

## Factors affecting tuberculosis cadres' motivation in the detection of tuberculosis cases in Kediri City, Indonesia



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### ABSTRACT

**Background and purpose:** Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis* (MTB). The high incidence of TB acquires the active role of TB cadres in TB case finding. Motivation is an important factor that support the performance of TB cadres. This study aims to explore factors that affect the motivation of TB cadres case detection rate of TB.

**Methods:** This was an observational analytic study with cross sectional study design, conducted in Kediri City. A total sampling technique was applied with a total of 59 TB cadres in the working area of Sukorame Public Health Center, in Kediri City. TB cadres filled in a questionnaire containing questions about sociodemographic, attitudes, knowledge, and motivation with a total of 39 questions. Data were analyzed with univariate descriptive statistics, bivariate test by Fisher and Chi Square tests and followed by multivariate analysis using logistic regression.

**Results:** Of the 59 cadres, 37 (67.2%) have a good motivation on

TB case findings. The results of multivariate analysis showed that there were four independent variables which have a significant association with the motivation of TB cadres, including age, education, jobs and incentive. Cadres who are 41-60 years have better motivation compared to 25-40 years (OR=31.49; 95%CI: 2.373-417.907; p=0.009), cadres who have higher education (university/college) have better motivation (OR=36.957; 95%CI: 2.389-571.805; p=0.010). While those who not getting incentives (OR=0.100; 95%CI: 0.013-0.758; p=0.026) and having a job (OR=0.120; 95%CI: 0.021-0.670; p=0.016) were less likely to have a good motivation.

**Conclusion:** Motivation of TB cadres in Kediri City is influenced by intrinsic factors (age, education and employment) and extrinsic factor (incentive). Providing appropriate incentive will significantly boost cadre motivation and relevant stakeholders should consider making this strategy sustainable.

**Keywords:** TB cadres, Tuberculosis, motivation

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### INTRODUCTION

Tuberculosis (TB) is a global public health problem. Every person in the world is at risk of being infected with this disease so that it becomes a priority health problem that should be resolved. TB is the second highest cause of death in the world based on the Global Burden of Disease reported by the Indonesian Ministry of Health (MoH). TB patients reached one-third of the total world population and nearly 40% of TB clients are left undiagnosed and experienced treatment delays.<sup>1</sup> Globally, based on the 2014 WHO report, an estimate of 9.6 million new TB cases were reported, where 56% of those cases occurred in five countries, namely India, Indonesia, China, the Philippines and Pakistan.<sup>2</sup> Meanwhile, based on the 2018 MoH Basic Health Research (*Riset Kesehatan Dasar/Riskesdas*), the number of TB cases in Indonesia was accounted for 0.4 percent of the total population, which is close to 1 million, and 23,000 of them reside in East Java Province.<sup>3</sup>

In Kediri City, East Java, from January to December 2018, the city health office recorded 820 TB cases. The three most populous Public Health Centers (PHCs) namely Sukorame PHC, Campur Rejo PHC and Pesantren 2 PHC have not reached the intended case detection targets with case detection rate of 71.4%, 77.4%, and 52.3%, respectively.<sup>4</sup>

The main goal of TB control program is to stop the disease transmission within the community. An effective TB control program requires early diagnosis and immediate initiation of treatment. Delay in diagnosis of individuals and community plays a crucial role for disease prognosis and disease transmission. The diagnosis and treatment delay may cause increasing severity, mortality, and transmission of TB. A previous study reported that patients become more contagious as the delay progresses. In other words, the longer the delays, the higher bacillary numbers in sputum smears and patients are more likely to develop pneumonia, other respiratory infections, and mortality in the

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emergency departments.<sup>5</sup>

The government has established the Find, Treat, and Cure TB (in *Bahasa Indonesia* called *Temukan Obati Sampai Sembuh* or TOSS-TB) program to encourage clients to take medication regularly and completely as planned so that the incidents of multi-drugs resistant (MDR) and Extensively drug resistant (XDR)-TB can be prevented. In addition, the community also takes part in TB control program in Indonesia by establishment of the Indonesian Tuberculosis Eradication Association (*Perkumpulan Pemberantasan Tuberculosis Indonesia - PPTI*), which is a professional organization that works in partnership with the government focusing on TB control program. PPTI committees available in various regions of Indonesia with a range of activities including spreading of TB-related information and training for community health volunteers or cadres.<sup>1</sup>

