

**DEMONSTRATION OF COUGH ETIQUETTE AS AN EFFORT TO REDUCE  
PULMONARY TUBERCULOSIS CASES IN SINDANG JAYA USING  
A COMMUNITY DIAGNOSIS  
APPROACH**

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Disubmit: 08 Maret 2024

Diterima: 12 Juni 2024

Diterbitkan: 01 Juli 2024

Doi: <https://doi.org/10.33024/mahesa.v4i7.14573>

**ABSTRACT**

Pulmonary Tuberculosis is currently still a serious health problem and is very easily transmitted. Indonesia is the country with the second-highest number of new pulmonary TB cases in the world. The Tangerang District Health Service at the end of 2022 found the number of pulmonary TB cases was 8,941 cases. There was an increase of 60% in new cases of pulmonary TB in Sindang Jaya District within 3 months in 2023. It was necessary to determine which villages had the main problem of pulmonary TB. This study aims to know the causes and carry out interventions to reduce new cases of pulmonary TB. Activities are carried out with a community diagnosis approach. A situation analysis is carried out to determine the problem. Identify the cause of the problem using the Blum Paradigm. Prioritization of problems using the Delphi non-scoring technique. Fishbone diagram to determine the root cause of the problem. Intervention plan with log frame goals and plan of action. Intervention is carried out through a demonstration of cough etiquette. There has been an increase in the ability to practice cough etiquette to help reduce the number of new cases of pulmonary TB. It was proven that 50% of the counseling participants could understand and practice cough etiquette well. After taking a community diagnosis approach, the cause of the problem was found and intervention was carried out, so it is hoped that new cases of tuberculosis in the Sindang Jaya Health Center working area will decrease.

**Keywords:** Tuberculosis, Community Diagnosis, Blum Paradigm, Fishbone Diagram

## INTRODUCTION

Community diagnosis is a series of activities in exploring and obtaining an overview of health problems in a community. (Herquanto, 2014) Community diagnosis begins with situation analysis, problem identification, determining the cause of the problem, determining problem priorities, and determining alternative problem solutions. (Alberdi-Erice et al., 2021) Community diagnosis aims to identify a problem in stages to discover more deeply about the main problems. (Jeong et al., 2019). Tuberculosis is a chronic infectious disease caused by the bacteria *Mycobacterium tuberculosis*. (Indonesian Lung Doctors Association, 2021) These bacteria are rod-shaped and acid-resistant, so they are often known as acid-fast bacilli. (Natarajan et al., 2020) Tuberculosis is usually transmitted from humans to other humans through the air via microscopic droplets or droplet nuclei (<5 microns) which are released when someone infected with pulmonary TB or laryngeal TB coughs, sneezes, or talks. (Lyon & Rossman, 2017). Clinical manifestations found in TB patients are coughing for two weeks or more, and coughing up phlegm with or without blood, which can also be accompanied by chest pain and shortness of breath. (Herchline, 2023)

Pulmonary tuberculosis (pulmonary TB) ranks 13th and is the main infectious agent that causes the most frequent deaths in the world in 2021. It is estimated that around 10.6 million people in the world are infected with *M. Tuberculosis* in 2021. Every year, around 10 million people suffer from pulmonary TB disease and 1.6 million people die from it. (World Health

Organization (WHO), 2023) The largest number of new TB cases in 2021 occurred in Southeast Asia (45%). (Centers for Disease Control and Prevention (CDC), 2022) Indonesia has the second-highest number of new TB cases in the world. According to the 2018 Basic Health Research Team of the Ministry of Health of the Republic of Indonesia, pulmonary TB in Indonesia in 2018 was 321 per 100,000 population. (Ministry of Health of the Republic of Indonesia, 2019) The Tangerang District Health Service at the end of 2022 found the number There were 8,941 cases of pulmonary TB. There was an increase of 60% in new cases of pulmonary TB in Sindang Jaya District found in the period May - July 2023, this figure increased compared to the previous three months period, namely February - April 2023.

