FACTORS ASSOCIATED WITH DELAYS OF TREATMENT AMONG AIDS PATIENTS WITH NEW SMEAR- POSITIVE PULMONARY TUBERCULOSIS IN NAKHON PHANOM PROVINCE

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Abstract- AIDS with tuberculosis-infected patients remain the major problem in public health because the delays of treatment can affect the severity and the transmission of disease. This research aimed to determine the prevalence of treatment delays and the factors associated with delays of treatment among AIDS Patients with new smear-positive pulmonary tuberculosis. A cross-sectional study was conducted among AIDS patients with new smear-positive pulmonary tuberculosis registered in 11 tuberculosis clinics in Nakhon Phanom province hospital. The study was conducted between January 2013 and February 2014. Data were collected by face-to-face interviews with structured questionnaires and from copies of the patients' medical records. The simple logistic regression was used, and a multiple logistic regression analysis was performed to compute adjusted odds ratios with 95% CI. In a total of 319 new smear-positive pulmonary tuberculosis patients, 31.3% (95%CI = 1.26-1.37) experienced patient were delays longer than 30 days. The factors significantly associated with patient delay were female gender (ORadj = 2.64, 95%CI = 1.33-5.16), age less than 50 years old (ORadj = 2.24, 95%CI = 1.18-4.22), a smoking history (ORadj= 3.18, 95%CI = 1.66-6.15), never having received information from village health volunteers and community leaders (ORadj= 2.66, 95%CI= 1.35-4.82), a monthly income (ORadj= 2.46, 95%CI= 1.32-4.65), number of people in households (ORadj= 2.47, 95%CI= 1.45-4.27), and unsuspected TB infection (ORadj= 1.89, 95%CI= 1.27-3.89). Factors significantly associated with health system delays were more than three sputum examinations (ORadj= 10.29, 95%CI= 3.27-34.14), the initial diagnosis of some other complication disease (ORadj= 9.45, 95%CI= 2.56-33.34), and no chest x-ray (ORadj= 5.93, 95%CI= 1.82-19.29). Therefore, health services for AIDS patients with tuberculosis need to be more proactive in terms of health education. Also, there needs to be more collaboration between health volunteers and community leaders in drawing attention to these issues.

Keyword- AIDS, AIDS Patients With Tuberculosis, Delays Of Treatment.

I. INTRODUCTION

Tuberculosis is a respiratory tract chronic disease which is significant from the past until nowadays. Tuberculosis has been being focused from the World Health Organisation because of the high infection rates and the increase in the resistance of disease. After the outbreak of HIV/AIDS, tuberculosis become crucial issue that has to be considered. It is estimated that in one year, the new cases are found about 8 million people, and about 2 million people will be died from this disease. The World Health Organization has estimated the incidence rate in Thailand that is between 137 to 142 per hundred thousand persons. The new patients were found 92,319 persons (137 per hundred thousand persons), and 44,475 patients were found in the infectious period (positive smear) (66 per hundred thousand persons). The estimation of 12,089 cases (19 per hundred thousand persons) died each year. The prevalence of drug-resistant in TB cases globally in 2010 was 650,000 cases or 30.0 percent of the tuberculosis infected population. In Asia, TB patients' percentage hold the first rank of the world TB patients representing 55.0 percent of all patients. The top three countries that have the high rate of TB patients in South Asia are found in India, China, and Indonesian. Thailand is rated 18 of the 22 countries that are facing to this situation which also has many TB patients who are not diagnosed and treated properly.[1] In the HIV/AIDS patients with pulmonary tuberculosis recently are the major problem due to the delays in treatment that can affect the severity and spread of the disease.

