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Correlation Between History of ISTC Training on Independent Practicing Doctor With Discovery of TB Suspected Children in Surabaya City

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ABSTRACT

The burden of Tuberculosis in children cases in the world is unknown due to the lack of diagnostic tools that are "child friendly" and the inadequacy of recording and reporting systems. TB findings in East Java province is second only to west java and the highest number of cases is in Surabaya. The purpose of this study was to analyse the relationship between history of ISTC training with the discovery of TB suspected Children. This research was done with case control design. The case samples were 14 doctors who found suspected TB in children and control sample that was 56 doctors which did not find suspected TB in children. Sampling technique was simple random sampling. Data analysis using Odds Ratio (OR) and 95% CI. The results of the analysis showed that OR value = 5.222 (95% CI 1.470 <OR <18.546). Which means the history of participation or had received training on TB DOTS / ISTC program from independent practice doctor have the chance to find suspected TB Children 5.222 times higher than doctors who have never attended or received any training on the TB DOTS/ISTC program. Suggestions are submitted to the department of health or primary health care to provide training of TB DOTS program to the doctors in the area of Surabaya and cooperate with independent practicing physicians especially in recording and reporting in order to improve case finding, the coverage of TB in children treatment is increasing.

Keywords: History of ISTC training, Physician practice, TB children

INTRODUCTION

Background

Tuberculosis is a disease caused by a complex Mycobacterium tuberculosis infection. Tuberculosis (TB) is an important public health problem in the world. In 1992 the World Health Organization (WHO) has launched tuberculosis as Global Emergency(1). The WHO report in 2015 states that by 2014 there are 9.6 million cases of pulmonary TB in the world, 58% of TB cases are in Southeast Asia and western pacific regions and 28% of cases are in Africa. In 2014, 1.5 million people worldwide die of TB. Tuberculosis ranks second after the Human Immunodeficiency Virus (HIV) as an infectious disease that causes the most deaths in the world population. Indonesia is a country in Southeast Asia with the second largest number of TB cases in the world after India. Based on the WHO report in 2015, it is estimated that in 2014 cases of TB in India and Indonesia are 23% and 10% respectively(2).

Indonesia has the opportunity to reduce the number of illness and deaths from TB by half by 2015 when compared to 1990 data. TB prevalence rate in 1990 was 443 per 100,000 population aged 15 years and over by 257. Smear positive new and all cases from year to year in Indonesia. Case Notification Rate (CNR) by 2015 for all cases of 117 per 100,000 population(3).

Achievement of program indicator, East Java Province ranks second in Indonesia in the number of positive TB AFB case detection new case after West Java Province. However, from the discovery of new cases of positive BTA (Case Detection Rate / CDR), East Java Province ranks eighth out of 33 provinces in Indonesia. CDR in 2015 was 56%, with the number of smear positive TB cases as many as 23,456 patients. The specified CDR target is at least 70%. From the cure side of the treated patients, the rate was 84%. These figures are patient-treated data by 2014 who have completed their overall treatment. The targeted cure rate is 85%. While the success rate

(Success Rate) of TB positive cases new cases in East Java in 2015 amounted to 91%, while the target set is >90%. With a success rate of >90% describing more and more people suffering from TB completing treatment to completion[4].

Tuberculosis of children is a disease of TB that occurs in children aged 0-14 years. In developing countries the number of children aged less than 15 years is 40-50% of the total population of the general population and there are about 500,000 children in the world suffer from TB every year[5].

TB is one of the most common causes of morbidity and mortality in children. Children are more at risk for severe TB such as miliary TB and TB meningitis, leading to higher morbidity and mortality in children. Children are especially vulnerable to TB infection especially close contact with TB patients with smear positive. Children with current TB infection indicate the source of future TB disease. The burden of child TB cases in the world is unknown due to the lack of diagnostic tools that are "child friendly" and the inadequacy of child TB recording and reporting systems. It is estimated that many children suffer from TB who do not get proper treatment. More than one million new cases of child TB every year[6].

