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Submission date: 12-May-2023 09:41AM (UTC+0700)

Submission ID: 2090942807

File name: sis_Drugs_and_Sputum_Check-ups_to_Compliance_of_TB_Treatment.pdf (132.2K)

Word count: 3399

Character count: 17491

The Relationship between Assistance in Taking Anti Tuberculosis Drugs and Sputum Check-ups to Compliance of TB Treatment

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Abstract. Drug Swallowing Control is needed to ensure regularity and compliance of TB treatment with ISTC service standards. This is an effort to control co-infection disease (TB-HIV), MDR, and XDR TB, and prevention of treatment drop-outs. The purpose of this study was to determine the relationship between assistance in taking anti TB drugs and sputum check-ups to compliance of TB treatment. This study used a cross-sectional design with 35 samples. Supervisor of Swallowing Drugs (SSD) TB patients in the Pringapus Health Center in January-December 2016 as the sample. The instrument used questionnaires and in-depth interviews. The results of this study concluded that there was a relationship between assistance in taking anti TB drugs ($p=0.002$) and assistance in sputum check-ups ($p=0.005$) on patients to compliance with TB treatment. So, it is important for the relevant parties to re-evaluate the policy in the criteria for selecting SSDs from family members.

Keywords: Drug Taking, Recheck Sputum Assistance, Tuberculosis

1 Introduction

TB is a major global health problem that can cause morbidity and mortality [1]. Transmission of TB disease occurs when inhaling droplet nuclei airborne people who have been infected with TB bacillus at the time of coughing, sneezing and talking [2]. Based on the Global Report Tuberculosis 2017, new TB cases in the world amounted to 6.3 million, equivalent to 61% of TB incidents (10.4 million). TB remains the 10th highest cause of death in the world and TB deaths globally are estimated at 1.3 million patients [3].

TB that is not treated routinely and completely will cause an increase in transmission until MDR (Multi-Drug Resistance) TB. A report from WHO occurred in cases of increasing cases of MDR (Multi-Drug Resistance) TB which initially amounted to 111,000 patients in 2014, increasing in 2015 to 125,000 MDR patients [4]. MDR sufferers will transmit the new MDR case with the sufferer of "latent TB" where the body is infected with TB germs but there are no symptoms or manifestations of TB. Most people with latent TB do not know and do not feel sick so they do not take medication, while M.tb bacteria will remain active and develop [5].

TB is a curable and preventable disease, so one of the WHO programs to combat TB with the Directly Observed Treatment Short course (DOTS) strategy is a strategy implemented by 187 countries in 2005 with 4.9 million TB cases were treated using DOTS that year [6]. One

of the DOTS guides is a guide to short-term anti-tuberculosis drugs with direct supervision. Circumstances that ensure regularity of treatment require the accompaniment of SSD (Superintendent of Swallowing Medicines) to ensure the regularity and compliance of medical treatment with service standards that refer to the International Standard for Tuberculosis Care (ISTC) aimed at controlling new challenges posed by TB diseases such as TB / HIV co-infection , Drug-resistant TB both MDR, XDR, total drug resistance (Total DR) and prevention in the occurrence of sufferers experiencing treatment breakups (Loss to follow-up [7], [8].

Supervisor of Swallowing Drugs (SSD) is a supervisor to swallow drugs that can be played by family, neighbors, cadres or community leaders and health workers. The SSD aims to directly monitor TB patients every day by using short-term medication guidelines that are by the dosage and schedule set by health workers [9]. Besides, SSDs accompany TB patients to take medication supplies and re-examine sputum to health care facilities according to a schedule determined by health workers [10].

Indonesia has a TB incidence rate of 391 per 100,000 population and mortality rate of 42 per 100,000 population whereas according to modeling based on TB prevalence survey data for 2013-2014 the prevalence rate in 2017 is 619 per 100,000 population while in 2016 it was 628 per 100,000 population. Case Detection Rate of TB cases in 2017 was 42.8%, increased compared to 2016 of 35.8% [11].

