FACTORS ASSOCIATED WITH DELAYED TREATMENT OF PULMONARY TUBERCULOSIS AMONG NEWLY DETECTED OPEN CASES PULMONARY TUBERCULOSIS IN NARATHIWAT PROVINCE

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ABSTRACT

This study employed unmatched case – control study to identify various factors associated with delayed treatment of pulmonary tuberculosis among newly detected open case pulmonary tuberculosis in Narathiwat Province. Data was retrieved from case record forms, i.e., TB03 card, OPD card, TB.01, and a structured-questionnaire was used during the interview process. Data collection was carried out from May 2011 to October 2011, of 207 cases consisting of 69 subjects in the case group and 138 subjects in the control group.

Logistic regression was used to estimate the magnitude of association with delayed treatment. After using the multiple logistic regression analysis and backward elimination, the factors significantly associated with delayed treatment were ; patients who used pattani malay language (OR = 10.50, 95% CI = 4.15 – 26.61), direct supervision of anti TB intake by non relatives (OR = 9.79, 95% CI = 2.09 – 46.00), patients aged under 60 years old (OR = 5.21, 95% CI = 1.79 – 15.19) and symptom of weight loss (OR = 2.56, 95 % CI = 1.30 – 5.03)

The study results can be used for further planning and implementation in the southern provinces of Thailand to increase the effectiveness of case finding, since case findings and prompt treatment are equally important to reduce the spreading of tuberculosis in the community and reduce the severity of illness including the death rate due to tuberculosis.

KEY WORDS: DELAY / PULMONARY TUBERCULOSIS

80 pages

ปัจจัยที่มีความสัมพันธ์ต่อความล่าช้าในการเข้ารับการรักษาวัณโรคของผู้ป่วยที่เสมหะพบเชื้อรายใหม่ในจังหวัดนราธิวาส

FACTORS ASSOCIATED WITH DELAYED TREATMENT OF PULMONARY TUBERCULOSIS AMONG NEWLY DETECTED OPEN CASES PULMONARY TUBERCULOSIS IN NARATHIWAT PROVINCE

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บทคัดย่อ

การศึกษาครั้งนี้เป็นการศึกษาแบบ Unmatched case control study มีวัตถุประสงค์ เพื่อศึกษาปัจจัยที่มีความสัมพันธ์ต่อความล่าช้าในการเข้ารับการรักษาวัณโรคของผู้ป่วยในจังหวัดนราธิวาส โดยใช้แบบคัดลอกข้อมูลและแบบสัมภาษณ์ เก็บข้อมูลจากผู้ป่วยวัณโรคปอดเสมหะพบเชื้อรายใหม่ ที่รักษาในโรงพยาบาลต่างๆในจังหวัดนราธิวาส ระหว่าง พฤษภาคม 2554 - ตุลาคม 2554 จำนวน 207 ราย จำแนกเป็นผู้ป่วยที่เข้ารับการรักษาล่าช้า จำนวน 69 ราย และผู้ป่วยที่เข้ารับการรักษาไม่ล่าช้า จำนวน 138 ราย วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา และสถิติเชิงอนุมาน คือ สถิติการถดถอยพหุแบบลอจิสติค (multiple logistic regression) กำหนดระดับนัยสำคัญทางสถิติ 0.05

ผลการศึกษาเมื่อนำตัวแปรที่ศึกษามาวิเคราะห์ โดยมีการควบคุมผลกระทบของปัจจัยอื่นๆ (multiple logistic regression) พบว่า ผู้ที่ไม่สามารถเข้าใจภาษาไทยมีความสัมพันธ์ต่อความล่าช้าในการเข้ารับการรักษาวัณโรคเป็น 10.50 เท่า ของผู้ที่มีความสามารถเข้าใจภาษาไทย (95 % CI = 4.15 – 26.61) ผู้ป่วยที่มีผู้ดูแลที่ไม่ใช่ญาติ มีโอกาสเข้ารับการรักษาล่าช้า เป็น 9.79 เท่า เมื่อเทียบกับกลุ่มที่มีญาติเป็นผู้ดูแล (95 % CI = 2.09 - 46.00) ผู้ที่มีอายุน้อยกว่า 60 ปี มีโอกาสเข้ารับการรักษาล่าช้า เป็น 5.21 เท่า ของผู้ที่มีอายุมากกว่า 60 ปี (95 % CI = 1.79 - 15.89) และผู้ป่วยที่มีอาการน้ำหนักลดมีโอกาสเข้ารับการรักษาล่าช้าเป็น 2.56 เท่า ของผู้ที่ไม่มีอาการน้ำหนักลด (95 % CI = 1.30 - 5.03)

ผลที่ได้จากการศึกษาครั้งนี้สามารถนำมาวางแผนในการแก้ไขปัญหา ในการค้นหาผู้ป่วยรายใหม่ให้มีความสอดคล้องกับสังคมและวัฒนธรรม ซึ่งจะเป็นการลดความล่าช้าของการเข้ารับการรักษา ลดการแพร่กระจายเชื้อในชุมชน และลดความรุนแรงของการป่วย รวมทั้งลดการสูญเสียชีวิตของผู้ป่วยได้