One of the roles of health cadres is to support TB case finding. The rate of new TB cases detection in the community is still low, hence the cadres' activities in detecting tuberculosis need a reinforcement.<sup>6</sup> To improve the effectiveness of TB cadres' role in Kediri, exploration of factors that influence TB cadres' motivation warrants investigation. Motivation is an essential factor that may support the performance of TB cadres.<sup>3</sup>

Motivation, both intrinsic and extrinsic motivation, is affecting the performance of cadres. Intrinsic motivation (inner) factors include age, level of education, the length of being a cadre, employment, attitude, and knowledge. Whereas extrinsic motivation, which is an encouragement that come from outside the individual, includes training of cadres and incentives.<sup>7-9</sup>

This study aims to explore factors associated with the motivation of cadres to detect TB cases. The improvement of cadres' motivation will lead to improved performance of new TB cases finding which will contribute to a better TB control.

## METHODS

This research was an observational analytic study with cross sectional design. The study was conducted at Sukorame PHC, Kediri, East Java. The study was conducted in the third week of February 2019.

A total population sampling was performed toward all TB cadres in Sukorame PHC Kediri, 59 people in total. The independent variables of this study are factors that may influence the motivation of TB cadres, both the intrinsic and extrinsic factors. Intrinsic factors (inner) are age, level of education, employment, duration of being a cadre, knowledge and attitudes. Extrinsic factors include the training received by the cadres and cadres' incentives for TB related activities. While the dependent variable in

this study is motivation of TB cadres in performing TB case detection.

The data collection was conducted with questionnaire. Motivation factor was grouped into well motivated and less motivated. Gender was grouped into female and male, and age was grouped into 25-40 years old and 40-60 years old. The education was categorized into elementary/junior/senior high school and university/college. While the duration of being a cadre was grouped into <2 years and  $\geq 2$  years, employment was classified into having a job and not having a job. Attitude and knowledge were grouped into good and poor. For the extrinsic factors, incentive was categorized into getting appropriate incentives and not getting appropriate incentives, while training factor is grouped into ever and never receive any training.

Descriptive analysis was firstly conducted, followed by comparative data analysis with Chi Square and Fisher Exact Test. For multivariable analysis, logistic regression was conducted. All analysis was conducted with IBM SPSS Statistic 24 application. Ethics approval was obtained from the Ethics Committee of the Faculty of Medicine, University of Muhammadiyah Malang (No: E.5a/088/KEPK-UMM/III/2018).

## RESULTS

Based on [Table 1](#), it can be seen that most of the cadres, 53 out of 59 (89.8%), were women and aged 40-60 years old. Cadres who have lower education level (elementary/junior/senior high school) were more than those who have higher education level (university/college), 76.3% and 23.6%, respectively. Meanwhile, almost two third (62.7%) of respondents have worked as cadres for <2 years and more than half were not employed (52.5%). All of the cadres (100%) have good attitude and knowledge around TB and all of them have been trained as a TB cadre. Most of the cadres (81.4%) reported receiving appropriate incentives, whilst almost two third of them (62.7%) were well-motivated toward TB case detection.

[Table 2](#) shows that age and incentives are correlated with TB cadres' motivation on case detection of TB suspects in Kediri City, p value derived from Fisher Exact test were 0.002 and 0.008, respectively. Association of level of education, duration of being a cadre and employment with the motivation of TB cadres on case detection rate of TB suspects in the Kediri City were also statistically significance with p value derived from Chi Square test were 0.008, 0.031 and 0.017, respectively.

Based on the results of the multivariate analysis, it can be concluded that there is a relation between age, level of education, job and incentives with the

**Table 1. Characteristics, knowledge, attitude and motivation of TB cadres**

Variables	n	%
<b>Gender</b>		
Male	6	10.2
Female	53	89.8
<b>Age</b>		
25-40	13	22.0
40-60	46	78.0
<b>Level of education</b>		
Elementary/junior and senior high school	45	76.3
University/college	14	23.7
<b>Duration of being cadres</b>		
<2 years	22	37.3
≥2 years	37	62.7
<b>Job</b>		
Do not have a job	28	47.5
Have a Job	31	52.5
<b>Attitude</b>		
Good	59	100
Poor	0	0
<b>Knowledge</b>		
Good	59	100
Poor	0	0
<b>Training</b>		
Ever	59	100
Never	0	0
<b>Incentive</b>		
Appropriate	48	81.4
Not appropriate	11	18.6
<b>Motivation</b>		
Less motivated	22	37.3
Well-motivated	37	62.7
<b>Total</b>	<b>59</b>	<b>100</b>

motivation of TB cadres on case detection rate of TB suspects in the Kediri City.