Based on previous research, the relationship of SSD from the family with medication compliance showed p-value = 0.001 [12]. Other research showed that the relationship between the role of mentoring remedial care to the health center by SSDs from family members had the greatest influence on treatment compliance in TB patients (p-value 0,000) [7], [13].

The highest prevalence of TB patients in Semarang District is based on data, in Pringapus Health Center with 84 cases per 100,000 population and it is known from the medical record data at Pringapus Health Center the number of TB incidents in 2014 with BTA + 15 cases per 100,000 population, in 2015 AFB + 20 cases per 100,000 population and 2016 AFB + 37 cases per 100,000 population [14].

Based on the preliminary survey conducted by researchers at the Pringapus Health Center for TB sufferers, there were those who did not have SSD because the family was busy with their work and considered the patient able to take care of themselves, and based on reports there was 1 case of drop out in Pringapus Health Center [15].

From these conditions, it is known that there is an increase in TB cases every year and there are patients who do not have SSD at the Pringapus Public Health Center. This study aims to determine the relationship between OAT taking assistance and SSD rechecking on regular TB treatment. The existence of this study is useful for increasing public awareness in TB treatment as well as evaluating the procurement of SSD for TB treatment in health services.

2 Method

Observational study with cross-sectional design is a type of research design. The independent variables include assistance in taking anti-TB drugs and assistance in checking sputum while the dependent variable is compliance of TB treatment. As many as 35 people were registered as SSDs at the Pringapus Health Center, Semarang District in January 2016 - December 2016 was the study population. Due to the sampling technique with saturated samples, the number of sample respondents was 35 respondents. To obtain primary data

information from respondents, direct interviews were conducted with the help of a questionnaire. To find out the relationship between independent and bound variables, bivariate analysis was carried out by Chi-Square test in this study.

3 Results and Discussions

Thirty-five SSDs who were taken as research respondents who were recorded as SSDs for TB treatment patients at Pringapus Public Health Center, Semarang District, were scattered in 10 villages.

Tabel 1. Distribution of respondent based on Villages

| Village | n | (%) |
|--------------|-----------|--------------|
| Blotongan | 1 | 2,9 |
| Candirejo | 3 | 8,6 |
| Derekan | 1 | 2,9 |
| Jatirunggo | 8 | 22,9 |
| Klepu | 3 | 8,6 |
| Krajan | 2 | 5,7 |
| Penawangan | 1 | 2,9 |
| Pringsari | 5 | 14,3 |
| Wonorejo | 5 | 14,3 |
| Wonoyoso | 6 | 17,1 |
| Total | 35 | 100,0 |

In table 1. above, it can be seen that the largest distribution resides in Jatirunggo Village as much as 22.9% and the smallest distribution of respondents based on residence in Derekan Village and Penawangan Village 2.9% respectively. The most common sex distribution of SSD is men with the number of respondents 17 (48.4%), only the difference is only 1 number in female sex with the number 18 (51.6%). Can be seen in table 2. This does not rule out the possibility that men also have patience in carrying out their role as SSD.

Education is an important investment because it can affect one's health status [16]. Based on the highest level of distribution education [4](#), the last level of education in junior high school (13.1%), a person's formal education level [affects a person's ability to receive, absorb or adopt information](#) [17].

Table 2. Characteristic of Respondents (n= 35)

| Characteristic | Categories | n | (%) |
|-------------------------|---------------------------|----|------|
| Sex | Men | 17 | 48.4 |
| | Women | 18 | 51.6 |
| Education Level | Not completed in primary | 4 | 11.4 |
| | Elementary School | 8 | 22.9 |
| | Junior High School | 13 | 37.1 |
| | Senior High School | 8 | 22.9 |
| | Diploma | 0 | 0 |
| | University | 2 | 5.7 |
| Jobs | Private Employees | 9 | 25.7 |
| | Farmer | 20 | 57.1 |
| | No Job | 6 | 17.1 |
| Residence status of SSD | Not live in the same home | 4 | 11.4 |
| | Live in the same home | 31 | 88.6 |

The largest distribution of respondents with the type of work of private employees is as many as 9 respondents (25.7%), followed by the type of farm work/labor that is as many as 20 respondents (57.1%), and not working or housewife namely 6 respondents (17.1%). People who work in closed spaces are more susceptible to M.tb and from the results of in-depth interviews indicate that early TB sufferers are contracting while in the workplace in confined spaces (indoors). M.tb bacteria cannot survive in the sun. These bacteria survive in damp places. That's why people who work outdoors will reduce their risk of getting infected with pulmonary TB.