80 หน้า

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CHAPTER I
INTRODUCTION

1.1 Background

Although the effective treatment of tuberculosis has been currently developed and established, tuberculosis still remains a major health problem worldwide. Tuberculosis is the important cause of morbidity and mortality of the world, especially in Asia and Africa. World Health Organization (WHO) estimated the incidence of tuberculosis up to 9.2 million new cases (139 per 100,000 population), 4.1 million new cases with positive sputum (44% of the total) and 1.37 million cases (14.8 %) were co-infected with HIV each year. In 2007, 1.32 million deaths were caused by tuberculosis. (1)

Regarding the situation in Thailand, approximately 30 % of the population were infected with tuberculosis. Case finding in the year 2007, reported by the Department of Disease Control, Ministry of Public Health, showed that 54,930 cases of tuberculosis were recorded from all levels of tuberculosis coordinators nationwide. Among these cases, 7,508 cases were found as extra-pulmonary tuberculosis. The report of the Bureau of Epidemiology during the year 1984-2007 revealed the prevalence of HIV infection was as high as 342,416 cases. Among these cases, 100,462 cases had the symptoms of acquired immune deficiency syndrome (AIDS). Interestingly, tuberculosis was the most common opportunistic infection (25.5%) among the HIV/AIDS patients. (2) The best preventive strategies to control tuberculosis are case finding and prompt treatment (treatment is the best prevention). (3) The effective treatment can reduce the spreading of acid-fast bacilli within the community. Using TB chemoprophylaxis in HIV infected cases can prevent the occurrence of tuberculosis. Proper management of both tuberculosis and HIV infection in such cases, therefore, can reduce the mortality. In addition, personal hygiene practiced by tuberculosis patients, for example, covering their mouth and nose during coughing and sneezing can also reduce the transmission of TB organism to other people. (2)

According to the official figure of pulmonary tuberculosis in Narathiwat province in the year 2009, there were 617 new cases. 383 cases had smear positive sputum, 147 cases had smear negative sputum, 25 cases were relapsed cases and 62 cases were extra-pulmonary tuberculosis.(4) Although many TB control strategies under the National Tuberculosis Programme (NTP) were implemented nationwide, tuberculosis still remained a major of health problem as well as its severity. The rates of poor anti-TB drug compliance were still quite high with the figures of 10.50%, 13.12%, 16.22%, 14.69% and 10.38% in the year 2004 – 2008, respectively. WHO recommended the default rate of poor anti-TB drug compliance being less than 5% (2) On the other hand, the successful rates of TB treatment in the year 2004 – 2008 were 71.65%, 73.23%, 70.52%, 73.97% and 77.22%, respectively.(4) WHO recommended the success rate or cure rate being at lest 85% (2). In 2007 – 2008, the death rates of tuberculosis were 10.31% and 10.38%, respectively. (4) With such worsening scenario of TB in Thailand, the best strategies to reduce morbidity and mortality are case finding, early detection and prompt treatment.

Case finding is an important measure to control the spreading of TB because one smear-positive case can spread tuberculosis to 10 – 15 people. (5) Although passive case finding in the clinic or in the hospital is relatively easy, it cannot confer an effective control. Since tuberculosis is a slow progressive and chronic disease, no abnormal symptom can be detected during the early stage of disease. In addition, the symptoms of pulmonary tuberculosis may be non-specific, e.g., chronic cough, chest pain, hemoptysis and fever. As a result, a long elapsed time may be taken before the patients seek medical service, so called “patient delay”. Meanwhile, as a result of non-specific symptoms of pulmonary tuberculosis, the diagnosis of tuberculosis can be missed, so called “health service delay”. Both patient delay and health service delay are equally important causes of poor TB control in the community.

Up until now, there was no any study about patient delay in tuberculosis in Narathiwat province. Therefore, the researcher was interested to study the factors related to patient delay such area. The researcher hopes to use the results of this study to develop TB control program in the southern provinces of Thailand.

1.2 Research Question

What are the factors associated with delayed treatment of pulmonary tuberculosis among newly detected open cases in Narathiwat Province?

1.3 Objective

1.3.1 To identify the factors associated with delayed treatment of pulmonary tuberculosis among newly detected open cases in Narathiwat Province.

1.3.2 To explore the demographic characteristics of newly detected open cases pulmonary tuberculosis in Narathiwat Province.

1.4 Hypothesis

1.4.1 The demographic characteristics are associated with delayed treatment of pulmonary tuberculosis among newly detected open cases in Narathiwat Province

1.4.2 Environmental factors are associated with delayed treatment of pulmonary tuberculosis among newly detected open cases in Narathiwat Province.

1.5 Scope of the study

This study was carried out in newly detected open cases pulmonary tuberculosis who accepted the treatment at tuberculosis clinic situated in Narathiwat Province. List of local district hospitals participated in the study are shown as follow: Ra-ngae (รพ.ระแงะ), Cho-airong (รพ.เจาะไอร้อง), Si-sakhon (รพ.ศรีสาคร), Su-ngai pa di (รพ.สุไหงปาดี), Takbai (รพ.ตากใบ), Yi ngo (รพ.ยี่งอ), Waeng (รพ.แว้ง), Bacho (รพ.บาเจาะ), Su-ngai-kolok (รพ.สุไหงโก-ลก), Rueso (รพ.รือเสาะ), Chanae (รพ.จะแนะ) and Sukhirin (รพ.สุคิริน)

1.6 Definitions of term

1.6.1 Newly detected open case pulmonary tuberculosis meant the person who was diagnosed of pulmonary tuberculosis by the doctors and acid fast bacilli was found by direct smear of the sputum. No previous history of TB treatment was also needed.

