

## THE EFFECTIVENESS OF THE ENVIRONMENTAL HEALTH SERVICES IN THE PRIMARY HEALTH CARE AGAINST THE PREVENTION OF PULMONARY TUBERCULOSIS IN THE REGENCY OF BANYUWANGI

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### Abstract

**Introduction:** One of the promotive and preventive efforts in the prevention of pulmonary tuberculosis (TB) disease in primary health care is a health services environment that includes counseling, inspection and intervention of environmental health. The purpose of this study is to evaluate the effectiveness of the Environmental health services in the primary health care against the prevention of Pulmonary TB disease in Regency of Banyuwangi. **Method:** This research was observational descriptive design of study cross-ssectional. The study population was the primary health care in districry of Banyuwangi and a large sample of 6 primary health care. The determination of the study sample by using purposive sampling based on criteria of results Assessment of Performance of primary health care (PKP) services and programs environmental health in primary health cares and numbers Case Notification Rate (CNR) at the top of the East Java Province. Processing and analysis of data using a scoring system based on the scale of the theoretically grouped in the category of good, enough, less. The data is then interpreted descriptively. **Result and Discussion:** The Program of health service in the prevention of the disease is said to be effective when the probability of >50.00%. The results showed the probability of the effectiveness of the environmental health services in the Primary Health Care of Klatak of 77.00%. The Primary Health Care of Mojopanggung, Sobo, and Kabat respectively 78.80%, Primary Health Care of Gitik by 64.20% and the Primary Health Care of Songgon 49.50%. Human resources at the Primary Health Care of Songgon not competent. The Primary Health Care of Gitik and Songgon not planning activities. The achievement of the output in all the primary health care less, it is because of the lack of commitment of the implementers and the coordination of cross-program not running. **Conclusion:** There are 5 primary health cares service programs environmental health in the prevention of Pulmonary TB effective that the Primary Health Care of Klatak, Mojopanggung, Sobo, Kabat and Gitik while at the Primary Health Care of Songgon is not effective. The effectiveness of services and programs environmental health in TB patients is influenced by policies, human resources, infrastructure, planning and coordination across the program.

## INTRODUCTION

One of the diseases that can cause death in all over the world and Indonesia is the disease pulmonary tuberculosis (TB). In 2016, Pulmonary TB is the cause of the 4<sup>th</sup> death in Indonesia after ischemic heart disease, cerebrovascular disease, and diabetes (1). Indonesian ministry of health reported number of cases of TB in Indonesia in the year 2017 showed 360,770 case. This number increased when compared with the number of cases in the year 2016 showed 351,893 case. In the year 2017 the number of cases was highest in West Java province amounted to 78,698 case, East Java showed 48,323 and Central Java showed 42,272 (2). In the Regency of Banyuwangi in the year 2016 the number of patients with pulmonary TB Bacteria Resistant Acid (BTA) is positive at 868 cases (45.99%) of the total cases 1,887 case, while the case of child TB as many showed 137 cases (7.26%). In the year 2017 the number of TB BTA positive increased to 907 cases (44.99 %) of the total cases of the 2016 cases, while the case of child TB as many showed 76 cases (is 3.77%) (3). In the year 2018 the number of TB BTA positive decreased to 734 cases (33.11%) of the total cases 2,216 cases, while of TB cases in children increased to 142 cases (at 6.41%) (4).

Primary health care as health care the first level is responsible for the success of the program for combating TB in the region. The priorities of TB control implemented in the primary health care that prioritizing aspects of promotive and preventive, without ignoring the aspect of curative and rehabilitative intended to protect public health, reduce morbidity, disability or death, to decide the transmission to prevent drug resistance and reduce the negative impact caused by TB. Aspects of promotive and preventive implemented to be integrated with a health service environment at the primary health care through counseling services environmental health inspections environmental health and the intervention of environmental health that aims to break the chain of transmission of TB disease by controlling environmental risk factors and behavior (5).

Services environmental health at the primary health care begins with counseling. Counseling is given to patients with pulmonary TB by fostering communication on a reciprocal basis between the patient and the attendant to recognize and solve the problems of pulmonary TB associated with the health of the environment. Based on the results of the counseling obtained an overview about the problems of environmental health in the face by patients with pulmonary TB does show the growing trend or the spread of disease due to environmental factors. Furthermore, the officer set up a schedule to do

the inspection of environmental health to the homes of TB patients (6).

Inspection environmental health is the activity of examination and direct observation of the media environment in the framework of supervision based on standards, norms and quality standards that apply to improve the quality of a healthy environment (6). Media observation of the environment to assess environmental risk factors, condition of building quality homes, extensive ventilation, natural lighting in the room, humidity and cleanliness of the patient's home and make observations of the behavior of patients with pulmonary TB. After doing the inspection to the homes of patients with pulmonary TB the next officer to give advice or intervention what should be done patient to improve the condition of the health of the home environment with consideration of the level of difficulty, effectiveness and cost. The intervention can be performed independently or involve stakeholders and relevant parties other (6). With the increasing health and environmental quality in homes of patients with pulmonary TB hopefully can speed up the process of treatment or not aggravating circumstances of patients with pulmonary TB or minimize the proliferation of the bacteria of TB and transmission of TB in the house.

Based on the above it is necessary to do optimization of the effectiveness of program services environmental health at the primary health care. One of the efforts to improve the effectiveness of programs is through program evaluation. Evaluation is the systematic assessment and impartial from an activity, project, programme, strategy, policy, topic, theme, sector, institutional performance operational area. Evaluation is also an integral part of each stage of the strategic planning and the cycle of programming and not the end of the program. The evaluation focuses on the achievement of expected and achieved, check the result chain, processes, contextual factors and causality to understand achievements of the program achieve the goal or the problem (7).

