospital's emergency room on 10-15th October 2017 by taking data from medical records. Researchers took the purposive sampling technique by setting certain criteria. The data included gender, age, triage color code, time when the patient arrived and the time when patient left the emergency room, the patient's disease diagnosis, and the category of patients with traumatic or non-traumatic wounds. Response time is the time between the patient's arrival and the patient's early treatment.6,7,8

This study found that the largest number of patients who visited the emergency room were 75 (30.7%) patients with the elderly age group (46-65 years). There were more males (52%) than females (48%). Similar to Takaendengan (2016), there were 33,05% patients with 45-64 years old at Prof. Dr. R. D. Kandou hospitas's emergency room.9

There were 2 types of wounds, traumatic and non-traumatic wounds. From the results of this study, it was found that the number of non-traumatic patients were 83,2%. It was greater than traumatic patients. Almost same with Dahliana (2015) at Yogyakarta, it was 53,3% of non-traumatic patient.10,11

According to Kepmenkes RI (2008) regarding the minimum standard of hospital services, the response time should be 5 minutes. Therefore, in this study, the response time is categorized as fast if 5 minutes, and if it is said to be slow if it is > 5 minutes.2,12

It was found that the overall fast response time in the Soetomo hospital's emergency room was about 196 (80.3%) of the total 244 sample visits obtained. With an average response time of 4.15 minutes or 4 minutes 15 seconds. The Fahilah's study (2015) at Dr. M. Djamil Hospital Padang had an average response time of 6.15 minutes or 6 minutes 15 seconds.13

In the most emergency room including Soetomo hospital's emergency room, trauma cases are divided into 3 main categories based on their causes, there are traffic accident, work accident and household accidents.14 Trauma is a wound or injury, both physical and psychological, caused by physical action by breaking the normal continuity of a structure.15 Trauma, in other words, is called injury or wound, which can be interpreted as damage or injury due to hard contact with something so that a tissue is opened in the human body.16

The response time itself was faster for non-traumatic wounds with a mean of 3.722 minutes or about 3 minutes 43 seconds. In trauma wounds, the response time averaged 6.244 minutes or about 6 minutes 15 seconds. The p-value of the chi- square comparison test was 0.374 (p> 0.05). This shows that there is no difference in response time for medical personnel in trauma and non-traumatic patients handling.

Traumatic patients may have a longer response time (6.244 minutes) because in severe cases they need to wait for the approval by the supervising doctor. The supervising doctor itself holds responsibility for any action taken on patients. The supervising doctor must give an agreement, so the procedure for action requires a longer waiting time. This study was only conducted for one week so it requires further research with a longer observation time.

Conclusion

The response time for traumatic patients has not met the applicable standards and the response time for non-traumatic patients has met the applicable standards. There was no difference in the response time of medical personnel in trauma and non-traumatic patients handling (p>0,05). Overall, it was found that the average emergency room's response time at Soetomo Hospital still met the applicable standards.

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Conflict of Interest

The author stated there is no conflict of interest

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ORIGINAL ARTICLE

Relationship Between LBW and the Incidence of Stunting in Toddlers Aged 1-3 Years at the Minasa Upa Health Center, Rappocini district

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ABSTRAK

Background: Stunting is a long-term effect of chronic malnutrition that causes disturbances in a person's physical growth which is characterized by a decrease in growth speed. Unbalanced food intake, LBW (Low Birth Weight Babies), and a history of the disease are the three main factors that play a role in the incidence of stunting. The purpose of this study was to determine the relationship between a history of LBW and the incidence of stunting for toddlers aged 1-3 years at the Minasa Upa Health Center in 2019.
Methods: This research is a quantitative study with an observational approach, using a cross-sectional method. Samples were taken by the purposive sampling method. The number of samples is 134 children with the mother of the child as the respondent. The data were processed and analyzed using the Chi-square $p<0.05$ test in the SPSS program.
Results: The results showed that there was a significant relationship between a history of low birth weight and stunting ($p = 0.000$) with an OR value of 18.8 which means that children aged 1-3 years who have a history of low birth weight have a risk of 18.8 times experiencing stunting. Interventions that focus on maternal and child health care are needed to reduce the risk of babies with low birth weight and stunting, as well as raise awareness of mothers about the importance of good nutrition for mothers and their children.
Conclusion: Based on this study, it can be concluded that there is a relationship between a history of LBW and the incidence of stunting in toddlers 1-3 years at the Minasa Upa Public Health Centre.

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Introduction

Nutrition has a close relationship with the health and intelligence conditions of each individual because it is a very important element in a person's growth and development.[1] Malnutrition in childhood is often associated with deficiencies of certain micronutrients and macronutrients. If this situation continues, it will have an impact starting from an increased risk of infectious disease and death, stunted growth and cognitive, motor, verbal, and so on development.[2]

Stunting is a long-term effect of chronic malnutrition that causes disturbances in a person's physical growth which is characterized by a decrease in growth speed.[3] Stunting is a linear growth disorder that, if it occurs in the golden period of brain development (0-3 years) of a child, will have an impact on poor brain development. The long-term impact of stunting is the disruption of physical, mental, intellectual, and cognitive development.

According to the Unicef Framework, unbalanced food intake, LBW (Low Birth Weight Babies), and a history of the disease are the main factors that play a role in the incidence of stunting, namely: Inappropriate exclusive breastfeeding caused by limited food consumed can lead to unbalanced food intake.[4]

According to Joint Malnutrition Estimates (2018) in 2017, around 22.2% or 150.8 million children under five in the world experienced stunting. According to WHO (2018), Indonesia is ranked third with the highest prevalence of stunting in the Southeast Asia/South-East Asia Regional (SEAR) region. The average prevalence of stunting under five in Indonesia from 2005 to 2017 was 36.4%.[5] Research in 2018 in Indonesia found that 29.9% of children under the age of 24 months experienced signs of stunting. Meanwhile, in Makassar the Makassar City Health Office has conducted a survey where the prevalence of stunting for the last three years was 8.75% in 2017 and 2018, then 8.61% in 2019.[6]

In Islam, we have been commanded by Allah SWT. how important it is to provide nutrition and nutrition to children to prevent health problems such as low birth weight and stunting. As His words in the Qur'an Surah Thaha verse 81 which means "*Eat of the good provisions that we have given you and do not exceed the limits*". In addition to the above verse, in the Qur'an Surah Al-Baqarah verse 233 is also explained about the recommendation of breastfeeding for 2 years to prevent stunting in children. The verse has the meaning "*mothers should breastfeed their children for two full years, that is for those who want to improve breastfeeding...".*[7]

Methods

The total sample in this study amounted to 134 samples. The research design used in this study was observational with a cross-sectional approach. The data used are primary data and secondary data. Primary data was obtained from questionnaires, while secondary data was obtained from research institutions in the form of medical records. Data collection aims to determine the relationship between the history of LBW and the incidence of stunting in children aged 1-3 years at the study site. Analysis of the data used in this study using the SPSS application, which first tested the univariate analysis and then continued with the bivariate analysis using the Pearson Chi-

Square. Then the hypothesis test was carried out using simple regression analysis.

Results

Based on the results of research and data processing carried out, the results of the research are presented as follows:

Table 1. Frequency distribution of respondent characteristics and samples of children aged 1-3 years at the Minasa Upa Health Centre in 2019.

Charachteristic	*Stunting*			
	Stunting		*Not Stunting*	
	n	%	n	%
Gender				
Male	29	41,4	41	64,1
Female	41	58,6	23	35,9
Age				
1 year age	27	38,6	23	35,9
2 year age	23	32,9	18	28,1
3 year age	20	28,6	23	35,9
Mother's education				
< High school/equivalent	32	45,7	12	18,8
≥High school/equivalent	38	54,3	52	81,3
Eexclusive breastfeeding				
Yes	52	74,3	57	89,1
No	18	25,7	7	10,9
Economic Status				
<Rp 2.118.678	44	62,9	36	36,3
>Rp2.118.678	26	37,1	28	43,8
History of Infection Disease				
Yes	36	51,4	27	42,2
No	34	48,6	37	57,8
Nutritional Status				
< 23,5 cm	42	60	12	18,8
> 23,5 cm	28	40	52	81,3

The results obtained show that the percentage of stunting is higher in the female sample group (58.6%). Based on age, the percentage of stunting that is more at risk is in the 1 year age group (38.6%). Exclusive breastfeeding has no risk of stunting (89.1%). Samples who have a history of infectious diseases are at risk for stunting (51.4%). Respondents with the latest education in the form of high school/equivalent have children who are at risk of stunting (54.3%). Respondents with poor nutritional status as measured using upper arm circumference during pregnancy are at risk of having stunting children (60%). Respondents with economic status < Rp 2,118,678 are at risk of having stunting children (62.9%).

Table 2. The relationship between the history of LBW and the incidence of stunting in children aged 1-3 years at the Minasa Upa Health Centre in 2019.

Birth Weight	***Stunting***				**Amount**		***P value***	**OR**
	Stunting		***Not Stunting***					
	n	%	n	%	N	%		
LBW	39	29,1	4	3,0	43	32,1	*p=0,000*	18,8
Not LBW	31	23,1	60	44,8	91	67,9		
Total	70	52,2	64	47,8	134	100		

Based on the table above, it shows that of the 43 samples with a history of low birth weight (LBW), there were 39 people (90.7%) who had a history of LBW with stunting, and 4 people (9.3%) were not stunted.

The results of the analysis to see the relationship between low birth weight infants (LBW) and the incidence of stunting using the Pearson Chi-Square statistical test, obtained the value of X2 p = 0.000 (p <0.05) with an OR value of 18.8. It can be concluded that there is a significant relationship between the history of low birth weight infants (LBW) and the incidence of stunting. Children who have a history of LBW have an 18.8 times risk of becoming stunted compared to children born with normal birth weight or not LBW.

Discussion

The frequency distribution of children's characteristics shows that the age of most children experiencing stunting is 1 year as many as 27 children (38.6%). At the age of 1 year, many changes occurred, such as changes in their diet from breast milk to solid food, and some of them began to have difficulty eating. Therefore, if not properly cared for, toddlers will be susceptible to diseases such as infectious diseases.[8]

Based on the results of this study also showed that the majority of children experiencing stunting had a history of infectious diseases, namely 36 children (51.4%). Malnutrition and infectious diseases have a relationship with each other, which if working together will contribute to the worse.