1.6.2 Environmental factors meant the external resources required by the subjects including their skills to express their behavior. In this study, environmental factors were distance from home to clinic, time travel to clinic, travel expense, mode of travel and travel safety in the unrest area of the three southern provinces.

1.6.3 Knowledge about TB meant the content of experiences accumulated over years for personal benefit. Knowledge about TB involved causes, symptoms, mode of transmission and treatment of TB.

1.6.4 Perception about TB meant the integration between sensory stimuli, brain perception and the experiences acquired over years. In this study, perception about TB involved perceived susceptibility, perceived severity, perceive benefits and perceive barriers.

1.6.5 Social support meant the assistance from family, neighbors or health officials. There were four types of social support, i.e., emotional support, instrumental support, informational support and appraisal support.

1.6.6 Delayed diagnosis meant the delay of disease diagnosis after the occurrence of symptom. There were three components of delayed diagnosis as follow:

1.6.6.1 Patient delay meant the time between onset of symptom and presentation to the health care provider being longer than 30 days. (6)

1.6.6.2 Health service delay meant the delay caused by health care system, i..e, a long time elapsed between the date of patient presentation to the health care provider and the date the anti-tuberculosis treatment was started.

1.6.6.3 Total delay meant the sum of patient and health service delay.

1.7 Expected outcomes and benefits of the study

The study results can be used for further planning and implementation in the southern provinces of Thailand to increase the effectiveness of case finding. Since case finding and prompt treatment are equally important to reduce the spreading of tuberculosis in the community and reduce the severity of illness including the death rate due to tuberculosis.

CHAPTER II
LITERATURE REVIEW

This study aims at identifying factors associated with delayed treatment of pulmonary tuberculosis among newly detected open cases pulmonary tuberculosis in Narathiwat Province. Literature review regarding the following 6 issues had been done as shown.

2.1 The concept of knowledge
2.2 The concept of perception
2.3 The concept of social supports
2.4 Knowledge about pulmonary tuberculosis
2.5 The previous research.
2.6 Conceptual framework

2.1 The concept of knowledge

Human's knowledge derived from past experience and from other people such as parents, teachers, friends and books etc. Human often questions the validity of knowledge they acquired (7). Bloom defined knowledge as those behaviors and test situations which emphasized the remembering either by recognition or recall, of ideas, material, or phenomena (8).

Bloom et al proposed 3 domains of knowledge i.e. cognitive domain, affective domain and psychomotor domain. Cognitive domain, which can be easily measured, is the ability of the brain to think. It can be divided into 6 steps as follows (9)

(a) Knowing is ability to remember or recollect the experience including specialized knowledge, knowledge about specific methods of operations and conceptualization of knowledge.

(b) Comprehension is ability to understand contents. It can be categorized into 3 categories i.e. paraphrasing, interpreting, and dilating.

(c) Application is ability to use the knowledge in actual situations.

(d) Analysis is the process of breaking a complex topic or substance into smaller parts to gain a better understanding of it. It consists of 3 main features i.e. component analysis, analysis of relationship and analysis of operational principles.

(e) Synthesis refers to a combination of two or more entities that together form something new. It includes synthesis of text, synthesis of program and synthesis of relationship.

(f) Evaluation is the ability to judge value of contents, materials and methods. It contains both internal and external evaluation criteria.

2.2 The concept of perception

Noppakate R. defined perception as the process of information processing derived through sensory inputs (10). Janaim S. stated that perception was the result of sensory interpretation (11). Siwapat S. proposed that perception was the continuing process started from sensory inputs and the information was then transferred to nervous system for interpretation (12).

In summary, perception is the results of sensory interpretation done by nervous system and one's previous experiences.

Some fundamental characteristics are needed before any person would change their behaviour into a good one as suggested by Rosenstock (13).

1. Perceived susceptibility: Each person perceives different level of his susceptibility to any disease. As a result, this would influence their health behaviors regarding disease prevention and health promotion.

2. Perceived severity: The severity of disease perceived by the people may vary from a temporary loss of physical health, disability and even death. Perceive severity is often positively associated with health behaviors

3. Perceived benefits: When a person is ill, he or she would take a necessary measure to seek treatment or to prevent the disease recurrence. He or she believes that such practice would lead to a good health or disease prevention.

4. Perceived barriers: Some difficulties occurred during practicing health behavior, e.g., any expenditure, the time taken to seek medical service or any possible risk may prevent the healthy behavior.

2.3 The concept of social support

Human behavior was also influenced by family and social supports. This involved both the physical and mental health, disease prevention and health promotion. (14)

Social support has been defined in different ways. Cobb (cited in Suwan P. and Suwan S.;.2536.p.176) stated that social support related to information a person received from others and made them realized that he or she was part of the society and cared for by other members of society (15).

Tolsdorf (cited in Suwan P.and Sawing ;. 2536. p.176) commented that it was a form of assistance a person received from other people and let a person achieve a certain objective or effectively face challenges (15).

Heaney CA and Israel BA viewed social support as an aid or assistance exchanged through social relationship and interpersonal transactions (16).

According to Trakulwong B, social support referred to any information, material or psychological support received from the providers who might be individual or group such as husband, wife, relatives, neighbors and health workers (14).