Evaluation of health programs one of them is to determine the effectiveness of health programs to control diseases. The effectiveness of health programs describe the capabilities of the program include inputs comprising resources, materials, funds, facilities and infrastructure, a process that includes planning and implementation of the program to be able to achieve the target/target set/output (8-9).

The results of the evaluation of the primary health care performance (PKP) on the program of environmental health in the Regency of Banyuwangi is very varied. Of the 45 primary health cares in the Regency of Banyuwangi with the value of the good as much as 20

primary health care (44.44%), values quite as much as 7 primary health care (13.56%) and value less as much as 18 primary health care (40%). The gap results of the PKP instrument, requires an evaluation to look at the problems that occur in the primary health care. PKP is one of the instruments to see the achievement program (3,10).

In the Regency of Banyuwangi has never been a study about the evaluation of the effectiveness of health programs. It is therefore necessary to research the effectiveness of the one health program. This study aims to evaluate the effectiveness of program services environmental health at the primary health care on the patients with pulmonary TB in the Regency of Banyuwangi.

**METHOD**

This type of research was observational descriptive and the design cross sectional study. The study population was all the primary health care in the Regency of Banyuwangi. Sampling of the research done with the technique of sampling was non-probability. The way the sampling was done by purposive sampling, it was based on certain considerations of the nature, the characteristics and the characteristics of the population that was already known in advance, primary health care that carry out the environmental health services with the results of the PKP are varied, good, sufficient and less, the primary health care with a case of TB is quite high with the value of the Case Notification Rate (CNR) was above the value of the CNR level of East Java Province and primary health care of different Regency. Of the 45 primary health cares is obtained 6 (six) local primary health care in the working area of the Office in the Regency of Banyuwangi, namely Primary Health Care of Klatak, Mojopanggung, Sobo, Kabat, Gitik and the Songgon.

Informants research was the head of the primary health care, service officers environmental health officers P2TB and patients with pulmonary TB new cases of receiver of services of environmental health at the primary health care at the time of the study. Data collection was done by document review, observation of activities, in-depth interviews with heads of primary health care, health officer and environmental officer P2TB, open-ended interviews with patients with pulmonary TB new cases as well as observation of the health of the home environment of the patient.

In this study, the evaluation of the effectiveness of the environmental health services in the primary health care on the patients with pulmonary TB using

model approach of system resources, namely the rate of the variable input, process and output by considering the needs of the patient against the health services program for the environment (11). Input variables included policy, human resources, infrastructure and budget. Process variables included the planning services environmental health at the primary health care, counseling services environmental health inspections environmental health, interventions for environmental health and monitoring and evaluation. While the output variable, among others, the amount of counseling services health environment in patients with pulmonary TB, the total number of inspections environmental health, the total number of interventions environmental health in patients of pulmonary TB and the number of patients with Pulmonary TB who need the service the health of the environment. Instrument used to measure the variables is a form of assessment based on the PKP document of the East Java Province 2018 (12).

The processing of data was done by assessment data, transcript data, coding, cleaning data on the results of the document review, in-depth interviews, open-ended interviews and observation. Then performed the scoring data on each variable of input, process and output. In each variable there were indicators where each indicator has a score. In the determination of a score/scale of measurement based on the scale of the theoretically grouped into 3 categories: good, adequate, less. Furthermore, the data were analyzed and interpreted descriptively to describe the condition and situation of the primary health cares, based on the results of the measurements then compare with the standard and regulations.

The program environmental health services s at the primary health care on the patients with pulmonary TB could be called effective if the probability of the effectiveness of the health program of >50.00% (8). Effective whether or not the program services environmental health at the primary health care on patients of pulmonary TB assessed by using the Baye's theory to enter the results of scoring each variable as follows :

The probability of the program effectiveness

$$P(\text{PH}) = \frac{\text{Weight I} \times \text{Score I}}{\text{Max Score I}} + \frac{\text{Bobot P} \times \text{Skor P}}{\text{Max Score P}} + \frac{\text{Bobot O} \times \text{Skor O}}{\text{Max Score O}}$$

Description :

(P<sub>PH</sub>) = the Probability of the effectiveness of the program

Score I = total score of variable input

Score P = total score of variable process

Score O = number of score output variable  
 Weight I = weight P = weight O = 0,33  
 Score mask I, score max P, max score O = Maximum score from input, process, output

Probability of Program Aggregate Effectiveness

$$Probability\ of\ Program\ Aggregate\ Effectiveness = S(E) \times P(PH)$$

Description:

SE (Strategy Efficacy) = assumed as 0.4 (the success of the intervention program health based on review of scientific literature (6).

To calculate the effectiveness with how to consider the value of the weights/relative contribution of each component that has a weight input (0.33), process (0.33) and output (0.33) with consideration and sensitivity analysis of that input, process and output have the influence and contribution of the same in the effectiveness of the program. While in the strategy efficacy/assumptions the success of the health programs assumed as 0.4, which is converted in the form of a percentage so that the maximum effectiveness of the health program is 40% (13).

The research was conducted during the three (3) months in April 2019 s/d June 2019 and prior research has been carried out the test of ethics in the Faculty of Nursing Airlangga University with Ethical Approval Number 1352-KEPK.

**RESULT**

**Services Environmental Health at the Primary Health Care on the Patients with Pulmonary TB**

Based on document review services and programs environmental health in the primary health cares in the Regency of Banyuwangi has been running since 2005 with Regulation of Clinical Sanitation. Regulations that support the implementation of the environmental health services in the primary health care, such as Regulation of Ministry of Health Republic Indonesia No.13/MENKES/2015 about Implementation of Environmental Health Services in Primary Health Care, Regulation of Ministry of Health Republic Indonesia No 43/MENKES/ 2019 about Primary Health Care, and Regulation of Ministry of Health Republic Indonesia No. 44/MENKES/2015 about Management of Primary Health Care. With these regulations the Head of Primary health care as the person in charge of all the program does not need to issue a letter of decision again specifically about the environmental health services , because it is already

listed in the types of services that are required in the primary health care, It also supported the statement of one of the Heads of primary health care in the interview session.