Inadequate nutrition can worsen the child's body in dealing with infectious diseases. This shows that there is a relationship between nutritional status and infectious diseases, that is, any infectious disease will worsen nutritional status.[9] The incidence of recurrent infectious diseases not only affects the child's weight loss but also affects height according to age. [10]

Based on the characteristics of the sample, namely exclusive breastfeeding, according to the results of the study, it was found that the majority of children with exclusive breastfeeding did not experience stunting, namely 57 children (89.1%). Breast milk is the best food for babies immediately after birth. For the baby's nutrition to be fulfilled, breast milk is needed during the growth period. Stunting can be caused by a lack of nutrition in a child caused by the baby's inability to get breast milk.[11]

This is in line with research conducted by Fitri (2018) which said that of the 55 children under five who were not exclusively breastfed, 23 (41.8%) of them experienced stunting. Meanwhile, toddlers who are exclusively breastfed have a lower risk of stunting, which is only 2 people (10%). The low level of exclusive breastfeeding is one of the triggers for stunting in children and can have an impact on the child's future, on the contrary, good breastfeeding by the mother will help maintain a child's nutritional balance so that normal child growth is achieved.[4]

Based on the characteristics of the respondents, in this case, mothers of children, the majority of mothers with poor nutritional status are at risk of having stunting children, which are 42 people (60%). One way to determine the nutritional status of pregnant women is by measuring the upper arm circumference (LILA). LILA is used to determine if a person suffers from Chronic Energy Deficiency (CED). Pregnant women at risk of CED have a high risk of giving birth to babies with low birth weight. Babies born with LBW will have a risk of malnutrition, growth disorders, impaired child development, and even death.[12] This is in line with Subekti (2014) which showed that LILA < 23.5 cm had a 1.95 times greater risk of giving birth to low birth weight.[13]

There are 44 children aged 1-3 years who are stunted and have families with low economic status in the working area of the Minasa Upa Health Center (62.9%), and 36 people who do not experience stunting (56.3%). The economic status of the household is one factor in the possibility that a child will be thin and short because it forms the lifestyle of a family. The adequate family economic status will support the development of the child's body. Therefore, WHO recommends stunting or stunting as a measure of low socioeconomic status and as an indicator to monitor equity in health.[14-15]

The characteristics of the mother's recent educational history indicate that the percentage of stunting is higher in the group of mothers with the last education of high school, which is 38 people (54.3%). The level of education of parents will affect the process of growth and development of children. A high and good

education can be ascertained to know about good nutrition too.[14,16-17]

Based on the results of the study of the relationship between the history of LBW and the incidence of stunting, a p-value of 0.000 ($p<0.05$) was obtained with an OR value of 18.8. This shows that there is a relationship between a history of LBW and the incidence of stunting in children aged 1-3 years in the working area of the Minasa Upa Health Centre in 2019. Children aged 1-3 years who have a history of low birth weight have an 18.8 times risk of experiencing stunting.

In this study, it was found that from 134 samples, there were 70 children diagnosed with stunting by doctors and 64 children who did not suffer from stunting. Of the 70 children who suffer from stunting, 39 of them have a history of low birth weight (LBW). Birth weight in general is closely related to the process of growth and development in the future because one of the effects is growth faltering.[16] This result is in line with the research conducted by Yeyen Supriyanto, et al (2017) in Yogyakarta which said that LBW had a significant relationship to the incidence of stunting.[10]

The results of this study are by the recommendations in the Qur'an to pay attention to the welfare of a child by providing adequate nutrition to children. Good nutrition during pregnancy and childbirth can prevent the incidence of LBW which can have an impact on child growth and development. As mentioned in a passage in surah An-Nisa verse 9 which has the meaning "*And let those who fear Allah, if they leave behind them weak children, whom they fear for (their welfare). Therefore let them fear Allah and let them speak the truth*".[7]

This study has several limitations, such as the delay in the data collection process due to the current condition, namely the Covid 19 pandemic. Many employees at the Minasa Upa Health Centre have to self-isolate so that researchers are hampered in obtaining secondary data.

Conclusion

Based on the results of this study, it can be concluded that there is a significant relationship between LBW and the incidence of stunting in children aged 1-3 years. Where children aged 1-3 years who have a history of low birth weight have an 18.8 times risk of experiencing stunting.

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Conflicts of Interest

There are no conflicts of interest declared by the author.

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ORIGINAL ARTICLE

The Effectiveness of the Implementation of Kangaroo Treatment Method in Increasing the Weight Gain of Newborns With LBW

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ABSTRACT

Background: Low body weight (LBW) cases have continuously occurred. However, some newborns with LBW could not afford good and high-technological health services due to several barriers such as cost, geography, transportation, and communication barriers. Incubator replacement through kangaroo treatment method is considered to be an effective and economical alternative in which the weight gain in newborns with LBW could be enhanced. Kangaroo care method can be used in treating newborns with low birth weight. The purpose of this study was to identify the effectiveness of the implementation of the kangaroo care method in increasing the weight gain of newborn with LBW at the General Hospital of Majene.

Methods: The research design used in this study was a pre-experiment with One Group Pretest Posttest Design. The sampling method used in this research was total sampling where 38 samples were selected. This research was conducted at the Regional Hospital of Majene in the Perinatology room.

Results: The results of this research indicated that there were significant differences in newborns before and after the implementation of the Kangaroo care method. It was evident that the newborns weight significantly increase with the Kangaroo care method. Therefore, further research should be carried out to investigate the factors which influence the increase of newborns weight.

Conclusion:

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Introduction

Low birth weight (LBW) is a birth weight of fewer than 2500 grams regardless of gestational age. Birth weight is the weight of an infant weighed within 1 hour after birth. LBW can occur in preterm infants (<37 weeks) or in full-term infants (intrauterine growth restriction / IUGR).[1] LBW has a 20 times greater risk of dying during infancy when compared to babies with normal birth weight. The infant mortality rate increases with the increase of LBW incidence in a country.[2]

Before finding FMD, incubators were one of the ways to deal with babies LBW or premature, but the use of incubators was considered to inhibit early mother-baby contact and breastfeeding. Given the limited incubator facilities in health services, PMK can be used in treating LBW. This method was first performed in 1979 in Colombia by Martinez, who treated babies weighing less than 1500 grams and the results were satisfactory.[3] FMD is useful in significantly reducing the number of neonates or newborns who died, avoiding low birth weight babies from being cold (hypothermia), stabilizing babies, reducing the occurrence of infections, increasing infant growth and development, increasing breastfeeding and bonding between mother and baby.[4]

In an attempt to introduce FMD as an appropriate technology to reduce neonatal mortality, this research is one tangible step.[5] The limited incubator in the room causes two babies in one incubator, that's why the baby has a risk of infection. Based on these reasons, many patients ask to go home prematurely due to cost reasons. So PMK is the right choice to overcome LBW. This research was also conducted the first time in Majene Regency.

Methods

The Research design used pre-experimental, one group pre-test and post-test Design was conducted on a set of objects that did not require a comparison group[6], the sample of this study was observed before being given treatment, after conduct treatment the sample was re-observed.[7] The research was conducted in the perinatology room of the Majene Regional Hospital, West Sulawesi Province. The study was conducted for 1 month, starting from December 2020 to January 2021.

The population of this study was all LBW babies who were treated in the perinatology room of the Majene Hospital. The sample in this study were all LBW babies who were treated with kangaroo method care in the perinatology room of the Majene Hospital. Sampling used a total sampling technique by taking samples of babies undergoing kangaroo treatment in the 2020 period. Data collection from this study used secondary data obtained from the research location agency according to the data listed in the research instrument in the form of observation sheets before and after treatment. kangaroo method. Data processing was analyzed using the Statistical for Social Science (SPSS) application using univariate analysis techniques and bivariate analysis. This bivariate analysis was used to connect the independent and dependent variables using the Paired t-test statistical test with a significance level of $\alpha = 0.05$.

Results

1. Univariat Analysis

Table 1. Characteristic Distribution of Babies

Characteristics	Frequency	Percentage (%)
Gender		
Female	17	44,73
Male	21	55,26
Gestational Age		
Preterm infants	27	71,05
Full-term infants	11	28,94
Baby Birth Weight		
<2000 gram	24	63,15
>2000 gram	14	36,84
Infant Weight at Evaluation of LBW		
BBLSR	5	13,15
BBLR	33	86,84
Length of Treatment		
< 7 Hari	6	15,78
7-14 Hari	13	34,21
> 14 Hari	19	50
Complementary Diseases in LBW Patients		
1. RDN	16	42,10
2. Hiperbilirubin	17	44,73
3. *Feeding Probl*	15	39,47
4. ems	9	23,68
5. Hypoglycemia	15	39,47
6. Hypothermia	8	21,05
7. Granuloma	7	18,42
8. Pyoderma	3	7,89
9. HDN	3	7,89
10. Asfiksia	6	15,78
11. Another		

Paired t-test

Data sekunder, 2020

Table 4.1 shows the characteristics of babies who experience LBW, data obtained using secondary data from medical records recording at Majene Hospital, the results are more male as many as 21 people (55.25%), with a full-term baby (BCB).) as many as 27 people (71.05%). While the birth weight of babies <2000 grams was 24 people (63.15%), then there were 33 babies (86.84%) who were treated with PMK. In addition, the length of treatment> 14 days was 19 people (50%), this could be influenced by comorbidities in LBW, namely Hyperbilirubin 17 cases (44.73%), then RDN 16 cases (42.10%), then Feeding. Problems and Hypothermia as many as 15 cases (39.47%).

Table 2. Characteristic Distribution of Mother's Babies

Characteristic	Frequency	Percentage %
Mother's age		
<21 year	10	26,31 %
21-35 year	20	52,63 %
>35 year	8	21,5 %
Mother's work		
Doesn't Work	31	81,57 %
Work	7	18,42 %
Mother's Education		
Elementary- Junior High School	15	39,47 %
Senior High School	16	42,10 %
Graduate	7	18,42 %

Table 4.2 data obtained utilizing secondary data from recording medical records at Majene Hospital, shows that the characteristics of the age of mothers who gave birth to LBW at Majene Hospital in the January-December 2020 period were the age group of fertile women, namely 21-35 years, as many as 20 people (52.63 %). Meanwhile, the highest level of education for mothers was SMA as many as 16 people (42.10%) and mothers who did not work much more, namely as many as 31 people (81.57%) when compared to mothers who worked.

Table 3. Weight Changed distribution Before and after PMK in RSUD Majene, Period January-December 2020 (n=38)

Variable	Mean	Std.	Mean	
			Lower	Upper
Before PMK	1973,15	364,01	22 (57,89%)	16 (42,16%)
After PMK	2018,07	374,86	22 (57,89%)	16 (42,16%)

Table 4.3 data obtained using secondary data from recording medical records at the Majene Regional Hospital shows that the results of weight interval estimation can be concluded that 95% is believed to be the average body weight before kangaroo treatment (PMK) is 1853.51 - 2092.80 grams and

The average body weight after kangaroo treatment (PMK) was 1894.86 - 2142.29 grams. A distribution of 22 people (57.89) was below the average value before PMK and after PMK. The table shows that the average body weight before PMK was 1973.1558 grams with a standard deviation of 364.01494 grams. The average body weight after PMK was 2018.0761 grams, with a standard deviation of 374.86840 grams. This is descriptive there is a difference in the average before and after PMK.

2. Bivariate Analysis

Table 4. Mean Distribution of Baby's Weight Gain before and after PMK in RSUD Majene, Period January-December 2020

	Paired Differences		**P-*value***
	Mean	std. Deviation	
Before PMK	44.92	19.46	0.000
After PMK			

Paired t-test

Data sekunder, 2020

The table paired samples test (T-test/ hypothesis test) states that the difference in mean difference before and after 44.92 standard deviations 19.46. Meanwhile, P-value 0.000 <0.005 or Ho is rejected. Thus, it is concluded that there are significant differences before PMK and after PMK**.**

Discussion

Referring to the results of the evaluation conducted in this study, it was found that the majority of mothers were aged 21-35 years (52.63%) or of childbearing age, who had more energy than those aged> 35 years. So that mothers can take better care of their babies. In addition, in the evaluation results, it was found that the majority of mothers had the characteristics of not working (81.57%), which meant that they had sufficient time to carry out PMK while in the hospital and even at home.

But in fact, based on research conducted by Samuel Maju Simanjuntak & Dina Hartini (2019) states that in their research[8], the results of the evaluation of the majority of mothers (96.7%) have the characteristics of not working, which means they have sufficient time to carry out PMK at home, but in reality, only 10% of mothers implement PMK, because it is recorded that they receive very little support from their families, as well as a lack of education about PMK for mothers who have LBW so that the implementation of independent PMK is still low.

