Efforts to Establish a TB-Free Area: A Case Report

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Abstract

Four pillars of efforts to accelerate TB treatment in Indonesia have not been implemented optimally in Kota Wetan Village, resulting in a high incidence of TB and non-compliance among people with TB. This can hamper the TB elimination program in Kota Wetan Village. Based on the results of the assessment, a nursing diagnosis of TB-related community health deficits was obtained related to the program not addressing all community health problems. This study aims to describe the efforts made to realize a TB-free pioneering area in Kota Wetan Village. The method used was a case report with a nursing process approach. The research sample was the community of RW 15 Kota Wetan Village totalling 695 people. There was an increase in the pretest and posttest scores of health education from an average of 76.25 to 91.25 with a p-value of 0.001 ($p<0.050$). RW cadres can carry out their duties as PMOs well, sputum examination (BTA) has been carried out for 58 people with suspected TB and household contacts with TB sufferers, and the declaration of TB-free RW has been carried out. The final evaluation found that the nursing problem of community health deficit was partially resolved. These interventions can raise community awareness to actively contribute to the success of activities that are being carried out for the common good so as to reduce the negative stigma of TB disease, increase the discovery of new cases of BTA positive TB, and reduce drug withdrawal rates in TB patients. Widespread community education and multisectoral collaboration are needed to accelerate TB elimination.

Keywords: Infectious disease, Public Health Services, Tuberculosis

Introduction

Tuberculosis (TB) is an infectious disease caused by the bacterium Mycobacterium tuberculosis, which can be transmitted through saliva or droplets (Making et al., 2022). TB is still one of the infectious diseases with a high prevalence. The prevalence of TB patients in Indonesia is 824 thousand cases per year with 49% of them receiving treatment, while 51% of TB patients have not been treated and are at risk of becoming a source of transmission to others. If TB disease is not treated immediately or the treatment is not complete, it can cause complications and even death. Deaths from TB are estimated at 144,000 or 52 deaths per 100,000 population. (Indonesian Ministry of Health, 2023).

When viewed from the findings of TB from 1995 to 2022, West Java Province has the highest number of TB cases at 40.1% of the total number of cases throughout Indonesia (Indonesian Ministry of Health, 2023). According to Central Bureau of Statistics of West Java Province (2023), there were 94,601 TB cases found in West Java. Garut Regency is included in the top 10 cities and districts with the highest number of TB cases, totalling 4,855 cases. Based on rapid molecular testing (TCM), there were 265 cases of pulmonary TB diagnosed in the working area of Puskesmas (Public Health Center) Guntur between January and February 2023. In February 2024, in Kota Wetan Village, Garut Kota Subdistrict, there were 49 people with TB, 26 people with TB symptoms, and 2 patients died because of TB.

The high incidence and mortality rates of TB have prompted the Indonesian government to make policies to eliminate TB from the Indonesian community. The TB-free program is one of the government policies in the context of TB control. There are 4 pillars of efforts to accelerate TB handling in Indonesia, namely TB prevention by conducting socialization meetings; health promotion to the community; detection, treatment, and surveillance with active case finding in household contacts and at-risk populations; and multisectoral collaboration (Pitaloka & Siyam, 2020). In Presidential Regulation No. 67 of 2021, collaboration and community involvement are important in TB prevention.

Garut district has made efforts to eliminate TB by conducting screening for early detection of TB and health education related to TB disease is intensively carried out to increase the knowledge of Garut people in preventing TB transmission and complete treatment for TB patients. (Mamay et al., 2023). In terms of TB treatment, Garut District held TB Alert Village Rembuk activities and the establishment of TB Alert Villages through the provision of healthy houses, slum arrangement, and social support to TB patients who are on treatment, as well as building halfway houses for TB patients to ease the financial burden and help TB patients access health services. (Indonesian Ministry of Health, 2021). The existence of BBKPM Bandung UPF (Public Lung Health Center) Garut - Dr. H. A. Rotinsulu Lung Hospital is expected to reduce drug withdrawal rates in TB patients which can lead to MDR (multidrug-resistant) conditions that require more intensive treatment.

Puskesmas Guntur conducts passive TB control efforts, where TB case finding is done by waiting for TB patients to come to the Puskesmas and reports from health cadres. This is due to the lack of funding for the TB control program so that screening activities are not carried out (Pitaloka & Siyam, 2020). Socialization by the Puskesmas related to the TB program is rarely carried out so that community knowledge related to TB disease is low, which affects TB prevention efforts (Rahman et al., 2017). If TB patients have low knowledge, drug withdrawal will occur because the patient's symptoms disappear and the patient feels cured. In addition, the absence of a medication supervisor can be a trigger for patient dropout (Sari et al., 2017). The Medication Drinking Supervisor (PMO) of Guntur Health Center has not functioned optimally. PMOs are only tasked with taking patients to treatment or taking drugs to the Puskesmas when TB patients cannot take their own, and not every day supervising when taking medication.