The national TB strategic plan to achieve the Millennium Development Goals in 2015 considers the major two indicators related to TB, which are decreasing the lower stages of the pandemic and the death rate from tuberculosis and the proportion of detected tuberculosis infection (case detection) with the treated rates. This leads to the six strategies for undertaking the national TB issues, which are promoting the implementation of the strategy for TB treatment with short-term standard drugs under the direct observation quality (DOTS: Directly observed treatment, short-course strategy), expediting the integration of TB and HIV, drug-resistant tuberculosis, and TB in prisons, children and other vulnerable groups, strengthening health systems for the control of tuberculosis, developing the participation of agencies or organizations in both public and private sector, and innovating the public communication and promoting TB research.[2]

The report on the implementation of the AIDS and tuberculosis control of Nakhon Phanom provincial health office in 2010 to 2013 has shown that in 2013 there were 823 AIDS cases (incidence rate of 94.69 per hundred thousands persons). AIDS patients with TB were found 372 patients, and 845 patients were infected with TB (incidence rate of 97.15 per hundred

thousand persons). The exploration for new TB patients infected sputum of the province in the fiscal year of 2010 to 2013 was found the registered curability nearby the targets (63 per hundred thousand persons from the expectation of 70 percent), but also found that in some districts including Banpang, Tha-Uten, Renunakhon, and Thatpanom, the rate has not reached the goal of the National TB Control Program. Moreover, from the exploring it also was found that the new cases of tuberculosis sputum died from tuberculosis in 2009 to 2011, and the rates were found 5.6, 6.3 and 6.2 percent respectively.[3]

In a study regarding the delay in TB treatment, many studies have found the length of the delay and the time lag of patients with different health systems including the delay in the treatment of tuberculosis in Thailand-Cambodia area; case studies in Surin, Sisaket, Buriram, and Songkhla province found that the median in the delay of patients was 51, 232.1, 62.5, and 31 days. The delay from the health system was found 4, 81.5, 16.8, and 20 days respectively. However, there were a few studies that studied about the delays in the treatment of AIDS patients with new smear- positive pulmonary Tuberculosis.[4-7]

Thus, it is interesting to examine the factors associated with the delays in the treatment of AIDS Patients with new smear-positive pulmonary Tuberculosis in order to the fulfillment of plans for TB control in the operation to expedite the exploring for the new cases of tuberculosis infected patients to be more than 70.0 percent of patients in the community. This can reduce morbidity and mortality rates and the spread of disease. Eventually, TB will be not an issue of public health in the future.

II. RESEARCH OBJECTIVE

2.1 To determine the prevalence and the factors associated with the delays in the treatment of AIDS patients with new smear-positive pulmonary Tuberculosis in Nakhon Phanom province.

2.2 To manage the factors that caused a delay in the treatment of AIDS patients with new smear-positive pulmonary Tuberculosis in Nakhon Phanom province.

III. RESEARCH METHODOLOGY

This study was a study of the AIDS patients with new smear-positive pulmonary Tuberculosis newly registered to the TB clinic in 10 community hospitals and one general hospital of Nakhon Phanom province that the physician has diagnosed as AIDS patients with pulmonary tuberculosis smear-positive between January 1, 2013 and February 28, 2014.

Data were collected using a structured questionnaire and a copy of the medical records and data were analyzed by using descriptive statistics including percentage, mean, median, standard deviation, 1st quartile, and 3rd quartile.

3.1 Sample size

The sample size was calculated from the sample size for multiple logistic regression analysis with following formula.[8]

$$n_p = \frac{n_1}{\left(1-\rho^2_{1.23...p}\right)}$$

The selection of multiple correlations coefficient was 0.5, so it was a total sample size of 319 samples with the inclusion criteria as following.

1) Patients who were infected pulmonary tuberculosis smear-positive that have been diagnosed by the physician.
2) Patient who have been living in the province for more than six months.
3) The patients have been registered according to the report of TB03 at the TB clinic in the General Hospital and community hospital of the province.
4) The patients agree to participate voluntarily.

3.2 Measurement Tools

The instruments used in this study were the interview using a questionnaire and a copy of the medical records from the review of literature research.[9]

Section 1: The information of AIDS patients with smear-positive pulmonary Tuberculosis.

Part 1: Delay duration of the patient, Delay duration of the health care system and the over all delay duration of AIDS patients with smear- positive pulmonary tuberculosis.

Part 2: The personal information of AIDS patients with smear –positive pulmonary tuberculosis.

Part 3: Health Behaviors information.

Part 4: Treatment expedition factors information.

Part 5: Referral system information.

Section 2: The copy data from medical records.

Part 1: Diagnostic data.