The proportion of Child TB cases among all cases of TB who were HIV infected in TB programs in Indonesia in 2010 was 9.4%, then to 8.5% in 2011, 8.2% in 2012, 7.9% in 2013, 7.16% by 2014, and 9% in 2015. The proportion varies across provinces, from 1.2% to 17.3% by 2015. This variation in proportion may indicate different endemicistas between provinces, but may also be due to differences in the quality of diagnosis of child TB at the provincial level. Some provinces have a proportion of child TB cases <5% and some other provinces show >15%. From these data indicate that the tendency of overdiagnosis, underdiagnosis and underreported cases of child TB[5].National Strategy 2015-2019 there are 6 main indicators of 10 operational indicators of TB control program, 2 of which are coverage of child TB case finding of 80% and coverage of children <5 years who get INH PP by 50% in 2019[5].

The main obstacle in TB management in children is diagnosis. The difficulty of finding the germs that cause TB in children causes the diagnosis of TB in children requires a combination of clinical features and relevant investigations. Diagnosis in children should not be based solely on chest x-rays. The diagnostic approach of TB in children uses a scoring system compiled by the health ministry along with IDAI (Indonesian Pediatric Association). Child TB scoring system is a weighting of symptoms, clinical signs and investigations that can be done in limited service facilities. Each symptom of the scoring system should be analyzed to determine whether it is included in the scoring system parameter[7].

TB Child TB scoring system has been socialized and recommended as a diagnostic approach. But the problem is, not all health facilities in Indonesia have tuberculin test facilities and examination of thorax images which are two parameters in the scoring system. As a result, in health-care facilities with limited access and facilities many underdiagnosis of TB Children are found. Another problem in child TB control programs is the increasing number of cases of drug-Rresistant TB (TB RO) in adults, which can be a source of transmission for children. The exact number of cases of TB RO in children in Indonesia is currently unknown, but the case is increasing[5].

To avoid overdiagnosis or underdiagnosis of TB in children should analyze the results of the examination carefully. The dosage of anti-tuberculosis drugs in children is relatively higher than adults because of pharmacokinetic and pharmacodynamic differences. With the right diagnosis and treatment with the right dosage it will improve the quality of life of children and child development that is optimal in accordance with its genetic potential[7].

Based on Taufik's research in 2003 that quite a lot of pulmonary tuberculosis patients who went to private practice doctors, quite high drop out rate. There is a willingness of some patients who have been diagnosed as pulmonary TB by a private practice physician to seek treatment with a drug program. It opens opportunities for health offices to include more pulmonary TB patients and incorporate them into eradication programs in collaboration with private practice physicians and no less important approaches to their own patients[8].

Pulmonary TB control program in Indonesia previously only involved public health center only. While patients with pulmonary tuberculosis treatment not only to the health center alone, they also come to the hospital treatment both government and private. In some areas with BP4, patients also went to BP4. Besides that which is also not less important many people with pulmonary tuberculosis treatment to private practice doctors both general practitioners and specialists. Thus, many pulmonary TB patients are not covered by this Eradication Program. Beginning in 2002 the eradication program also involves BP4, government hospitals, as well as private hospitals, among others in Yogyakarta and in some areas as well as private practice physicians participating in this eradication program in collaboration with local health authorities such as in Bali[9].

The existing health care facilities have not been fully involved in TB control. Based on provincial baseline data in 2012, 100% BKPM/ BBKPM/ Lung Hospital and 98% of the number of public health center have implemented DOTS strategy. However, only about 38% of hospitals (Government, State-Owned Enterprise, TNI, Polri and Private) apply service using DOTS strategy. Although it was reported that 98% of staff in public health center and approximately 24% of TB staff in hospitals have been trained, TB programs must develop human resources given the high staff mutation rates. New challenges to be faced by TB programs are the increasing need

for training for new approaches such as drug resistant TB, PAL, PPI TB, and others. Basic training on tuberculosis is still needed given program expansion and new innovations to strengthen program implementation, such as the introduction of new diagnostic tools, electronic TB information systems, AKMS (Advocacy, Communication and Social Mobilization), logistics management[10]. The purpose of this study was to analyze the correlation between the history of ISTC training with the discovery of suspect TB Children in Surabaya City.