Based on the results of the Introspection Survey (SMD) to the community of RW 15 Kota Wetan, it is known that the demographic characteristics in RW 15 are mostly adults (19-59 years old) (56.1%), male (55.4%), High

school Level of education (30.4%), and have a smoking habit (39.7%). The environmental conditions in RW 15 were humid (24.6%), densely populated (22.2%), dusty/dirty houses (21.6%), and insufficient ventilation (9.4%). Based on the interview results, the handling of TB cases at Puskesmas Guntur includes sputum examination of patients suspected of having TB. If the sputum test results are positive for TB, the TB program holder will administer Anti-Tuberculosis Drugs (OAT) according to the category and type of TB disease suffered and directly supervised by the PMO.

Tuberculosis Case Report in the Guntur Health Center Working Area in 2024, it is known that in February 2024 there were 49 people with TB, 26 people with TB symptoms, and 2 patients died from TB in Kota Wetan Village. TB suspects were screened using the TB Signs and Symptoms Screening Form. 7 people (1%) were suspected of TB. Based on observations, it was found that the community still considers TB taboo and often denies the signs and symptoms of TB. Some people say that TB is hereditary and incurable. People with TB in RW 15 do not know how to prevent transmission to others and consider it just a normal cough so there is no need for treatment.

From these data, a nursing diagnosis of TB-related community health deficits can be established related to programs that do not address all community health problems characterized by 49 people with TB, 26 people with TB symptoms, and 2 patients died from TB; negative perceptions and erroneous knowledge related to TB; lack of public awareness to check health conditions; and unsupportive home environmental conditions to prevent TB transmission (PPNI, 2017). To overcome these problems, there are outcomes that must be achieved, namely improved community health status with outcome criteria: increased community knowledge related to TB, improved health surveillance systems, and increased community participation in community health programs (PPNI, 2019).

Based on the statement of the high incidence of TB in Garut Regency, the many efforts of the Garut Regency Government to eliminate the incidence of TB, as well as the results of the Self-Inspection Survey that has been conducted, researchers are interested in conducting research in Kota Wetan Village with the title Efforts to Realize a TB-Free Pioneering Area in Kota Wetan Village with a Nursing Process Approach. The purpose of this study is to describe the efforts made in order to realize a TB-free pioneering area in Kota Wetan Village in the form of health education related to TB, initiation of functional duties of RW cadres as PMOs, sputum examination (BTA), and declaration of TB-free pioneering RW.

Research Methods

This research uses a case report or case study method with a quantitative approach. Case study research is characterized by its ability to describe and focus research on specific events, activities, processes, or entities in a specific (contemporary) context (Widhagdha & Ediyono, 2022). This research was conducted on January 16 - February 22, 2024 in Kota Wetan Village, Garut City Subdistrict, Garut Regency, West Java Province. The population of this study was the people of RW 6-10, 12, 14-20 Kota Wetan Village totalling 4,552 people. The research sample used was the community of RW 15 Kota Wetan Village totalling 695 people. The case study in this study was conducted based on the nursing process, namely assessment, nursing diagnosis, planning, implementation, and evaluation with a community approach. These processes applied step by steps started from assessing the community, identifying the nursing diagnosis, and developing nursing intervention including health education, observation the cadres' roles as PMOs, Sputum test, and free TB areas declaration. Next, implementing the nursing care plan, and finally evaluating all the nursing processes.

Results

The implementation of the nursing care plans as follows:

a. TB-related health education

The targets of health education are RW 15 stakeholders, namely the Head of RW 5, the

Heads of RT in RW 15, and RW 15 cadres. Health education was conducted using lecture, simulation, and question and answer methods as well as leaflet distribution to the audience. The audience was given a pretest before health education and a posttest after health education. Health education began with the distribution of leaflets to the audience, then the presentation of material about TB, and simulation of 6-step hand washing and cough etiquette. The audience was given the opportunity to ask questions related to the material after the session. There was an increase in pretest and posttest scores from an average of 76.25 to 91.25 with a p-value of 0.001 ($p<0.050$) so it can be concluded that there is a significant difference between knowledge before and after health education.