This study aims to determine the effectiveness of the kangaroo treatment method for changes in body weight. The data obtained is the measurement of body weight which was carried out while being treated in the perinatology room of the Majene Hospital.

Based on data obtained from the medical records section of the Majene Hospital in 2020, there were

38 cases of babies with LBW who were given PMK treatment during their recovery period. In the evaluation results, it was found that there were more male babies (55.26%) than women (44.73%), with the majority of term babies (71.05%) and the majority were born with birth weights <2000 grams. (63.15%). The evaluation results also found that the majority of the length of stay more than 4 days (50%). This level of length of care is supported by the presence of comorbidities in infants with LBW, the majority of infants with LBW also suffer from hyperbilirubin (44.73%), then RDN (42.10%) is also a common comorbid disease based on the results of the evaluation in this study.

Based on the results of the study, the researchers argued that where babies with low birth weight (LBW) were given kangaroo treatment, it was closely related to the significant increase in baby weight. The kangaroo method (PMK) treatment process in this study was carried out for 7 days with a minimum PMK time of 1-2 hours per day. Infants with LBW who received PMK experienced a significant increase.

The results showed that of the 38 respondents who received PMK for one week, there was a significant influence between body weight before and after PMK p-value 0,000, with the average difference between before and after PMK was 44.92 grams per week. This increase is not much different from the results presented by Siti Dewi Rahmayanti (2010) that the increase in body weight in infants with LBW shows that the average body weight before treatment without FMD is 2050.00 grams with a standard deviation of 290.48 grams.[9] The average body weight after treatment without FMD was 2156.25 grams, with a standard deviation of 330.593 grams.

This study is also in line with previous research conducted by Putri & Gusmila in 2014 which said that there was a difference in the average weight of babies before and after treatment with the kangaroo method in the perinatology room of Dr. Achmad Mochtar Bukittinggi, where the results showed that there was a significant difference between the average body weight of babies before the kangaroo method treatment and after the kangaroo method treatment with an average baby weight of 28.30 grams with a standard deviation of 3.093.[10]

This is also put forward by the 2013 Maryuani theory[11], writing that the benefits of PMK for mothers are to increase prematurity baby weight or low birth weight, by stabilizing heart rate, breathing patterns and oxygen saturation, providing warmth to babies, increasing sleep duration, reducing infant crying and calorie requirements, accelerate weight gain and brain development, increase success and prolong the duration of breastfeeding.

This is following research conducted by Mardiani Freari, Agonwardi 2017, in her research proving the effectiveness of the kangaroo method to increase the weight of babies with LBW. Based on the research concept framework, the application of the kangaroo method can increase the baby's weight optimally.[12] This is because a baby born with a low birth weight (LBW) baby will generally be put in an incubator so that his body temperature remains normal and given oxygen assistance for interpretation and low birth weight (LBW) babies can also experience mental and physical disorders at growing age.[13] flower further, so that the maintenance requires high maintenance costs, in addition to the incubator the baby's body temperature can be maintained warmly by the kangaroo method. In the past, this method was

considered only for the poor because the rich were put in an incubator, but based on experience, the result is the kangaroo method is even more effective.

The kangaroo method itself can increase the ability of babies to suck, with good sucking ability in babies with low birth weight (LBW),[14] it will stimulate the formation of the hormone oxytocin and increase the hormone prolactin which will help milk production, so that the mother can produce breast milk that is sufficient for the needs of the baby, the baby freely gets breast milk in a timely manner and whenever the baby needs it.[15]

Conclusion

BBLR is an accident from Allah SWT to His creations. Islam emphasizes the importance of effort and prayers. In the Qur'an, it says that humans will not get anything other than what they work for, and the results of their efforts will be shown (to them), then they will be rewarded with an appropriate result according to Surah Ar Rad verse 11. One of the efforts that can be done is by Kangaroo Method Care (PMK).

From this study, it was found that the characteristics of the sample of babies were more male, with a full-term gestation age who passed treatment for more than 14 days because they were generally accompanied by comorbidities other than LBW. In this study, it was found that there were more mothers with low birth weight patients of productive age with secondary education and who work as housewives. From the research, it was found that there were significant differences in LBW babies before and after being treated with the kangaroo method (PMK).

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Conflict of Interest

The author stated there is no conflict of interest

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ORIGINAL ARTICLE

The Effect of Brown Algae (*Sargassum Sp*) Extract on Burns Wound Healing

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ABSTRACT

Backgroud: The wound care method that is currently developing uses the principle of moisture balance which is also known as the modern dressing method. Seaweed is a potential commodity in Indonesia, which has been widely used as a medicinal ingredient. However, the use of seaweed in the form of hydrogel ointment in the treatment of burns has not been widely studied. Therefore, this study was conducted to determine the effect of giving seaweed extract (Sargassum sp.) in the form of hydrogel ointment to burns.
Methods: The design in this study was an experimental study with a randomized post-test only control group design, using *musmusculus* mice. This study was divided into 4 groups, group 1 was a negative control without treatment, group 2 was a group with burns and was given bioplacenton, group 3 was a burn group treated with 5% Sargassum sp extract hydrogel ointment and group 4 was a burn group given 5% ointment. Sargassum sp extract hydrogel ointment 10%. The treatment was carried out for 14 days and evaluated the diameter of the burn and the percentage of burn healing.
Results: The results of this study showed that the difference in burn diameter at 0 days and after 14 days in the negative control group experienced a difference of 1.2 cm with a healing percentage of 44.85%. In treatment group 1, there was a difference in diameter of 1.2 cm, with a healing percentage of 49.41%, the 2-day treatment group obtained a difference in diameter of 1.2 cm, with a healing percentage of 50.31%, and in the positive control group a wound diameter of 1.0 cm, while the percentage of cure is 55.75%. The results of statistical tests on the percentage of wound healing between groups were not significantly different.
Conclusion: In this study the seaweed extract (Sargassum sp.) formed in the hydrogel ointment did not affect the healing of burns, this may be due to the long duration of administration.

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Introduction

Wounds are a serious problem in world health, especially in developing countries. The World Health Organization (WHO) reported that in 2004, the incidence of injuries worldwide averaged 110/100,000 people each year and an estimated 310,000 people died from injuries such as burns, infected wounds, etc. In 2015, approximately 486,000 injuries occurred in the United States, 40,000 of which required hospitalization and 300,000 requiring treatment in wound care centers. [1]

In Indonesia, there are no exact figures regarding injuries, but with the increase in population and industry, the number of injuries is increasing. Hospital Dr. Soetomo has a wound care center, the number of burns that are treated at RSUD Dr. Soetomo Surabaya since 2007-2011 as many as 665 occurred.[2]

Burns are skin damage due to excessive heat or chemicals.[3] There are three types of burns, namely first degree, second degree and third-degree burns. The three types of burns, third degree burns are burns that can destroy all layers of the skin.[4]

The wound healing process requires time and proper care so that the wound can heal quickly. Wound care methods that are currently developing are using the principle of moisture balance which is also known as the modern method of dressing. Modern wound care must still pay attention to three stages, namely washing the wound, removing dead tissue and choosing a dressing. Conventional wound care must often replace gauze with wound dressings, while modern wound care has the principle of maintaining wound moisture, one of which is hydrogel material.[5]

Hydrogel functions to keep the wound moist, soften and destroy necrotic tissue without damaging healthy tissue, which is then absorbed into the gel structure and wasted with the dressing.[4] The basic ingredients of hydrogels are glycerin or water so that they can provide moisture.

Seaweed is a potential commodity in Indonesia, seaweed production in Indonesia has increased significantly with an increase of 76.4 percent from 5.2 million wet tons of seaweed in 2011 to 9.2 million tons in 2013. Seaweed is one of the ingredients in wound dressing. Seaweed contains bioactive compounds such as flavonoids, saponins, tannins, albumin, which are useful as antibacterial, anti-obesity,cholesterol-lowering, anti-inflammatory, immunostimulant, antioxidant.[6]

Several studies on the use of seaweed as wound dressings for wounds have also been carried out, such as the research of Annisa et al, 2018 on the effect of brown algae extract *Sargassum sp* on healing of traumatic ulcers.[7] And by Aprinaldi's research, 2020 regarding the effectiveness test of red seaweed on wound healing.[2] As well as previous study from Mutia in 2011 regarding the use of alginate membranes from *Sargassum sp* seaweed as wound dressings and delivery of topical drugs.

From several studies on the use of seaweed as a topical wound medicine, there has never been any research on the use of seaweed formed in hydrogel ointment and its effectiveness for burns. So as to add to the scientific study on the use of seaweed, this research was conducted to determine the effect of

seaweed extract (*Sargassum sp*.) which is formed in the hydrogel ointment on the main wound, which is burns.

Methods

Animal Model

This research was conducted in the research laboratory and experimental animal laboratory, Faculty of Medicine, Universitas Nahdlatul Ulama Surabaya. Ethical approval was granted by the animal ethics committee of Universitas Nahdlatul Ulama Surabaya with the number 182/EC/KEPK/UNUSA/2021.

The design in this study is an experimental study with a randomized post-test *only control group design*. The population of the research sample is adult white male mice (*Mus musculus*), the age is between 2-3 months and the weight of the mice is 20-30 grams. During the study mice were given standard feed. Mice in healthy condition were characterized by active and not isolated movements in the corner of the cage, clean and smooth fur, clear eyes, no abnormal discharge from the eyes, ears, anus and no defects and no weight loss of up to 10% during acclimatization.

Extract of *Sargassum sp*

Sargassum sp obtained from Lampung, Sumatra. *Sargassum sp* was weighed as much as 250 grams and put into an erlenmeyer, then added solvent until the final volume reached 1000 ml with a ratio of 1: 4 (w/v). The extraction procedure was carried out by the maceration method by immersing the sample with 90% ethanol. The maceration results were then filtered with *Whatman* 42 filter paper to produce filtrate and residue. The filtrate obtained was then concentrated with a *vacuum rotary evaporator* at a temperature of 40 ^{o}C to obtain a crude extract in the form of a paste.[8]

Sargassum sp extract paste that has been finished is ready to be made in the preparation of hydrogel ointment. The preparation of *Sargassum sp* ointment hydrogel preparations is processed by mixing the basic gel ingredients, namely carbopol 940, methyl paraben, propyl paraben, TEA, glycerin, propylene glycol and aquadest and added *Sargassum sp* extract. The composition of the hydrogel preparation ingredients is in the following Table 1.

Experimental Design

This study was divided into 4 groups, namely a negative control group, a positive control group, and 2 treatment groups. The number of samples was calculated based on the Federer formula: (n-1) (t-1) 15. Each group had 6 mice, so the total number of samples was 24 mice. The negative control group was the group that was treated with wounds and plain ointment hydrogel without *Sargassum sp* extract. The positive control group was the group that was treated with wounds and given *Bioplacenton*. Treatment group 1 was the group that was treated with wounds and given a 5% hydrogel ointment with *Sargassum sp* extract. Treatment group 2 was treated with wounds and was given 10% ointment hydrogel *Sargassum sp* extract.

Statistical analysis

All results were expressed as mean ± SEM. The unpaired Student's ttest was performed to compare of

parameters between two groups . Comparisons of dose-response curves were made by two-factor repeated measures ANOVA, followed by Tukey's post hoc test for comparison between groups. A value of $P < 0.05$ was considered significant.

