UNDER-REPORTED TUBERCULOSIS CASES AND RELATED FACTORS AT THE HOSPITAL LEVEL IN KUDUS, CENTRAL JAVA

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ABSTRACT

Background: Tuberculosis (TB) is an infectious disease of global concern. The number of TB cases in Indonesia has increased from year to year. One of the TB control problems stems from the inaccuracy in disease reporting. The previous studies have reported that there is still a large gap between the number of new cases reported and those that are not reported. This study aimed to determine the factors affecting the incidence of underreported tuberculosis cases at the hospital level in Kudus, Central Java.
Subjects and Method: This was a cross-sectional study conducted at hospital in Kudus in 2019. A sample of 700 TB cases was selected for this study. The dependent variable was unreported case. The independent variables were TB officer's competency, doctor in charge competency, and staff commitment. The data were collected from the Integrated Tuberculosis Information System (ITIS) and the medical record. The data were analyzed using logistic regression.
Results: The incidence of underreported cases increased with lack of TB officer's competency (OR= 19.90; p= 0.001), lack of doctor in charge competency (OR= 10.48; p= 0.001), and low staff commitment (OR= 7.88; p= 0.001).
Conclusion: The incidence of underreported cases increases with lack of TB officer's competency, lack of doctor in charge competency, and low staff commitment.

Keywords: underreported tuberculosis case, competency, commitment, healthcare officer

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BACKGROUND

Tuberculosis (TB) is still a public health problem in the world, although prevention efforts have been carried out in many countries for the past few years. Deaths from tuberculosis are estimated at 1.4 million deaths and 0.4 million deaths from tuberculosis in people with HIV. The number of TB cases in Indonesia in 2019 was 845,000 people, this number increased from the previous year in 2018 of 843,000 people. This places Indonesia as one of the countries that contributes 60% of all TB cases in the world (WHO, 2008).

The increasing burden of TB problems is caused by various factors. One of the factors that causes an increase in the burden of TB problems is the failure of the TB program. The failure of the TB program is caused by the inadequacy of TB service organi-

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zations which include the inaccessibility of the community, non-standard case finding/diagnosis, drugs that are not guaranteed to be provided, monitoring, recording and reporting that are not standardized (Zhou et al., 2019).

Every year there is an increase in TB cases, one of which is because there is still a large gap between the number of new cases reported and those that are not reported. This gap is due to a combination of unreported and undiagnosed TB cases. The main reason for the gap between reporting and estimated cases is the reporting of TB cases that are detected but not reported, this is because there is no policy regarding the obligation to report TB patients to hospitals or other health services. In addition to unreported cases, underdiagnosis also adds to the reporting gap. Underdiagnosis can occur due to geographical factors, economic factors for health services, delays in treatment and failure of inaccurate diagnostic tests (WHO, 2015).

Notification or recording and reporting of TB cases must be carried out by advanced referral health facilities (FKRTL) such as Hospitals, BP4, Health Centers, and Main Clinics, in accordance with Minister of Health Regulation Number 67 of 2016 concerning Tuberculosis Prevention. In the explanation of this regulation, it is stated that violation of this obligation can result in administrative sanctions up to the revocation of the operating license of the health facility concerned in accordance with the provisions of the legislation. The notification system must be carried out manually or through an electronic system in accordance with the procedures and systems determined by the TB control program (Dabaro, 2017)

TB recording and reporting using SITT is carried out in stages, starting from first-level health facilities (FKTP) and advanced referral health facilities, district/city health offices, provincial health offices, to the ministry of health. The success of this system must be supported by the presence of competent TB officers, competent doctors in charge, staff commitment, hospital commitment and infrastructure, so that the level of validity of recording and reporting can meet standards as an effort to control TB (Cruz et al., 2017).

Information obtained from all hospitals in Kudus Regency in 2019 there were 700 TB cases. From these data there are reported and unreported cases. This is due to the lack of competent TB officers, doctors in charge who are incompetent in treating TB patients, lack of commitment from officers and hospitals and facilities and infrastructure that are not up to standard.

The purpose of this study was to determine the cause of under-reporting in Kudus Hospital, Central Java Province, Indonesia. This study only examines hospital system variables that cause underreporting of TB cases.

SUBJECTS AND METHOD

1. Study Design

This research is an analytic observational study with a cross sectional approach.

2. Population and Sample

The population in this study were all

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TB case reporting data using SITT and medical records at the Kudus District Hospital. The sampling technique was carried out using a total sampling covering 700 cases. The data includes outpatient and inpatient records, TB cases detected but not reported in the Integrated Tuberculosis Information System (ITIS) are considered as unreported data.

3. Variable

The dependent variable is the unreported case. The independent variables are the competence of TB officers, the competence of the doctor in charge, and the commitment of the officers.