In conclusion, social support was an assistance a person get from other people as the feeling of care or any materials a person need to maintain his life.

2.3.1 Type of social support.

Social support can be classified into 4 categories (16).

1) Emotional support involves the provision of empathy, love, trust, and caring.

2) Instrumental support involves the provision of tangible aid and services that directly assist a person in need.

3) Informational support is the provision of advice, suggestion, and information that a person can use in addressing the problems.

4) Appraisal support involves the provision of information useful for self-evaluation purpose, that is, constructive feedback, and social comparison.

2.3.2 The elements of social support (14)

1) Social support occurs when there is a communication between "provider" and "recipient".

2) The nature of relationship can be varied as follows.

a) The receiver feels that he or she is cared for by other people with love, sympathy and goodwill.

b) The receiver feels that he or she is valued and recognized in the society.

c) The receiver feels that he or she is part of the society and beneficial to the society.

3) The input may be in the form of information, materials or psychological support.

4) The input must make the recipient achieves his or her goal.

2.4 Knowledge on tuberculosis

2.4.1 Causes of tuberculosis.

Tuberculosis is a disease caused by Mycobacterium tuberculosis which can infect any part of the body such as lung (pulmonary tuberculosis), lymph nodes (tuberculous lymphadenitis), meninges (tuberculous meningitis), intestines (tuberculous enteritis) and joints (tuberculous arthritis). Pulmonary tuberculosis is the most frequent form of the disease and important to public health worldwide. (17) Mycobacteria is an aerobic bacillus with high concentrations of lipids within its cell wall. It has no capsule, unformed spore and is also immobile. It has the ability to retain carbofuchsin dye despite decolorization with acid alcohol. This ability give it the term acid fast bacilli (AFB). This bacillus can also remain inactive in tissue and persist for many years. (18)

2.4.2 Symptoms

The common symptoms of pulmonary tuberculosis are as follow.

1. Chronic cough is a common symptom of pulmonary tuberculosis. The cough may be non-productive, but afterwards, as inflammation and tissue necrosis ensure, sputum is usually produced. Hemoptysis may be a presenting symptom. In general, patients cough about 2 – 3 weeks or more.

2. The other symptoms include debility, anorexia, weight loss, fever with temperature rising in the evening and night sweating. Spontaneous pneumothorax may occurs causing chest pain and perhaps dyspnea. (2, 19)

2.4.3 Transmission of tuberculosis

TB almost always spreads from person to person by airborne method. Though it is rare, TB may be transmitted from other sources including contact of soft tissue wounds, autopsy procedures, or direct inoculation in laboratory or postmortem accidents.

When patients with pulmonary tuberculosis cough, sneeze or talk, they create an aerosol about 3,000 droplet nuclei (18). Each droplet particles, 1 – 5 micron in diameter, carries 1 – 3 tubercle bacilli. When the particle reaches alveoli in the lung, it induces inflammation and bring about pulmonary tuberculosis (17)

2.4.4 Diagnosis

1. History taking

A systematic case history supports the clinician to decide whether or not the patient requires which diagnostic tests to confirm or exclude the diagnosis of TB. The most frequent symptoms of pulmonary tuberculosis are cough for 2 weeks or more, sputum production which may be purulent or hemoptysis. Other symptoms are tiredness, anorexia, weight loss, fever, night sweating or chest pain etc. (20, 21)

2. Laboratory examination

2.1 Radiography

The chest radiography has a limitation for the diagnosis of pulmonary tuberculosis since it can lead to either under- or over-diagnosis. The chest x – rays may be helpful in identifying other lung abnormalities. It can reveal some suggestive evidence of pulmonary tuberculosis, e.g., fibronodular infiltration at the apical segment, posterior segment of the upper lope or superior

segment of the lower lobe. The presence of a cavity will even more suggest the diagnosis of the disease (21).

2.2 Sputum microscopy

In general, patients who are suspected of having pulmonary TB must undergo an examination of sputum. The sputum will be smeared over a glass slide, stained by the Ziehl – Nielsen method and looked under a microscope. This method is the most reliable way to make a diagnosis of pulmonary TB. The technique is so simple and inexpensive. If patient cannot cough up any sputum sample, physiotherapist may be consulted to help the patient cough up some sputum. In case of negative sputum examination, suspected case of drug-resistant TB and HIV patients, sputum culture for TB is needed. (20)

The details of 3-sample sputum collection could be clarified as follows:

Sample 1: Spot specimen: This specimen is obtained on the first day when the patient visits the clinic. After gargling the throat with clean water, the patient makes a productive cough, under the supervision of health personnel, in a well ventilated area, preferably in the open air. Then, a sputum container will be given to the patient for sputum collection in the next morning.

Sample 2: Morning specimen: The patient repeats the same process as sample 1 collection when he wakes up in the next morning.

Sample 3: Spot specimen: The patient repeats the same process as sample 1 collection when he comes back to the clinic to deliver all the samples. This procedure is also supervised by the health personnel.

2.3 Tuberculin skin test

A tuberculin skin test is sometime used to support the diagnosis of tuberculosis. However, there is some limitations of the test interpretation. A positive test may not confirm the diagnosis of tuberculosis. On the other hand, a negative test does not always rule out the disease. Factors influencing the result of tuberculin skin test are shown as follows:

(1) Previous BCG vaccination.