Table 1. Formulation of Hydrogel Ointment

Ingredients	**Formulation (%)**			
	Plain	***Sargassum sp* 5%**	***Sargassum sp* 10%**	**Bioplacenton**
Sargassum sp extract	0%	5%	10%	0%
Carbopol 940	4 %	4 %	4 %	0 %
Triethanolamine	4 %	4 %	4 %	0 %
Glycerin	20 %	20 %	20 %	0 %
Propylene glycol	10 %	10 %	10 %	0 %
Methyl paraben	0,4 %	0,4 %	0,4 %	0 %
Propyl paraben	0,4 %	0,4 %	0,4 %	0 %
Aquadest Ad.	Ad. 100	Ad. 100	Ad. 100	0 %

The process of making burns in mice is carried out on the back area by shaving and cleaning the skin first. Then disinfection with alcohol. Mice were previously anesthetized using ketamine + acepromazine 100/5 mg/kg bw intramuscularly. Burns are made with an iron plate. the diameter of the iron plate is 2 cm. an iron plate that has been heated on a blue fire for 3 minutes then affixed to the back skin of mice for 5 second.[9]

After 14 days, the mice were euthanized using ether. Burn healing was evaluated for 14 days by measuring the diameter of the burn. The data from the diameter measurement of burns on the first day and the last day were analyzed using the formula (9):

$$D\% = \frac{d0 - dx}{d0}\ x\ 100\%$$

D% = percentage of burn healing

d0 = wound diameter on day 1

dx = wound diameter on day 14

The percentage of burn wound healing was then statistically analyzed.

Results

The pH test results showed that all formulas were in the 4.5-6.5 range which did not cause skin irritation. Carbopol in aqueous solution has a pH of 2.5-4 so triethanolamine is needed as a buffer.[10] The following are the results of measuring the pH of the ointment hydrogel:

Table 2. pH of Hydrogel Ointment

No	Hydrogel Ointment	pH
1	Hydrogel Ointment Without *Sargassum sp* extract	6
2	Hydrogel Ointment *Sargassum sp* extract 5%	5
3	Hydrogel Ointment *Sargassum sp* extract 10%	5
4	Bioplacenton	6

The diameter of the burn was measured for 14 days, the measurement of the diameter of the wound was analyzed to determine the progress of wound closure. The results of the calculation of the average wound diameter with an interval of 4 days for each group are made in the form of tables and figures below:

Table 3. Mean of Diameter (cm) of Burns Wound by Group

Groups	Day 0	Day 1	Day 4	Day 7	Day 10	Day 14
K(-) 0%	2,000	2.200	1.967	1.850	1.717	1.217
P1 (5%)	2,000	2.367	2.150	1.967	1.800	1.233
P2 (10%)	2,000	2.483	2.133	2.017	1.833	1.217
K(+) Bioplacenton	2,000	2.317	1.900	1.683	1.467	1.017

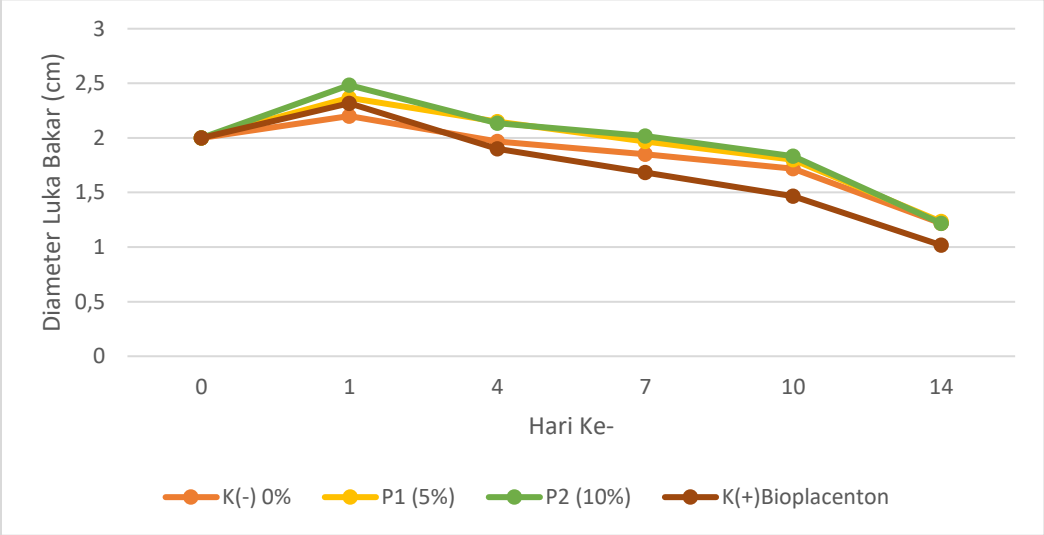

Figure 1. Mean of Diameter (cm) of Burns Wound by Group Day 0 – Day 14

The data from the measurement of the diameter of the burn wound were analyzed to produce a calculation of the percentage of burn healing. The percentage of burn wound healing was then analyzed statistically one way ANOVA. Before the one-way ANOVA statistical analysis is carried out, the data needs to be tested for normality and homogeneity. The results of the normality and homogeneity test showed p value >

0.05 so that the data were normally distributed and homogeneous. The results of one-way ANOVA statistical analysis p value 0.627 (> 0.05) which showed no significant difference between the treatment groups. The results of the average percentage of burn healing are in table 4 and figure 2.

Table 4. The Mean of Percentage (%) of Burn Healing

Group	Average	
K(-) 0%	44.85 + 2.46	*P Value 0.627*
P1 (5%)	49.41 + 9.21	
P2 (10%)	50.31 + 3.64	
K(+)Bioplacenton	55.75 + 5.57	

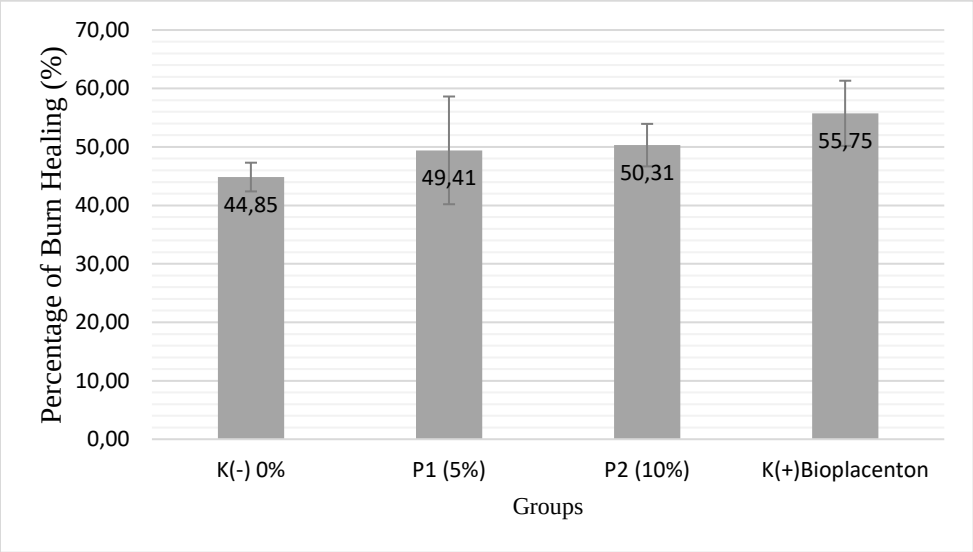

Figure 2. The Mean of Percentage (%) of Burn Healing

There were no significant differences in all treatment groups, but from the average percentage of burn healing, the bioplacenton control group showed the most optimal results. And in the negative control group, the ointment hydrogel without *Sargassum sp* extract showed the lowest percentage of burn healing.

Discussion

The results of measuring the pH of the hydrogel ointment, whether containing Sargassum sp extract or not, resulted in a gel base pH value of 5-6. For plain ointment hydrogel without extract and bioplacenton the resulting pH is 6, while the Sargassum sp extract ointment hydrogel produced pH 5. Increasing the concentration of the extract in this study resulted in an increase in the pH of the ointment hydrogel, this indicates the acidity of the extract. In this study, the ointment hydrogel produced a pH range that was in accordance with the research of Prasongko et al, 2020 and Ardianti et al, 2018 where the pH value of an ointment hydrogel must match the skin pH, which is 4.5-6.5.[9] The pH value that is too

acidic can cause skin irritation and too alkaline can cause scaly skin. While the pH of the hydrogel ointment with a range of 4.5-6.5 does not cause skin irritation.[11]

The results of statistical analysis showed that there was no significant difference between the treatment groups, this indicates that the ointment hydrogel *Sargassum sp* extract had no significant effect on the control group, both the negative control group (without *Sargassum sp* extract) and the positive control group (bioplacenton). From the results of statistical analysis it is possible that the healing process of burns is relatively the same. This is possible because of the alleged human error during the process of making burns so that the burns formed are not second degree burns. Second-degree burns are characterized by damage to the epidermis and part of the superficial dermis, partial necrosis of tissue cells, and swelling and degeneration of some cells in the superficial dermis.[12]

In Figure 1 the results of measuring the diameter of burns from day to day in all treatment groups show that the burns are shrinking and undergoing a healing process. And in Figure 2 the results of the analysis of the calculation of the percentage of burn healing indicate the percentage of healing in each treatment group. In the negative control group with ointment hydrogel without *Sargassum sp* extract the percentage of healing that occurred was 44.85%, in the treatment group 1 with ointment hydrogel with *Sargassum sp* extract 5% the healing percentage was 49.4%. In treatment group 2 with ointment hydrogel with *Sargassum sp* extract 10% the percentage of healing was 50.31% and in the positive control group with *bioplacenton* the percentage of burn healing was 55.75%. The percentage of burn healing in the negative control group without *Sargassum sp* extract had the lowest percentage of healing when compared to the percentage of burn healing in the treatment group 1 and treatment 2 with hydrogel ointment containing *Sargassum sp* extract.

Sargassum sp is one of the seaweed plants that has a lot of content and nutrients. The active ingredients of *Sargassum sp* include alkaloids, triterpenoids, steroids, saponins, phenols, flavonoids and quinones [8] Wound healing process can occur due to secondary metabolites, namely flavonoids and saponins. In the wound healing process, saponins play a role in repairing damaged endothelial cells (angiogenesis) in the wound so that the supply of oxygen and nutrients becomes more optimal. In addition, saponins also function as antibacterial so that they can reduce the risk of wounds being contaminated by bacteria and can act as antioxidants that can minimize free radical levels in wounds so that the process of wound proliferation and contraction takes place more quickly. Saponins also promote epidermal cell proliferation and keratin cell migration.[13] Finally, wound closure takes place more quickly.