4. Operational Definition of Variable

Under-reporting TB cases are patients diagnosed according to hospital standards but not reported to the Hospital's Integrated TB Information System (ITIS) in Kudus health office. Measuring tools: Check the list of TB patient status. Scale: Categorical.

Competency Doctor is a doctor who diagnoses TB and attends nationally certified ITIS training or. Measuring tools: check the list of IT IS certificate ownership lists. Scale: Categorical.

Competency of health personnel are competent or less competent personnel in handling and reporting cases of tuberculosis and have a ITIS certificate. Measuring tools: check list of competencies. Scale: Categorical.

Commitment of Health Workers is the commitment of personnel including nurses, TB officers, laboratory workers in reporting TB cases. Measuring tools: Check the list of health workers commitments. Scale: Categorical.

1. Instrument

Data were collected from the Integrated Tuberculosis Information System (ITIS) and medical records.

2. Data Analysis

Data analysis using logistic regression model.

3. Research Ethics

This research has been approved by the Health Research Ethics Commission of Sebelas Maret University with the number 039 /UN27.06.6.1/-KEPK/EC/2020.

RESULTS

Based on the table above, it can be said that from 700 TB cases diagnosed January-December 2019 in seven hospitals, there were 352 TB cases (50.3%) not reported at ITIS.

Table 1. Distribution of reported and unreported cases based on medical records and Hospital SITT in Kudus Regency

Hospital	TB Case			
	Reported		Not Reported	
	N	%	N	%
Loekmono Hadi	85	53	76	47
Mardi Rahayu	84	46	97	54
Sunan Kudus	57	49	60	51
Aisyiyah	50	40	74	60
Kartika	45	73	17	27
Nurussyifa	16	52	15	48
Kumalasiwi	11	45	13	55
Total	348	49.7	352	50.3

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Table 2. System for recording and reporting TB cases in Kudus Hospital

Variable	Category	TB Case Recording and Reporting System				OR	p
		Reported		Not reported			
		N	%	N	%		
TB officer	Competent	295	87	44	13	9.12	0.001
	Incompetent	55	15	306	85		
Doctor in charge	Competent	248	82	63	18	8.50	0.001
	Incompetent	66	19	287	81		
Officer commitment	Yes	267	72	102	28	7.23	0.001
	No	83	25	248	75		
Hospital Commitment	Yes	250	51	238	49	2.07	0.775
	No	100	47	112	53		
Infrastructure	Complete	168	49	174	51	3.02	0.069
	Incomplete	182	51	176	49		
Network space	Good	181	49	185	51	1.03	0.478
	Poor	169	51	165	49		

From the results of the bivariate analysis, it was found that there was a relationship between TB officers (p = 0.001), Doctor in Charge (p= 0.01) and Officer Commitment (p= 0.001) with the system for recording and reporting TB cases in hospitals in Kudus Regency. Meanwhile, the commitment of the hospital, infrastructure and network space has no relationship with the system for recording and reporting TB cases in hospitals. The results of the multivariate analysis of the three factors related to the system of recording and cleaning TB cases in hospitals caused under-reporting, namely TB officers (OR = 19.90), doctor in charge (OR = 10.24) and commitment of officers (OR = 7.88).

Table 3. Multivariate Analysis

Variables	OR	95% CI		p
		Lower limit	Upper limit	
TB officer	19.90	0.05	0.17	0.001
Doctor in charge	10.48	0.02	0.09	0.001
Officer commitment	7.88	0.07	0.24	0.001
N observation= 700				
-2 log likelihood= -152.87				

The results of the multilevel regression analysis stated that there was an influence of the competence of TB officers, doctors in charge and commitment of officers to the incidence of unreported cases. TB patients whose information was recorded by health workers with good competence were less likely to be unreported than those recorded by health workers with less competence (OR=0.05; 95% CI= 0.02 to 0.09; p<0.001). TB patients who were examined by doctors with good competence were less likely to go unreported than were examined by doctors with less competence (OR=

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0.09; 95% CI= 0.05 to 0.17; p<0.001), and TB patients who were served by health workers with a strong commitment were less likely to be underreported than served by health workers with weak commitment (OR=0.13; 95% CI= 0.07 to 0.24; p<0.001).

DISCUSSION

The results of this study stated that 50.3% of TB cases were not reported from the standard registration system of the Kudus District Hospital. The results of this study are in line with the results of the Patient Path Analysis Study in 2017 which stated that not all TB cases treated were recorded in the standard recording system, especially from private health care facilities and private hospital or clinics (Mekonnen et al., 2015).

