

A Mixed Method Study Of Tuberculosis Case Management In Hospitals Of West And Central Java, Indonesia

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Submission date: 28-Sep-2018 05:18PM (UTC+0700)

Submission ID: 1010005233

File name: Lampiran_C1-9_Artikel.pdf (248.38K)

Word count: 4281

Character count: 22675

16
Original Research Article

DOI: <http://dx.doi.org/10.18203/2394-6040.ijcmph20173849>

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A mixed method study of tuberculosis case management in hospitals of West and Central Java, Indonesia

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Received: 13 July 2017

Accepted: 04 August 2017

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ABSTRACT

Background: Indonesia as the second largest contributor of tuberculosis (TB) has adopted the WHO recommendation through DOTS strategy to reduce disease burden in both government and private hospitals. Effectiveness of DOTS implementation in healthcare centers has been reported. However, few studies found that the TB treatment success rate in hospitals was still low. The objectives of the study were to assess case detection and the implementation of DOTS strategy in hospital.

Methods: Study was conducted in 8 hospitals in West Java and Central Java that had implemented DOTS strategy during a two-year period (2007-2008). Mixed methods were used to obtain data on treatment strategy quantitatively and its exploration qualitatively, particularly the practice performed by hospital staff and the patient's experience.

Results: Hospitals did not refer many new TB cases to healthcare centers. All patients, treatment observers and the heads of DOTS team of the private hospitals stated that medication was always available at the hospital. Some public hospitals reported lack of stock of OAT due to large patient numbers. Seven out of the 8 hospitals had allocated treatment observers. Public and private hospitals had achieved treatment success rate of 61 to 74% for smear-positive and negative cases. However, there was a high proportion of cases that defaulted from treatment, the majority of which was among smear-negative cases in public hospital (29%).

Conclusions: Overall success rate of TB treatment in hospital was low. Strengthening of TB case management in hospital through improved training of health-care personnel is needed to reduce the burden of TB in Indonesia.

Keywords: Tuberculosis, DOTS in hospital, Treatment observer

INTRODUCTION

To this date Indonesia is the second largest contributor of tuberculosis (TB) cases in the world after India.¹ In 2014, the incidence of TB in Indonesia was estimated to be 399 per 100 000 population.¹ Indonesia has adopted the World Health Organization (WHO) recommendation for TB case-management through directly observed treatment short course (DOTS strategy) to reduce disease

burden. DOTS focuses on case finding and effective treatment to reduce community transmission and disease incidence.

Since 1997, DOTS was widely applied in healthcare centers in Indonesia followed by lung clinics/hospitals.² In 2005, the National TB program expanded DOTS to both government and private hospitals. The TB case management activities in hospitals include case detection

and treatment or referral to the healthcare centers for the longer term case monitoring. Effectiveness of DOTS implementation in healthcare centers has been reported.² However, a study found the TB treatment success rate in hospitals was as low as 50% in Jakarta.³ A study that was conducted in Jogjakarta province found that the TB cure rate in hospitals is low compared to that in healthcare centers and chest clinics.⁴ To date, few studies have reported on the implementation of the DOTS strategy in hospitals.^{5,6} The application and utility of the DOTS approach in a hospital setting warrants further investigation as previous studies have shown that some TB patients prefer to receive treatment at hospitals.^{7,8}

The objectives of the study were to assess case detection and the implementation of DOTS strategy in hospital. In addition, we explored patient's satisfaction regarding TB case management in hospitals and the role of treatment observer.

METHODS

We conducted the study in 8 hospitals of West Java and Central Java. Mixed methods were used to obtain data on treatment strategy quantitatively and its exploration qualitatively, particularly, practice performed by hospital staff and the patient's experience. Hospitals were selected if they had implemented DOTS strategy during a two-year period (2007-2008). Hospitals were defined to have DOTS strategy if they received standard drugs from the Ministry of Health for treatment of TB patients and when they report TB notifications and treatment outcomes to the local health authorities. A list of hospitals that had implemented DOTS since 2007, according to this definition, was obtained from a partner technical Non-

Governmental Agency. The list consisted of information on public, private and lung hospitals. For each of the two provinces, four hospitals were selected from the list to make up five public hospitals and 3 private hospitals.