One of the major causes of delayed healing is the persistence of inflammation or an inadequate angiogenic response. Flavonoids are substances that are believed to be anti-inflammatory and antioxidants.[14]Flavonoids can block the cyclooxygenase and lipoxygenase pathways of arachidonic acid metabolism, this causes the

synthesis of inflammatory mediators such as prostaglandins, thromboxane is inhibited so that it can reduce inflammation.[2]

The flavonoid content in *Sargassum sp* extract can inhibit cyclooxygenase and lipoxygenase enzymes in the inflammatory cascade reaction so that it can reduce the production of prostaglandins and leukotrienes. The decrease in prostaglandins as proinflammatory mediators can limit inflammatory cells in the wound area. Suppression of prostaglandins as inflammatory mediators can cause reduced pain and swelling, and reduce vasodilation of blood vessels and local blood flow, so that the inflammatory reaction will last for a shorter time then the proliferation process can occur immediately.[15]

In addition to the active ingredients of secondary metabolites, *Sargassum sp* also contains other ingredients, namely zinc, calcium, iron, vitamin A and vitamin C which are known to accelerate the inflammatory phase. Vitamin A and Vitamin C contained in *Sargassum sp* can play a role in increasing the migration of neutrophils and macrophages to the wound area so that phagocytosis activation becomes optimal. Vitamins A and C also increase the synthesis of collagen and help in the differentiation of epithelial cells. Calcium contained in *Sargassum sp* can accelerate re-epithelialization by increasing the proliferation of keratinocytes. The iron contained in *Sargassum sp* can affect the process of cell growth and tissue maintenance, serves as a cofactor for collagen synthesis. Zinc contained in *Sargassum sp* also plays a role in wound healing, besides that it is also able to increase immunity.[7]

In Figure 2 the most optimal percentage of healing is in the positive control group with *bioplacenton*. This shows that *bioplacenton* is still more effective for healing burns than hydrogel ointment with and without *Sargassum sp* extract although the results of statistical analysis are not significantly different. So it is also necessary to evaluate the process of making ointment hydrogel with and without *Sargassum sp* extract.

Conclusion

In this study, the extract of seaweed (*Sargassum sp*) which was formed in the hydrogel ointment had no effect on the healing of burns.

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Conflict of Interest

The author stated there is no conflict of interest

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REVIEW ARTICLE

Prevalence of *Trichomoniasis* in Cervical Cancer Patients

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ABSTRACT

Background: *Trichomoniasis* is the most frequent non-viral sexually transmitted disease in the world, and it can lead to persistent HPV infection. *Trichomonas vaginalis* infection causes damage to the vaginal mucosa, activation of oncogenes and inactivation of tumor suppressor proteins, and production of non-specific oxidants that lead to cervical cancer. This study aims to determine the prevalence of *trichomoniasis* in cervical cancer patients.
Methods: This study uses systematic literature review method and uses 10 international journals obtained through machine learning and indexed in Scimago. Journals are screened through PRISMA and have gone through a critical appraisal process. This study took place from April to September 2021.
Results: The prevalence of *trichomoniasis* in cervical cancer patients ranged from 0.022% to 87.7%, according to the findings of this study. The prevalence results vary due to differences in demographics and diagnostic methods used. Statistical analysis of the association between *trichomoniasis* and cervical cancer varied between significant and insignificant. Differences in the association are influenced by the research design used, diagnostic methods, and sample of the research.
Conclusions: The conclusion of this study is that the prevalence of *trichomoniasis* in cervical cancer patients was discovered to be the highest in the study by Ghosh *et al.* in Kolkata, India (72.6% women with CIN 1, 71.0% women with CIN 2 or CIN 3, and 87.7% women with invasive cancer) and the lowest in the study by Su *et al.* in Taiwan (0.022%). The association between *trichomoniasis* and cervical cancer was found to be varied.

Medical and Health Science Journal

Introduction

Trichomonasis is a protozoan infection caused by *Trichomonas vaginalis*. *Trichomoniasis* is the most frequent non-viral sexually transmitted disease in the world. This parasite can survive for 24 hours in a humid and warm environment.[1] The prevalence of *trichomoniasis* in the United States is 1.3%, while the prevalence of *trichomoniasis* in Bandung is 2%. People with multiple sexual partners have a higher risk of *trichomoniasis*. An increased risk was also seen in older women, black women, and people with limited knowledge and low socioeconomic status. [2–4]

Trichomoniasis generally does not cause symptoms, so screening is rarely done. This causes the available screening and diagnostic equipment to be inadequate.[5] *Trichomoniasis* can occur in men and women with equal frequency, but symptoms in men are milder and disappear within a few weeks. Meanwhile, in women, infection can occur for several years with some symptoms such as *pruritus* and smelly vaginal discharge.[6] If not treated properly, *trichomoniasis* can be associated with pelvic inflammatory disease, cervical cancer, and premature birth. In addition, individuals with *trichomoniasis are* more susceptible to HIV infection and *herpes virus*.[1]

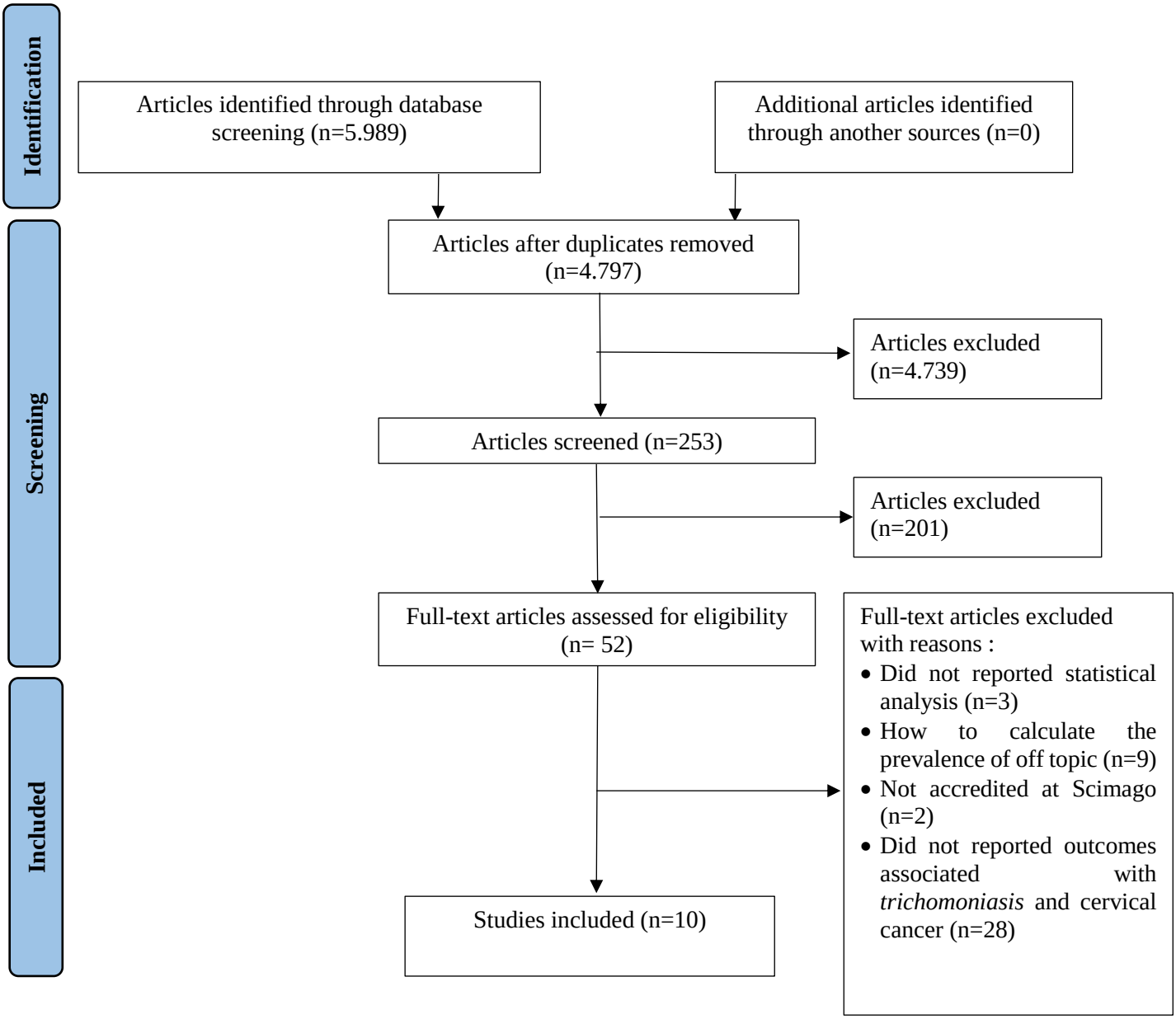
Cervical cancer is cancer that develops in a woman's cervix. Cervical cancer is caused by the *human papillomavirus* (HPV), which accounts for 99% of all cases. HPV is transmitted through sexual contact, resolves spontaneously, and generally causes no symptoms. A persistent HPV infection can cause cervical cancer. The fourth most frequent malignancy in women is cervical cancer. Cervical cancer was diagnosed in around 570,000 women worldwide in 2018, with approximately 311,000 women dying from the disease. Cervical cancer is a form of cancer that can be treated well if detected early in the disease and treated effectively. If detected at late stage, the disease can be controlled with appropriate treatment and palliative care.[7]

Trichomonas vaginalis infection causes damage to the vaginal mucosa and the release of lytic enzymes thereby increasing the virulence of HPV. This infection causes activation of oncogenes and inactivation of *tumor suppressor proteins* that lead to cervical epithelial mutations and tumor formation.[8] Chronic inflammation of *T. vaginalis* can lead to the production of nonspecific oxidants that can damage *host* DNA and lead to cervical cancer. This literature study will provide knowledge about the prevalence of *trichomoniasis* in cervical cancer patients and provide knowledge and awareness that *trichomoniasis* is an infection that must be treated properly.

Methods

This research uses systematic literature review method that aims to determine the prevalence of *trichomoniasis* in cervical cancer patients. The author searches for articles in the form of original articles on machine learning. Machine learning used include *Google Scholar, PubMed,* and *ScienceDirect*. The search for articles was carried out from April to September 2021. The author entered keywords related to this research, namely the prevalence of

trichomoniasis or *trichomoniasis* prevalence and cervical cancer or uterine cervical neoplasm or cervical neoplasm. The journals used are journals published from 2016 to 2021, in the form of *original articles*, and indexed at *Scimago*.



Results

Ten journals were used in this study. All journals are international journals indexed on *Scimago*. Three journals are research conducted in India, two journals are research conducted in Brazil, while the other journals are research conducted in Taiwan, China, Korea, Italy, and Rwanda. These journals used case-control, cross-sectional, and retrospective cohort study design. The journals used in this study reported the prevalence of *trichomoniasis* in cervical cancer patients differently. There are several journals that report the total prevalence in cervical cancer patients, or based on the stage or grade of cervical cancer. All journals also report statistical analyzes of *trichomoniasis* and cervical cancer.