METHODS

This research was analytic observational. This study was included in this type of observational research because this study did not provide treatment to the subject of the study. The design of this research using case control study design. Case control study was an epidemiological study design studying the relationship between exposure (factor research) and disease, by comparing case groups and control groups based on their exposure status. A study that emphasizes the measurement or observation of data at one time[11].

Case population in this study were all independent practicing doctors in the Surabaya City area who found suspected TB Children. While the control population in this study were all independent practicing doctors in the area of Surabaya City who did not find suspected TB Children. Independent Practice Doctor is a doctor who opened private practice both general practitioners and specialist doctors who have their own practice place and usually have certain practice hours in Surabaya City area.

The sample cases in this study were independent practicing doctor who found suspected TB Children. The sample of cases in this study was DPM that meets the inclusion criteria. DPM inclusion criteria were: have valid STR (Registration Letter) and SIP (Practice License), DPM with qualification of general practitioner, pediatrician and lung disease specialist, have opened practice in Surabaya at least one year, suspected TB children were found to be pediatric patients from the DPM itself when the practice independently not as an institution doctor (Public health centeer, Hospital, etc).The control samples in this study were independent practicing doctor who did not find suspected TB Children. The sample of cases in this study was DPM that meets the inclusion criteria. DPM inclusion criteria were valid STR (Registration Letter) and SIP (Practice License), DPM with qualification of general practitioner, pediatrician and lung disease specialist, have opened practice in Surabaya at least 1 year.Sample size in this study used ratio 1:4 was in the group of cases amounted to 14 doctors and in the control group amounted to 56 doctors. The sampling technique used was simple random sampling (simple random sampling).

The research location was in working area of Public Health Centers located in North Surabaya and East Surabaya. This research started since June 2017. The reason for choosing the location of this research was based on the consideration that in The main reason for selecting the location of this study was because the public health center has become a referral health facility for tuberculin testing. So this research is done in North Surabaya and East Surabaya which is the bag of TB invention area.

The variables in this research were the length of doctor's practice and the training history as the independent variable. While the dependent variable in this research was the discovery of suspect TB Child. The data collected in this research was secondary data. Secondary data was data obtained indirectly by the researcher. This research was an umbrella research about "Operational Research to Build Network of TB Management through Role of Independent Practice Doctor (DPM) in Early Detection as Improvement Effort of TB Coverage in Surabaya City 2017". The instrument of data collection used in this research was secondary data collection form.

Data analysis techniques using computer applications, namely univariate analysis and bivariate analysis. Univariate analysis was to analyze each research variable descriptively by calculating frequency distribution and percentage of each variable, whereas bivariate analysis was analysis conducted on two variables that was dependent variable and independent variable which allegedly have relationship. Statistical measures used were Odds Ratio (OR) and 95% CI. OR was the size obtained from research by using case control design.

RESULTS

Characteristics of respondents

Characteristics of independent practicing doctor based on the discovery of suspected TB Children in Surabaya City 2017 divided into 2 groups, namely case and control groups.

Table 1. Distribution of independent practice doctor by category of age in Surabaya City 2017

Age category	Case (found)		Control (not found)	
	n	%	n	%
<60 year	13	92.9	50	89.3
≥60 year	1	7.1	6	10.7
Total	14	100	56	100

Based on table 1 above, it can be seen that the age characteristics of independent practicing doctor based on the discovery of suspected tuberculosis TB in Surabaya in 2017 were mostly (92.9%) in case group aged less than 60 years, while most (89.3%) in the control group were also less than 60 years old.