Older age (41-60 year old) has an increased odd of having good motivation by 31.49 compared to the younger TB cadres aged 25-40 years old,  $p=0.009$ .

Education (University/College) has a significant association with cadre's motivation (OR=36.96; 95%CI: 2.39-571.81;  $p=0.010$ ). Cadres with a university degree have 36.9 higher odd of having good motivation compared to those with lower education level. Having a job is negatively correlated with cadre's motivation, where cadres who have a job were 88% less likely to have good motivation on TB case detection compared to those who do

not have a job (OR=0.12,  $p=0.016$ ). Meanwhile, not getting appropriate incentive is also inversely correlated with good motivation, where cadres who do not get appropriate incentive were 90% less likely to have good motivation compared to those who received appropriate incentives (OR=0.10,  $p=0.026$ )

## DISCUSSION

Motivation is a concept that describes the extrinsic conditions that stimulate certain behaviors, as well as intrinsic responses that show human behavior. Motivation also explains the set of beliefs and emotions which are interrelated. Beliefs and emotions drive and influence person's behavior.<sup>10</sup> Motivation, both intrinsic and extrinsic, affects the performance of cadres. Intrinsic motivation, which is cadres' inner factors, include age, level of education, the duration of being a cadre, employment, attitude, and knowledge. Whereas extrinsic motivation, which is encouragements that come from outside the individual, includes the training received by the cadres and incentives.<sup>7-9</sup>

In this study, we found a significant relation between age and motivation of TB cadres. According to research conducted by Sumartini, there is an association between age and the role of cadres because with increasing age, the level of maturity in thinking and behavior also increase - thereby increasing a person's ability to make decisions, control emotions, to think rationally, to adapt the behavior to the environment and tolerance for the views of others.<sup>11-13</sup> Some evidence mention that the older cadres are more respected in their communities than their younger counterparts.<sup>14</sup> In society, there is a culture that emphasizes the achievement between age, education or history of training. Therefore, the older cadres are relatively easy to perform tasks in the community, because of the respect they receive from the public which act as facilitator of their work.<sup>15,16</sup>

The level of education showed the most significant results. This is supported by research conducted by Ratih, that the level of education affects a person's level of knowledge, while knowledge can be obtained from the presence of cadres training.<sup>17</sup> In addition, cadres with higher educational status is associated with performance of cadres. The high education level contributes to better health knowledge, the cadre with higher education status will be easier to understand how to write and send their monthly reports, and work better.<sup>18-20</sup>

Incentives have a significant relationship to the motivation of cadres. The results are consistent with research conducted by Kofi, et al which stated

**Table 2. Association between characteristics with the motivation of TB cadres on case detection in the Kediri City**

Variables	Motivation						P
	Less		Well		Total		
	n	%	n	%	n	%	
<b>Age</b>							
25-40 years	10	16.9	3	5.1	13	22.1	0.002*
41-60 years	12	20.3	34	57.6	46	77.9	
<b>Incentive</b>							
Appropriate	15	25.4	33	55.9	48	81.3	0.008*
Not appropriate	7	11.9	4	6.8	11	18.4	
<b>Education</b>							
Elementary/junior/senior HS	21	35.6	24	40.7	45	76.3	0.008**
University/college	1	1.7	13	22	14	23.7	
<b>Duration being a cadre</b>							
<2 years	12	20.3	10	16.9	22	37.2	0.031**
≥2 years	10	16.9	27	45.8	37	62.8	
<b>Job</b>							
Do not have a job	6	10.2	22	37.3	28	47.5	0.017**
Have a job	16	27.1	15	25.4	31	52.5	