The validity of the content and the language was evaluated by three TB professionals or qualified expertise. The reliability was tested for the factors that determine the quality of each item including the difficulty index, which had the difficulty values between 0.2 and 0.8, the classification power (r), which had the authority to classify from 0.2 and more, the consistency of the questionnaire by Kuder-Richardson, which was trialed with AIDS patients with smear-positive pulmonary tuberculosis in neighboring provinces before using a questionnaire to collect information on real samples.

3.3 Data analysis

Using descriptive statistics including percentage, mean, standard deviation, median, 1st quartile, and 3rd quartile analyzed data. The relationship of one variable was analyzed by using simple logistic

regression analysis of the relationship. Multiple logistic regressions were used for multiple variable included the adjusted odds ratio (OR_{adj}) with the 95% confident interval (95%CI).

IV. RESULTS

From the study it was found that the total of AIDS patients with new smear-positive pulmonary tuberculosis have been registered 319 cases, which were male 209 cases (65.5 percent) and female 110 cases (34.5 percent).

4.1 The prevalence of delays caused by the patient, health System and overall

The prevalence of delays in treating AIDS patients with new smear-positive pulmonary tuberculosis found in Nakhon Phanom province was more than 30 days or 31.1 percent (95% CI = 1.26-1.37) with the median of 30 (1st quartile = 14, 3rd quartile = 60). The prevalence of the delay in treatment caused by the public health care system found that most of the time was more than 7 days or 11.7 percent (95% CI = 1.08-1.15) (1st quartile = 0, 3rd quartile = 4). The prevalence of overall delays was found more than 60 days or 26.5 percent (95% CI = 1.20-1.30) (quartile 1 = 17, 3rd quartile = 61).

4.2 The delay and the non-delay in the treatment of AIDS patients with smear-positive pulmonary tuberculosis caused by the individual, health behaviors and treatment expedition issue.

4.2.1 The delays and non-delays from the general characteristic of individual.

The study showed that most females delayed from receiving treatment represented 34.5 percent. Most of them aged 30-39 years old with a delay of 44.2 percent (mean = 54.07, SD = 15.28). For the educational level, it was found that those who do not attend school mostly delayed of the treatment shown 36.4 percent of patients. The patients who married/ widowed/divorced/separated were found 45.2 percent delaying. An employee was found to be the occupation that had the highest rate of the delay, which was shown 29.8 percent. The patients who had a median income per month less than or equal to 1,000 baht, the rate of delay was shown 38.1 percent (median = 2000, 1st quartile = 700 and 3rd quartile = 4000). The patients who had a median family monthly income from 2001 to 3,000 baht were shown 44.4 percent that delay from the treatment (median = 5000, 1st quartile = 2000 and 3rd quartile = 7,000). For the chronic disease it was found that patients with tuberculosis disease had 32.4 percent delay. TB patients with chronic obstructive pulmonary disease were found to be the most of delaying (60.0 percent). TB patients who has been investigating with HIV and do not know the blood testing result were delayed 31.5 and 44.4 percent as shown in Table 1.

Table 1 : Percentage of AIDS patients with new smear-positive pulmonary tuberculosis receiving delayed and non-delayed treatment characterized by the individual characteristics.

Characteristics	AIDS patients with new smear – positive pulmonary tuberculosis				
	Delay (n=100)		Non-delay (n=219)		Total (n=319)
	No.	Percent	No.	Percent	No.
Gender					
Male	62	29.7	147	70.3	209
Female	38	34.5	72	65.5	110
Age (year old)					
≤19	1	25.0	3	75.0	4
20-29	2	16.7	10	83.3	12
30-39	19	44.2	24	55.8	43
40-49	18	34.0	35	66.0	53
50-59	22	25.6	64	74.4	86
≥60	38	31.4	83	68.6	121
Mean (SD)				54.07 (15.28)	
Median (Quartile 1st, Quartile)				54 (42, 66)	

4.3 The univariate analysis of delays in the treatment in AIDS patients with new smear-positive pulmonary tuberculosis caused by individuals and the public health care system by Chi-square.

This study aimed to identify the factors that were associated with delays in the treatment of patients with new smear-positive pulmonary tuberculosis in Nakhon Phanom by analyzing the relationship between the independent variables including the individual characteristics, health behavior, and treatment expedition factors and the dependent variables including the delay from patient variables: symptoms and diagnosis activities, referral system with delay variables from the health care system. The results were shown as following.