“...At the Primary health care level, there is no specific decree on the environmental health services program at primary health care, but the service has been included in the decree of the head of the primary health care regarding the types of services at primary health care containing all types of services available at primary health care ... “(DT)

Environmental health services s at the primary health care on patients of pulmonary TB derived from the referral services general/service control and counter measures (P2) TB. Diagnosed with pulmonary TB then referred to an environmental health services . Environmental health services s at primary health care were started by providing environmental health counseling. Furthermore inspection of the environment health in the form of home visit patients and provide the intervention of environmental health based on the results of inspection/observation.

**Assessment Variable of the Effectiveness in Environmental health services at the Primary Health Care**

**The Input Services Environmental Health at the Primary Health Care**

Input variable measured include policy, human resources, infrastructure and funds the implementation of environmental health at the primary health care. The measurement is done with the interview and observation which then enter into the assessment form. The following is a report of the results of the scoring assessment on the input variable :

In Table 1 shows that the input variables of the 6 primary health care that are rated there are 5 primary health care with both categories i.e. Primary Health Care of Klatak, Mojopanggung, Sobo, Kabat and Gitik. While 1 the primary health care that the Primary Health Care of Songgon get category less. This is due to on the components of the human resources and infrastructure to get a low value. On the components of the human resources of Primary Health Care of Songgon not have the power of competence environmental health (graduate, 1 environmental Health). Most executive environmental health in Primary Health Care of Songgon not a sanitarian, but rather other personnel appointed by the head of primary health care to be given the additional task of implementing environmental health services .



**Tabel 1. Recapitulation of Scoring Results for Environmental Health Services Assessment on Input Variables**

Input Variable	Klatak	Mojo panggung	Sobo	Kabat	Gitik	Songgon
<b>Policy</b>	3	3	3	3	3	3
<b>Human Resources</b>						
Total	3	3	3	3	3	2
Education	2	3	3	3	3	1
Training	3	3	3	3	3	1
STRS	3	3	3	3	3	1
SIKTS	3	3	3	1	3	1
Additional tasks	2	2	2	2	3	3
<b>Infrastructure</b>						
Counseling room	2	3	3	3	2	3
Kit sanitarian	3	2	3	2	2	1
CIE media	2	2	2	2	2	1
Guidelines	3	3	3	3	3	3
<b>Fund</b>	3	3	1	2	0	0
<b>Score</b>	31	33	32	30	30	20
<b>Weight</b>	33	33	33	33	33	33
<b>Score</b>	1056	1089	1056	990	990	660
<b>Category</b>	Good	Good	Good	Good	Good	Less

This is reinforced from the results of interviews with informants from the primary health care. The following is quote the results of interviews with informants :

*“...There is no distribution to the sanitarians of the District Health Office in Banyuwangi at our primary health care, so the effort that we do is pointed to be the executor of the program of environmental health at the primary health care that comes from a combination of the most kid health...” (AP).*

And quotes from interviews of informants from the District Health Office of Banyuwangi.

*“...The amount of sanitarians as the executor of the environmental health services in the primary health care in Regency of Banyuwangi has not been fulfilled as a whole, only about 70 % (30 primary health care) that has sanitarian, while the remaining 30% was held by other health professionals appointed by the head of primary health care “ (WHS)*

On the components of the infrastructure, the primary health care Songgon have sanitarian kit, but the condition is broken can not be used and there wer only used 2 type of media information, education, and communication (IEC), namely leaflets and sheets of feedback. Here is an excerpt of the interview results with the research informants from the primary health care:

*“...Media communication, information and education available at the primary health care we are the leaflet and the turning sheet and slide in the form of ppt that was used at the time of counseling and illumination..” (MO).*

*“...Leaflet about TB does not exist ... other leaflets on environmental health ... then we will fulfill it soon ... “(IS).*

On the components of the funding or budget within a Primary Health Care of Klatak and Mojopanggung which allocates the budget for the environment health program well so that it can include > 91% activities environment health. The Primary Health Care of Kabat also allocates the budget for the environment health program, but can only cover 81% - 91% activities environment health. The Primary Health Care of Sobo budget can covers <80% of the activities of the environmental health while the Primary Health Care of Gitik and Songgon not allocate budget for environmental health. The following is excerpts the results of interviews with research informants from the primary health care:

*“.....Inspection activities the environmental health/home visits of TB patients is being implemented jointly with the holder of the TB program, so although there are no funds, the activities of the environmental health inspection can still be implemented.....(RT)*

*“.....Inspection environmental health at the home of TB patients is being implemented jointly with the holder of the TB program using funds from the P2TB at the time of the activities of contact tracing.....”.( EL).*

So of the components of the human resources, infrastructure and funds whose value is so low that it causes Primary Health Care of Songgon overall get category less than input variables.