Table 2. Distribution of independent practice doctor by sex in Surabaya City 2017

Sex	Case (found)		Control (not found)	
	n	%	n	%
Male	10	71.4	29	51.8
Female	4	2.6	27	48.2
Total	14	100	56	100

In Table 2 it can be seen that the sex characteristics of independent practicing doctor based on the discovery of suspected tuberculosis TB in Surabaya in 2017 were mostly physicians (71.4%) in the case group of male sex, while mostly in the control group (51.8%) were also male.

Table 3. Distribution of Independent Practice Doctor by Category Practice Location in Surabaya City 2017

Practice Location	Case (found)		Control (not found)	
	n	%	n	%
North Surabaya	8	57.1	37	66.1
East Surabaya	6	42.9	19	33.9
Total	14	100	56	100

In table 3 it can be seen that the practice location of Independent Practice Doctor based on TB Children's finding in Surabaya City in 2017 was mostly (57.1%) in the case group located in North Surabaya, whereas most (66.1%) control groups were also located in North Surabaya.

Table 4. Distribution of independent practice doctor by category of doctor qualification in Surabaya City 2017

DPM Qualification	DPM (found)		DPM (not found)	
	n	%	n	%
General Doctor	14	100	54	96.4
Child Specialist Doctor	0	0	2	3.6
Lung Specialist Doctor	0	0	0	0
Total	14	100	56	100

In table 4 showed that the qualifications of Independent Practice Doctor based on finding TB Children's suspected in Surabaya City in 2017 were in the case group entirely (100%) DPM qualifications were general practitioners, whereas most (96.4%) in the control group also general practitioners.

Analysis of Training History About TB DOTS/ISTC programwith TB Child Suspect Findings

Table 5. Distribution of independent practice doctor based on training history of TB DOTS / ISTC Program in Surabaya City 2017

Training History	DPM (found)		DPM (not found)	
	n	%	n	%
Yes	7	50.0	9	16.1
No	7	50.0	47	83.9
Total	14	100	56	100

In table 5 it can be seen that the training history of TB DOTS / ISTC program from Independent Practice Doctor based on TB suspect finding in Surabaya City in 2017 was mostly (50%) in the case group had attended

or received training on TB DOTS/ISTC program, whereas most (83.9%) in the control group had never attended or received training on the TB DOTS / ISTC program.

Table 6. Analysis of training history of TB DOTS / ISTC program from independent practice doctor based on the discovery of TB children suspect in Surabaya City 2017

Analysis of Training history of TB DOTS / ISTC program	Discovery of TB Children Suspect				OR	95% CI
	DPM (found)		DPM (not found)			
	n	%	n	%		
Yes	7	50.0	9	16.1	5.222	1.470 - 18.546
No	7	50.0	47	83.9		
Total	14	100	56	100		

The results of the analysis in table 6 of OR = 5.222 (95% CI 1.470 <OR <18.546), which means the history of participation or had received training on TB DOTS / ISTC program from Independent Practice Doctor have the chance to find suspected TB Children 5.222 times higher than doctors who have never attended or received any training on the TB DOTS/ ISTC program. The value of OR is statistically significant, so the training history of the TB DOTS / ISTC program is related to the discovery of suspected TB Children.

DISCUSSION

Analysis of Training History About TB DOTS/ISTC program with TB Child Suspect Findings

The analysis of training history of TB DOTS/ISTC program from Independent Practice Doctor based on TB suspect finding in Surabaya City in 2017 is mostly (50%) in case group ever get or attend training on TB DOTS / ISTC program whereas most (83.9%) in the control group had not received training on the TB DOTS / ISTC program.

The results of the analysis showed that OR = 5.222 (95% CI 1.470 <OR <18.546). This means that a history of participating in or training on TB DOTS/ISTC program from Independent Practice Doctor has a probability of finding a baseline TB suspension of 5.222 times higher than doctors who have never attended or received training on the TB DOTS/ISTC program. The value of OR is statistically significant so it can be concluded that the training history of the TB DOTS/ ISTC program is related to the discovery of suspected child TB.