Most of SSD of TB patients are relatives or family members of the patient themselves. So that the distribution of residence status mostly lives in one house, which is 31 (88.6%) respondents. The selection of SSD can affect the performance and role of SSD in assisting. Family members or close relatives are chosen as SSDs, this is because family members meet with patients every day and are very familiar with patients, making it easier to provide supervision and assistance to patients during TB treatment.

From the results of the bivariate analysis, it was found that the role of SSD in mentoring when taking anti-tuberculosis drugs in health facilities had p-value 0.002 (<0.05). It was concluded that the role of SSD in assisting when taking anti-tuberculosis drugs in health facilities was related to TB patients compliance with treatment. Can be seen in table 3.

A total of 26 respondents who were recorded as having carried out their duties as SSDs were assisting TB patients while taking drugs in health facilities. Can be seen in table 3. SSDs who assist when TB patients take drugs in health facilities tend to 15,000 times greater influence on TB adherence to treatment when compared with SSDs who do not assist when TB patients.

However, 10 respondents did not accompany the sufferer when taking medicine in the health facility. The reasons most often expressed were because of work that could not be left behind, so the SSD's assignment was replaced by another family party. Some TB sufferers also take their medication at the health facility, because there is a high motivation for themselves to heal, which is the responsibility of the patient and is supported by the desire of the patient who does the preventive transmission of the disease.

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Based on the results of in-depth interviews on the role of SSDs from family members in mentoring TB patients when taking drugs in health facilities in the Pringapus Health Center area, it was quite good. SSD often reminds and sees TB patients directly when taking medicine, not infrequently SSD also calculates the remaining medicine for TB patients and sufferers until they are waiting for medication, if the patient has not taken the medicine, the SSD will not go to work. This study is in accordance with [5] that TB monitoring was not planned. Members of the SSD family, the sufferers themselves, also stated that they must motivate themselves if they are cured and do not want their illness to spread to other people.

Supporting results from health workers as TB program holders in the Pringapus Public Health Center state that when taking drugs there is always a doctrine, especially when you first encounter two choices that are conveyed to TB patients, namely "wanting to get well or want to get worse", a motivation for patients and SSD is a necessary.

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Table 3. The relationship between assistance in taking anti TB drugs to compliance with TB treatment

| Assistance in taking anti TB drugs in the health center | Compliance of TB treatment | | | | | | P-value | RP (95% CI) |
|---|----------------------------|------|----------|------|-------|------|---------|-----------------------------|
| | Not Obey | | Obedient | | Freq. | | | |
| | n | % | n | % | n | % | | |
| Not doing assistance | 5 | 14,3 | 4 | 11,4 | 9 | 25,7 | 0,002 | 15,000 (2,130 - 105,618) |
| Doing assistance | 2 | 5,7 | 24 | 68,6 | 26 | 74,3 | | |

If indeed the medicine runs out always informs firsthand via SMS to agree with taking the drug supplies. The results of this study are equivalent to [18] where health workers inform in advance via SMS when sufferers want to control or take drugs in health facilities. TB patients and SSDs who get education and counseling from health workers are also following the results of [19].

Based on [9] the progress and results of treatment in adults is carried out by re-examination of sputum microscopically. Microscopic examination of sputum is better than radiological examination in monitoring treatment progress.

