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Edwin Sovvan Aritonang et al., Factors Associated with Delayed Diagnosis Among Tuberculosis Patient in Kebumen District

Factors Associated with Delayed Diagnosis Among Tuberculosis Patient in Kebumen District

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ABSTRACT

Introduction: Tuberculosis is a major global health problem. It is estimated that almost 9 million new cases detected in 2011 and 1.4 million died because of TB. Early diagnosis and effective treatment are the key elements of the TB control program. Delayed diagnosis associated with a longer duration of infectiousness, increase the severity of the disease, more severe complication and even death.

Objectives: To determine the factors associated with delayed diagnosis among tuberculosis patients in Kebumen District.

Methods : A cross sectional study among newly diagnosed TB patients in April to June 2013 in Kebumen was conducted. The data was collected using a questionnaire interviewing officers of government health care facilities which have implemented DOTS programs already. Data was analyzed by a logistic regression test with confidence interval (CI) of 95%.

Results: Eighty five pulmonary TB patients were studied consisting of 65 TB smear positive and 20 smear negative/roentgen positive patients. The median duration of delayed patients was 3.9 weeks; delayed health service was 2.6 weeks and delayed diagnosis was 7.6 weeks. Multivariate analysis showed that factors associated with delayed diagnosis were the type of health services which first visited (p value = 0.002 and OR = 6.87), level of knowledge about TB (p value = 0.002 and OR = 6.41), educational level (p value = 0.024 and OR = 5.68) and the number of visits to health service (p value = 0.021 and OR = 3.87).

Conclusion : The median duration of delayed diagnosis was 7.6 weeks. Delayed diagnosis among TB patients in Kebumen Distict was associated with type of health services which is non-DOTS, low level of knowledge about TB, low levels of education and the number of visits to health services e"3 times.

Keywords: delayed diagnosis, TB patients, Kebumen District

INTISARI

Pendahuluan: Tuberkulosis (TB) merupakan masalah kesehatan global yang utama. Diperkirakan 9 juta kasus baru pada tahun 2011 dan 1,4 juta meninggal karena TB. Diagnosis dini dan pengobatan yang efektif merupakan bagian penting dari program pengendalian TB. Keterlambatan diagnosis terkait dengan durasi penularan yang lebih lama, peningkatan keparahan penyakit dan menyebabkan komplikasi yang lebih berat dan bahkan kematian.

Tujuan: Untuk mengetahui faktor-faktor yang berhubungan dengan keterlambatan diagnosis antara pasien tuberkulosis di Kabupaten Kebumen.

Metode: Penelitian ini merupakan penelitian potomng lintang pada pasien TB yang didiagnosis baru pada bulan April sampai Juni 2013 di Kabupaten Kebumen. Data dikumpulkan dengan kuesioner dengan mewawancarai petugas di fasilitas kesehatan pemerintah yang telah melaksanakan program DOTS. Data dianalisis dengan uji regresi logistik dengan interval kepercayaan (IK) 95%.

Hasil: Delapan puluh lima pasien TB paru diteliti yang terdiri dari 65 pasien TB dengan BTA positif dan 20 pasien TB dengan BTA negatif/rontgen positif. Durasi rata-rata keterlambatan pasien adalah 3,9 minggu; keterlambatan pelayanan kesehatan adalah 2,6 minggu; dan keterlambatan diagnosis adalah 7,6 minggu. Analisis multivariabel menunjukkan bahwa faktor yang terkait dengan keterlambatan diagnosis adalah jenis pelayanan kesehatan yang pertama kali dikunjungi (p = 0,002 dan OR = 6,87), tingkat pengetahuan tentang TB (p = 0,002 dan OR = 6,41), tingkat pendidikan (p = 0,024 dan OR = 5,68) dan jumlah kunjungan ke pelayanan kesehatan (p = 0,021 dan OR = 3,87).

Simpulan: Durasi rata-rata keterlambatan diagnosis adalah 7,6 minggu. Keterlambatan diagnosis pasien TB di Kabupaten Kebumen terkait dengan jenis pelayanan kesehatan yang pertama kali dikunjungi adalah non-DOTS, rendahnya tingkat pengetahuan tentang TB, rendahnya tingkat pendidikan dan jumlah kunjungan ke pelayanan kesehatan e" 3 kali.

