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ORIGINAL ARTICLE

ANALYSIS OF COMMUNITY HEALTH VOLUNTEER (CHV) BEHAVIOR IN DETECTING PRESUMPTIVE PULMONARY TB IN BANJARNEGARA

Analisis Perilaku Kader Kesehatan dalam Penemuan Suspek TBC Paru di Kabupaten Banjarnegara

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ABSTRACT

Background: Pulmonary TB case detection in Banjarnegara Regency from 202 to 2023 has fallen short of the target. As of June 2024, only 21% of suspected pulmonary TB cases have been identified. The behavior of community health volunteers (CHV) who actively seek out TB cases in the community starting from conducting visits, providing basic education to at least 20 close contacts of the index TB case, screening symptoms through interviews using the National TB 16K form, to encouraging symptomatic contact to undergo sputum examination at the health center is closely linked to the detection of pulmonary presumptive TB. **Purpose**: To analyze the behavior of CHV and to identify the factors influencing CHV behavior to identify presumptive TB pulmonary. **Methods**: The research design used was quantitative with a cross-sectional and observational design. The sampling technique used was total sampling with a total of 136 respondents. **Results**: Based on research conducted, 77 demonstrated good behavior in presumptive identification, while 59 exhibited less favorable behavior. The majority of respondents had excellent knowledge (92.65%), a supportive attitude towards presumptive detection (65.44%), and good motivation (60.29%). There is a relationship between knowledge (P=0.015), attitude (P=0.006), and motivation (P=0.000) with the behavior of community health volunteers in identifying pulmonary TB presumptive in Banjarnegara Regency. **Conclusion**: 56.62% of respondents exhibited good behavior in detecting pulmonary TB presumptives. Further training with an interactive learning approach is necessary to enhance the capacity of community health volunteers.

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ABSTRAK

Latar Belakang*: Penemuan kasus TB Paru di Kabupaten Banjarnegara sejak tahun 2021 hingga 2023 belum memenuhi target. serta hingga Juni 2024 penemuan suspek TB paru hanya sebesar 21%. Perilaku kader yang melakukan pencarian kasus TB secara aktif di Masyarakat dari mulai melakukan kunjungan, memberikan edukasi sederhana pada minimal 20 kontak sekitar indeks kasus terkait TB, melakukan skrinning gejala melalui wawancara dengan panduan form 16K TBC Nasional hingga mempengaruhi kontak yang bergejala TB untuk melakukan pemeriksaan dahak di puskesmas memiliki keterkaitam erat dengan deteksi suspek TB Paru.* ***Metode****: Desain penelitian yang digunakan adalah kuantitatif dengan desain cross-sectional dan observasional analitik. Teknik pengambilan sampel yang digunakan adalah total sampling dengan jumlah 136 responden.* ***Tujuan****: Untuk menganalisis perilaku kader dan faktor yang berpengaruh terhadap perilaku kader dalam identifikasi suspek TB paru di Kabupaten Banjarnegara.* ***Hasil****: Berdasarkan penelitian yang dilakukan sebanyak 77 orang menunjukkan perilaku yang baik dalam identifikasi suspek, sedangkan 59 orang menunjukkan perilaku yang kurang baik. Mayoritas responden memiliki pengetahuan yang sangat baik (92,65%), sikap yang mendukung terhadap deteksi suspek (65,44%), dan motivasi yang baik (60,29%). Ditemukan adanya hubungan antara pengetahuan (P=0,015), sikap (P=0,006), dan motivasi (P=0,000) dengan perilaku kader kesehatan masyarakat dalam mengidentifikasi suspek TB Paru di Kabupaten Banjarnegara.* ***Simpulan****: Sebanyak 56,62% responden menunjukkan perilaku yang baik dalam mendeteksi suspek TB Paru. Pelatihan lebih lanjut dengan pendekatan pembelajaran interaktif diperlukan untuk meningkatkan kapasitas para kader.*

INTRODUCTION

TB is the leading infection killer of humankind, surpassing HIV/AIDS, even during the coronavirus (COVID-19) (1). TB is the leading cause of death after ischemic heart disease and cerebrovascular disease (2). TB is caused by Mycobacterium tuberculosis (Mtb), which spreads through droplets when a person with TB coughs or sneezes, and these droplets are then inhaled by others (3). Globally, in 2022, 7.5 million (0.09%) people were diagnosed with TB, marking the highest number since the World Health Organization (WHO) began global TB monitoring in 1995. Indonesia ranks as the second-highest country with the highest TB burden in the world, following India (4).