b. Initiation of Functional Duty of RW Cadres as PMOs

The intervention of initiating the functional duties of RW cadres as PMOs was coordinated with the Head of RW 15 and RW 15 cadres. RW 15 cadres are cadres of posyandu for toddlers and the elderly so that they need to be given counseling related to TB disease and its treatment. RW 15 cadres were given counseling related to the role of PMO, including supervising patients with pulmonary TB to take regular medication until completion, providing motivation to take regular medication, reminding sputum rechecks, and educating the patient's family regarding signs and symptoms and prevention of pulmonary TB.

c. Sputum Testing (BTA)

The priority targets of sputum (BTA) examination are individuals with suspected TB and people in household contact with people with TB. Sputum examination (BTA) is conducted door to door to the homes of target individuals. Sputum samples were immediately given to the Guntur Health Center for laboratory analysis. Sputum samples were collected from 58 people who were priority targets. The results of the BTA examination showed that of the 58 people whose sputum samples were collected, 1 person was positive for TB.

d. Declaration of TB-Free Pioneering RW

After all the interventions were carried out, a TB-free RW Declaration was held in collaboration with various stakeholders including the Head of RW 15, RW 15 cadres, Guntur Community Health Center, Lurah Kota Wetan, Garut City Sub-District Head, Garut Regency Health Office, Garut Regency Environmental Office, and Nusantara Architecture Foundation. This TB-free RW declaration is an initial commitment from the RW 15 community to jointly realize a TB-free area by maintaining PHBS, conducting TB screening and contact investigation, and taking medication regularly for TB sufferers.

Discussion

The high incidence of TB in RW 15 Kelurahan Kota Wetan may be influenced by environmental conditions as shown in Table 2, namely the humid environment of RW 15 (24.6%), dense occupancy (22.2%), dusty/dirty house conditions (21.6%), and insufficient ventilation (9.4%). These environmental conditions do not meet health requirements so that they can be a risk factor for TB incidence. This is in line with research by Zuraidah & Ali (2020) which states that one of the risk factors for TB is the environment and housing conditions that do not meet health requirements. Factors such as slum living environment, poor sanitation, house occupancy density, lighting, floor type, wall type, ventilation, and room humidity greatly contribute to cases of pulmonary TB (Perdana & Putra, 2018). In addition, community behavior can also be a risk factor for TB incidence. It is known from Table 1 that 276 respondents (39.7%) have a smoking habit. Smoking is the second risk factor for TB in Indonesia after malnutrition. Active smokers are 4.7 times more susceptible to contracting TB compared to passive smokers or non-smokers (Suharmanto, 2023).

a. TB Suspect Screening

The number of risk factors for TB incidence in RW 15 requires TB screening based on signs and symptoms to detect TB cases as early

as possible. This is in line with research by Frascella et al. (2021), which states that TB transmission can be reduced early because a person will be diagnosed early through TB screening. However, many people are not open to health workers regarding their cough because they are afraid of being examined and found out if they are diagnosed with TB. According to Rahman et al. (2017), this negative attitude will lead to apathy from a person who does not want to prevent TB disease.

People who are less open assume that TB disease is still taboo, shameful, and incurable, so they do not want to be considered as having TB. This makes it difficult to find TB cases based on signs and symptoms in the community. Prihanti et al. (2018) and Dhea (2023) revealed the same thing, that negative perceptions and lack of knowledge can be an inhibiting factor in the discovery of TB suspects. Negative perceptions of people with TB lead to feelings of inferiority or low self-esteem because they feel embarrassed by others. These negative perceptions arise from a lack of knowledge related to TB disease or exposure to misinformation related to TB so that people avoid TB-related self-examination efforts (Sandha & Sari, 2017).

b. TB-related health education

The low level of community education (elementary school 20.4%, high school 30.4%) and exposure to inaccurate information related to TB are among the factors that lead to environmental conditions that do not meet health requirements, negative stigma towards TB, and poor community behavior such as smoking. As a first step, TB-related health education was provided to RW 15 stakeholders, especially cadres. The cadres are considered role models and community mobilizers in managing health conditions. RW cadres who are trained in health can be an extension of health workers and are responsible for providing health information and preventing the spread of infectious diseases, including TB (Swee-Hock, 2018).