(2) Infection with other mycobacterium.

(3) Tuberculosis contact or previous TB infection.

(4) Socio-economic background

(5) Immunity status

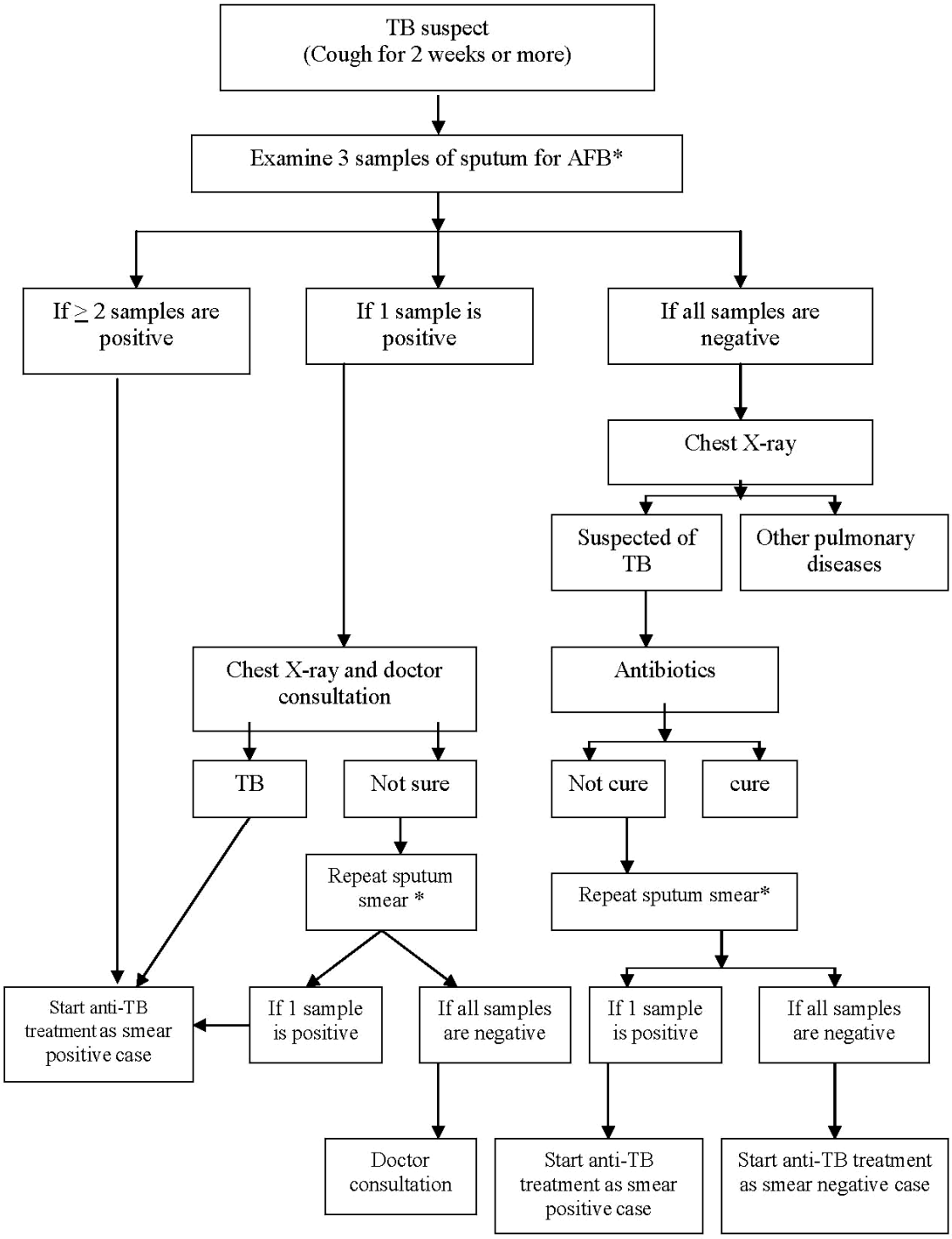

Figure 2.1 Flowchart for the diagnosis of pulmonary TB (19)

2.4.5 Case definition

1. Smear-positive pulmonary tuberculosis

1.1 One smear-positive sputum for AFB and chest X-ray abnormalities compatible with active TB.

1.2 At least 2 smear-positive sputum for AFB.

2. Smear-negative pulmonary tuberculosis:

2.1 All sputum specimens are negative for AFB, chest x-ray abnormalities, clinical and/or histological evidence compatible with active TB.

2.2 All sputum specimens are negative for AFB, but sputum culture is positive for TB. (22)

2.4.6 Treatment

According to the main objective of the National Tuberculosis Programme (NTP), 85% of newly detected and active TB must be treated (23). Treatment benefits the patient by reducing the severity of the disease and death rate. In addition, treatment can decrease the spreading of tuberculosis in the community.

The principle of tuberculosis treatment is the drug compliance that each patient must receive the prescribed drugs at the right dosage on a regular basis for a certain period of time. A combination of drugs is needed to prevent drug resistance. The poor drug compliance can easily bring about the problem of drug resistance.

1. Standardized TB treatment regimens

World Health Organization (WHO) and the International Union Against Tuberculosis and Lung Disease (IUATLD) recommend standardized TB treatment regimens. The first – line anti – TB drugs of choice for the treatment of tuberculosis are Isoniazid (H), Rifampicin (R), Pyrazinamide (Z), Ethambutal (E), and Streptomycin (S).