The increase in cases and deaths is attributed to the long duration of treatment, which lasts 6-8 months. Patients who feel better before completing their treatment often stop taking their medication((5)5) (6). TB patients with comorbidities such as HIV/AIDS and Diabetes Mellitus (DM) are at a higher risk of death (7). Stigma against TB patients can discourage people from seeking medical examinations, lead to delayed diagnoses, and result in poor treatment adherence (8). Undetected and untreated TB cases have the potential to continuously spread the disease to family members and the community (9). One patient diagnosed with bacteriological TB, if not treated properly and effectively, can infect approximately 10-15 people per year (10). Among those who come into contact with a TB patient, 3.50%-10% will develop TB, while about one-third will become infected but remain asymptomatic/Latent TB (11).

The current TB control program is implemented by the government using a TB elimination strategy that consists of:1) Strengthening the commitment and leadership of the central government, provincial governments, and district/city governments, 2) Improving access to quality TB services that are patient-centered, 3) Intensifying health efforts to combat TB, 4) Enhancing research, development, and innovation in TB control, 5) Strengthening the involvement of communities, stakeholders, and other multisectoral actors in TB

control, and 6) Strengthening program management (12).

Banjarnegara Regency currently has a population of 1,047,226, of which 717,318 (68.49%) are of productive age (7). The regency is one of the areas in Central Java with relatively low TB case detection rates (8). Over the past four years, Banjarnegara's performance in meeting TB case detection targets has shown variation. In 2021, the target was 1,851 cases, with 848 cases detected (45.81%). In 2022, the target remained at 1,851, and 1,215 cases were detected (65.64%). In 2023, the target was adjusted downward to 1,176 cases, and 1,396 cases were detected (118.70%). Moreover, until November 2024, the regency achieved 55% of the 82.50% annual target (13).

Regarding presumptive detection, with a target of 50% by June 2024, none of the 35 public health centers (Puskesmas) in Banjarnegara met the target. The Puskesmas with the highest TB presumptive detection rates include Banjarnegara 1 with 223 presumptives (37.92%), Banjarmangu 1 (37. 69%), Wanayasa 2 with 68 presumptives (35.60%), Wanadadi 1 with 128 presumptives (34.97%), Karangkobar with 191 presumptives (32.10%), and Bawang 1 with 156 presumptives (30.05%). Meanwhile, 29 other Puskesmas achieved less than 30% of the target, with one Puskesmas detecting only six presumptives (6.27%) (13).

Data from active case-finding efforts conducted by TB community health volunteers in 2023 indicate that 21,252 individuals in close contact with TB index cases received education and TB symptom screening. Of these, 6,812 individuals (32%) were identified as presumptives, and 534 individuals (2.48%) were confirmed to have TB after molecular rapid testing (TCM) at Puskesmas. Despite meeting the minimum target for TB presumptive identification (21.90%), the percentage of confirmed TB diagnoses fell short of the target (minimum 4.80%) (15).

Several factors influence the success of the TB control program, including community knowledge, guidance from district-level supervisors, and the infrastructure at public health centers (16). Additionally, the human resources of TB community health volunteers require attention (17). This is particularly important in Banjarnegara Regency, where community health volunteers actively detect TB cases in high-risk areas (prisons, Islamic boarding schools, and factories) and screen for symptoms among household and close contacts of bacteriological index cases (15) (18).

Programmatically, community health volunteers play a critical role in providing education, detecting TB presumptives and cases in the general community, conducting symptom screening around index cases, and offering support (19). Without identifying TB presumptives, the TB elimination program will not succeed, making the screening process to identify pulmonary TB presumptives by TB community health volunteers vital to the program's success. These processes can only be effective if the community health volunteer possesses adequate skills and knowledge (5). Predisposing, enabling, and reinforcing factors are the foundational elements that shape behavior (20).