Kata kunci: keterlambatan diagnosis, pasien TB, Kabupaten Kebumen

INTRODUCTION

Tuberculosis is a major global health problem. It is estimated that almost 9 million of new cases were diagnosed in 2011 and 1.4 million were died because TB. It is the second leading cause of death from an infectious disease worldwide after HIV. In addition, an estimated of 95% of TB motality in the world occur in developing countries[1].

According to WHO (2006), a key element of the TB control program is early diagnosis and effective treatment. Delayed diagnosis can increase its ease transmission in the community, the severity of disease, and risk of death[2]. Greenaway et al. suggested that there is a relationship between delayed diagnosis and treatment with mortality in patients with tuberculosis[3].The other studies suggested that early diagnosis and treatment contribute to decreasing mortality and transmission of TB in the community[2].

In Indonesia, the TB control program faces a major problem because of the high prevalence of TB which is 289 per 100,000 population, the incidence rate of 189 per 100,000 population and the mortality rate due to TB is 27 per 100,000 population by the number of deaths of 61,000 people per year [4].

In Kebumen District, TB remains one of the priority program because of the high prevalence of TB cases which is 136.9 per 100,000 population in 2011 and 126.2 per 100,000 population in 2012, deaths due to TB increased from 18 cases in 2011 to 23 cases in 2012, yet the achievement of new case detection rate (CDR) is 60.4% in 2011 and 59.9% in 2012[5]. This might be caused by a delayed diagnosis and non-DOTS treatment.

MATERIALS AND METHODS

This study used a cross sectional design. The location of the study is Kebumen District which includes 35 units of Community Health Centers (PHC=Puskesmas). The study population was all new pulmonary TB patients who have been diagnosed and are being treated for tuberculosis at the Community Health Centers in Kebumen District with age e" 15 years who meet the inclusion and exclusion criteria. The sample size of this study is 85 individuals. Sampling was performed using a consecutive sampling technique .

The dependent variable in this study is delayed diagnosis, while the independent variables are demographic characteristics (age, gender, educational level, occupation, and socio-economic), access to health services (distance, travel time, and access to health care costs), knowledge about TB, stigma and treatment seeking patterns (action treatment was first performed, the type of health services which first visited and number of visits to health service).

The results were analyzed in univariate, bivariate and multivariate tests. For bivariate and multivariate analysis, a logistic regression with confidence level (á) of 95% was used.

RESULTS AND DISCUSSION

The median duration of delayed diagnosis was 7.6 weeks (range 2.4-31.0 weeks) and proportion of delayed diagnosis of 49.4%. The results of bivariate analysis showed that there are six variables which statistically significant with delayed diagnosis amongst tuberculosis patient in Kebumen District i.e. 1) the level of education (p = 0.008 ; OR = 5.09 and 95 % CI = 1.52-17.00), 2) socioeconomic status (p = 0.016 ; OR = 4.05 and 95% CI = 1.31- 12.59), 3) access to health care (p = 0.035 ; OR = 2.73 and 95 % CI = 1.07-6.93), 4) level of knowledge about TB (p = 0.000 ; OR = 6.49 and 95% CI = 2.52 - 16.73), 5) the type of health services which is first visited (p = 0,000 ; OR = 6.50 and 95% CI = 2.43 -7.38) and 6) the number of visit to health care (p = 0.001 ; OR = 4.62 and 95 % CI = 1.85 -11.52).

Table 1.   Results of multivariate logistic regression analysis between risk factors with diagnosis delay in Kebumen District

No.	Variable	Diagnosis Delay		OR	CI 95%	p value
		$\leq$ 7,6 weeks n (%)	> 7,6 weeks n (%)			
1	Type of health service					
	- Non DOTS	34 (66,7)	17 (33,3)	6,87	2,04-23,15	0,002**
	- DOTS	8 (23,5)	26 (76,5)	1		
2	Level of knowledge					
	- Low	29 (72,5)	11 (27,5)	6,41	1,99-20,60	0,002*
	- High	13 (28,9)	32 (71,1)	1		
3	Education level					
	- Low	38 (57,6)	28 (42,4)	5,68	1,26-25,53	0,024*
	- High	4 (21,1)	15 (78,9)			
4	The number of visits					
	- $\geq$ 3 times	29 (67,4)	14 (32,6)	3,87	1,23-12,21	0,021*
	- < 3 times	13 (31,0)	29 (69,0)			

*Information : * = p value < 0,05   ** = p value< 0,01*

The result of multivariate analysis (Table 1), showed that diagnosis delay was statistically associated with the type of health care which first visited (p = 0.002 and OR = 6.87), level of knowledge about tuberculosis (p = 0.002 and OR = 6.41), educational level (p value = 0.024 and OR = 5.68), and the number of visits to health service (p value= 0.021 and OR=3.87).

