Difference of Predisposing Factors with Notification Pulmonary TB through Rapid Moleculer Test and Specimen Transportation Method of TB Health Centre Staff

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Abstract

In 2017 North Sumatera province had a TB incident of 73,488 with CDR BTA(+) 65,7%, and CNR of 185/100.000 population higher than Indonesia. CDR BTA(+) Deli Serdang District is 61,6% is below than CDR average of North Sumatera province 65,7%. The Deli Serdang District is one of the fostered area of the international NGO KNCV to accelerate the process of elimination of TB by providing facilities assistance and improvement of human resources. The purpose of this research is to analyze the relationship predisposing factors of pulmonary TB staff in Health Centre to achieve the case notification of pulmonary TB through Rapid Moleculer Test with Xpert MTB/RIF and Specimen Transportation methods. This research using cross sectional design and population is all TB staff (34 staffs) in the Health Centres in Deli Serdang District where is each Health centre has 1 TB staff. Data collection is conducted with interviews using pre-tested questionnaires and get approval from the Ethics committee of the Faculty of Nursing Universitas Sumatera Utara. Analyzed using the Mann-Whitney test and Kruskall Wallis. The result of this research there is no relationship of predisposing factors with the Pulmonary TB case notification using Rapid Moleculer Test and Specimen Transportation method in Deli Serdang District.

Keywords: *Pulmonary TB, Rapid Molecular Test, Specimen Transportation, Predisposing factor*

Background

In 2016 the estimated pulmonary TB incident in Southeast Asia at the highest of 45%. Indonesia has a new case of TB as many as 420,994 cases in 2017 with the Case Notification Rate (CNR) 161/100,000 population, and Case Detection Rate (CDR) 47%[1].

In 2017 North Sumatera province had a TB incident of 73,488 with CDR BTA(+) 65,7%, and CNR of 185/100.000 population higher than Indonesia. CDR BTA(+) Deli Serdang District is 61,6% is below of CDR average North Sumatera province 65,7%[2]. In 2016 the total number of TB cases in the health facilities of Deli Serdang 2,806 cases are divided in several places such as hospitals, Health centre, clinics, and prison. There was a significant difference in the discovery of a new case after an equitable intervention of lung TB in all regencies/ cities. Deli Serdang is one of the demonstration areas of the international Non Government Organization Koninklijke Nederlandse Centrale Vereniging (NGO KNCV) to accelerate the process of elimination of TB by providing facilities and improvement of human resources in North Sumatera province. KNCV in each Regency/city, be equipped a facility for notification of the case with a Rapid Moleculer Test and also given Specimen Transportation.

The strategy of TB case notification in Deli Serdang District followed the WHO recommendation diagnosis of bacteriological examina-tion using microscopic of the Acid Fast Bacillus (AFB).

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Rapid Molecular Test with GeneXpert Mycobacterium Tuberculosis / Rifampisin (Xpert MTB/RIF) is fast and can identify the presence of MTB and resistances against rifampicin simultaneously, so that early initiation of accurate therapy can be administered and can reduce the incidence of TB in general. At this time, the only molecular examination includes all the necessary reaction elements including the entire reagent for the Polymerase Chain Reaction (PCR) process in one cathrid with a Rapid Moleculer Test examination with Xpert MTB/RIF. Xpert examination of MTB/RIF can be qualitatively detect complex MTB DNA from specimens directly through sputum and non-sputum and also can detect mutations in the rpoB gene that causes resistance to rifampicin. TB and resistance to rifampicin can be diagnosed with Xpert MTB/RIF examination quickly and accurately[3]

Information systems to monitor the movement of delivery of package test samples ranging from order process, courier pickup, acceptance confirmation, feedback related test sample conditions to the recapitulation of test sample results which are Development of information Systems Tracking for specimen Transport. Specimen Transportation is used to send and receive test samples, consisting of a web-based application for managing data, Specimen Transportation user accounts and Android-based mobile applications. The Program management staff, laboratory analysts of the health centre and jail clinics, couriers, health office and Sub-Directorate of TB are the primary users of this information system. In addition to having functions as a tracking tool, Specimen Transportation also supports recording recapitulation and delivery reporting of test samples electronic[3]. Saomi's research et al (2013) states there is an educational background relationship (p = 0,027; OR = 8.0) and knowledge (p = 0,023; OR = 9.75) to the invention of the lung TB[4]. Rye, et,al (2007) states there is a relationship in the between suspect of TB (OR = 8.92; 95% CI 2.36-38,65), Communication Information and Education about TB (OR = 8.85; 95% CI = 2.16-36,97), and training DOTS (OR = 5.84; 95% CI = 1.54-26,77) with the invention of a new case in Palu City[5].