The behavior of community health volunteers who actively conduct TB case finding includes making home visits, providing basic education to at least 20 contacts around the index case, conducting symptom screening through interviews using the National TB Form 16K, and encouraging symptomatic contacts to undergo sputum examination at the public health center. Hopefully, help obtain a deeper understanding of how many community health volunteers successfully conducted screening, with 21.9% of screened participants identified as presumptive TB and 4.8% confirmed as TB cases. Understandably, screening behavior by community health volunteers, including symptom screening conducted through other family members, leads to lower estimates of TB presumptive and TB cases, as no further investigation is conducted when the individual is reported to have no symptoms (21). This study aims to describe community health volunteers' behavior in detecting suspected pulmonary TB cases in Banjarnegara Regency.

METHODS

This was an observational study with a cross-sectional design. The sampling technique employed in this research is total sampling. The sample in this study consists of 136 tuberculosis volunteers (kader) in Banjarnegara Regency. The independent variables in this study include demographic status (occupation, age, and education level), knowledge, attitudes, motivation, training, availability of personal protective equipment (PPE), accessibility, program manager support, family support, and rewards/incentives. The dependent variable in this study is the behavior of tuberculosis volunteers in detecting presumptive pulmonary TB cases. Community health volunteers are considered good behavior if they can conduct education and symptom screening for at least 20 contacts of a single TB index case. It is considered less favorable if these benchmarks are not met. The instrument

used in this study is a questionnaire that has been tested for validity and reliability. The data are analyzed using descriptive statistical analysis with a crosstabs test. This study has been approved by the Research Ethics Committee of the Faculty of Public Health, Diponegoro University, with approval number: 378/EA/KEPK-FKM/2024.

RESULTS

Characteristic Respondents

Table 1 indicates that the majority of respondents were adults (99.30%), with only a small proportion classified as elderly. Most respondents (79.40%) were unemployed, and more than half (57.40%) had attained a secondary education level. Nearly all respondents (97.10%) reported having received training, and 99.30% had been provided with personal protective equipment. Furthermore, 75.70% of respondents lived within a 7 km radius of the education and screening sites. Support for TB presumptive case detection in the community was reported by 89% of respondents from TB program managers, 95.60% from their families, and 91.90% received rewards or incentives.

Univariate Analysis

Table 2 shows that 92.60% of respondents had excellent knowledge, 65.40% had a supportive attitude, and 60.30% had good motivation. A total of 56.60% of respondents demonstrated good behavior in detecting pulmonary TB presumptives, while 43.40% of respondents still exhibited less favorable behavior in detecting pulmonary TB presumptives.

Field findings during the study revealed that, over the past three months, respondents conducted education and symptom screening among close contacts of 291 pulmonary TB bacteriological index cases (index cases from primary health centers and hospitals). A total of 2,740 close and household contacts were screened for symptoms, of which 1,651 (60.25%) were presumptive cases, and 98 were confirmed positive for pulmonary TB (3.57%). Based on these activities, the percentage of identified presumptives met the target, but the percentage of presumptive cases that became notified cases fell short.

In this study, 77 respondents demonstrated good behavior, successfully meeting the community's criteria for active TB case detection through education, symptom screening, referring presumptives, ensuring presumptives underwent examination, and identifying notified TB cases. Meanwhile, 59 respondents showed less effective behavior in presumptive identification, meaning they did not meet the successful active case detection criteria.

The Relationship Between Knowledge and Community Health Volunteer Behavior in Pulmonary TB Presumptive Detection in Banjarnegara Regency

Respondents with excellent knowledge exhibited better behavior (61%) in pulmonary TB presumptive detection than those with adequate or reasonable knowledge.

Table 3 presents the results of the chi-square analysis between knowledge and the behavior of tuberculosis community health volunteers in detecting pulmonary TB presumptives, revealing a p-value of 0.015 (<0.05). The analysis meets the criteria for the hypothesis relationship, indicating that knowledge has a significant relationship with the behavior of detecting pulmonary TB presumptives.

The Relationship Between Attitudes and Community health volunteer Behavior in Pulmonary TB Presumptive Detection in Banjarnegara Regency

Respondents with a supportive attitude demonstrated better behavior (65%) in detecting pulmonary TB presumptives than those with a less supportive attitude.