4.3.1 The delay caused by AIDS patients with new smear-positive pulmonary tuberculosis identified by the characteristics of the patients.

Factors associated with a delay in the treatment of patients were statistical significance ($p<0.05$) according to the person including the monthly income of the family and number of family members. The patients who had a median income of families less than 5,000 baht per month delayed in the treatment more than patients with average monthly family income more than 5,000 baht 1.88 times (OR = 1.88 and 95% CI. = 1.27- 2.95). The patients that had the number of family members more than 3 people delayed 1.88 times more than the patients that had the number of family members less than 3 (OR = 1.88 and 95% CI = 1.08-2.94).

Factors associated with a delay in the treatment of patients based on the individual characteristics such as sex, age, education, occupation, marital status, monthly income while ill, HIV infection, levels of knowledge, history of tuberculosis in the family,

information perceiving from radio, television, and public health officials, tuberculosis posters/ leaflets, and the guideline from relatives/ family members, health workers and volunteers and community were not statistically significant (p> 0.05) as shown in Table 2.

Table 2 : The analysis of the relationship between variables of the delays in the treating AIDS patients with new smear-positive pulmonary tuberculosis caused by the characteristics of the patients

Health Behaviors	Patients		OR	95%CI	p-value
	Delay (n=100)	Non- delay (n=219)			
Gender					
Male	38	72	2.11	0.74-2.11	0.372
Female	62	147	1.00		
Age (year old)					
<50	40	72	1.36	0.81-2.29	0.216
≥50	60	147	1.00		
Family monthly income (Bath)					
≤5,000	52	67	1.88	1.27-2.95	0.009*
>5,000	48	152	1.00		
Family member (person)					
>3	49	77	1.88	1.08-2.94	0.018*
≤3	51	142	1.00		

4.3.2 The delay in treating AIDS patients with new smear-positive pulmonary tuberculosis resulting from the public health care system identified by the symptoms and the diagnosis.

Factors associated with a delay in treatment caused by the public health care system and the symptoms and the diagnosis, the diagnosis of the first medical examination, sputum number of sputum examination, and chest x-ray had shown the statistical significance (p<0.05). The study found that patients with new smear-positive pulmonary tuberculosis who were firstly diagnosed from the physician to be other disease rather than tuberculosis found the delay was 14.28 times more than the patient at first diagnosed as TB (OR = 14.28 and 95% CI = 4.25-47.84). Patients who were not receive a sputum test had the delay in the treatment found 2.71 times more than patients who were received the sputum test (OR = 2.71, 95% CI = 1.30-5.66). For the patients received sputum test more than 3 times, the delay was 11.87 times more than the patients received sputum test less than 3 times (OR = 11.87, 95% CI = 4.44-37.96), and patients who were not received a chest x-ray were delayed 8.07 times more than patients received a chest x-ray (OR = 8.07, 95% CI = 2.71-23.98).

Factors associated with a delay in treatment caused by the public health care system was shown the statistical significance (p>0.05) on the symptoms and diagnostic features including cough, cough duration of cough with phlegm, chest pain, cough with blood, fever in the afternoon/ exhaustion, and weight reduction more than 10 percent. The first sputum test and the disorder of the lungs results were shown in Table 3.

Table 3 : The analysis of the relationship between variables of the delays in treating AIDS patients with new smear-positive pulmonary tuberculosis resulting from the public health care system by symptoms and the diagnosis.

Symptoms and diagnosis	The public health care system				
	Delay (n=41)	Non-delay (n=278)	OR	95%CI	p-value
The first diagnosis					
Other disease	38	128	14.28	4.25-47.84	<0.001*
TB	3	150	1.00		
Spatum tesing					
No	19	68	2.71	1.30-5.66	0.008*
Yes	23	210	1.00		
Spatum tesing result					
Negative	18	70	2.30	1.09-4.82	0.028*
positive	24	108	1.00		
The number of spatum tesing					
>3	12	16	1.87	4.44-37.96	<0.001*
≤ 3	30	262	1.00		
Chest x-ray					
No	11	18	8.17	2.81-22.98	<0.001*
Yes	31	260	1.00		

*p-value <0.05

4.4 Multivariable analysis of the delay caused by case and the delay from the health service by multiple logistic regressions.