1. Prevalence of *Trichomoniasis* in Cervical Cancer Patients

The prevalence of *trichomoniasis* in cervical cancer patients was discovered to be the highest in the study by Ghosh *et al.* in Kolkata, India (72.6% women with CIN 1, 71.0% women with CIN 2 or CIN 3, and 87.7% women with invasive cancer). According to study by Amorim *et al.*, 2017 in Brazil, *trichomoniasis was* found in 55.6% of women with CIN 1, 62.5% of women with CIN 2, and 64.3% of women with CIN 3 or carcinoma *in situ*. Study by Mukanyangezi *et al.*, 2018 in Rwanda reported that *trichomoniasis was* found in 7.7% in the HIV positive with LSIL, HSIL, and cancer group and as much as 22.2% in the HIV negative with LSIL, HSIL, or cancer group.[13] Study by Dey *et al.*, 2016 in Delhi, India reported the prevalence of *trichomoniasis* as much as 17.3% in women with ASCUS and 4.8% in women with LSIL. According to a study by Yang *et al.*, 2020 in China, 13.85% of women with CIN 1, 4.68% of women with CIN 2, 8.55% of women with CIN 3, and 1.22% of women with cancer had co-infection with *T. vaginalis* and HPV16. This study also reported a prevalence of co-infection with *T. vaginalis* and HPV18 as much as 12.38% in women with CIN 1, 2.86% in women with CIN 2, 0.95% in women with CIN 3, and 0.95% in women with cancer and the prevalence of coinfection with *T. vaginalis* and other types of hrHPV as much as 4.20% in women with CIN 1, 1.34% in women with CIN 2, 0.54% in women with CIN 3, and 0.09% in women with cancer.[8]

Trichomoniasis was found in 5.6% of women with ASCUS, 7.5% of women with LGSIL, 3.7% of women with ASC-H, and 2.8% of women with HGSIL in the study by Kassandra *et al.*, 2021 which was held in Maranhao, Brazil. Study by Gupta *et al.*, 2020 in India reported the prevalence of *trichomoniasis* as much as 7.8% in the group with CIN and 4.1% in the group with cervical cancer. Study by Raffone *et al.*, 2020 in Naples, Italy reported the prevalence of *trichomoniasis* as much as 2% in women with CIN 1 or LSIL. According to study by Kim *et al.*, 2016 conducted in Korea, *trichomoniasis was* found in 1.0% of women with ASCUS, 1.0% of women with LSIL, and 0.5% of women with HSIL. The prevalence of *trichomoniasis* in patients with cervical cancer was discovered to be the lowest in the study by Su *et al.*, 2020 in Taiwan. In this study, *trichomoniasis was* found in 0.022% of women with cervical lesions.[9-11]

Based on these data, the prevalence of *trichomoniasis* in cervical cancer patients ranged from 0.022% to 87.7%. The first factor that influences the difference in prevalence is demographic differences. In this study, the highest

prevalence was found in Kolkata, India and the lowest was found in Taiwan. Differences in race, poverty, and low levels of education also appear to have an effect on the prevalence of *trichomoniasis.*[12] Several studies in India show that the level of hygiene and use of gynecological services in Indian women is still very low. In addition, the Indian government is less aware of the importance of women's health in rural areas in India.[13] The second factor that influences the difference in prevalence is the difference in the diagnostic method used in the study reviewed. Each diagnostic methods used has a different level of sensitivity and specificity, so that the reported study results are also different.

2. The Relationship Between *Trichomoniasis* and Cervical Cancer

Trichomonas vaginalis infection causes cellular and immune changes in the female reproductive area, thus facilitating cell mutation and causing cervical cancer. *T. vaginalis* can produce lytic enzymes that induce vaginal mucosal damage, thereby causing microepithelial lesions, and integration of HPV DNA within host cells is induced.[14] Overexpression of E6 and E7 proteins occurs as a result of HPV DNA incorporation into host cells. This process inhibited the activity tumor suppressor protein and induce immunosuppression. Physiologically, tumor suppressor proteins have a role to trigger the process of apoptosis, repair DNA host damage, and inhibition of c-myc protein, a protein encoded by the c-myc gene. In the cell cycle, the c-myc protein is involved in cell proliferation, replication, and associated with its function to trigger tumor development (proto-oncogene).[15] Inhibition of the protein suppressor tumor's activity will trigger the development of cervical cancer.[16] Over-stimulation of E6 and E7 proteins also causes immunosuppression so that HPV infection can be persistent and cause the production of lytic enzymes and chronic inflammatory processes.[12] On the other hand, persistent infection of *T. vaginalis* will trigger an inflammatory response and oxidant production that causes host DNA damage. Damage to host DNA can also lead to the development of cervical cancer.[14]

This literature study showed that four selected journals found significant associations among *trichomoniasis* and cervical cancer based on statistical analysis. Study by Amorim *et al.*, 2017 reported that *T. vaginalis* is a risk factor for cervical lesions. Study by Dey *et al.*, 2016, found that *T. vaginalis* had a significant association with ASCUS, LSIL, and all *premalignant* cervical lesion. According to a study published in 2021 by Kassandra *et al.*, women with LGSIL and ASCH had a 3,179-fold and 12,047-fold increased risk of *T. vaginalis* infection, respectively. Study by Su *et al.*, 2020 reports cervical cancer risk was 3.684 times higher in those who had *T. vaginalis* infection compared to women who do not have *T. vaginalis* infection.

Study by Mukanyangezi *et al.*, 2018 reported that *trichomoniasis* is a risk factor for SIL and cancer in the HIV negative group, but the results of statistical analysis showed a non-significant relationship in the HIV positive group.[17] Study by Yang *et al.*, 2020 reported that coinfection of *T. vaginalis* with hrHPV increased the risk of CIN 1, but did not increase the risk of CIN 2-3. Study by Raffone *et al.*, 2020 stated that patients co-infected with *T. vaginalis* and

Gardnerella vaginalis had an 8-fold risk of cervical lesion progression, but *T. vaginalis* infection without co-infection with *Gardnerella vaginalis* did not significantly affect the risk of lesion persistence or progression.[10]

Three other journals reported non-significant association between *trichomoniasis* and cervical cancer in statistical analysis. Study by Ghosh *et al.*, 2017 reported that HPV coinfection with *T. vaginalis* did not significantly affect CIN. Invasive cancer risk was higher in women who were co-infected with HPV and *T. vaginalis* than in those who were not, although there was no statistically significance difference. The prevalence of *trichomoniasis* was higher in the group with pre-invasive lesions than in the group with normal cytology or invasive lesions. However the difference was not statistically significant. Study by Tompkins *et al.*, 2020 reported that statistical analysis showed insignificant results between *T. vaginalis* and cervical abnormalities.[18]

The correlation between the prevalence of *trichomoniasis* and the severity *grade* of cervical cancer appears to be variable. The prevalence of *trichomoniasis* was higher in the group with pre-invasive lesions than in the group with normal cytology or invasive lesions, according to a study by Gupta *et al.*, 2020, however the difference was not statistically significant. Study by Yang *et al.*, 2020 reported that co-infection of *T. vaginalis* with hrHPV increased the risk of CIN 1, but did not increase the risk of CIN 2-3. There are no journals that can explain the cause of the higher prevalence of *trichomoniasis* in lower grade cancer. According to a 2017 study by Ghosh *et al.*, the prevalence of *trichomoniasis* in cervical cancer was greater than CIN, which was 87.7%. The prevalence of *trichomoniasis* in patients with the higher grade of cervical lesions can be caused by secondary infection due to tumor necrosis.

Differences in the correlation of *trichomoniasis* and cervical cancer may be influenced by the study design used in the study being reviewed. Most of the research reviewed is not a longitudinal study with a long observation period, so the data displayed is data in a short time, whereas the development of cervical cancer takes a long time (years) until abnormalities appear and can be detected in cells and tissues. Another factor that may influence the difference in results between one study and another is the difference in the number of samples used. The limited number of samples cannot describe the true correlation in the population. Differences in diagnostic tools can also affect research results because the sensitivity and specificity of a diagnostic tool will determine whether a respondent's examination result is positive or negative. Research on the prevalence of *trichomoniasis* in cervical cancer patients is still very limited, so there are only few journals that can be reviewed in this study. Further research with a prospective design regarding *trichomoniasis* in cervical cancer patients needs to be done in the future.

Conclusion

Based on ten articles discussed in this study, the prevalence of *trichomoniasis* in cervical cancer patients was discovered to be the highest in the study by Ghosh *et al.* in Kolkata, India (72.6% women with CIN 1, 71.0% women with CIN 2 or CIN 3, and 87.7% women with invasive cancer) and the lowest in the study by Su *et al.* in Taiwan

(0.022%). The association between *trichomoniasis* and cervical cancer was found to be varied. Some journals report statistically significant analyzes, while other journals report non-significant statistical analysis results.

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Conflicts of Interest

There are no conflicts of interest declared by the author.

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CASE REPORT

Pregnancy With Early Latent Syphilis, A Reality In 21st Century : A Case Report And Literature Review

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ABSTRACT

Syphilis is a sexually transmitted disease caused by the spirochete Treponema pallidum. It is of special concern during pregnancy because can lead to adverse pregnancy outcomes and congenital syphilis. We retrospectively included female patient with laboratory-confirmed syphilis in East Java. Demographic, pregnancy record, clinical, radiological, laboratory, and treatment data were reviewed from medical record and health of both mother and child book. Clinical characteristics and outcome of patient were described. Th e patient was 40-year-old multiparous pregnant women was referred to the hospital at 40 weeks of gestation due to early latent syphilis. The patient was diagnosed during the last trimester and had not been treated, but no vulvar and anal genital wart was found. Patient was scheduled to urgent section caesarean but 1 hour after admitted to the hospital, patient had spontaneous delivery. A healthy son was born (3400 g /50 cm, 10 points Apgar score). Due to the lack of documentation regarding treatment of maternal syphilis, crystalline penicillin was administered to the newborn. Screening and early penicillin treatment are the most important factors that can eliminate complications related to the prenatal contagion with Treponema pallidum. Yet despite the lack of treatment or its inappropriate administration, the pregnancy complicated with maternal syphilis may end in a completely different way.

Medical and Health Scince Journal

Introduction

Syphilis is a bacterial sexually transmitted infection caused by Treponema pallidum. The disease remains the most common congenital infection worldwide.[1] The World Health Organization (WHO) estimates that, globally, 1.5 million pregnancies are affected by syphilis each year and up to 50% of those who are not treated will experience adverse outcomes such as congenital syphilis.[2] Syphilis infection during pregnancy related with miscarriage, stillbirth or neonatal death shortly after delivery.

Timely diagnosis and proper management of infection in pregnant women are important to prevent adverse outcomes. This study aims to describe cases of syphilis that occur in pregnancy, the lack of data and how the treatment will be given.

Case

Mrs. HR A 40 years old Malay housewife, Gravida 4 Para 2 + 1, came for an antenatal check-up at the obstetrics polyclinic of a hospital in East Java, Indonesia. The patient had been under control at the community health centre and currently has no complaints other than being close to delivery. According to the referral letter from the community health centre, the patient was diagnosed with early latent syphilis and was subsequently referred here for further management. She also did not complain of itching in the genital area associated with vaginal discharge. The patient was diagnosed during the last trimester and received no treatment. No vulvar and anal genital warts were found.

Routine blood tests including hepatitis B, human immunodeficiency virus (HIV) and syphilis serological tests were repeated. Serological test results for hepatitis B and HIV were negative. However, rapid plasma reagin is reactive at 1:16 titration. The diagnosis of syphilis is confirmed by a positive syphilis from the immunoglobulin G (IgG) result. There was no previous history of syphilis, and there was no record of syphilis treatment from the community health centre. Her husband was counseled for syphilis screening but was turned down.

The patient was scheduled for immediate cesarean section but 1 hour after being admitted to the hospital, the patient had a spontaneous delivery. She gave birth to a baby boy at 40 weeks' gestation by spontaneous delivery with a birth weight of 3400 g, body length of 50 cm, and an Apgar score of 10 points. There are no clinical signs of congenital syphilis. The results of rapid plasma reagin for infants are unknown because they are not tested. He was discharged after three days in the ward. Post-partum follow-up was scheduled for mother and baby during control at the polyclinic.