Tuberculosis (TB) is still a health problem, especially in developing countries, including Indonesia. Indonesia in 2015 the number of all cases. Tuberculosis found was 330,729 and increased to 351,893 in 2016. The highest number of cases reported was in provinces with large populations. West Java as many as 23,774 people, East Java as many as 21,606 people and Central Java as many as 14,139 people. Tuberculosis cases in these three provinces amounted to 44% of the total all new cases in Indonesia (Ministry of Health of the Republic of Indonesia, 2016). Tuberculosis (TB) is an infectious disease that usually attacks the lungs, though can affect any organ in the body. TB infection develops when bacteria enter through droplets in the air. TB can be fatal, but in many cases, TB can be prevented and treated. A person can become infected with TB after inhaling *Mycobacterium Tuberculosis* (*M. Tuberculosis*). When TB affects

the lungs, it becomes very contagious, but a person. You will usually only become ill after close contact with someone who has pulmonary TB (Werdhani RA, 2019).

The increase in new cases of pulmonary TB in Sindang Jaya requires community diagnosis activities to identify causes and find alternative solutions so that there can be a reduction in new cases of pulmonary TB in the future.

## LITERATURE REVIEW

### Community Diagnosis

A community is a group of people who have at least one characteristic in common (region, occupation, ethnicity, housing conditions, and so on) among all members of the community concerned. These similarities make each member of the community relate to each other and encourage the community to function well. If a community is well-empowered, the community will have a positive impact in various aspects, including health. (Herquanto, 2014). Community diagnosis according to the World Health Organization (WHO) is an explanation of health conditions and factors that influence health conditions in a community, both qualitatively and quantitatively. Community diagnosis is used to identify problems that occur so that intervention can be carried out immediately and real work results can be obtained. Community diagnosis skills are important for doctors to master to implement holistic and comprehensive health services. (Jeong et al., 2019)

### Blum Paradigm

Blum proposed a theory regarding public health called Force Field and Well-Being Paradigms of Health in 1981. Public health is

influenced by 4 main factors, namely the environment, lifestyle (human behavior), heredity/genetics, and health services. (Subagio et al., n.d.) These four factors are interconnected and influence an individual's or population's health. According to Blum, the environment is a major factor and has a strong influence on individual and community health. The second factor that influences health is lifestyle and heredity, while health services have little influence on individual and community health. (Mukid et al., 2023)

### Determining Problem Priority

Determining problem priorities is carried out to improve health quality concerning limited resources, such as human resources (HR), facilities, and funds. These limitations encourage prioritization at the initial stage of activity planning so that the type or form of intervention that will be carried out can be immediately determined. Methods that can be used to determine priority health problems are scoring and non-scoring methods. Scoring methods consist of the Bryant and PAHO methods, while non-scoring methods consist of the Delbecq and Delphi methods. (Rahman et al., 2022; Turner et al., 2017)

### Identify the Root of the Problem Community Diagnosis

One method for identifying a problem's root cause is using a fishbone diagram. Fishbone diagrams are also called cause-and-effect diagrams or cause-effect diagrams. (Reilly et al., 2014) The function of using a fishbone diagram is to identify and organize the root cause of a problem, determine solutions to solve the problem, as

well as help search and investigate further problems. (Satya, 2016)

### PDCA Cycle

Improving the quality of public health is a process that has been planned through Plan-Do-Check-Act (PDCA) and is focused on activities that follow community needs to improve health. Plan-Do-Check-Act or PDCA refers to continuous and ongoing efforts to achieve increased efficiency, effectiveness, performance, accountability, results, and other indicators of quality services or processes to achieve equality and improve public health. Plan means planning, Do means trial implementation, Check means observing the results, and Act means carrying out in the future. The PDCA cycle is widely used in quality management in various fields, not only in the field of public health. (Wu et al., 2015)

### Systems Approach

The systems approach is based on the generalization that everything is interconnected and interdependent. A system consists of interconnected and dependent elements when interaction will form a unified whole. A system is simply a collection or combination of things or parts that form a complex whole. Systems approaches are considered general and specific systems. The general systems approach to management is primarily concerned with formal organizations and its concepts relate to the techniques of sociology, psychology, and philosophy. Specific management systems include analysis of organizational structure, information, planning and control mechanisms job design, etc. (Smirti Chand, n.d.)