**The Process of Environmental Health Services at The Primary Health Care**

Process variables in the activities of environmental health includes the components of planning, implementation of counseling services environment health in patients of pulmonary TB, the inspection of the environmental health on patients with pulmonary TB, the intervention of environmental health and monitoring and evaluation of the environmental health services on patients with pulmonary TB. Recapitulation of the assessment of process variables ensure the environmental health in primary health cares is as follows:

**Tabel 2. Recapitulation of Scoring Results for Environmental Health Services Assessment on Process Variables**

Process Variables	Klatak	Mojo pangung	Sobo	Kabat	Gitik	Songgon
Planning	3	3	3	3	0	0
Counseling services of Environmental health	3	3	3	3	3	2
Environmental health Inspection	3	2	3	2	2	1
CIE intervention	3	3	3	3	3	2
Suggestion intervention	3	3	3	3	2	2
Monitoring and evaluation	2	2	2	2	2	1
<b>Score</b>	17	16	17	16	12	8
<b>Weight</b>	33	33	33	33	33	33
<b>Score</b>	561	528	561	528	363	264
<b>Category</b>	Good	Good	Good	Good	Enough	Less

Based on the data and information in Table 2, primary health care that get a good category on the process variables is as much as 4 primary health care that the Primary Health Care of Klatak, Mojopanggung, Sobo and Kabat while the Primary Health Care of Gitik get the enough category and the Primary Health Care of Songgon get category less.

On the components of the planning on process variables there are 2 primary health cares get a low value that the Primary Health Care of Gitik and Primary Health Care of Songgon because of no planning activities the health of the environment while in 4 public primary health care that the Primary Health Care of Klatak, Mojopanggung, Sobo and Kabat each year routinely planning activities.

On the component services counseling environmental health in TB patients, 5 centers namely Primary Health Care of Klatak, Mojopanggung, Sobo, Kabat and Gitik perform counseling services with better, carry out the procedure of counseling with the 7 stages of the 8 stages according to the standard of service. While the Primary Health Care of Songgon perform the procedure counseling with 6 stage because of the limitations of the officer and time, such as the quote the results of interviews with primary health care staff:

*“Limitations of officers and many activities in the program of environmental health at the primary health care, home visit is carried out if there is time”.*(EH)

On the component inspection environmental health in patients with pulmonary TB, there are 2 primary health care, that the Primary Health Care of Klatak and Sobo that meet the 8 criteria of the inspection the environmental health of the 10 criteria according to the

standard. While primary health care other Primary Health Care of Mojopanggung, Kabat, Gitik meet the 7 criteria of the inspection of environmental health and Primary Health Care of Songgon just meet the 4 criteria of the 10 criteria of the inspection of environmental health. Measurement media environment is one that can not be done by the Primary Health Care of Songgon such as the quote the results of interviews with officers and Paramedics

*“Equipment to measure the physical environment in conditions that could not be used because it is broken and old...”.*(MO).

*“We do not have the equipment to measure the media environment ....and for next year we will have already proposed the procurement sanitarian kit...”.*( RT).

On the components of the intervention environment health in patients with pulmonary TB, as many as 5 centers namely Primary Health Care of Klatak, Mojopanggung, Sobo, Kabat and Gitik which gives 12-13 stages of Information, Education, and Communication, Program (IEC) and advice follow-up of 14 stages of the intervention according to the standard. While the Primary Health Care of Songgon just give the 9 stages of the IEC without follow-up suggestions. On the components of the monitoring evaluation of the Environmental health services on patients with pulmonary TB, as many as 5 primary health cares namely Primary Health Care of Klatak, Mojopanggung, Sobo, Kabat and Gitik monitoring and evaluation with 3 stages of 4 stages as standard. While the Primary Health Care of Songgon just do monitoring and evaluation with 2 stages.

**The Output of The Environment Health Service at The Primary Health Care**

The output variable in the environment health services include the components of the amount of counseling services the environmental health, the number of inspections of the environmental health, the amount of intervention in the environmental health and the number of patients who need the environmental health services . The results support the assessment of process variables is as follows :

**Tabel 3. Recapitulation of Scoring Results for Environmental Health Services Assessment on Output Variables**

Output Variables	Klatak	Mojo pangung	Sobo	Kabat	Gitik	Songgon
Total of counseling services	1	2	2	3	1	1
Total of Environmental health inspection	1	1	1	1	1	1

Output Variables	Klatak	Mojo panggung	Sobo	Kabat	Gitik	Songgon
Total of Environmental health interventions	1	1	1	1	1	1
Patients need Environmental health services	3	3	3	3	3	3
<b>Score</b>	6	7	7	8	6	6
<b>Weight</b>	33	33	33	33	33	33
<b>Score</b>	198	231	231	264	198	198
<b>Category</b>	Less	Enough	Enough	Enough	Less	Less

On the components of the counseling services of environmental health, only 1.

Primary health cares that get the value of the good is Primary Health Care of Kabat because the number of patients who get counseling between 91-100%. The Primary Health Care of Mojopanggung get enough value with the number of patients who get counseling between 81% - 90%. While the 4 primary health care other Primary Health Care of Klatak, Sobo, Gitik and Songgon get less value because the number of patients who get counseling < 81%. Some of the constraints based on the

citations the results of interviews with clinic staff are as follows:

“Early diagnosis of TB and treatment is done by the doctor so from P2TB sometimes loss at TB 01...”(S)

“Sometimes when you want to refer TB patients, officers of environmental health are not in place/outside agencies...”(ITW).

On the component the number of inspections environmental health and the amount of intervention environment health in patients with pulmonary TB all primary health care to get the same result of < 81% of the total number of patients with pulmonary TB. It is because the officer often outside agencies and additional tasks that the more charged at the officer of environmental health.

On the component the number of pulmonary TB patients who need Environmental health services , all primary health cares achieve the same result, namely 91% - 100% of patients with pulmonary TB requires Environmental health services .