The trained interviewers and enumerators used a questionnaire to collect information on case management of TB patients in hospitals that included the year the DOTS strategy was implemented, the number of staff involved, the number of functional units in the hospital, and number of functional units involved DOTS. We also obtained the number of cases registered by the DOTS team who were referred to a health center, and the number of patients receiving standard anti tuberculosis drugs (OAT). The type of treatment observer and treatment outcome of each case were obtained from the TB form. We used hospital records to calculate the number of cases registered by the DOTS team and their outcome treatment.

To better understand TB case management in hospitals we conducted in-depth interviews with the patients, their treatment observer and the head of the DOTS team to explore the role of treatment observers and TB case management in hospital. From each selected hospital we selected 5 informants: the head of DOTS team, 2 patients who completed treatment and 2 patients who discontinued the treatment (Figure 1). Patients were randomly selected from the medical records of TB patients in 2008. A total of 4 heads DOTS team in 4 hospitals, 8 patients who completed and 8 patient who discontinued, and 16 treatment observers were participated. We performed triangulation to validate the data.



Figure 1: Summary of the informants in each province.

Descriptive analysis was performed to describe TB case management in hospital that has implemented the DOTS strategy and success rate by types of hospital.

Content analysis was used to analyze the qualitative data. Questionnaires were transcribed into individual field notes, and information from each note was then coded and categorized by patient satisfaction and treatment observer role. Coded data were summarized in a matrix to evaluate the similarities and differences in stakeholder reports, and these were then interpreted to regarding

patient satisfaction, DOTS strategy implementation and the role of treatment observer.

RESULTS

Case detection and treatment strategies in hospitals with DOTS strategy

Length of experience implementing DOTS strategy varied between participating hospitals: three hospitals had implemented DOTS strategy for >2 years (hospitals 2, 4

and 6), three hospitals (hospitals 1, 3, and 8) for 2 years, and two hospitals (hospital 5 and 7) for 1 year (Table 1).

Table 1: Characteristics and treatment performance of DOTS strategy in study hospitals, 2008.

	Public hospital				Private hospital			
	1	2	3	4	5	6	7	8
Years of DOTS implemented	2007	2004	2007	2005	2008	2005	2008	2007
Number of staff involved in DOTS	15	12	10	25	10	16	30	6
Number of cases registered in DOTS	769	207	149	1012	205	16	68	14
% cases referred to healthcare centers	5%	0	0	15%	4%	6%	65%	7%
% cases receiving OAT	92%	100%	100%	5%*	47%	17%	88%	100%
% cases having a treatment observer	96%	100%	100%	7%	72%	62%	75%	100%
Type of treatment observer:								
- Family	99%	100%	80%	60%	72%	62%	43%	50%
- Health volunteer	1%	0	0	20%	0	0	0	0
- Hospital staff	0	0.5%	0	0	4%	0	7%	50%

* Information on OAT provided by hospital 4 was based on data in 828 TB 01 forms. Of this 5% received standardized treatment that was provided free of charge by the TB program (FDC). The remainder of the cases received prescription drugs for which they had to pay. Information on the prescription or type of medication was not recorded in TB 01.

The number of hospital staff involved in the DOTS program varied between hospitals. The human resources in the DOTS strategy program consisted of a doctor, laboratory technicians, and a nurse with the obligation to serve both at the pulmonology clinic and pediatric clinic, and to also record and report cases and treatment outcome. In public hospitals, general practitioners, pulmonologists and pediatricians participated in the DOTS strategy program, whereas in the private hospitals only general practitioners were involved.

Hospitals did not refer many new TB cases to healthcare centers (Table 1). Two hospitals did not refer any cases at all. Almost all members of the DOTS teams in the selected hospitals had participated in the Hospital DOTS linkage training. Although all hospitals had implemented the DOTS Strategy Program since 2007, the hospitals had not assigned a team member for TB case documentation. This is despite the requirement to report on a tri-monthly basis to District Health Offices.

Most TB cases received OAT in hospital 1, 2, 3, 7, and 8 (Table 1). One hospital recorded OAT on the TB form only for cases that received OAT program, but not for those who received prescription, this led to under reporting. The qualitative study shows a difference in OAT provided by the four hospitals. In hospital 3, OAT were given to all TB cases. There was a high number of cases registered in this hospital, which caused a lack of OAT in the DOTS unit. To solve the problem, some of the cases were given prescription or free prescription for those who hold JAMKESMAS. In hospital 8, ambulatory patients and third class hospitalized patients automatically take part in the DOTS program, where they will be given medication (OAT) free of charge. First and second class hospitalized patients will be given a choice whether they want to take part in the OAT program or use patented drugs. Since there were not that many TB patients in hospital 5, the hospital has never had an OAT drugs shortage. A different pattern is found in hospital 7 because the OAT medication is only given to patients

treated by doctors who are members of the DOTS program team. At hospital 7, patients treated by pulmonologist or internist were given patented TB drugs. This is due to the fact that the internal network in hospital 7 has not yet been implemented.