There are 3 factors related to the system of recording and reporting TB cases at the Kudus District Hospital based on bivariate analysis, including the TB officer factor (p= 0.001), the doctor in charge (p= 0.001) and the commitment of the officer (p = 0.001). The implementation of recording and reporting TB patients at the Kudus District Hospital has been going well, but there are still shortcomings. This can be seen from the results of the bivariate analysis which showed that TB officers had a relationship with the incidence of underreporting of TB cases in Kudus Regency. Incompetent TB officers are a strong cause of unreported TB cases. TB officers enter data into the system only following the instructions contained in the ITIS application. The ITIS handbook is not yet available at the Hospital but is available at the Kudus District Health Office. Only a few TB staff at Kudus general hospital have attended ITIS training. To reduce the number of under-reported TB cases, it is necessary to have ITIS system training for all TB officers and the ITIS manual as a guideline for officers who run the ITIS system.

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According to Rahmi et al. (2017), human resources (HR) have a considerable influence in the development

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of information systems in an organization. The official stated that the dissemination of the use of ITIS carried out by the health department usually only invited one officer so that there was only one person who knew about using ITIS. Socialization can be done by inviting more officers so that more officers are aware of the use of ITIS. Thus the data input work can be done by more than one person so that the data input work into the ITIS will be completed more quickly (Rahmi et al., 2017).

Anggraeni (2010) stated that the availability of a manual for the use of MCH SIM can improve the skills of officers in using MCH SIM. According to Fatimah (2008), the SIK operation manual provided by the Purbalingga District Health Office can be used to assist officers in studying the operation of the SIK (Fatimah, 2008).

In addition to TB officers, the doctor in charge also had a relationship with the factor of underreporting TB cases at the Kudus Hospital (p = 0.001). The doctor in charge must have competence in accordance with his field of expertise in terms of lung disease. In addition, the doctor in charge also evaluates the results of microscopic examinations from hospital laboratories. The reality is that not all doctors in charge of TB cases at the Kudus Hospital are competent in their fields, resulting in underdiagnosis. This shows the ineffectiveness of TB case finding. The health office needs to evaluate the recording and reporting so that it can be used as a basis for planning activities for the following year. This will strengthen the data on TB cases that are not reported at the Kudus Hospital.

In line with the Awusi et al. (2009) stated that screening activities for TB suspects to the community is considered not cost-effective, therefore passive case finding is carried out with active promotion, so that screening is only carried out when necessary such as investigations of home contacts, investigations of special groups such as dormitories and correctional institutions (Noveyani, 2009). and Martini, 2014).

Officer commitment was also a factor associated with under-reporting (p= 0.001). To reduce TB cases, there needs to be a strong commitment from staff and management team staff in a hospital. Evaluation is needed through supervision activities from both hospital management and from the department to examine the seriousness or commitment of the TB staff team. At the Kudus Hospital, some of the TB team doubled as nurses in another room, so that the TB patient data recording was incomplete, because the record officer doubled as a nurse in another room. In addition to the task of taking notes, the officer is also responsible for taking the need for microscopic examination in the laboratory. This causes the commitment of officers to be weak. These results are in line with the results of research from Chin and Hanson (2017) that recording and reporting are not optimal because recording officers have dual duties, thereby reducing the commitment of officers.

According to Uplekar et al. (2016), the components needed in the

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implementation of mandatory notification of TB cases are policies and regulations, reporting systems and mechanisms, orientation of health service providers, monitoring and evaluation, and feedback. A comprehensive and consistent understanding between policy makers and implementers, regarding mandatory notification and its practical components will accelerate implementation among private practitioners. The five practical components are policies and regulations, reporting systems and mechanisms, service provider orientation, feedback, and monitoring and evaluation (Tollefson et al., 2016).

Based on the results of multivariate analysis of the three factors that have a relationship with the occurrence of under-reporting, the TB officer factor has the greatest relationship strength with an OR value of 19.9. In this study, it was found that TB officers felt involved in the medical management of TB, but most did not report due to ignorance or lack of socialization of the system and mechanism for the mandatory TB notification policy. Appropriate approaches such as communication and initial approaches are needed to bind private practitioners when the system is just starting, periodic socialization, informal socialization or a specific approach, or which includes all private practitioners by involving the licensing physician practice system or other stakeholders, such as professional organizations.

AUTHOR CONTRIBUTION

The first researcher (Rusnoto) is responsible for the entire research, starting from determining the research topic, collecting data, interpreting the data and writing research articles. Furthermore, the second, third, fourth, fifth and sixth researchers are responsible for guiding and directing this research from start to finish. The sixth and seventh researchers are responsible for providing an assessment of the research results and the eighth researcher is responsible for proofreading research articles.

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CONFLICT OF INTEREST

We declare that there was no conflict of interest.

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