4.4.1 Multivariate analysis of the delays in treating AIDS patients with new smear- positive pulmonary tuberculosis caused by the characteristics of the individual, health behavior, and the expedition to get the treatment.

Multiple logistic regressions were used by backward elimination of selected variables into the starting model based on the analysis of univariate analysis that gives the p-value <0.25, so variables imported into models were 15 variables including gender, age, marital status, monthly income of the patient, monthly income of the family, number of family members, history of tuberculosis in the family, COPD, the persistent asthma, information obtaining from the community, the advice to get examined by health officials, duration of smoking, the number of cigarettes per day, the suspect of TB infection, and the distance from home to the hospital. The results were analyzed as follows:

4.4.1.1 Gender: Women were found to be delaying to the treatment 2.60 times more than men (OR_{adj} = 2.64, 95% CI = 1.33-5.16).

4.1.2 Age: The patients whose aged less than 50 years delayed in treatment 2.20 times more than patients aged ≥50 years (OR_{adj} = 2.24, 95% CI = 1.18-4.22).

4.4.1.3 Monthly income of the patient: It was found that patients with a monthly income of less than or

equal to 2,000 baht delayed in treatment 2.46 times more than patients who had a monthly income of more than 2,000 baht (OR_{adj} = 2.46, 95% CI = 1.32-4.65).

4.4.1.4 Number of family members: It was found that patients with family size more than three people were delaying to the treatment 2.37 times more than TB patients who have a number of family members less than or equal to 3 people (OR_{adj} = 2.47, 95% CI = 1.45-4.27).

4.4.1.5 Information obtaining: The patient who was infected with tuberculosis sputum that had not received new information from the community found to delay in the treatment 2.66 times more than patients who had received information from community (OR_{adj} = 2.56, 95% CI = 1.35-4.82).

4.4.1.6 Smoking period: It was found that patients who smoke for a period of less than or equal to 20 years delayed in treatment 3.18 times more than patients who smoke more than 20 years (OR_{adj} = 3.08, 95% CI = 1.66-6.15).

4.4.1.7 Number of cigarettes per day: For patients who smoke more than 15 cigarettes per day had a delay in treatment 2.45 times more than patients who smoke less than or equal to 15 cigarettes (OR_{adj} = 2.55, 95% CI =. 1:15-5:27)

4.4.1.8 TB suspects of themselves: It was found that patients who did not engage themselves suspected to TB delayed in treatment 1.99 times more than patients with TB suspected (OR_{adj} = 1.89, 95% CI = 1.27-3.89).

Other factors including marital status, monthly income of the family, history of tuberculosis in the family, the underlying of COPD, the asthma persistent, the advice to get examined by health officials, and the distance from home to the hospital had no relation to the delay in the treatment of AIDS patients with new smear-positive pulmonary tuberculosis caused by new factors on the patient. Details were shown in Table 4.

Table 4 : Multivariate analysis of relationship between factors associated with the delays in treating AIDS patients with new smear-positive pulmonary tuberculosis caused by the characteristics of individuals.

Risk Factors	Delay (n=91)	Adjusted OR	95%CI Adjusted of OR	p-value
Gender				
Male	38	2.64	1.33-5.16	0.006
Female	62	1.00		
Age (year old)				
<50	40	2.24	1.18-4.22	0.017
≥50	60	1.00		
Family monthly income (Bath)				
≥ 5,000	52	2.46	1.32-4.65	0.006
>5,000	48	1.00		
Family member (person)				
>3	49	2.47	1.45-4.27	0.003
≤3	51	1.00		
Information obtaining				
No	69	2.66	1.35-4.82	0.003
Yes	31	1.00		

p-value < 0.05, Goodness of fit = 0.739, gender and age were the control variables

4.4.2 Multivariate analysis of relationship in delaying in the treatment of AIDS patients with new smear-positive pulmonary tuberculosis caused by healthcare system identified by symptoms and diagnosis activities, and referral system factors.