**Tabel 4. Variable Data on Input, Process and Output of Primary Health Care of Klatak**

INPUT		PROCESS		OUTPUT	
Variable	Score (1-3)	Variable	Score (1-3)	Variable	Score (1-3)
<b>Policy</b>	3	1. Planning	3	1. Total of Kesling counseling services for pulmonary TB patients	1
<b>Human Resource</b>		2. Counseling services of Environmental Health	3	2. Total of Kesling Inspection in pulmonary TB patients	1
Quantity	2	3. Environmental Health Inspection	3	3. The Number of environmental health interventions in pulmonary TB patients	1
Education	3	4. Environmental Health intervention		4. Pulmonary TB Patients Needing Serviceof environmental health	3
Training	3	a. Provides of CIE	3		
STRS	3	b. Suggestion	3		
SIKTS	3	5. Monitoring and Evaluation	2		
Additional tasks	2				
<b>Infrastructure</b>					
Counseling Room	2				
Kit Sanitarian	3				
CIE Media	2				
Guide	3				
<b>Fund</b>	3				
<b>Sub Score</b>	32		17		6
<b>Score</b>					
(sub score / total score)	0,889		0,944		0,5

**The Effectiveness of the Environmental Health Services In the Primary Health Care on the Patients with Pulmonary TB**

Measurement of the effectiveness of the health service environment at the primary health care on the patients with pulmonary TB using the formula the probability of the effectiveness of that :

Data assessment variable input, process and output each of the primary health cares is presented as follows :

Based on Table 4, the probability of the effectiveness of the environmental health services in the Primary Health Care of Klatak

$$= (0.33 \times 0.899) + (0.33 \times 0.944) + (0.33 \times 0.5)$$

$$= 0.77 \text{ or } 77.00\%$$

The results of the measurement of the effectiveness of the environmental health services in the primary health care on patients of pulmonary TB Primary Health Care of Klatak obtained a score equal to 0.889 in the input variables, score 0.944 on the process variable and a score of 0.5 on the output variable. The output variable has a score that is less because of the achievement of the output/target <of 81.00%. The probability of the effectiveness of the program services environmental health at the Primary Health Care of Klatak of 77.00%.

**Tabel 5. Variable Data on Input, Process and Output of Primary Health Care of Mojopanggung**

INPUT		PROCESS		OUTPUT	
Variable	Score (1-3)	Variable	Score (1-3)	Variable	Score (1-3)
<b>Policy</b>	3	1. Planning	3	1. Total of Kesling	2
<b>Human Resource</b>		2. Counseling services of	3	counseling services for pulmonary TB patients	
Quantity	3	Environmental Health		2. Total of Kesling	1
Education	3	3. Environmental Health Inspection	2	Inspection in pulmonary TB patients	
Training	3	4. Environmental Health intervention		3. The Number of environmental health interventions in pulmonary TB patients	1
STRS	3	a. Provides of CIE	3		
SIKTS	3	b. Suggestion	3	4. Pulmonary TB Patients	3
Additional tasks	2	5. Monitoring and Evaluation	2	Needing Service of environmental health	
<b>Infrastructure</b>					
Counseling Room	3				
Kit Sanitarian	2				
CIE Media	2				
Guide	3				
<b>Fund</b>	3				
<b>Sub Score</b>	33		16		7
<b>Score</b>					
(sub score / total score)	0,889		0,899		0,583

**Tabel 6. Variable Data on Input, Process and Output at Primary Health Care of Sobo**

INPUT		PROCESS		OUTPUT	
Variable	Score (1-3)	Variable	Score (1-3)	Variable	Score (1-3)
<b>Policy</b>	3	1. Planning	3	1. Total of Kesling	2
<b>Human Resource</b>		2. Counseling services of	3	counseling services for pulmonary TB patients	
Quantity	3	Environmental Health		2. Total of Kesling	1
Education	3	3. Environmental Health Inspection	3	Inspection in pulmonary TB patients	
Training	3	4. Environmental Health intervention		3. The Number of environmental health interventions in pulmonary TB patients	1
STRS	3	a. Provides of CIE	3		
SIKTS	3	b. Suggestion	3	4. Pulmonary TB Patients	3
Additional tasks	2	5. Monitoring and Evaluation	2	Needing Service of environmental health	
<b>Infrastructure</b>					
Counseling Room	3				
Kit Sanitarian	2				
CIE Media	2				
Guide	3				
<b>Fund</b>	1				
<b>Sub Score</b>	31		17		7
<b>Score</b>					
(sub score / total score)	0,86		0,944		0,583

Based on Table 5, the probability of the effectiveness of the environmental health services in the Primary Health Care of Mojopanggung

$$= (0.33 \times 0.917) + (0.33 \times 0.889) + (0.33 \times 0.583)$$

$$= 0.788 \text{ or } 78.80\%$$

The effectiveness of the environmental health services in the primary health care on patients of pulmonary TB Primary Health Care of Mojopanggung obtained a score of 0.917 on the input variables, score 0,889 on the process variable and the score 0.583 on the output variable. The output variable has a score that is less because of the achievement of the output/target <of 81.00%. The probability of the effectiveness of the program environmental health services at the Primary Health Care of Mojopanggung of 78,80%.

Based on Table 6, the probability of the effectiveness of the environmental health services in the Primary Health Care of Sobo

$$= (0.33 \times 0.86) + (0.33 \times 0.944) + (0.33 \times 0.583)$$

$$= 0.788 \text{ or } 78.80\%$$

The measurement of the effectiveness of the environmental health services in the primary health care on patients of pulmonary TB Primary Health Care of Sobo obtained a score equal to 0.86 in the input variables, score 0.944 on the process variable and the score 0.583 on the output variable. The output variable has a score that is less because of the achievement of the output/target <of 81.00%. The probability of the effectiveness of the program Environmental health services at the primary health care Sobo of 78.80%.