Treatment regimen consisted of two phases: In the initial phase, the patient will be given a combination of drugs for a minimum of 2 months. This phase is an important part of the chemotherapy. Then, the continuation phase, this phase is to ensure that the treatment is successful and prevent the relapse after treatment. The drug regimens used in Thailand include 2HRZE(S)/4HR, 2HRE/7HR and 2HES/16HE (The number in front shows the number of months) (20).

2. Directly Observed Treatment Short course (DOTS)

Though the effective anti-TB drugs have been available for nearly 50 years; tuberculosis remains a major health problem worldwide. This is due to the fact that the original regimens require a long-term treatment up to 18 – 24 months. However, the more effective drugs, namely, Isoniazid, Pyrazinamide and Rifampicin were discovered and found to be effective even used in a shorter duration.

DOTS was formulated by the International Union against Tuberculosis and Lung Disease (IUTLD). World Health Organization (WHO) recommends DOTS strategy to solve the problem of drug compliance. Under this regimen, the patients must take their anti-TB drugs under direct observation of health worker, trained volunteer or even their own family members.

DOT ensures that patients receive social support that helps to remind and motivate the patient to take medication. DOT should ideally be assigned to all tuberculosis patient or at least all newly smear-positive cases to decrease the death rate due to active tuberculosis and the transmission of disease (24).

3. The five essential elements of DOTS strategy.

3.1 Government commitment to maintain TB control.

3.2 Case detection by direct smear microscopy among patients who cough for 2 weeks or more.

3.3 Standardized regimens of 6 – 8 month treatment at least all sputum smear positive pulmonary TB cases, with directly observed treatment (DOT) for the initial 2 mouths.

3.4 A regular, uninterrupted supply of anti-tuberculosis drugs.

3.5 Monitoring and evaluation system of programme supervision of treatment outcome for each tuberculosis patient.

4. The need for DOT strategy (2)

4.1 An observer watches and helps the patient takes the medication.

4.2 Direct observation ensures good drug compliance for the entire course of appropriate drug regimen.

4.3 To prevent treatment failure and drug resistance by a strict drug compliance.

2.4.7 Delay

Case finding and prompt treatment are the most effective ways of preventing transmission in the community. These also reduce the severity of illness as well as the death.

Up to date, the study of diagnosis and treatment delay has become a very important issue. Diagnosis and treatment delay is defined as follows: (25)

Total delay means time between onsets of symptom until initiation of anti-tuberculin treatment which includes 2 components i.e. diagnosis delay means the time between the onset of symptom and diagnosis of the patient as a tuberculosis patient and treatment delay refers to the time between tuberculosis diagnosis and start of anti-tuberculosis drugs.

Total delay is also the sum of patient and health system delay. This delay can be described as:

Patient delay refers to the time between onset of symptom and presentation to the health care provider.

Health system delay means the time between the date of health-seeking behavior at the health care provider until initiation of anti-tuberculosis drugs.

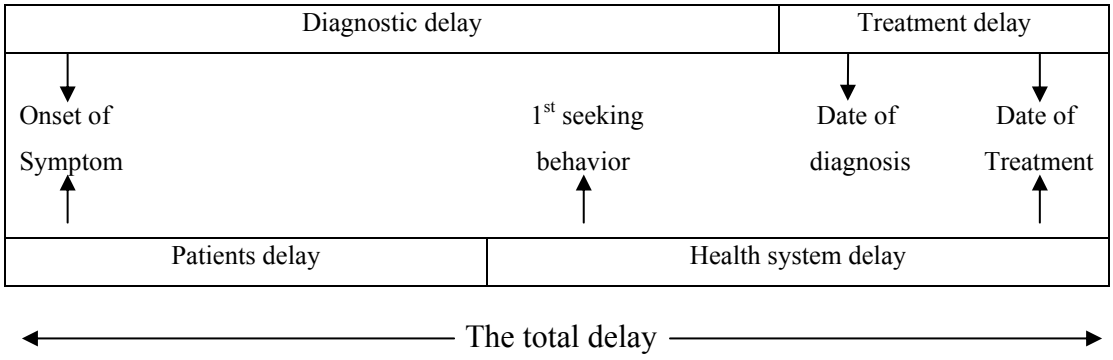

Figure 2.2 Flow-chart showing different delay durations contributing to the total delay Source WHO page 14 (25)

2.4.8 Drug resistance

After the discovery of streptomycin for treatment of tuberculosis in decade 2513-2523, with an effective directly observed treatment short-course, there has been the hope for tuberculosis control. But HIV-infected people world-wide were also co-infected with tuberculosis and intermittent of treatment causes an increase of drug-resistance. Drug resistance affects the treatment and control of tuberculosis in the future. It reduces the effectiveness of DOTS strategy and spread of drug resistance tuberculosis to the cycle (26).

1. Situation drug-resistance in Thailand (2).

A survey of drug-resistance tuberculosis in 1997 – 1998 and 2001 – 2002 found that the rate of multi drug-resistance in new patients were 2.02 % and 0.96 % respectively. As for patient prior treatment, it was found to be 20.3 %. A survey in 2005 – 2006 found rate of multi drugs resistance in new patients was1.65 % (If the prevalence of multi drug-resistance tuberculosis more than 3 % considered to health problem) and patients prior treatment was 34.54 %.