Health education conducted with lecture, simulation, and question and answer methods as well as leaflet media distribution is effective in increasing community knowledge about TB (Konoralma & Alow, 2018).. Health education related to TB has an impact on increasing the knowledge of RW 15 stakeholders as seen based on the increase in the average pretest and posttest scores from an average of 76.25 to 91.25 with a p-value of 0.001 ($p<0.050$). Sari et al. (2017) also mentioned that health education related to TB has a positive impact on increasing knowledge and changing the attitude of people with TB to prevent transmission of TB to others. This is because knowledge is an important component and directly affects a person's performance. In addition, health education can also reduce the negative stigma about TB disease (Wilson et al., 2016). The same thing was expressed by Amalia et al., (2024) that efforts to reduce negative stigma through health education related to TB can increase the willingness of the community to screen for TB, especially in communities that are at high risk or have signs and symptoms of TB.

c. Initiation of Functional Duty of RW Cadres as PMOs

The RW 15 cadres were initially toddler and elderly Posyandu (Health Post) cadres who were given counselling related to the role of PMOs. RW 15 cadres, hereafter referred to as TB cadres, began to actively conduct health counseling related to TB in the form of signs and symptoms and prevention of pulmonary TB during posyandu implementation. The active participation of RW cadres can help conduct contact investigations to find TB cases, increase the number of recoveries, and eliminate negative community perceptions that can hinder TB control programs (Tuot et al., 2019). TB cadres who provide assistance to individuals with TB encourage individuals to conduct examinations and take regular medication, which can reduce the number of patients who drop out of treatment (Arfan et al., 2020).

TB cadres supervise patients with pulmonary TB to take medicine regularly by asking questions via whatsapp and making home visits to see the condition of TB patients. This is in accordance with the results of the study Susetyowati et al. (2018), which states that cadres can monitor treatment regularity

by asking directly, through communication tools (cellphones), or making home visits. According to (Hadland, 2022), if the role of TB cadres can be maximized, the recovery rate of patients will be higher and the risk of TB transmission will be reduced.

d. Sputum Testing (BTA)

Priority targets for sputum testing (BTA) are TB suspects and individuals in household contact with people with TB. People in household contact with people with TB are vulnerable to TB transmission because they interact with each other every day and are likely to inhale droplets containing TB germs. (Rafika et al., 2022).. The BTA test results showed that 1 out of 58 people were positive for TB. From these results, there is a tendency for failure in the sputum sampling process, including respondents not being able to spit out sputum and instead salivating, sputum released <5 mL, and only one sputum collection is done, namely sputum during. The majority of sputum specimens obtained were mixed with saliva with a volume of 2-5 mL. Ideally, the sputum specimen to be examined is mucopurulent or mucoid sputum, totalling 3-5 mL, and taken at 3 different times (during-morning-time) (Indonesian Ministry of Health, 2020).
Saliva specimens have a low probability of a positive result or even a negative detection. This is because saliva is not a breeding ground for Mycobacterium tuberculosis (Masitah, 2022). Furthermore, differences in the volume of sputum released by TB patients can be influenced by the degree of disease suffered and the stage of the disease. Clinically, the use of a 5 mL sample has a false positive probability on a truly negative result that is almost 50% lower than the use of a 2 mL sample (Hermansyah et al., 2022). (Hermansyah et al., 2022). In addition, the one-time nature of sputum sampling may contribute to false-negative results. Determination of TB diagnosis is carried out by examining three sputum specimens microscopically, because various studies have obtained similar results with the biopsy (Larissa et al., 2015). (Larissa et al., 2015). According to research Chairani et al. (2023) the criteria for BTA (+) pulmonary TB is when at least 2 out of 3 sputum specimens show positive BTA results.

e. Declaration of TB-Free Pioneering RW

Collaboration with various stakeholders is important to help provide the resources needed by the community. Cross-sectoral collaboration is conducted with sub-district heads, village heads, and religious leaders to support TB control. However, cross-sectoral cooperation with the industrial sector, companies, or workplaces is less than optimal because there are still many agencies that have not participated in TB control. Limited cross-sectoral and community cooperation can have a negative impact on health promotion activities, which results in the discovery of TB patients remaining low (Wijayanti, 2016).

Study Limitations

The limitation of this study is the use of a case report method that focus on specific cases and may not be representative of the larger population.

Conclusion

Realizing a TB-free pilot area in Kota Wetan Village, Garut Regency is an effort to eliminate TB and improve public health status. As a first step, TB-related health education, initiation of functional duties of RW cadres as PMOs, sputum examination (BTA), and collaboration with various stakeholders in the pilot area can be carried out. These activities can raise community awareness to actively contribute to the success of activities that are being carried out for the common good so as to reduce the negative stigma of TB disease, increase the discovery of new cases of BTA-positive TB, and reduce drug dropout rates in TB patients. From the evaluation of the four interventions, it can be concluded that the nursing problem of community health deficit is partially resolved. There is a need for widespread education so that the community can eliminate the negative stigma associated with TB disease. Collaboration with the industrial sector, companies, or workplaces needs to be improved to increase TB case

finding. It is hoped that the series of programs that have been implemented can provide benefits and become a sustainable program as an effort to achieve optimal health status, especially for the people of Kota Wetan Village

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