Tabel 7. Variable Data on Input, Process and Output at Primary Health Care of Kabat

INPUT		PROCESS		OUTPUT	
Variable	Score (1-3)	Variable	Score (1-3)	Variable	Score (1-3)
<b>Policy</b>	3	1. Planning	3	1. Total of Kesling counseling services for pulmonary TB patients	3
<b>Human Resource</b>		2. Counseling services of Environmental Health	3	2. Total of Kesling Inspection in pulmonary TB patients	1
Quantity	3	3. Environmental Health Inspection	2	3. The Number of environmental health interventions in pulmonary TB patients	1
Education	3	4. Environmental Health intervention		4. Pulmonary TB Patients Needing Service of environmental health	3
Training	3	a. Provides of CIE	3		
STRS	3	b. Suggestion	3		
SIKTS	2	5. Monitoring and Evaluation	2		
Additional tasks	2				
<b>Infrastructure</b>					
Counseling Room	3				
Kit Sanitarian	2				
CIE Media	2				
Guide	3				
<b>Fund</b>	2				
<b>Sub Score</b>	30		16		8
<b>Score</b>	0,833		0,889		0,667
(sub score / total score)					

Tabel 8. Variable Data on Input, Process and Output at Primary Health Care of Gitik

INPUT		PROCESS		OUTPUT	
Variable	Score (1-3)	Variable	Score (1-3)	Variable	Score (1-3)
<b>Policy</b>	3	1. Planning	0	1. Total of Kesling counseling services for pulmonary TB patients	1
<b>Human Resource</b>		2. Counseling services of Environmental Health	3	2. Total of Kesling Inspection in pulmonary TB patients	1
Quantity	3	3. Environmental Health Inspection	2	3. The Number of environmental health interventions in pulmonary TB patients	1
Education	3	4. Environmental Health intervention		4. Pulmonary TB Patients Needing Service of environmental health	3
Training	3	a. Provides of CIE	2		
STRS	3	b. Suggestion	2		
SIKTS	3	5. Monitoring and Evaluation	2		
Additional tasks	3				
<b>Infrastructure</b>					
Counseling Room	2				
Kit Sanitarian	2				
CIE Media	2				
Guide	3				
<b>Fund</b>	0				
<b>Sub Score</b>	30		11		6
<b>Score</b>	0,833		0,611		0,5
(sub score / total score)					

Based on Table 7, The probability of the effectiveness of the environmental health services in the Primary Health Care of Kabat

$$= (0.33 \times 0.833) + (0.33 \times 0.889) + (0.33 \times 0.667)$$

$$= 0.788 \text{ or } 78.80\%$$

The measurement of the effectiveness of the environmental health services in the primary health care on patients of pulmonary TB Primary Health Care of Kabat obtained a score of 0.833 is on the input variables, score 0.889 on the process variable and the score 0.667 on the output variable. The probability of the effectiveness of the environmental health services program at the Primary Health Care of Kabat of 78,80%.

Based on Table 8, the probability of the effectiveness of the environmental health services in the

Primary Health Care of Gitik

$$= (0.33 \times 0.833) + (0.33 \times 0.611) + (0.33 \times 0.5)$$

$$= 0.642 \text{ or } 64.20\%$$

The measurement of the effectiveness of the environmental health services in this primary health care on patients of pulmonary TB Primary Health Care of Gitik obtained a score of 0.833 is on the input variables, score 0.611 on the process variable and a score of 0.5 on the output variable. The output variable has a score that is less because of the achievement of the output/target <of 81.00%. The probability of the effectiveness of the environmental health services program at the Primary Health Care of Gitik of 64.20%.

Based on Table 9, the probability of the effectiveness of the environmental health services in the

Tabel 9. Variable Data on Input, Process and Output at Primary Health Care of Songgon

INPUT		PROCESS		OUTPUT	
Variable	Score (1-3)	Variable	Score (1-3)	Variable	Score (1-3)
<b>Policy</b>	3	1. Planning	0	1. Total of Kesling counseling services for pulmonary TB patients	1
<b>Human Resource</b>		2. Counseling services of Environmental Health	2	2. Total of Kesling Inspection in pulmonary TB patients	1
Quantity	2	3. Environmental Health Inspection	1	3. The Number of environmental health interventions in pulmonary TB patients	1
Education	1	4. Environmental Health intervention		4. Pulmonary TB Patients Needing Service of environmental health	3
Training	1	a. Provides of CIE	2		
STRS	1	b. Suggestion	2		
SIKTS	1	5. Monitoring and Evaluation	2		
Additional tasks	3				
<b>Infrastructure</b>					
Counseling Room	3				
Kit Sanitarian	1				
CIE Media	1				
Guide	3				
<b>Fund</b>	0				
<b>Sub Score</b>	20		8		6
<b>Score</b>					
(sub score / total score)	0,556		0,444		0,5

Primary Health Care of Songgon

$$= (0.33 \times 0.55) + (0.33 \times 0.44) + (0.33 \times 0.5)$$

$$= 0.495 \text{ or } 49.50\%$$

The measurement of the effectiveness of the environmental health services in the primary health care on patients of pulmonary TB Primary Health Care of Songgon obtained a score equal to 0.55 in input variables, process variable has a location score 0.44. The output variable gets a score of 0.5. The output variable has a score that is less because of the achievement of the output/target <of 81.00%. The probability of the effectiveness of the environmental health services program at the primary health care Songgon of 49,50%.

### DISCUSSION

#### The Input for Program Environmental Health Services in the Primary Health Care

Component input/input services environmental health includes policy, human resources, funding and infrastructure (14). On the components of the policy does not become a problem because of all the primary health cares to get good results which means that the policy has been socialized to the officers by the head of the primary health care. The head of primary health care understand if environment health service is very important so instructed the officer to commit to carry out the duties properly in accordance with Regulation of Ministry of Health Republic Indonesia No. 13/MENKES/2015 about Implementation of Environmental Health Services in Primary Health Care. The policy implemented in the Decree of the Head of the primary health care about the Type of service and be the basis/guidelines in the implementation of services at the primary health care. Public policies need to be disseminated through

meetings cross-program at the primary health care so it can be understood by all the implementing activities in the primary health care, with the socialization of affect the motivation of employees (6,12).