\* Fisher Exact test

\*\*Chi Square test

**Table 3. Adjusted odd ratio of cadre motivation based on cadre characteristics**

Variables	OR	95%CI for OR	p
<b>Age</b>			
25-40 years	Ref		
41-60 years	31.49	2.37-417.91	0.009
<b>Education</b>			
≤Senior high school	Ref		
University/college	36.96	2.39-571.81	0.010
<b>Jobs</b>			
Do not have a job	Ref		
Have a job	0.12	0.021-0.67	0.016
<b>Incentives</b>			
Appropriate	Ref		
Not Appropriate	0.10	0.013-0.76	0.026

that the incentive is one of the most influential extrinsic factors to increase the motivation to be a cadre. Incentives have been shown to improve the performance of the work of health workers in Ghana. Wenting et al also says that one of the motivating factors is an incentive which is very

effective to increase the performance of health workers.<sup>18</sup> Economic incentives may undermine intrinsic motivation but well-designed incentives can encourage intrinsic motivation.<sup>19,21</sup> In the study conducted by Lindquist, et al researcher was trying to determine the motivation for someone to choose a job with low payment and challenging. The results showed that the volunteers chose their jobs most commonly for personal pleasure or the respondents considered that this role is the best job they can do.<sup>22</sup>

Employment has a relationship to the motivation of cadres. This is according to research conducted by Maryse which states that cadres who have fewer household tasks and cadres depending on the job as a volunteer is found to perform better than others.<sup>18</sup> Having a job also affect the interest of cadres. Those who have the highest interest in becoming volunteers are housewives (do not have a job). Housewives have a good attitude toward the interest in becoming a volunteer. In this study, the majority of the cadres, 23 of 59 respondents were a housewife.<sup>17,23</sup>

In our study, the length of being a TB cadre affects the motivation. The longer duration of becoming a health worker lead to more experience and knowledge so the health workers should serve the community better and more professional.<sup>9</sup> Cadres who have a longer service life will have a deeper closeness with the community, because they are more familiar and well known and they have interacted longer.<sup>24</sup> Years of experience as a volunteer associated with increased patient satisfaction in Kenya and the use of appropriate working tools.<sup>18</sup> Moreover, a cadre who has longer working experience have more opportunity to receive training, supervision and incentives of any kind and more time to establish close relationships with the community members.<sup>18,25</sup>

Attitude cannot be analyzed due all respondents have good knowledge with 67-100% of the value of a questionnaire. Attitude is essentially a psychiatric condition, feelings that can affect the behavior and ultimately realized by deeds. There is a significant relationship between the attitude of health workers to practice of the invention suspect cases of TB. The better attitude about the task the better the action cadres in finding cases of TB in the community.<sup>20</sup>

Training factors cannot be analyzed due all respondents never received training. Training will provide better knowledge and skills in performing their duties as volunteers. Training is one of the factors that affect work productivity, job training to complement the performance of the skill and the proper ways to use work equipment, on the job training is required not only complement but also to provide basic knowledge.<sup>9,26</sup> Training not only



provides preventive, curative, or other relevant services to the community, but also to teach and communicate with the local communities.<sup>17</sup>

The training has a positive impact on the capacity to provide health care and to build confidence and skills of cadres in communicating with rural communities.<sup>18</sup> Useful and effective training in terms of the knowledge required to work as a volunteer, as well as ways of approaching the patient's family. The training they receive is also important in motivating them to voluntarily work in the field of health.<sup>27,28</sup>

### Study Limitation

There are several limitations of the study. The study was conducted only in one PHC, hence, generalization of the study is limited. The low education of most respondents delayed the data collection since they have difficulties in filling out the questionnaire and checklist. The researchers tried to assist the respondents without leading their responses. The sample size in our study was very low, hence, the OR has a wide confidence interval. A future study with bigger sample size and involving more PHCs should be conducted to have a better understanding on the role of TB cadres in TB case finding.

### CONCLUSION

Motivation of TB cadres in Kediri City is influenced by intrinsic and extrinsic factors. The intrinsic factors were including age, education and employment. Cadres who are older, 41-60 years old, not having a job and had been study at university/college has higher motivation. For the extrinsic factor, incentive is associated with good motivation, where TB cadres who get appropriate incentives has higher motivation to perform their tasks. Providing appropriate incentive will significantly boost cadre motivation, so that relevant stakeholders should consider making this strategy sustainable. A future study with bigger sample size and involving more PHCs should be conducted to have a better understanding on the role of TB cadres in TB case finding.

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### AUTHOR CONTRIBUTION

GSP designed the study, conducted the statistical analysis. HLO and YF collected the data. GSP ESH

and GBP performed the interpretation of the data. GSP, GGP and CCA drafted the manuscript, and GSP critically revised the intellectual content of the manuscript.

### CONFLICT OF INTEREST

There is no conflict of interest

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