All patients, treatment observers and the heads of DOTS team of the private hospitals stated that medication was always available at the hospital. But in some public hospitals, heads of DOTS teams reported stock-outs of OAT due to large patient numbers. There were simultaneous stock-outs at District Health Office. To manage the situation, DOTS teams prescribed drugs that could be purchased at the hospital pharmacy. Patients of poor economic status with medical insurance cards called Jamkesmas (Indonesia's Government - Finance Health Coverage Program for the Poor) could obtain the pharmacy drugs at lower cost. The heads of the DOTS team at public hospitals developed the policy that the DOTS program should prioritize the poor.

The role of the treatment observer was well known by hospital DOTS strategy teams. Seven out of the 8 hospitals had allocated treatment observers to the majority of their cases; where 62-100% of cases had observers allocated (Table 1). In Hospital 4, only 5% of cases were allocated a treatment observer.

Family members were the most common type of treatment observers. Most treatment observers for both patients who completed treatment and those who discontinued treatment were women. As with patient informants, the educational background of treatment observers was greater for patients who had completed treatment than those who discontinued treatment. Half of the treatment observers for patients who completed treatment had completed Senior High School whereas only few treatment observers for patients who discontinued their treatment had a Junior High School degree. Most had only finished elementary school or had no school education at all.

Table 2: Treatment outcome of tuberculosis cases by hospital type, 2007-2008.

Treatment outcome	Smear-positive				Smear-negative			
	Public hospital		Private hospital		Public hospital		Private hospital	
	N	%	N	%	N	%	N	%
Cure	858	67	5	17				
Complete	90	7	16	55	1238	61	48	63
Default	201	16	1	3	582	29	13	17
Failure	17	1	3	10	6	0	0	0
Died	10	1	0	0	34	2	0	0
Transferred out	104	8	4	14	178	9	15	20
Total	1280	100	29	100	2039	100	76	100

Treatment outcome of TB cases by type of hospital

In the two-year period, public and private hospitals had achieved treatment success rate of 61 to 74% for smear-positive and negative cases (Table 2). However, there were a high proportion of cases that defaulted on treatment, where the majority was among smear-negative cases in public hospital (29%).

Almost all patients who completed treatment and all treatment observers stated that the hospital service was good. Patients who discontinued treatment and their treatment observers were satisfied with the services provided despite a wait of up to three hours after outpatient registration.

The long distance between residence and hospital was one of the reasons mentioned by patients who discontinued the treatment. The opposite opinion was expressed by most patients who completed treatment, they considered the hospital close from their homes.

Other reason that a patient had discontinued treatment after having received 4 months of TB treatment was the high cost as the patient was not offered to participate in DOTS strategy program and so did not receive free medication. A different experience was mentioned by a patient who completed treatment at the hospital. The clinic doctor was a member of the DOTS team of the hospital and offered the patient DOTS treatment. Other reason to discontinue the treatment was the side effects of medication including itching, redness, or nausea and no accompanying person.

Far more patients discontinued TB treatment at the public hospitals than at the private hospitals (Table 2). Reasons for discontinuing treatment as mentioned by the head of the DOTS team both for public and private hospitals were: (1) patients do not understand about TB and its treatment, because there is lack of explanation when the treatment starts; (2) the patients feel better at the end of the second month; (3) patients left to their hometown and relocated to faraway places. To minimize the treatment cost, a private hospital has a policy on performing laboratory sputum examination at local health center for

underprivileged patients since laboratory sputum examination at that hospital costly.

DISCUSSION

This study shows the level of implementation of DOTS in 8 hospitals of West Java and Central Java, Indonesia. The treatment outcome of TB cases in hospital varied and was not related to the type of hospital or province. Halve of the hospitals did not achieve a success rate of 90%. However, the TB treatment success rate in hospital was slightly higher compared to the previous study that was conducted in Jakarta and Jogjakarta.^{3,4} The number of hospital staff who had worked for DOTS varied across hospitals, and it was not proportional to the size of the hospital. Most hospitals did not refer TB cases to health center, they managed TB patient themselves. Other studies agreed with the finding that hospital managed most of their patients themselves.^{3,9} This study found that all patients satisfied with the care and treatment they received from the hospital. They perceived the quality of service good, including medical examinations were met to their signs or symptoms and diagnosis was confirmed that allowing to a proper treatment. There was no difference in satisfaction to the services between patients who completed and those who discontinued the treatment. Patient's satisfaction of hospital services might be one of the reasons of the TB cases to choose the hospital and to continue the treatment in hospital.