The availability of the health workforce environment in Primary Health Care of Klatak, Mojopanggung, Sobo, Kabat ,and Gitik has been good. Most environmental health workers are qualified education for minimum of Diploma 1. But unfortunately there is still that concurrently with another position because of limited manpower at the primary health care. On the Regulation of Ministry of Health Republic Indonesia No. 13/MENKES/2015 about Implementation of Environmental Health Services in Primary Health Care explained that the environment health service is implemented by the sanitary personnel with educational background in environmental health and should not be accredited. With the fulfillment of most in the primary health care make service can focus in accordance with the duties of each. Different with the Primary Health Care of Songgon which is the most the health of the environment comes from other health professionals appointed Head of the primary health care to be given additional duties as environmental health. To improve the quality of health workers environmental District Health Office of Banyuwangi can hold training events (6). The problem of the double post can be overcome by reviewing about the division of tasks in primary health cares with first perform a workload analysis for planning the placement officer. When there has been no recruitment of candidates for civil servants (CPNS), primary health care can propose recruitment of contract appropriate qualifications to the health department with financing from the Special Allocation Fund Non-Physical Operational Assistance of Health (DAK Non-Physical BOK) (12).

The issue of funding, unless the Primary Health Care of Gitik and Songgon, primary health care and other already budgeted funds for health services environment in accordance with the needs. The primary health care utilizes the DAK Non-Physical BOK to fund all the activities of the promotive and preventive activities included Environmental health services . Each year the primary health care to make the proposal set forth in the General Plan of Activities (RUK) (9,12). However at the primary health care Gitik and Songgon not propose funds for the Environmental health services because there are still activities that are more priorities that need to be budgeted for example Community-Based Total Sanitation (STBM). The difference in the allocation of funds BOK for each primary health care to make the primary health care should determine priority activities in preparing the RUK (12).

Infrastructure services environmental health primary health cares the results have been quite good although there are several means primary health cares are still lacking. Counseling room all have their own space even though there are already integrated and there are not integrated given the limitations of the room and area primary health cares to add to the room again. According to the standard that there is a special room counseling and integrated with other services are easily accessible to the patient (6). The results of another study in Primary Health Care of Gucialit in Regency of Lumajang mention that the patient is referred from the space hall is treatment to the clinic room sanitary to do counseling. In the room the patient's family with free storytelling about the condition of the patient's environment because the room is not mixed with the other room (15-16). As for the equipment of the sanitarian kit, all primary health care already have a sanitarian kit only Primary Health Care of Songgon who do not have a sanitarian kit. For the next primary health care can propose the procurement of a sanitarian kit to the department of health. Sanitarian kit used by the clerk in order to measurement of the parameters of the field to determine the risk factors of health in the inspection of the environmental health such as lighting, humidity, density of occupants, ventilation (17).

In counseling an officer requires the IEC media so that delivery is easy and understood by the patient because it is a part of health education to the community (6). Of the 6 primary health care only Primary Health Care of Songgon that only have 1 type of IEC media while others already have more than 2 types of IEC media. The use of media is one communication strategy to

promote knowledge and attitude about prevention of TB and encourage the understanding of information better health that improve attitudes, awareness and behavior of TB patients in the vigilance of transmission of TB (18).

The fulfillment of the third means, namely the counseling room, sanitarian kit and IEC media can improve environmental health services in the primary health care because it includes part of the commitment of the head of primary health care to improve the quality of services at the primary health care (6). Other research in Jambi in the implementation of the environmental health services in the primary health care to get the achievement that high because it is supported by the input components of policy, human resources, infrastructure, and budget (19).

### **The Process of Service Environmental Health at The Primary Health Care**

On the stages of the process include planning, counseling, inspections and environmental health interventions. The stages of this process in accordance with the service flow for environmental health at the primary health care (6). At the stage of planning, primary health care that do not plan activities environmental health is the Primary Health Care of Gitik and Songgon. The Primary Health Care of Gitik and Songgon not enter the service activities of environmental health in the planning because prefer activities other priorities. The process of the preparation of this planning is part of the commitment and responsibility to duties. The beginning of each year, primary health care doing planning (PTP) starting from the evaluation of the program, identification of problems, determination of alternative problem and the determination of priority problems. Subsequently prepared proposed plan of activities (RUK), activities implementation plan (RPK) and plan of action (POA) (12). In another study, the primary health care who do the planning properly and measured in the City of Jambi to get the achievement of the health service environment is high because it is already part of the duties of environmental health at the primary health care (19).

Then on the components of the process of counseling the health of the environment, almost all primary health care make the process of counseling the health of the environment in accordance with the standard however there is one primary health care that the Primary Health Care of Songgon who do not do counseling as standard. The provision of counselling environmental health to the patient can improve the knowledge and attitude of patients in prevention of pulmonary TB (20,21).

The lack of health knowledge and health behavior of poor will pose a serious threat on health condition (22). A good knowledge of patients of pulmonary TB and the family can raise the consciousness of the patient and the family to work together for the prevention of TB by improving the behavior and environmental sanitation a healthy home (23).

Based on Regulation of Ministry of Health Republic Indonesia No.13/MENKES/2015 about Implementation of Environmental Health Services in Primary Health Care, health counseling environment includes 8 stages, namely the recording of registers, preparation of a list of questions, identify the behavior and habits of the patient, identification of risk factors of the environment, concluded the risk of disease, give IEC on the patient, advice and inspection schedule environmental health. Paramedics of Primary Health Care of Songgon not do a deal schedule inspection environmental health with the patient. Officers should carry out inspections environmental health at least 24 hours after counseling (6). The number of activities and double tasks be the reason for the delay inspection of the health of the environment to the patient's home. A field visit will be done when it's free or follow the schedule the officer TB do a home visit. Another study in Primary Health Care of Gucialit District of Lumajang mention of a home visit is a routine activity to sharpen the results of the counseling. The patient's family feel happy because of getting more services from the primary health care (15).