Discussion

Globally, syphilis remains prevalent in Africa, South America, Southeast Asia and Eastern Europe.[2] If a pregnant woman has syphilis, mother-to-child transmission can occur, potentially causing serious adverse outcome including low birth weight, stillbirth and congenital syphilis.[3] For this reason, infection remains part of the antenatal screening program. Only 40% of women with positive screening results require antibiotic treatment for the condition.[4] This is because patients who screen positive may have an inadequately treated infection acquired before conception, a false-positive result, or an inflammatory condition.[5,6] The stage of maternal syphilis affects the risk of transmission to the fetus as high as 100% in primary syphilis,

whereas the risk is much lower in early and late latent syphilis, with transmission rates of 40% and 10%, respectively.[5]

Syphilis can seriously make complicated pregnancy and result in spontaneous abortion, stillbirth, non-immune hydrops, intrauterine growth restriction, and perinatal death, as well as serious outcome in live-born infected children. While appropriate treatment for pregnant women often prevents these complications, the main obstacle is the inability to identify infected women and put them on treatment. First-trimester screening with non-treponemal tests such as the rapid plasma reagin test (RPR) or venereal disease research laboratory test (VDRL) combined with individual confirmation of being reactive with treponemal tests such as the fluorescent treponemal antibody absorption test (FTA-ABS) is a cost-effective strategy. Those at risk should be retested in the third trimester. Treatment during pregnancy should be with penicillin. In determining a penicillin regimen, the clinician must consider the stage of the mother's infection and the mother's HIV status. Patients allergic to penicillin should be sensitized before treatment. Despite proper treatment, as many as 14% will experience fetal death or give birth to an infected baby.[7]

Spirochetes of Treponema pallidum can cross the placenta and infect the fetus starting at about 14 weeks of gestation, and the risk of fetal infection increases with gestational age. However, the manifestations and outcomes of congenital syphilis are influenced by gestational age, maternal syphilis stage, maternal medication, and fetal immunologic response. Congenital syphilis can cause spontaneous abortion, usually after the first trimester, or stillbirth at term is found in 30 to 40 percent of cases, or premature, or full-term birth in a live baby but may have obvious signs of infection or have no symptoms at all once (about two-thirds of the time live births).[8] Placental infection and decreased blood flow to the fetus are the most common causes of fetal death. Untreated women have about a 70% chance of fetal infection during the first 4 years of disease.[9] In 35% of cases, infected fetuses are born alive with congenital syphilis. Low birth weight can be the only sign of infection. In fact about 60% of live births are asymptomatic at birth.[7]

In this patient, there were no signs of infection either in the mother or in the fetus, but further examination needs to be done to prevent the bad condition and the possibility of congenital syphilis being undetected during delivery. Adequate treatment of maternal infections is effective for preventing maternal-to-fetal transmission and for treating fetal infections. The treatment is Penicillin G, which is administered parenterally. In this case there is no problem in giving antibiotics. Treatment failure has been described in several case reports, particularly in patients with HIV infection, but no penicillin resistance has been documented in T. pallidum. [10] The CDC recommends that pregnant women should be treated with a penicillin regimen appropriate for their stage of infection. In primary, secondary, and early latent syphilis, benzathine penicillin G 2.4 million units IM in a single dose is recommended.[11] Additional therapy may benefit pregnant women in some situations. Some authors suggest that a second dose of benzathine penicillin 2.4 million units IM be administered 1 week after the initial dose for women with primary, secondary, or early latent syphilis.[12] In late latent syphilis or latent syphilis of unknown duration, a total of 7.2

million units of benzathine penicillin G should be given, as 3 doses of 2.4 million units IM each at 1 week intervals.

Pregnant women with reactive serological tests for syphilis should be counseled about the possibility of harboring other sexually transmitted agents, and tested for these. The most important is the concurrent HIV infection. Data on concurrent syphilis and HIV infection are limited. Two prospective studies involving 178 non pregnant syphilis patients (95 HIV seropositive, 83 seronegative) found no clinical difference in clinical presentation, course of disease, and response to therapy, but there was a delay in serological improvement in patients with HIV after therapy. Despite the recommended penicillin regimen for pregnant women, as many as 14% will experience fetal death, or deliver a baby with clinical evidence of congenital syphilis.[13] Although in these cases it is recommended to be treated with at least two doses of benzathine penicillin 2.4 million units within 1 weeks, the efficacy of this regimen in either preventing or fetal syphilis is unknown.[14] Severely infected fetuses can be aborted even though the mother has been on therapy. Mothers who are infected within 4 weeks after delivery can still give birth to a newborn with the risk of exposure.[7]

Conclusion

In this case, due to lack of documentation regarding the treatment of maternal syphilis, crystalline penicillin was administered to the newborn. Early penicillin screening and treatment is the most important factor in eliminating complications associated with prenatal transmission with Treponema pallidum. The main factor that causes failure to prevent congenital infection is the lack of prenatal care. In the United States, 98.7% of pregnancies ending in a live birth had at least one prenatal medical visit; in contrast, only 52% of mothers of infants with congenital syphilis reported having had at least one prenatal visit.7 The likelihood of seeking prenatal care was strongly related to age, marital and socioeconomic status, rural residence, and educational attainment.

Routine prenatal screening is the main line of defense against congenital syphilis. All pregnant women should undergo non-treponemal serological testing for syphilis during the first trimester. In areas with a high syphilis index, serological screening should be performed early in the third trimester and at the time of deliver. All cases of congenital syphilis can be prevented if the maternal infection is diagnosed and treated promptly. However, for this to happen, good treatment pathways must be in place and adequate resources must be available. This requires commitment from the government and strong program leadership. The WHO Millennium Development Goals to reduce mortality of children under 5 years of age by 66% and improve maternal health by 2025 present significant challenges and opportunities: prevention of congenital syphilis is an integral aspect of this goal and requires leadership action.

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Conflict of Interest

The author stated there is no conflict of interest

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ORIGINAL ARTICLE

Case Report: Tuberculosis with Pericardial Effusion in Children

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ABSTRACT

Tuberculosis pericardial effusion is a rare case in the developed countries. This may cause serious and deadly impact if not diagnosed and treated properly. Appropriates diagnosis and treatment of tuberculosis pericardial effusion can prevent mortality. A 14-years-old boy was admitted with tightness of breath, chest pain, and abdominal enlargement. Chest X-ray revealed heart enlargement and echocardiography showed a massive pericardial effusion. The diameter of induration of tuberculin skin test was 14 mm. This patient was diagnosed as tuberculosis pericardial effusion and showed complete recovery after paricardiocentesis and anti-tuberculosis drugs administration for 12 months. Chest X-ray in tuberculosis with pericardial effusion shows an enlarged heart. so that adequate treatment with pericardiocentesis and anti-tuberculosis drugs can completely cure this disease.

Medical and Health Science Journal

Introduction

Tuberculosis pericardial effusion is a complication of pericarditis due to *Mycobacterium tuberculosis* infection which is one of extra-pulmonary tuberculosis. Tuberculosis is the cause of more than 50% of pericardial effusion in children in India where tuberculosis was an endemics.[1] Appropriates diagnosis and treatment of tuberculosis pericardial effusion can prevent mortality.[2] The diagnosis is obtained based on history taking, physical examination, laboratory and imaging examinations.[2,3] The treatments of massive tuberculosis pericardial effusion are administration of anti-tuberculosis and anti-inflammatory, and fluid evacuation by paricardiocentesis or pericardiectomy.[3,4] Patients with tuberculous pericarditis merit to conduct invasive pericardial procedures.[5] This paper reports on a case of massive tuberculosis pericardial effusion that was diagnosed appropriately and treated adequately.

Case

The informed consent was obtained from the family of the patient. A boy, 14 years old, was taken by his parents to the emergency room with complaints of tightness of breath, chest pain, and enlarged abdomen, that had been getting worse sinces 2 weeks. Physical examinations results showed the body weight is 40 kg, 165 cm height, 14.6 body mass index (BMI), conjuctival anemic, weak and distant heart sounds, jugular vein distension, ascites and distended abdomen. This patient had blood pressure of 100/60 mmHg, heart rate of 110 beat per minute, respiratory rate of 38 times per minute, and 37.7 °C axillary temperature. Chest X-ray showed heart enlargement with cardiothorax ratio of 84% (Figure 1). Electrocardiograph showed sinus tachycardia and low-voltages QRS complex. Blood examination results were Haemoglobin 9.5 gr/dL, leucocyte 9,100/mm^3, platelets 384,000/ mm^3, albumin 3.7 g/dL, serum cratinin 0.7 mg/dL, serum electrolyte Sodium 133 mmol/L and potassium 3.7 mmol/L. Echocardiography showed a massive pericardial effusion, with ejection fraction of 87%. Tuberculin skin test was performed and the result 3 days later showed 14 mm induration. Based on clinical finding, laboratory finding, imaging and positive tuberculin skin test, this patient was diagnosed as tuberculosis pericardial effusion, cardiac tamponade and anemia.

Anti-tuberculosis drugs of Isoniazid 300 mg, Rifampicin 600 mg, Pirazinamid 1500 mg and Ethambutol 750 mg each was given once daily. He was also given Methylprednisolone 16 mg three times daily, Pyridoxine 10 mg once daily and Furosemide 20 mg twice daily. Pericardiocentesis subxyphoid approach was performed and drain catheter was installed by cardiothoracic surgeon, removing 1200 ml of pericardial effusion fluid. Histopathological examination of effusion fluid showed haemorrhagic fluid, histiocyte macrophage cell, no visible tuberculous process and without cell malignancy. Effusion fluid culture were performed, even not in Lowenstein-Jensen medium. The result showed that there was no bacterial growth. After pericardiocentesis, chest radiograph showed cardiothorax ratio of 54% (Figure 2). Six days after pericardiocentesis, the child was getting better. There were no

shortness of breath, ascites, and jugular vein distension anymore. Therfore, this patient was discharged. Methylprednisolone was continued for 2 weeks and was then tapered off. Anti-tuberculosis drugs intensive phase (Isoniazid, Rifampicin, Pyrazinamide and Ethambutol) was administered for 2 months, then followed by continuation phase (Isoniazid and Rifampicin) for 10 months.

The patient's condition was observed every month in pediatric ambulatory clinic. His body weight increased from 40 kg (BMI 14.6) in the first admission to 46 kg (BMI 16.5) in the 6th month of anti-tuberculosis treatment. At the end of treatment (12th month of treatment) his body weight was 50 kg and body height was 170 cm (BMI 17.3). Chest radiograph after 6 months of anti-tuberculosis treatment showed that the lungs and heart were normal, and no pericardial effusion was seen (Figure 3).

Patient's chest radiograph:

Figure 1. In the first admission, enlarged heart was seen, cardio thorax ratio was 84%.

Figure 2. After pericardiocentesis, the size of the heart was reduced, cardio thorax ratio was 54%.

Figure 3. After 6 months of anti-tuberculosis treatment, the heart appeared normal, cardio thorax ratio was 40%.

Discussion

Tuberculosis is not the only cause of pericarditis, however, it is the most common cause of pericarditis in developing countries.[10] A definitive diagnosis of tuberculous pericarditis is made if acid-fast bacilli is found in pericardial fluid or tissue. Probable diagnosis is made if at least one of the following three conditions is found: (1) pericardial effusion with confirmed TB in other organs, (2) exudative lymphocytic effusion with increased ADA level, and (3) treatment response to anti-tuberculosis drugs.[5] The diagnoses were also supported by the increased ADA >30 U/L in pericardial fluid, which has sensitivity of 94% and

specificity of 68% in establishing Mycobacterium tuberculosis as the cause of effusion.[6]

Tuberculosis with pericardial effusion is caused by *Mycobacterium tuberculosis* infection in the pericardium hematogenously, lymphogenously or direct spread that can occur even without starting with pulmonary tuberculosis.[2,4] Pericardial effusion increases the pressure of the pericardial space that disrupts ventricular filling during diastole, increases pressure of the systemic and pulmonal vein, and also inhibits blood backflow to the heart. Decreasing of ventricullar filling when diastole, causing a decrease in stroke volume and cardiac output. Perfusion to vital and peripheral organs is reduced which can lead to shock and death.[6] Increased systemic venous pressure results in jugular vein distension, liver enlargement, ascites, and peripheral edema, whereas an increase in pulmonary venous causes pulmonary edema.[7] Cardiac tamponade is suspected when there is severe shortness of breath, systemic hypotension, tachycardia, weak heart sounds in auscultation and pulsus paradoxus (reduction in systolic blood pressure of more than 10 mmHg when inspiration).[8] Previous studies have demonstrated that reversing the lymphatic flow of bacteria from peritracheal, peribronchial, or mediastinal lymph nodes or through hematogenous spread of primary tuberculosis infection will lead to cardiac involvement. [13] The tuberculin skin test can suggest diagnosis of tuberculosis if after 48-72 hours there is induration of > 10 mm.[9] In this case, induration diameter of tuberculin skin test was 14 mm. Bacteriological examination is important in diagnosing tuberculosis, i.e detecting *Mycobacterium tuberculosis* in sputum, gastric lavage or pericardial fluid with Ziehl Nelsen staining, cultivated in Lowenstein-Jensen medium as selective medium for cultivation and isolation of *Mycobacterium tuberculosis* or polymerase chain reaction.[2] In this case, *Mycobacterium tuberculosis* was not detected in pericardial fluid.