The DOTS team had not done their tasks according to the DOTS Implementation Guidance. The reason for this was that the hospital administration had not given job descriptions to those who were assigned to implement the DOTS program. External networking has only been implemented in one hospital because if a patient drops out of the DOTS program, the hospital will contact the health center near the patient's home in order to locate the patient. Some studies have suggested that consulting the private sector after the commencement of TB-related signs and symptoms may result in diagnostic and treatment delay.^{10,11} The accessibility of network of health facilities that include trained staff and supplies, such as anti-tuberculosis drugs and microscopes is important to achieve TB control program.¹²

This study discovered that some hospitals assigned a treatment observer to all cases and other hospitals assigned a treatment observer to only 7% of TB cases. Family members were mostly assigned as treatment observer. Most treatment observers of patients who completed or discontinued treatment have taken on a comparable role, this included accompanying patients for control visits to the hospital, picking up medicine, and bringing the sputum to the hospital for testing. Other roles of treatment observers were providing health education for family members who have signs of TB and ensuring that they visit a health care facility to check their health. Continuous observation of patient taking medicine was only performed by treatment observers who were living together with the patient. In fact, there were many treatment observers of patients who completed or discontinued the treatment who did not stay in the same house. In addition, not all treatment observers who came to the hospital and were given information about TB treatment by the hospital staff delivered the information to the treatment observers who live together with the patient. Therefore, the treatment observer could not be of help if side-effects of the OAT arose during the treatment initiation. WHO has stated that identification of side effect and ensuring proper dose of OAT is part of the role of treatment observer.¹³ Previous studies in Tanzania and Central Java found that TB patient relied on health workers for TB information.^{9,14} The unique result, found that study in rural Africa district was no statistical difference between community health workers (CHW) and family member for treatment of patients with TB. The choice of treatment observer should be based on access, patient preference and availability of CHW resource.¹⁵

Despite detection of smear positive TB cases by direct microscopy is a key element of the DOTS strategy.¹ This study found that almost all the heads of the DOTS team believed that chest radiology is more sensitive than sputum examination to diagnose pulmonary TB. However practical experience and many studies have shown that no radiographic pattern is diagnostic of TB. Many other diseases of the lung show a similar radiographic appearance and can easily mimic TB. Chest radiography can help to localize abnormalities in the lung, but further examination is required in order to establish the TB etiology of an abnormality and only bacteriology can provide proof.¹⁶

One has to be cautious in terms of interpreting the results as the sample size was not large and does not represent the hospitals that implemented DOTS in West and Central Java. However, secondary data from provincial health offices that consisted of all hospitals in West and Central Java was obtained to support the findings. Another weakness is that the study was trying to capture the implementation of DOTS in hospital. Although the qualitative study has explored the factors more in-depth, missed information was possible as it was not conducted in all hospital studied. The third issue, by design the

study was a snap-shot of TB treatment in hospital that may have been changed.

This study revealed the overall success rate of TB treatment in hospital was low. The implementation of DOTS, e.g., number of personnel involved, OAT distribution, used of PMO, medical recording, varied across hospitals. In addition, although most hospitals had used family member as PMO for the patient, the health education for patients and PMOs was very much lacking. Strengthening TB case management in hospital through improved training of health-care personnel is needed to reduce the burden of TB in Indonesia.¹⁷

6 ACKNOWLEDGEMENTS

The Global Health Bureau of the Office of Health, Infectious Disease, and Nutrition, US Agency for International Development (USAID), financially supports this document through the Tuberculosis Control Assistance Program (TBCTA) under the terms of Agreement No. GHS-A-00-05-00019-00.

We thank Dr. Marieke van der Werf for technical support during this study and Dr. Gina Samaan for her comments on the manuscript.

Funding: The financial on this study supported by the Tuberculosis Control Assistance Program (TBCTA)

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Prihartono N, Hadi EN, Wuryaningsih CE, Saraswati LD, Yovsyah. A mixed method study of tuberculosis case management in hospitals of West and Central Java, Indonesia. *Int J Community Med Public Health* 2017;4:3380-5.

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