Inspection environmental health to the homes of patients with pulmonary TB is a follow up of the activities of counseling. Equipment that was taken the officer when inspection of the health of the environment is a sanitarian kit. The primary health care perform health inspections quite well, except the Primary Health Care of Songgon. Because the Primary Health Care of Songgon don't have the personnel sanitarians and sanitarian kit then the inspection is carried out only observations without any field measurements.

There are 10 components that should be carried out in conducting inspections of environmental health is to prepare form of the examination, coordination of cross-program/cross-sector, making observations and measurements of the physical environment, observation of patient behavior and invstigasi contact the patient, mapping the population at risk, explain to the patient about the condition of the physical environment as well as provide advice recommendations (6,24). Officer sanitation will understand the groove and the method of implementation of the Environmental health services of the service activities of environmental health at the

primary health care will get the achievement of a high (19).

Next is the activities of the intervention. The process of intervention of environmental health by providing advice and recommendations for the improvement of sanitation facilities the physical environment of the house based on the results of the inspection of environmental health (6). There are no problems in this process, all primary health cares already provide advice recommendations that can be done independently by the patient's family.

### **The Output of The Health Service Environment at The Primary Health Care**

When the input and the process goes well then it should be the output of the activity result will also be good. Output/output is the direct result of the activities of the program which is the target of health programs, namely the number of counseling services the health of the environment, the number of inspections environmental health and the amount of intervention health environment in patients with pulmonary TB. Targets of health services the environment is all the pulmonary TB patients get the environmental health services in the primary health care. Output ratings better with a score of 3 if achieved of >91.00%, enough with the score 2 if it is reached of 81.00% to <of 91.00% and less with a score of 1 if it is reached <of 81.00% (10). From the results of the observation on the 6 primary health center only 1 primary health cares that get the value of the good. Primary Health Care of Kabat and Mojopanggung get enough value while the 4 primary health care other primary health care such as Primary Health Care of Klatak, Sobo, Gitik and Songgon get less value. It is because of the commitment of the implementers, communication and coordination across programs less.

The success of the environmental health services depends on the commitment of the officers of the sanitary and coordination of cross-program TB treatment at the primary health care. This is because counseling services the health of the environment depends on the referral of TB patients from TB treatment. Improve communication and coordination of integrated and comprehensive is an important factor in the success of the implementation of government policies and programs (25-26).

In addition load factors of the task are high because of multiple roles or be the implications of not maximal services. Due to the busyness of serving patients officer TB not had time to do the referral to the clerk sanitation or when doing a patient referral, the officer sanitation was not in place. On research in the Primary Health Care of Gambut Districts of Lumajang



that ensure the health of the environment decreased because in addition to the limitations of the officer, the patient is also not willing to allocate the time to undergo counseling (15). The results of another study in Jambi mention that the constraints faced in the primary health care that the achievement of high is not forget to refer the patient because of the lack of commitment of the officer of the polyclinic to carry out the activities of the environmental health services in accordance with the standard operating procedures (SOP) (19).

### **The Effectiveness of the Environmental Health Services in the Primary Health Care on the Patients with Pulmonary TB**

Health services program will be qualified if the implementation of the program is performed according to the standard implementation in accordance with service procedures, the officers have the competence, the implementation of the supported budgeting and adequate infrastructure, communication and cooperation in cross-program and cross-sector (6,27). The difference of the input and the process in each primary health care to make the health service environment in Banyuwangi is not yet fully running optimally is evident from the achievements of output reaching an average of 81%-91%. In research at the Primary Health Care of Adiwerna in District of Tegal mention the family of the patient feel happy with the environmental health services in the Primary Health Care of Adiwerna because the room is a comfortable, easy to reach, the officer sanitarian friendly and flexible (28).

The targets in the environmental health services on patients with pulmonary TB is all TB patients lungs to get counseling services, inspection and intervention of environmental health. The effectiveness of the environmental health services is also characterized by the emergence of the needs of the patient (29). As in the research in Jambi that carried out inspections of the health of the environment, the family of the patient feel cared for and carrying out the advice given officer (19). The patient's need for health services to encourage the effectiveness of the program increased health, because the role and participation of the patient to control the disease (30). Research in the Regency of Lumajang mention the success of the clinic of sanitary Primary Health Care of Gucialit not regardless of the alignment between the commitment officer, cooperation cross-program, cross-sector and support infrastructure as well as adequate budget (15). While the research in Jambi states that environmental health services s at high-achieving primary health care could be effective because of good collaboration between clinic staff, TB programmers and sanitation workers and were always evaluated at monthly workshop meetings by the head

of primary health care (19). When probabilitas the effectiveness of the program health >50%, then the program is considered effective in the prevention of disease (8). Primary health cares in the Regency of Banyuwangi is the probability of the effectiveness of the program >50% of the Primary Health Care of Klatak, Mojopanggung, Sobo, Kabat and Gitik.

### **CONCLUSION**

Environmental health services on patients with pulmonary TB are effective, namely in the Primary Health Care of Klatak, Mojopanggung, Sobo, Kabat and Gitik. While the environmental health services on patients with pulmonary TB at the Primary Health Care of Songgon is not effective. The ineffectiveness of the health service environment at the Primary Health Care of Songgon because of the lack of commitment of officers, the absence of most environmental health in accordance with the competence so that the concurrent position, the absence of planning and budgeting as well as the lack of supporting infrastructure such as sanitarian kit and media for counseling.

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