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People who have a weak immune system have a much higher risk of developing TB than those who

have a good immune system. (Centers for Disease Control and Prevention (CDC), 2016) Clinical manifestations found in TB patients are coughing for two weeks or more, and coughing up phlegm with or without blood, which can also be accompanied by chest pain and shortness of breath. Patients with pulmonary TB have abnormal breath sounds, especially in the superior lobes or affected areas. Rhonchi or bronchial breath sounds encountered indicate lung consolidation. (Herchline, 2023) Classic symptoms are often absent in high-risk patients, especially those who are immunocompromised or elderly. Up to twenty percent of patients with active TB deny any symptoms. Therefore, sputum sampling is essential if chest radiographic findings suggest the presence of TB. (Luies & Du Preez, 2020)

All suspected TB patients must undergo a bacteriological examination to confirm TB disease. Bacteriological examination is an examination of smears from biological preparations in the form of sputum or other specimens, culture examination, and identification of *M. tuberculosis* or rapid diagnostic methods that WHO has recommended. (Caulfield & Wengenack, 2016; Chengalroyen et al., 2016)

The principle that must be fulfilled for adequate TB treatment is that treatment is given in the form of an appropriate combined anti-tubercular medication containing at least 4 types of drugs to prevent resistance, namely isoniazid, rifampin, pyrazinamide, and ethambutol. It is given in the right dose, swallowed regularly, and supervised directly by the drug swallowing supervisor until completion of treatment, and treatment is given over a sufficient

period divided into initial stages and advanced stages to prevent recurrence. (Peloquin & Davies, 2021; Sotgiu et al., 2015)

TB prevention can be done with Bacillus Calmette et Guerin (BCG) vaccination, prophylaxis with isoniazid (INH) in healthy toddlers who have contact with TB patients, and TB programs from the government. (Chakaya et al., 2021; Floyd et al., 2018) The TB program in Indonesia consists of TOSS TB (Find, Treat Until Cure Tuberculosis) and GERMAS (Healthy Living Community Movement). (Magdalena & Tarigan, 2021).

## RESEARCH METHODOLOGY

Identification of problems using the Blum paradigm was then carried out to determine problem priorities using non-scoring Delphi by discussing with the head of the community health center, doctors, nurses, and health promotion officers at the Sindang Jaya Community Health Center. From the results of the discussion, among the three aspects of the Blum Paradigm, the lifestyle factor was chosen as the priority problem. The lifestyle factor was chosen as a problem because there is still a lack of knowledge, attitudes, and behavior in the community regarding pulmonary TB disease. Interventions on lifestyle aspects with demonstrations of cough etiquette are expected to increase public knowledge in preventing pulmonary TB. In the long term, it is hoped that there will be a reduction in pulmonary TB cases in the Sindang Jaya Health Center working area.

Based on data at the Sindang Jaya Community Health Center from May to July 2023, the highest number of pulmonary TB cases was found in Sindang Jaya Village with 10 new cases out of a total population of

9668 people (0.103% of cases). Sindang Jaya Village has a pulmonary TB problem that must be resolved immediately in the work area of the Sindang Jaya Health Center. Therefore, the author chose Sindang Jaya Village to conduct community diagnostic interventions.

Before determining the intervention that will be applied to problems in the village, there are several steps. The first step is to identify the cause of the problem using the Blum Paradigm. Aspects of the Blum Paradigm were obtained through the results of a mini-survey of the Sindang Jaya Village community which included aspects of health services, lifestyle, and the environment. From the mini-survey that was carried out, it was found

that the knowledge aspect was the aspect with the poorest assessment.

## RESEARCH RESULT

Cough etiquette demonstration activities were carried out at Al-Ghifari PAUD Sindang Jaya Village which is located next to the house of the Sindang Jaya Village Head on Saturday, August 26, 2023. The counseling was carried out after the morning exercise activity in the field of the Sindang Jaya Village Head's house. The counseling was carried out by 3 young doctors, assisted by 1 cadre, and 1 community figure, and attended by 22 participants. This activity aims to increase residents' knowledge about how to practice cough etiquette properly and correctly.