Method

This research using Cross sectional design. The purpose of this research is to analyze the relationship predisposing factors of pulmonary TB staff in Health Centre to achieve the case notification of pulmonary TB through Rapid Moleculer Test with Xpert MTB/RIF and Specimen Transportation methods. This research using cross sectional design and population is all TB staff (34 staffs) in the Health Centres in Deli Serdang District where is each Health centre has 1 TB staff. Data collection is conducted with interviews using pre-tested questionnaires and get approval from the Ethics committee of the Faculty of Nursing Universitas Sumatera Utara. The invention of TB case in Health centre is obtained from secondary data that is calculated by the number of cases of lung TB obtained per Health centre divided by the case target per Health centre. Categorized into: above average if ≥ median and below average if < median. The Mann-Whitney test and Kruskall Wallis were used to see the relationship between the predisposition factor of TB staff with the discovery of TB cases.

Results

Relationship Characteristic of TB Program with the Notification of Pulmonary TB Through Rapid Moleculer Test and Specimen Transportation Method in the Health Center of Deli Serdang

Table 1. Relationship Characteristic of TB Program with the Notification of Pulmonary TB Through Rapid Moleculer Test and Specimen Transportation Method in the Health Center of Deli Serdang

Characteristic		Case Finding TB			
	n	%	Mean	SD	p
Age					

Cont... **Table 1. Relationship Characteristic of TB Program with the Notification of Pulmonary TB Through Rapid Moleculer Test and Specimen Transportation Method in the Health Center of Deli Serdang**

<45 years	13	38,2	37,46	5,77	0,649
≥45 years	21	61,8	50,57	3,44	
Gender Male Female	 3 31	 8,8 91,2	 0,001 0,001	 8,8 91,2	0,121
Last Education					
SMA	4	11,8	1	0,001	0,153
D-III	21	61,7	2	0,001	
S1	9	26,5	3	0,001	
Long time duty					
<8 years	11	32,4	2,53	2,42	0,359
≥ 8 years	23	67,6	19,21	7,58	
Training Never	 3	 8,8	 1	 0,001	0,832
Ever	31	91,2	2	0,001	

According to the table above the majority of TB cases were found by TB staff aged ≥ 45 years with a total of 21 people (61.8%). Based on the Mann-Whitney test There is no difference between the age of the staff and the notification of the Pulmonary TB ($p > 0.05$). In accordance with the research Widjanarko (2006) indicates that age and gender have no relationship to the notification of the Pulmonary TB[6].

The majority of women's genital female TB staff as much as 31 people (91.2%) And there is no difference between the gender of the officer with the notification of pulmonary TB ($p > 0.05$).

This is in line with the research of Widayat (2006) which suggests that there is no association between the genders of TB staff with the role of health staff in the notification of the case TB[7]

The last education staff of TB D-III as many as 21 people (61.7%). Based on the Kruskall Wallis test, there was no difference between the last education and the notification of a Pulmonary TB ($p > 0.05$). Maryani Research (2015) received a majority of TB staff have a D-III education (66%)[8].

The length of duty of TB staff for ≥ 8 years with the number of 23 people (67.6%). Based on the Mann-Whitney test, the value of $p > 0.05$ is that there is no

difference between the duration of the notification of the Pulmonary TB. The results of the research of Husein (2012) also showed no relationship between long working with the notification of the Pulmonary TB[9].

The notification of Pulmonary TB in Health centre Deli Serdang more than in the staff who have already conducted training compared to the one that has not been, namely the discovery of 31 people (91.2%). Based on the Mann-Whitney test, the *p*-value > 0.05, there is no difference between the experience of training and the notification of pulmonary TB. Rye (2009) states there is a connection between DOTS training and the notification of Pulmonary TB through training provided on staff[5].

Table 2. Relations of Knowledge, Attitudes, Actions of TB Program with the Notification of Pulmonary TB Through the Method of Rapid Moleculer Test and Specimen Transportation in the Health Center of Deli Serdang District

Variable	Case Finding TB			
	n	Mean	SD	p
Knowledge				
Low	14	15,64	3,20	0,904
High	20	25,70	5,06	
Attitudes				
Not good	16	32,25	3,37	0,105
Good	18	38,67	1,02	
Action				
Not Good	13	4,38	0,87	0,304
Good	21	6,71	0,84	

According to the Mann-Whitney test the *p*-value >0.05 i.e. there is no difference between the knowledge of the officer with the invention of the Pulmonary TB.

In comparison with the results of Maryani Research (2015) in Kartasura Health centre which stated that there is a relationship between the level of knowledge of health staff with the role of the case notification TB (Spearman test: $p < 0.05$)[8]. From the results of the study obtained an overview of staff who have an above average attitude score but have a low case notification results. There is no difference between the attitude of the officer and the notification of the pulmonary TB ($p > 0.05$). This is different from the research results of Widjanarko (2006) which indicates that there is a relationship between the attitude of TB staff with the notification of suspect TB[6]. Ratnasari Research (2015) also shows the same results that there is a connection between the attitude of staff with the achievement of staff against case detection rate in the Pulmonary TB program in Rembang District[10-13].

There is no difference between action staff TB with the notification of pulmonary TB ($p > 0.05$).

Conclusion

There is no difference of predisposing factors with the notification of TB using Rapid Moleculer Test and Specimen Transportation method in Deli Serdang District.

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