2. Characteristics of drug-resistance.

2.1 Drug resistance tuberculosis (DR-TB) refers to tuberculosis bacilli that resist to one or more anti-tuberculosis drugs, but does not resist to Isoniazid and Rifampicin.

2.2 Multi-drug resistance tuberculosis (MDR-TB) refers to tuberculosis bacilli that have the resistance to at least Isoniazid and Rifampicin and may also have the resistance to at least one other anti-tuberculosis drugs. (26)

2.3 Extensive drug resistance; (XDR-TB) refers to tuberculosis bacilli that are resistance to MDR-TB isolates that are also resistance to fluoroquinolone and at least one injectable such as kanamycin. (2)

3. Type of drug resistance (26)

3.1 Primary drug resistance occurs in patients who have not had prior treatment with anti-tuberculosis drug. WHO defines it as patients who have been prior treatment under 2 weeks. As for patient who can not provide history of prior tuberculosis treatment, it refers to initial drug resistance. Primary drug resistance has an impact on the effectiveness of tuberculosis control in the past.

3.2 Secondary drug resistance or acquired drug resistance is the drug resistance occurs in patient with previous treatment. It is often caused by irregular anti-tuberculosis.

2.4.9 Recommendations for tuberculosis patients. (19)

After the patients have been diagnosed with tuberculosis, health worker should advise them on treatment and control so that to prevent tuberculosis transmission to community, as the follows:

1. Receive Directly Observed Treatment Short Course (DOTS) especially during 2-3 mouths of treatment.
2. Do not stop taking their anti-tuberculosis drugs, when they get well. If they have side effect, they should contact the doctor.
3. Close their mouths and noses with handkerchief when coughing or sneezing.
4. Keep sputum into a container with covers and then do disinfection by burning or landfill.
5. Clean up their house, ventilation place and should allow sunlight to kill tuberculosis bacteria.
6. Avoid drinking alcohol and smoking.

2.4.10 Guideline for preventing people from exposure to tuberculosis.

1. Avoid crowded and badly ventilation.
2. Take a very good care of their health and take enough rest.
3. Avoid of risk factors to tuberculosis such as taking drug, smoking etc.
4. Take care tuberculosis patient in household especially on their medication intake to reduce the cycle of transmission.
5. If a member of household is found to infect with tuberculosis, other members of the household should go for screening. For children under 5 years of age, they should be given 6 months isoniazid preventive treatment. If the children have no history of BCG vaccination, they should be given BCG vaccination. For the children aged 5-15 years old, they should have a screen tuberculin test in order to be considered for treatment of latent tuberculosis infection (20)

2.5 The previous research.

Previous studies on factors associated to delayed treatment of pulmonary tuberculosis as follow.

Sex: The studies of Narawut Khamhom (27) found male was significant associated with delayed treatment compare female (OR: 4.1; 95%CI: 2.0 – 8.7), that similar to studies of Hoa NP (28), Wang J (29) and Yimer S (30) found male was significant to delay treatment. But difference in the study of Needham DM (31) and Karim F, (32) found female was a significant to delay treatment. Another studies such Kampanart Chaychoowong (33) Kiwuwa MS (34) Demissie M (35) Narith Ratha (36) Schneider D (37) Aye R (38) Ngadaya ES (39) Gele AA (40) Mahendradhata Y (41) Gershon AS (42) Mesfin MM (43) Lacroix C (44) Basnet R (45) Yimer S (46) dos Santos MA (47) Rojpibulstit M (6) Mfinanga SG (48) Chiang CY (49) Farah MG (50) Odusanya OO (51) and Mirsaeidi SM (52)found sex does not associated with delayed treatment.

Age: Gershon AS (42), Rojpibulstit M (6) and Chiang CY (49) found that people aged between 35 – 64 years, 31 – 61 years and less than 65 years respectively associated with delayed treatment. Farah MG (50), Karim F (32) and Lin CY (53) however found people aged more than 60 years and more than 65 years were more likely to associate with delayed treatment.

Education: Needham DM (31) and Mfinanga SG (48) discovered that patients who had no primary education were more likely to involve in delayed treatment as compared to those patients who received formal education (OR: 1.74; 95%CI: 1.01 – 3.05). Similarly, Mesfin MM (43) confirmed that illiterate patients were significantly related to delayed treatment (OR: 1.7; 95%CI: 1.2 – 2.4). Narawut Khamhom (27), Kampanart Chaychoowong (33), Kiwuwa MS (34), Demissie M (35), Narith Ratha (36), Schneider D (37), Ngadaya ES (39), Gele AA (40), Basnet R (45), Hoa NP (28), dos Santos MA (47), Yimer S (30) and Mirsaeidi SM (52), on the other hand, found the education does not associate with delayed treatment.