**Table 1. Characteristics of Respondents**

| Variable           | Frequency (n=22) | Percentage (%) |
|--------------------|------------------|----------------|
| <b>Age</b>         |                  |                |
| <30 years old      | 8                | 36.4           |
| 30-39 years old    | 6                | 27.3           |
| >40 years old      | 8                | 36.4           |
| <b>Gender</b>      |                  |                |
| Male               | 0                | 0              |
| Female             | 22               | 100            |
| <b>Education</b>   |                  |                |
| Elementary School  | 10               | 45.6           |
| Junior High School | 8                | 36.4           |
| Senior High School | 4                | 18.2           |
| College/University | 0                | 0              |

The activity began with an opening by the young doctor who explained the purpose of the activity. Young doctors explain and practice good and correct ethical ethics. The participants present were invited to follow the movements being demonstrated. The activity then continued with a question and answer for the participants present. Next, all participants were asked to

demonstrate cough etiquette properly and correctly. The young doctor then asked 3 random participant representatives to return to practice good and correct cough etiquette in front of all the participants and then given prizes as appreciation for successfully practicing good and correct cough etiquette. The activity then closed with a photo session.



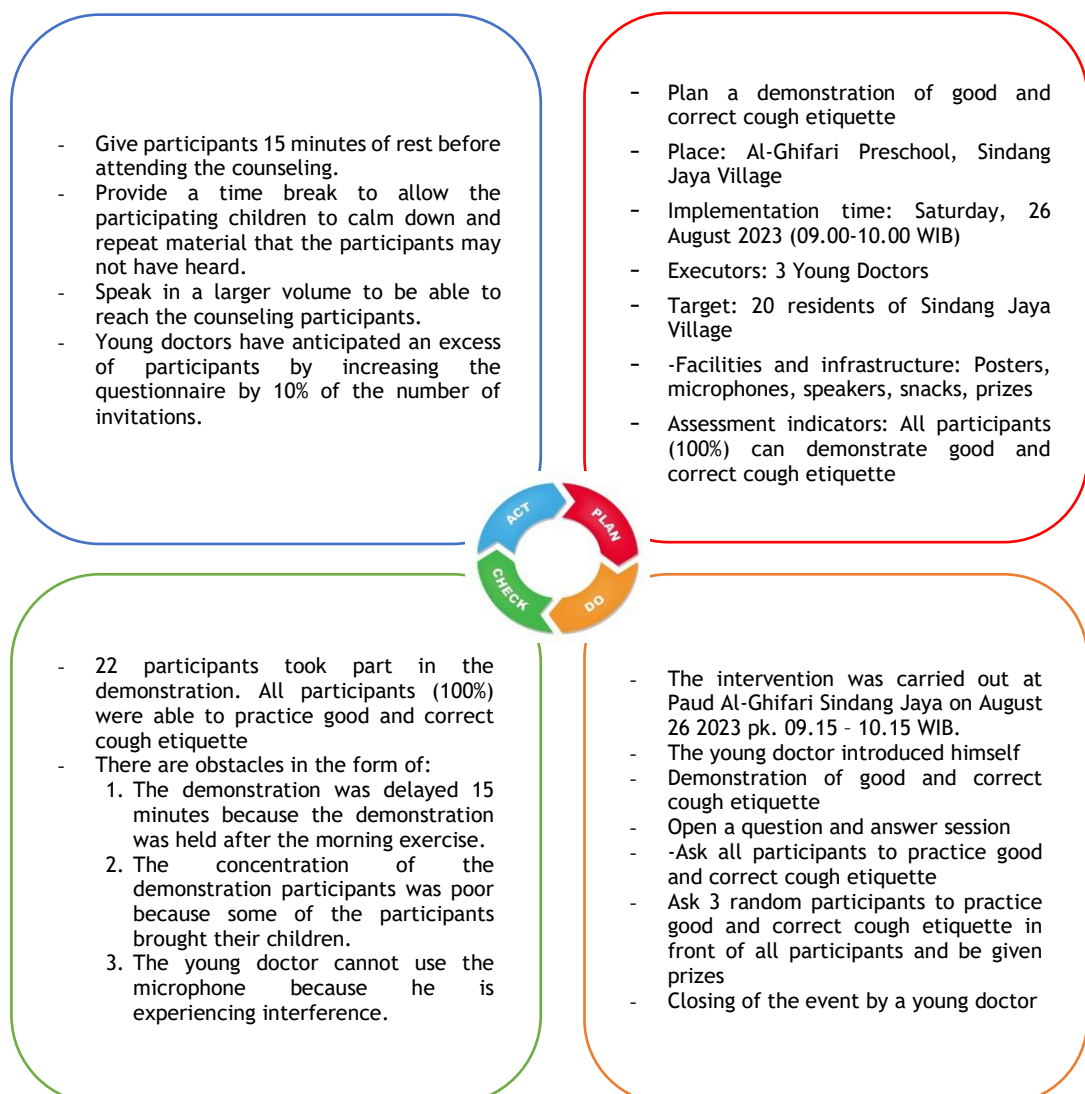
**Table 2. Respondents Able to Demonstrate Cough Etiquette**