Constitution Number 29 in 2004, medical and dental education and training, to provide competence to physicians or dentists, is carried out in accordance with medical or dental profession education standards. Every practicing physician or dentist is required to attend continuing medical and dental education and training held by professional organizations and other institutions accredited by professional organizations in order to absorb the development of medical science and technology or dentistry. Ongoing medical and dental education and training are conducted in accordance with the standards set by the medical or dental profession organizatio[12].

International Standard for Tuberculosis Care (ISTC) is a standard that complements the national tuberculosis prevention program guideline with WHO recommendations. The standard is international and newly launched in February 2006. The standard is also supported by professional organizations in Indonesia. International Standard for Tuberculosis Care is a standard consisting of 21 standards, 6 standards for diagnosis, 7 standards for treatment, 4 TB treatment standards with HIV infection and other comorbid conditions, and 4 standards for public health and preventive services[13].

The results of this study also support previous research conducted in Blora in 2005, that based on the test x^2 with $p > 0.05$, proved to be a relationship between the training of respondents with the practice of the discovery of suspected pulmonary tuberculosis in Blora regency. Based on these statements, there is a statistically significant relationship, so it can be concluded that the training is related to the discovery of suspected TB[14].

The results of this study also support previous research conducted in Tasikmalaya in 2006, in the study stated that there is a correlation between training with the performance of pulmonary tuberculosis program officers to the coverage of new case finding of BTA (+) in Tasikmalaya City in 2006 with p value 0.024[15].

The results of this study also support previous research conducted in Lampung in 2013, in the study stated that the socialization given in the form of training on TB conducted to the cadres was able to provide leverage to the achievement of suspects. The accuracy of the cadre finding the suspect is an indicator of the cadre's understanding of the program so that the various information gained through the training has an impact on the cadre's knowledge on TB prevention. Based on the information gained from the cadres, there is a considerable amount of training benefits that they gain, including increasing knowledge about TB disease, from previously unknown to know, increasing experience and being able to find TB cases[16].

The results of this study also support previous research in Bojonegoro in 2014. The results of statistical tests in the study showed that p value was 0.019 (p <0.05), so it means there is an influence between training with the suspect tuberculosis of children by public health center officers in Bojonegoro District. Based on the statement can be concluded that the training will affect the performance of officers. The participation of officers in the training can increase the knowledge, skills, and ability of the officers so that it can be a driver to do the job well[17].

The results of this study also support the previous findings in Surabaya in 2013. Based on previous research conducted by Wahyuni, that after being trained, cadre knowledge about TB suspect findings increased. Knowledge is a very important factor in shaping one's actions, behavior based on knowledge will be more lasting than not based on knowledge. Hence good knowledge will affect the cadres in the discovery of suspected tuberculosis[18].

The results of this study in accordance with the opinion Notoatmodjo, which states that training is an effort related to the improvement of skills or skills of a person who has occupied a particular job or task. There are two kinds of training objectives: general objectives are formulations of general skills to be achieved by the training and the specific objectives are details of capabilities formulated in special abilities. Then someone who has attended training in a certain field will have certain knowledge and skills as well[19].

CONCLUSION

Result showed that The history of participating in or training on TB DOTS/ISTC program from independent practice doctor has an opportunity to find Child TB infants at 5.222 times higher than doctors who do not have attended or received training on TB DOTS/ISTC program. It is recommended that training should be conducted, especially for doctors who have not received training related to child TB. To increase the coverage of new case findings it is suggested to the Surabaya City Health Office or local community health clinic to improve services and to provide socialization and training on TB DOTS program to doctors in Surabaya City area. It also cooperates with independent practicing physicians, especially in recording and reporting routinely related to TB suspect findings in order to improve case discovery so that the coverage of child TB treatment is increasing.

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