Polymerase chain reaction and cultivation in Lowenstein-Jensen medium was not conducted due to limited resources in our hospital. Histopathological examination of the pericardium is conducted if granulomatous and pericardial calcification is a definitive way of diagnosing pericardial tuberculosis.[11] Electrocardiographic features of massive pericardial effusion or cardiac tamponade are in the form of tachycardia and low voltage of QRS complexes.[12] Examination of the chest X-ray in a massive pericardial effusion patient shows globular enlarged heart (water bottle heart). Echocardiography examination can detect pericardial effusion, cardial tamponade, pericardial thickening or constrictive pericarditis.[7]

Management of tuberculosis pericardial effusion includes anti-tuberculosis and anti-inflammatory drugs administration and pericardiocentesis or pericardiectomy.[9] According to Indonesian Pediatric Society, the administration of anti-tuberculosis for tuberculous pericarditis consists of an intensive phase of Isoniazide, Rifampicin, Pyrazinamide, Ethambutol every day for 2 months and followed by a continuatioan phase of Isoniazide and Rifampicin every day for 10 months.[9] Corticosteroids can suppress the inflammatory response and accelerate the absorption of pericardial fluid, thereby preventing pericardial constriction.[7,8] Pericardiocentesis is an invasive procedures to remove fluid from the pericardial space. This procedure is carried out

when there is a massive pericardial effusion and cardial tamponade.[8] Pericardiectomy is performed if recurrent pericardial effusion occurs with constrictive pericarditis and drainage obstruction.[8]

In this case, anti-tuberculosis drugs are administered to the patient and observations are made regularly every months after discharge. Disappearance of tuberculosis pericardial effusion causes normal cardiac function so that there is no more tightness of breath, chest pain, and abdominal enlargement. Patient's body weight goes up every month and BMI also increases.

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Conflict of interest

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REVIEW ARTICLE

Survey Of Public Knowledge About New Normal Behavior After Covid-19

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ABSTRACT

Background:: Coronavirus virus disease pandemic 2019 (Covid-19) has not shown improved health conditions, it is necessary to conduct an in-depth survey of public knowledge in carrying out healthy living behaviors after the Covid-19 pandemic. Clean and healthy living behavior is one of the efforts in maintaining personal and environmental hygiene. The purpose of the study was to conduct an analysis of public knowledge about clean and healthy living behaviors after the covid-19 pandemic.

Methods: Design used in qualitative research with explanatory survey approach. The technique of sampling snowballs over the internet online, an anonymous online instrument was developed using google form. Questionnaire links were sent via email, WhatsApp, and other social networks through researchers. The instrument packaged in structured questioner form (included as an additional file) consists of questions covering several fields: (1) sociodemographic data (age, gender and level of education), (2) New normal behavior habits include wearing a mask, washing hands with soap or hand sanitizer, social distancing, Do not a crowd with many people, keep the environment around the residence always clean and healthy, packaged in google form. Data recapitulation and processing are carried out with the help of IT, then qualitative analysis.

Results: In this study, we conducted explorations related to sociodemographic, environmental hygiene around the place, healthy behavior habits including, wearing masks, hand washing, *social distancing*, availability of facilities for hand washing with hand sanitizer or hand washing with running water. The results showed that the community has carried out *new normal behavior* with awareness without any compulsion from anywhere. Thus *new normal behavior* includes, wearing masks, washing hands with running water or hand sanitizer and social distancing has become a new habit in order to break the chain of spread of 'covid 19.

Conclusion: With a better understanding of *the new normal behavior*, people are able to break the indirect chain of transmission of COVID-19 in everyday life

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Introduction

The new coronavirus (SARS-CoV-2) is causing concern in the medical community, as it spreads globally.[1-2] The fact that people without symptoms is a potential source of infection justifies a thorough analysis of the dynamics of current outbreak transmission. [3] The virus is mainly transmitted by direct or indirect contact with the mucous membranes of the eyes, nose or mouth or hands.[4] Hygiene is considered an important step to prevent the transmission of pathogens in health care facilities, and it is proven that improving hand hygiene compliance significantly reduces infections acquired from health care.[5] Therefore, hand hygiene is recommended as an important strategy to help prevent the spread of COVID-19 in hospitals. possible spread of COVID-19. There is evidence that daily hygiene measures are an important part of infection prevention, which is important in the prevention of transmission and transmission.[6] There is evidence that daily hygiene measures are an important part of infection prevention and important in preventing transmission and transmission of infections. [4] Cross-rationing to others who live together, body hygiene habits, care control behaviors and disinfection in the environment. [7] Basic hygiene such as washing hands with soap and clean water is the most effective and economical way to prevent various infections of the digestive tract, digestion, and skin.[8] Coronavirus Disease 2019 (COVID-19) is an infectious disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SAR-CoV-2).[9] This pandemic has strengthened the need for changes in new normal behavior, namely frequent hand washing with hand sanitizer or with soap and running water, wearing masks, social distancing, avoiding crowds. The use of masks is very important to prevent pathogens from being inhaled and cause airway infections can result in low immunity and susceptible to the covid-19 virus.[10] Efforts made in improving personal hygiene are as follows; provide CTPS hygiene tools in public or home, bring hand sanitizer and wet wipes when out, use masks, cultivating new normal behavior.[11] The purpose of the study is to explore public knowledge about clean and healthy living behaviors after Covid 19.

Methods

The research design used in this study is qualitative with the explanatory survey approach that is attempt data collection is specifically designed to avoid contact person to person. The explanatory survey was conducted online, and only participants with Internet access were able to participate in the study. The sampling technique using snowball samples and online questioner was developed using Google forms with consent forms. Questionnaire links are sent via email, WhatsApp, and other social networks owned by researchers. Participants are encouraged to complete surveys covering sociodemographic (age, gender and education level), (2) daily behavior of family members that allows the transmission of covid 19 (hand washing with soap or hand sanitizer, change clothes after traveling, immediately bathe and clean yourself after from outside the house) with the format of the response carried out through the dichotomous question (yes =1/ not =0), (3) Personal hygiene habits are also supporting questions including; oral self-hygiene during a period of self-isolation (brushing 2 or more times

per day, flossing once a day, gargling once a day, brushing the tongue once a day). Responses from respondents were assessed on a 5-point Likert scale ranging from 1 to 5, with "Never"=1, "Almost never"=2, "Sometimes 3," "Almost always 4 and "Always"

Results

Table 1. Sociodemographic Characteristics Of The Participants

No.		N	%
1.	**Age (mean ± SD), years : 40.49 ± 16.97**		
2.	**Sex**		
	Male	113	45,2
	Female	117	46,8
3.	**Education**		
	Primary school	25	10
	Secondary school	55	22
	Upper school	123	49,2
	College	47	18,8
4.	**Work activity**		
	Private	67	26,8
	Entrepreneur	79	31,6
	Professional	54	21,6
	Civil Servants	50	20

Table 2. Knowledge, attitude and practice score of participants

	N	%
Knowledge :		
Satisfactory	98	39,2
Unsatisfactory	152	60,8
Attitude :		
Positive	114	57,6
Negative	136	54,4
Practice		
Good	87	34,8
Poor	163	65,2

Discussion

To our knowledge, as we know, *new normal behavior* today has become a habit of everyday people in running a clean and healthy lifestyle.[12] However, in this study, it has not been able to see further the different effects of each member of the public in carrying out *new normal behavior* habits, because researchers have not made direct observations in the study subjects group.[13] The situation and conditions on the ground have not fully supported the data retrieval activities directly to respondents.

In this study, we explored sociodemographic, environmental hygiene around the place, healthy behavior habits including, wearing masks, hand washing, social *distancing*, availability of facilities for hand washing with hand sanitizer or hand washing with running water.[14] The results showed that the community has carried out *new normal behavior* with awareness without any compulsion from anywhere. Thus *new normal behavior* including, wearing masks, washing hands with running water or hand sanitizer and social distancing has become a new habit in order to break the chain of spread of 'covid 19.[15]

Changes in thinking and changes in people's insights about the impact of this pandemic on hand hygiene prevent the spread of COVID-19, it is very important to comply with all measures of the Health protocol established by the government(RI, 2020) In addition, it will be interesting to know the different effects depending on the number of people in the household. Improper use of measures in indirect transmission of COVID-19 between people living together.[16]

In descriptive sociodemographic data, the cleanliness of the environment around the place, healthy behavior habits include, wearing masks, hand washing, *social distancing*, the availability of facilities for hand washing with hand sanitizer or hand washing with running water. The results

showed that the community has carried out *new normal behavior* with awareness without any compulsion from anywhere. Thus *new normal behavior* including, wearing masks, washing hands with running water or hand sanitizer and social distancing has become a new habit in order to break the chain of spread of 'covid 19.[17-18]

In the results of the study related to individual data respondents obtained result that highlights personal hygiene, considering sharing toothbrushes, toothpaste, the same container for brushes, closing the toilet lid before flushing and replacing the brush after the virus process can be a cross-contamination path COVID-19.[13] However, when studying oral hygiene habits, there is no significant difference so it is less able to provide information about personal *hygiene.* These results can be interpreted to show that personal hygiene exerts a considerable influence in breaking the chain of spread of COVID-19.[11] Some respondents provided information related to factors that might contribute in efforts to break the chain of transmission and spread of covid'19 through increased knowledge and understanding of personal hygiene and the environment around the residence.[19] The main thing in efforts to increase people's knowledge and understanding to always run *new normal behavior* becomes a habit of living a clean and healthy life.[20] The main thing in efforts to increase people's knowledge and understanding to always run *new normal behavior* becomes a habit of living a clean and healthy life.[20]

The results also provide information that, effectively, clean and healthy living behaviors, hygiene at home and in daily life have the potential to reduce infection rates and antibiotic consumption, thereby reducing selective pressure for further development and spread of resistance [21] As noted in this *new normal behavior* effort to contain the SARS-CoV-2 virus and slow the spread of COVID 19, hygiene practices including hand washing, are the first line of defense to reduce the transmission of infection and spread of the coronavirus.[22]

Conclusion

The study concluded that most of the study subjects had good knowledge of the spread, transmission and disconnection of the COVID-19 chain, but there were gaps in understanding new normal *behavior.* The following research is recommended to conduct a study on *health belief models* related to compliance with carrying out clean and healthy living behaviors.

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Conflict of Interest

The author stated there is no conflict of interest

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