| Variable                                   | Frequency (n=22) | Percentage (%) |
|--|------------------|----------------|
| <b>Able to Demonstrate Cough Etiquette</b> |                  |                |
| Yes  | 22               | 100            |
| No   | 0                | 0              |

The activity was carried out for 22 participants who attended. The result of this intervention is that all participants (100%) can practice

good and correct cough etiquette after the demonstration. Then an intervention evaluation was carried out using a systems approach.

**Table 3. PDCA Cycle**



The obstacles faced in implementing the intervention were the demonstration was delayed 15

minutes because the demonstration was held after the morning exercise activity, the demonstration

participants' concentration was lacking because some of the demonstration participants brought their children, the young doctor could not use the microphone

because the battery ran out so the young doctor had to speak at a larger volume to can reach the demonstration participants.

## DISCUSSION

Based on this study, it is known that the main problem causing the increase in the number of pulmonary TB cases in the Sindang Jaya Community Health Center working area based on the Blum paradigm is the lifestyle obtained from the results of a mini survey in Sindang Jaya Village. This is following research conducted by Amaral et al., which showed that lifestyle plays a major role in the transmission of pulmonary TB. (Amaral & Adi, 2021) Based on research conducted by Ridzuan et al., it is stated that there is a correlation between lifestyle factors and TB disease. (Ridzuan et al., 2021). The intervention was carried out to deal with the high number of pulmonary TB cases in the Sindang Jaya Community Health Center working area by demonstrating good and correct cough etiquette to the residents of Sindang Jaya Village. From this intervention, it is hoped that the people in Sindang Jaya will be able to implement good and correct cough etiquette to prevent the transmission of pulmonary TB. This is expected to reduce the number of new pulmonary TB cases in Sindang Jaya.

Eradicating pulmonary TB is an effort that is influenced by several factors, including the attitude of health workers in treating patients, the availability of drugs and the sufferers' own factors. Community behavioral factors also determine the success of eradicating pulmonary TB. One of the factors that determines community behavior in breaking the chain of spread of TB

diseases lungs through good and correct cough etiquette is knowledge about the prevention and treatment of pulmonary TB itself. To increase knowledge about pulmonary TB, information (counseling) has been provided using lecture and role play methods to residents of Aik Nyet hamlet with the hope that there will be an increase in community knowledge about pulmonary TB (Puspitasari, 2021).

Effective coughing is a coughing exercise to expel secretions. Effective coughing is a method of coughing correctly, that is, the client can save energy so that he does not get tired easily and can expel phlegm optimally (Wahit, 2015). Accumulation of secretions in the lower respiratory tract can make the cough even louder because the secretions block the respiratory tract, so another way to expel the accumulated secretions is by coughing effectively. Effective cough training is a nurse's activity to clear secretions from the airway, which functions to increase the mobilization of secretions and prevent a high risk of secretion retention (Muttaqin, 2008). Prevention of transmission of Tuberculosis is influenced by the behavior of sufferers, families and the community. It is known that there are several conditions of Tuberculosis that can increase the risk of transmission, namely that sufferers do not apply cough etiquette by covering their mouths when coughing or sneezing and not expelling phlegm in the open (Marissa & Abidah, 2016). And the



bad behavior of tuberculosis sufferers in cough etiquette is because public knowledge is still low in knowing the prevention and transmission of tuberculosis (Hasina, 2020).

## CONCLUSION

In this research, a community diagnosis approach was taken and it was found that the cause of the problem was lifestyle. The intervention was carried out with a demonstration of cough etiquette. This is expected to reduce new cases of tuberculosis in the Sindang Jaya Health Center working area.

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