The chi-square analysis results between attitude and the behavior of community health volunteers in detecting pulmonary TB presumptives show a p-value of 0.006 (<0.05). The analysis meets the criteria for the hypothesis relationship, indicating that attitude has a significant relationship with the behavior of detecting pulmonary TB presumptives.

The Relationship Between Motivation and Community Health Volunteer Behavior in Pulmonary TB Presumptive Detection in Banjarnegara Regency

Respondents with good motivation demonstrated better behavior in detecting pulmonary TB presumptives than those with less favorable motivation.

The chi-square analysis results between motivation and the behavior of community health volunteers in detecting pulmonary TB presumptives show a p-value of 0.000 (<0.05). The analysis meets the criteria for the hypothesis relationship, indicating that motivation has a significant relationship with the behavior of detecting pulmonary TB presumptives.

Table 1
Characteristics of Respondents

Characteristics	n	%
Age		
Adult	135	99.30
Elderly	1	0.70
Employment Status		
Employed	28	20.60
Unemployed	108	79.40
Education		
Basic	48	35.30
Secondary	78	57.40
Higher	10	7.40
Training Status		
Yes	132	97.10
No	4	29.00
Provided Personal Protective Equipment		
Yes	135	99.30
No	1	0.70
The Distance to The Activity Location		
<7km	103	75.70
>7km	33	24.30
Support from TB Program Managers		
Yes	121	89
No	15	11
Support From Families		
Yes	130	95.60
No	6	4.40
Reward		
Yes	125	91.90
No	11	8.10

Table 2
Distribution of Respondents Based on Knowledge, Attitude, Motivation, and Behavior

Variables	n	%
Knowledge		
Sufficient	2	1.50
Good	8	5.90
Very Good	126	92.60
Attitude		
Less Supportive	47	34.60
Supportive	89	65.40
Motivation		
Poor	54	39.70
Good	82	60.30
Behavior		
Poor	59	43.40
Good	77	56.60

DISCUSSION

Respondents during the study only 56.6% exhibiting good behavior. Respondent with poor behavior in TB persumtive identification were those who had been volunteer for less than five years, did not conduct follow- up visits, did not coordinate with health care workers when screened contacts had no symptoms and dillemas related to bacteriologically confirmed targets, which led to the neglect of presumptive unable to produce sputum. Respondent conducted education and symptom screening around 1-11 index cases and during community meetings. However, not all respondents could generate presumptive/presumptive TB cases that could be referred to healthcare facilities. Some of those who successfully referred presumptives found that the presumptives did not meet the standards for examination. The field study revealed that a community health volunteer who referred more presumptives had a higher notification rate. Conversely, community health volunteers with fewer presumptive referrals had lower notification rates, with no cases found. This aligns with a study that found that the more people screened for symptoms, the more presumptives are identified, and subsequently, the more cases are diagnosed (22).

A study in Ukraine faced challenges due to the high proportion of undiagnosed TB cases (23). The difficulty of volunteers in motivating potential patients with TB symptoms to seek screening and treatment services was identified as one of the challenges in implementing an active case finding model (24). Refusal of visits and communication causes community health volunteers, who connect presumptive TB cases in the community with healthcare facilities, to lose motivation to perform their duties. Respondents who lack sufficient capacity may struggle to deliver accurate and relevant health information to the community, resulting in the public not fully understanding. This may occur because the training provided to volunteers is too short, making it difficult for them to gain a proper understanding within 2-3 days (25).

Training requires 3-5 days to cover each topic in detail. Further training is needed, particularly those that enhance knowledge and counseling skills, including communication skills to foster relationships with TB survivors, village officials and the local community (26).

Table 3
Relationship between Knowledge, Attitudes, and Motivation with the Behavior of Community Health Volunteers in Identifying Pulmonary TB Presumptives in Banjarnegara Regency

Variable	Category	Behavior of Community Health Volunteers in Pulmonary TB Presumptive Detection				p-value
		Poor		Good		
		n	%	n	%	
Knowledge	Sufficient	2	100	0	0	0.015
	Good	8	100	0	0	
	Very Good	49	39	77	61	
Attitude	Less Supportive	28	59	19	41	0.006
	Supportive	31	35	58	65	
Motivation	Poor	35	65	19	35	0.000
	Good	24	29	58	71	