The results showed that the median duration of delayed diagnosis in Kebumen District was 7.6 weeks, similar to the study in other studies which are 7 weeks (49 days) and 8 weeks[6, 7]. The duration of delayed diagnosis detected in this study is lower compared with studies in India (8.6 weeks) and Nepal (70.5 days) [8,9]. The duration of diagnosis delay in Kebumen still longer than research in Yogyakarta (5.4 weeks)[2]. This because of Yogyakarta is one of Indonesia's provinces with strong TB control programs and health systems are already well established[2], unlike in Kebumen District where TB control programs and health systems still need to be improved. This is evident from the high number of people with TB , case detection rate and the recruitment rate of tuberculosis suspects who are still below the target as well as the duration of the delayed diagnosis .

The education level is statistically associated with delayed diagnosis. Low level of education more at risk of delayed diagnosis compared to the high level of education. These results are consistent with research in India and Kenya[10,11]. Educational level associated with a person's ability to absorb and receive information. People who have higher education levels are generally absorb and receive information about health issues easily compared with the less educated, thus affecting the decision in utilizing the available health services. Delayed diagnosis is common among people who are illiterate and have low education level (did not finish primary/ junior school). Level of education may determine the knowledge about the importance of early diagnosis and treatment seeking. In this case, people with low education levels tend to know the importance of seeking treatment after falling ill[11].

The level of knowledge about TB was statistically associated with delayed diagnosis. These results are consistent with research in Surakarta[12]. Rosenstock cit. Notoatmodjo argued that knowledge of the disease is a factor that can influence a person's perception of a disease that ultimately can affect a person's behavior to reduce the threat of disease and knowledge is also needed to change the mindset and behavior[13]. According to Anderson cit. Samad, knowledge about illness and disease can be used as a basis in the use of health services, the higher the level of public knowledge about the disease, the higher to use health services[10].

The type of health services which first visited statistically associated with delayed diagnosis and visiting non-DOTS health services more at risk of delayed diagnosis compared DOTS health services. These results are consistent with research conducted by Lönnroth et al. and Needhem et al. which suggests that patients visiting non DOTS-health service (private practice/personal) are more at risk of delayed diagnosis compared with who visited DOTS-health service. Delays in accessing DOTS-health services for TB diagnosis and treatment is a major challenge in Indonesia since it has a very wide geographic area. This causes most of the TB patients receive treatment from health

services outside the national TB program. The coverage DOTS-health services is not adequate and the number of health services (hospitals and private practices) that have not participated in the TB control program also causes TB patients experience delayed diagnosis and early treatment according to standard TB treatment[2]. In Kebumen District, most of health professionals (doctors, nurses, laboratory personnel and TB programmers) in DOTS -health services (health centers/hospitals) have received training on the prevention and reduction of pulmonary TB. In addition, the number of health services and the availability of facilities such as DOTS diagnostic tool (binocular microscope) and supporting equipment diagnostics (reagents) are adequate[14].

The number of visits to health care are statistically associated with delayed diagnosis. Visiting health services e" 3 times is more at risk of delayed diagnosis compared with visited health care <3 times. These results are consistent with research in India[10]. The more a person visiting health care, more likely to experience delayed diagnosis. Many TB patients have to visit several times to health care before being diagnosed. As many as two thirds of patients do visit more than 2 (two) times and nearly a quarter of patients do visit more than 6 (six) times before being diagnosed. This is because TB patients receive several different diagnosis before referred or deciding to visit higher health services[15].

CONCLUSION

The median duration of delayed diagnosis amongst tuberculosis patients in Kebumen District was 7.6 weeks. Factors associated with delayed diagnosis among tuberculosis patient in Kebumen are 1) the type of health services which first visited is Non DOTS, 2) low level of knowledge about TB, 3) low level of education and 4) the number of visits to health service e" 3 times.

RECOMMENDATION

Health Department of Kebumen District need to strengthen, improve and expand TB control programs to private health care (hospital/clinic/private practices) that have not participated in the implementation of the DOTS programs because long duration of delayed diagnosis and mostly occuring non-DOTS treatment. The health center is expected to provide information about TB to the community through health education, mass media and other medias (leaflets /brochures/posters) to increase public knowledge about TB in order to prevent delayed diagnosis. They are also expected to actively seeking information about TB in order to increase their knowledge.

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Scientific Journal

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