TB treatment manual, all TB patients did a repeat check for sputum when they had been on treatment for 2 months. According to [20] positive TB patients re-examined the sputum later in the 5th month. If the results are negative, the treatment is continued until the entire treatment dose is complete and a repeat examination of the sputum is done at the end of the treatment. This is one of the tasks of the SSD which also has the role of accompanying TB patients to take medication supplies and re-examine phlegm to the health facility according to the specified schedule [10].

Table 4. The relationship between assistance in checking sputum to compliance of TB treatment

| Assistance in checking sputum at health center | Compliance of TB Treatment | | | | | | P-value | RP (95% CI) |
|--|----------------------------|------|----------|------|-------|------|---------|----------------------------|
| | Not Obey | | Obedient | | Freq. | | | |
| | n | % | n | % | n | % | | |
| Not doing assistance | 5 | 14.3 | 5 | 14.3 | 10 | 28.6 | 0,007 | 11.500 (1.714 -77.1178) |
| Doing assistance | 2 | 5.7 | 23 | 65.7 | 25 | 71.4 | | |

The results of the research on the role of SSD from family members in mentoring rechecked phlegm of TB patients in health facilities was 25 respondents (71.4%) and obtained p-value 0.005 <0.05. This indicates that there is a meaningful relationship between the role variables of the mentoring SSD, rechecking the phlegm of TB patients with adherence to treatment for TB patients. Further results with an assessment of RP (Ratio Prevalence) of 11.500 mean that the results of this study prove that SSDs who assist when patients check phlegm to health facilities tend to tend to 11,500 times greater influence on adherence to treatment for TB patients. The measurement results of this RP strengthen [7] research where SSD assistance when patients check phlegm to health facilities has OR 16.017 which means SSDs who assist when patients check phlegm to health facilities tend to have 16.017 times greater influence on adherence to TB treatment.

Based on the results of in-depth interviews on the role of SSDs from family members in mentoring TB patients when checking phlegm to health facilities in the Pringapus Health Center area, it was quite good. The SSD statement was done by doing phlegm checks in the laboratory section and carried out by rontgen at Balkesmas Ambarawa area. This is due to the referral of the Pringapus Health Center and referrals from the local midwife. Some TB sufferers were deliberately referred to because of the renovation of the Pringapus Health Center after the renovation was finished checking the sputum again at the Pringapus Health Center because of the costs incurred by TB patients.

This is in accordance with the national TB strategy, which is to achieve a high cure rate, treatment of TB patients requires the use of TB drugs rationally by health workers and adequate support from various parties for TB and SSD patients, one of which is minimizing opportunity costs and making it easier for patients and SSD for access to available health services [9].

In-depth interviews conducted with the SSD, namely the SSD said, check again the sputum at Balkesmas Ambarawa area. It is also equipped with supporters from the SSD family who are also TB sufferers that the SSD is carrying out their duties properly, delivering TB patients with sputum examinations, rechecking phlegm until it is declared sputum from the Mt. Supporting results from health workers for the role of SSD in mentoring TB patients when checking phlegm to health facilities in the Pringapus Public Health Center area can't be tightened, because if the SSD is too strict it should take, fear of lazy TB sufferers in treatment. Health workers stated that the SSD had a busy life, had dependents on family matters, and made a living. Finally, those who deliver also take turns, who can be incidental.

4 Conclusion

From these results, this study can conclude that there is a relationship between the role of SSD from family members in assistance in taking anti-TB drugs and assistance in checking sputum to the compliance of TB patients following TB treatment routinely. It is suggested that this result will be used as an evaluation of health services to pay more attention to the procurement of SSD for each health facility to increase patient awareness and compliance in following TB treatment routinely. Besides, health workers at the public health center are expected to be able to maintain TB counseling for TB patients and SSD, which includes providing information on transmission, prevention, and treatment. Social persuasion provided by health workers in the form of counseling can improve sufferers' self-efficacy and

SSD in terms of understanding and knowledge by using the language understood by patients and SSDs.

Acknowledgment. The gratitude is delivered to Pringapus Health Center ³ that has given the permission and assistance to this research, also facilitated data collection. The gratitude is also delivered to all respondents of this study that have permitted to be interviewed.

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