The Relationship Between Knowledges and Community Health Volunteer Behavior in Pulmonary TB Presumptive Detection in Banjarnegara Regency

Field research results show that a higher proportion of tuberculosis (TB) community health volunteer behavior categorized as poor in identifying pulmonary TB presumptives was found among respondents with moderate to good knowledge. Meanwhile, respondents with excellent knowledge mostly demonstrated good behavior in identifying pulmonary TB presumptives. The better a community health volunteer's knowledge about their role in identifying TB cases in the community, the better their efforts and actions in detecting such cases. Conversely, community health volunteers with limited knowledge about their role in TB case detection tend to show initiative or action in finding TB cases in the community (26).

The results of this study are consistent with a study conducted by Putri SA et al, whose analysis found that community health volunteers' knowledge is related to their actions in TB case detection at the Lite Health Center (27). The better the community health volunteer' knowledge about their role in TB case detection in the community, the more effective their efforts or actions in identifying TB cases in the community. Community health volunteer with less knowledge about their role in detecting pulmonary TB cases in the community tend to take fewer actions in identifying TB cases.

In community empowerment activities, community health volunteers must understand the health issues they face to carry out their roles effectively. When community health volunteer community health volunteer community health volunteers possess adequate knowledge about health problems, they are more likely to perform well in their duties. In addition, practice also plays a crucial role in enhancing their ability to fulfill their responsibilities, empower communities, and address existing health issues along with their attitudes (28).

The Relationship Between Attitudes and Community Health Volunteer Behavior in Pulmonary TB Presumptive Detection in Banjarnegara Regency

Based on field data, the proportion of TB community health volunteer behavior in identifying pulmonary TB presumptives was poorer among respondents with less supportive attitudes. Conversely, good behavior in identifying pulmonary TB presumptives was more prevalent among respondents with supportive attitudes.

Based on field data, although the multivariate test did not show an effect, the behavior of detecting pulmonary TB presumptives in the good category was more prevalent among respondents with a supportive attitude. This study aligns with previous research, which found that good behavior in presumptive detection is influenced by the attitude of the community health volunteer (21) (29). With a positive attitude, the behavior of presumptive detection was also categorized as good. Conversely, community health volunteers with less favorable attitudes exhibited lower presumptive detection behavior.

Respondents with good knowledge but poor practice were often involved in multiple community groups, which led to a lower sense of responsibility and limited time availability (29).

The Relationship Between Motivation and Community Health Volunteer Behavior in Pulmonary TB Presumptive Detection in Banjarnegara Regency

The field data shows that a higher proportion of TB community health volunteer behavior in identifying pulmonary TB presumptives was poor among respondents with low motivation. Conversely, good behavior in identifying pulmonary TB presumptives was more common among respondents with high motivation.

The behavior of detecting pulmonary TB presumptives was more prevalent among respondents with good motivation. This study is consistent with previous research, which shows a statistically significant relationship between motivation and CHV in detecting presumptive TB pulmonary (30). Motivated people were more likely to engage in practical TB case control activities. A study by Ogutu et al. stated that although health volunteers face challenges in their activities, they are motivated to continue their work due to the recognition, respect, and acknowledgment they receive from the community. Some community members refer to them as doctors, teachers, and good people. As a result of this respect and recognition, some community members even visit volunteers to seek solutions to various challenges they face (21).

The field data shows that a higher proportion of TB community health volunteer behavior in identifying pulmonary TB presumptives was poor among respondents with low motivation. Conversely, good behavior in identifying pulmonary TB presumptives was more common among highly motivated respondents.

CONCLUSION

Field findings revealed that more than half of the respondents had excellent knowledge, a supportive attitude, and motivation in detecting pulmonary TB presumptives. However, nearly half of the respondents still exhibited poor behavior in presumptives. Further training with an interactive learning approach is necessary to enhance the capacity of the community health volunteer.

CONFLICT OF INTEREST

None.

AUTHOR CONTRIBUTIONS

S: Concept, Methodology, Scripting, Data Analysis, Data Visualization, and Editing. BW: Data Visulization, Writing Review, Proofreading, Manuscript Examination, Final Approval of Research. ZS: Data Visualization, Writing Review, Proofreading, Manuscript Examination.

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