Multiple logistic regressions were used by backward elimination of selected variables into the starting model based on the analysis of univariate analysis that gives the p-value <0.25, so variables imported into models were 10 variables including phlegm cough duration, cough with blood, fever in the afternoon / exhaustion, weight loss more than 10 percent, the first medical diagnosis of sputum smear examination for the first time, the number of sputum testing, chest x-ray, and the nature of the disorder of the lungs. The results were shown as follows:

4.4.2.1 Chest x-ray: In patients with new smear-positive pulmonary tuberculosis that did not do the chest x-ray for the first doctor visiting showed the delay of the treatment caused by the state's health care system 5.73 times more than patients who received chest x-ray (OR_{adj} = 5.93, 95% CI = 1.82-19.29).

4.4.2.2 The first doctor's diagnosis: The patients with infected sputum that newly diagnosed as other diseases showed a delay in treatment caused by the health service 9.58 times more than patients diagnosed with tuberculosis in the first time (OR_{adj} = 9.45, 95% CI = 2.56-34.14).

4.4.2.3 The number of sputum testing: In patients with new smear – positive pulmonary tuberculosis that received the sputum testing more than 3 times had the delay in treatment caused by the state's health care system. 10.29 times more than patients received sputum less than or equal 3 times (OR_{adj} = 10.49, 95% CI = 3.27-34.14).

Other factors including cough with phlegm duration, cough with blood, fever in the afternoon / exhaustion, weight loss more than 10 percent, sputum testing, and the nature of lungs disorder had no relationship in the delay of the treatment in patients with new smear-positive pulmonary tuberculosis caused by public health care system. The results were shown in Table 5.

Table 5 : Multivariate analysis of relationship in delaying in the treatment of AIDS patients with new smear-positive pulmonary tuberculosis in Nakorn Phanom province caused by healthcare system.

Risk Factors	Delay (n=34)	Adjusted OR	95%CI Adjusted of OR	p-value
The firth Chest x-ray				
No	11	5.93	1.82-19.29	0.003
Yes	31	1.00		
The first doctor's diagnosis				
Other disease	38	9.45	2.56-34.14	<0.001
TB	3	1.00		
The number of spatum tesing				
>3	12	10.29	3.27-34.14	<0.001
≤ 3	30	1.00		

p-value < 0.05, Goodness of fit = 0.329, Chest x-ray was control variable

V. DISCUSSION

The median of the delay from patients in public health care service system and the overall delays

This study found that the median delay of AIDS patients with new smear-positive pulmonary tuberculosis was 30 days. This was consistent with the study in Malaysia,[10-11] but was not consistent with other studies in Thailand, which was found the shorter time. In Buriram and Surin case study, and Si Sa Ket, and the Thailand-Cambodia borders area, the median delay from patients was found 232.1 days and 90 days, respectively.[8,12]

From multivariate analysis, it was found that gender was associated with a delay in the treatment of AIDS patients with new smear-positive pulmonary tuberculosis with statistical significance ($p<0.05$). In women the delay were found 2.64 times more than men (OR_{adj} = 2.64, 95% CI = 1.33-5.16). This was consistent with the Brazilian study (OR = 1.18, 95% CI = 0.91-1.53)[13] and the study of Vietnam (OR_{adj} = 1.13, 95%. CI = 1.00-1.70), but differed from Serawak, Malaysia.[10-14] The study revealed that women with a delay mainly were elderly and low-income, and they needed their relatives or family members for taking them to the hospital and usually using the bus when they found that they were sick. This can cause the delays in receiving the treatment.

From the Multivariate analysis showed that age was associated with a delay in the treatment of AIDS patients with new smear-positive pulmonary tuberculosis with statistical significance ($P<0.05$). In patients whose aged less than 50 years old were found that they delayed in the treatment 2.24 times more than the patients aged 50 years old (OR adj = 2.24, 95% CI = 1.18-4.22). This was different from the study in Hong Kong, which found that patients aged more than or equal to 60 years old were delaying in the treatment more than patients aged less than 60 years (OR = 2.6, 95% CI = 1.30-5.10).[15] The study in Ethiopia found that patients aged more than 45 years had the delay more than patients aged less than or equal 45 years (OR = 2.62, 95% CI = 1.13-6.02).[16] The patients that were healthy and younger and had no other medical conditions often waited for symptoms before they came to treat at a hospital, and many of them were found that they were a working group. This might be the cause of economy issues. Most people in Nakhorn Panom province were farmers. Most of them were found that they were poor. Elderly patients had no career and make no income. The social security for seniors was only 500-900 baht per month. Although when they came to the hospital, they did not pay for medical expenses, they needed to pay for transportations, meals, and etc. Consequently, they always waited for the symptoms and came to hospital. The social conditions of the people in the province were found that they lived together as a big family, and each family living more than 3 persons together. Most of them were poor farmer, so their family members had to leave to be employed outside their home. This resulted in they did not have the time to spend for their and their family's health.

In the Information obtaining from the community aspect, Nakhorn Panom province has established a project and workshop for potential community in screening for TB patients in the community. They also had to have the skills to be a mentor in the presence of the drug to patients with tuberculosis since 2009 implementation. This project was not comprehensive and continuous. It found that TB patients who had never been taught from the community had the delay in receiving treatment.

The chest x-ray is necessary since the pathology of tuberculosis often found in the lungs. Therefore, the chest radiography for the diagnosis is necessary. The chest radiograph sensitivity is quite high, but specificity is relatively low. The diagnosis must be done with sputum examination for tuberculosis to avoid any errors that might occur and to provide the most appropriate treatment. [17-18]

The current TB diagnostic criteria for clinicians to diagnose and treat TB patients must have the results of sputum testing with chest radiography. From data analysis, it was found that among patients diagnosed with other diseases rather than TB, there were 9.3 percent who did not receive a chest x-ray, and 44.2 percent did not get a sputum examination. In spite of the fact that if patients come to the hospital with the main symptom that was not cough such as exhausting or coughing less than two weeks, the doctors usually diagnosed as the other respiratory disease other rather than to be diagnosed as having tuberculosis.[19-21] In the case of diagnosis of tuberculosis in AIDS patients, the elderly with the contiguous diseases such as asthma and chronic pulmonary disease which were found coughing were complicated and took a long time to diagnose for TB disease. The number of sputum testing was associated with the first result of sputum testing. If the result was found positive for the first time, patients were treated for TB immediately. If sputum testing was found initially negative infection, the doctors would ask to re-test three times by appointment that was that the patient needed to sent their sputum in the next day. Sometimes patients did not come by appointment resulting in the delays in treatment. If sputum is not found positive infection in the first time, this may be caused by a deviation from the lab or the patients that did not collect sputum samples properly. As a result, the doctors were uncertain in the result whether or they were infected with TB and could not give medical treatment for tuberculosis. This causes the delays in treatment.

VI. RECOMMENDATIONR

6.1 There should be the education and awareness rising about TB in women because in the study found those women were delayed more than men. The tuberculosis verbal screening among women was needed with at least 2 times a year.
6.2 There should be the improving in the quality of the screening new cases in the community to acknowledge with the skills to give advice and screening for suspected tuberculosis symptoms to have the treatment faster.
6.3 AIDS patients that were suspected of TB including cough with phlegm more than two weeks, which may have other symptoms of the respiratory system (shortness of breath, chest pain, and coughing with blood) and/ or general symptoms (anorexia, weight loss, fever, and night sweats) should receive chest radiography and sputum testing in all cases. Because it was found that if the doctors did not give chest x-ray in patients with suspected TB symptoms caused the delays in treatment. The chest x-ray and sputum testing is an international standard for diagnosis.
6.4 There should be the increasing in awareness of TB screening among people or a chronic disease such as smoking, chronic obstructive pulmonary disease in clinical trials, asthma clinic, smoking cessation clinics. This should be screened for TB regularly and continuously.

VII. RECOMMENDATIONSR FOR FUTURE RESEARCH

7.1 The comparative study between regions with the screening and proactive identifying patients in the community that have no operations needs to be considered to study the affect of the delay of in the patient.
7.2 The fear of being shunned by society whether or not it affects or delays in the treatment of tuberculosis needs to be considered.
7.3 There should be a qualitative study among patients with a delay to find patterns or innovation to reduce the delay of AIDS patients with TB suspects to have the treatment faster.

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