Occupation: Kiwuwa MS (34) claimed that patients who were agriculturist were more likely to have delayed treatment as compared to other occupations. Dos Santos MA (47) and Mfinanga SG (48) stated that unemployed patients were significantly had

the most likelihood of delayed treatment (OR: 1.77; 95%CI: 1.20 – 2.60). On the contrary, Narawut Khamhom (27), Kampanart Chaychoowong (33), Demissie M (35), Schneider D (37), Aye R (38), Gele AA (40) and Mesfin MM (43) that established that occupation did not associate with delayed treatment

Income: Narawut Khamhom (27) found that there was an association between patients who received monthly income less than 1,500 baht and delayed treatment (OR: 2.7; 95%CI: 1.5 – 5.0). Yilmaz A (54) further stated that economic situation of the patients was the main reason for delayed treatment. Kampanart Chaychoowong (33), Narith Ratha (36), Hoa NP (28), Yimer S (46), Needham DM (31) and dos Santos MA (47) however found income levels did not associate with delayed treatment.

Marital status: Narawut Khamhom (27) discovered that the patients who are single significant associated with delayed treatment (OR: 3.0; 95%CI: 1.5 – 6.2). Nevertheless, Kampanart Chaychoowong (33), Schneider D (37), Gele AA (40), and Mesfin MM (43) claimed that marital status did not cause delayed treatment.

Symptoms

Weight loss: Schneider D (37) maintained that there was a relationship between patients who were present with weight loss with delayed in seeking medical attention (OR: 2.99; 95%CI: 1.46 – 6.14). Lacroix C (44) and dos Santos MA (47) also found that weight loss associated with delayed treatment.

Cough: Yimer S (30) found the patients who had a long and persistent cough were more likely to visit a medical health provider as compared to those with a shorter duration of cough (OR: 1.5; 95%CI: 1.03 – 2.30).

Mild illness: Rojpibulstit M (6) revealed mild illness in patients was a risk factor for delayed diagnosis.

Exposure to fluoroquinolones: Lin CY (53) found patients who exposed to fluoroquinolones are more likely to cause a prolonged in-hospital diagnosis delay (IHDD) of pulmonary tuberculosis (OR:4.59; 95%CI: 1.13 – 18.67).

Smoking: dos Santos MA (47) found the patients who smoked had more likelihood for delayed treatment. Similar to the studies by Narawut Khamhom (27) which found that smoking was significantly associated with patient delay (OR: 2.1; 95%CI: 1.1 – 4.0). Basnet R (45) stated that patients who smoked using more than 5 cigarettes per day had higher risk of patient delay (OR: 2.7; 95%CI: 1.39 – 5.38).

Alcohol consumption: Narawut Khamhom (27) found the patients who were alcohol drinkers had higher likelihood for patients delay (OR: 2.8; 95%CI: 1.4 – 5.5). Kiwuwa MS (34) found that daily alcohol consumption was independent predictors of patient delay (OR: 3.7; 95%CI: 1.57 – 9.76). However, Kampanart Chaychoowong (33), Basnet R (45) and dos Santos MA (47) alcohol consumption did not associate with delayed treatment.

Distance to clinic: Demissie M (35), Narith Ratha (36), Yilmaz A (54) and Gele AA (40) distance from home to health institute related to delay treatment. Mfinanga SG (48) found that patients who lived more than 5 km from healthcare facility had higher likelihood of patients delayed (OR: 2.24; 95%CI: 1.41 – 3.55).Narawut Khamhom (27), Kampanart Chaychoowong (33), Kiwuwa MS (34), Gele AA (40), Yimer S (30) and Mfinanga SG (48) found distance to clinic did not associate with patient delay.

Mode of travel: Narawut Khamhom (27) found patients who traveled to get treatment by public transport were more probable to cause patient delay (OR: 3.7; 95%CI: 2.0– 6.8). Kampanart Chaychoowong (33) found that there was no relationship between mode of travel and patient delay.

Traveling time to clinic: Narith Ratha (36) found traveling time was a significant factor for patient delay. Narawut Khamhom (27) found that patients who had travel time to get treatment of more than 30 minutes often associated with patient delay (OR: 3.3; 95%CI: 1.7– 6.5). Kampanart Chaychoowong (33) contended that time travel to clinic did not cause patient delay.

Accesses to information on tuberculosis: Narith Ratha (36) found patient who never got information about TB were more likely to cause delay. Kampanart Chaychoowong (33) revealed that there was no association between the level of access to information about TB and patient delay.

Social support received: Kampanart Chaychoowong (33) found that low social support linked to patient delay (OR: 3.7; 95%CI: 1.87– 7.30).

Knowledge about tuberculosis: Narith Ratha (36) indicated that low knowledge about tuberculosis had a significant association with patient delay. Hoa NP (28) found the patients who better knowledge of tuberculosis was significantly related to seeking health care and seeking hospital care. Ngadaya ES (39) discovered the risk factors of delay included poor knowledge that chest pain may be a tuberculosis symptom

(OR: 2.9; 95%CI: 1.20– 7.03). The study by Gele AA (40) concluded that patients having low biomedical knowledge on TB (OR: 2.02; 95%CI: 1.02– 3.98) were more likely to report a prolonged patient delay. Kampanart Chaychoowong (33) Kiwuwa MS (34) and Mesfin MM (43) contended that there was no relationship between the knowledge about TB and patient delay.

Perception of patients on tuberculosis: Narith Ratha (36) indicated that patients with low level of perception on severity of TB disease were more likely to delay treatment. Mesfin MM (43) found lack of awareness/misperception of causes of pulmonary tuberculosis brought about delayed consultation. Kiwuwa MS (34) found perception of smoking as a cause of tuberculosis was a significant factor in predicting patient delay (OR: 5.54; 95%CI: 2.26–13.58)

2.6 Conceptual framework

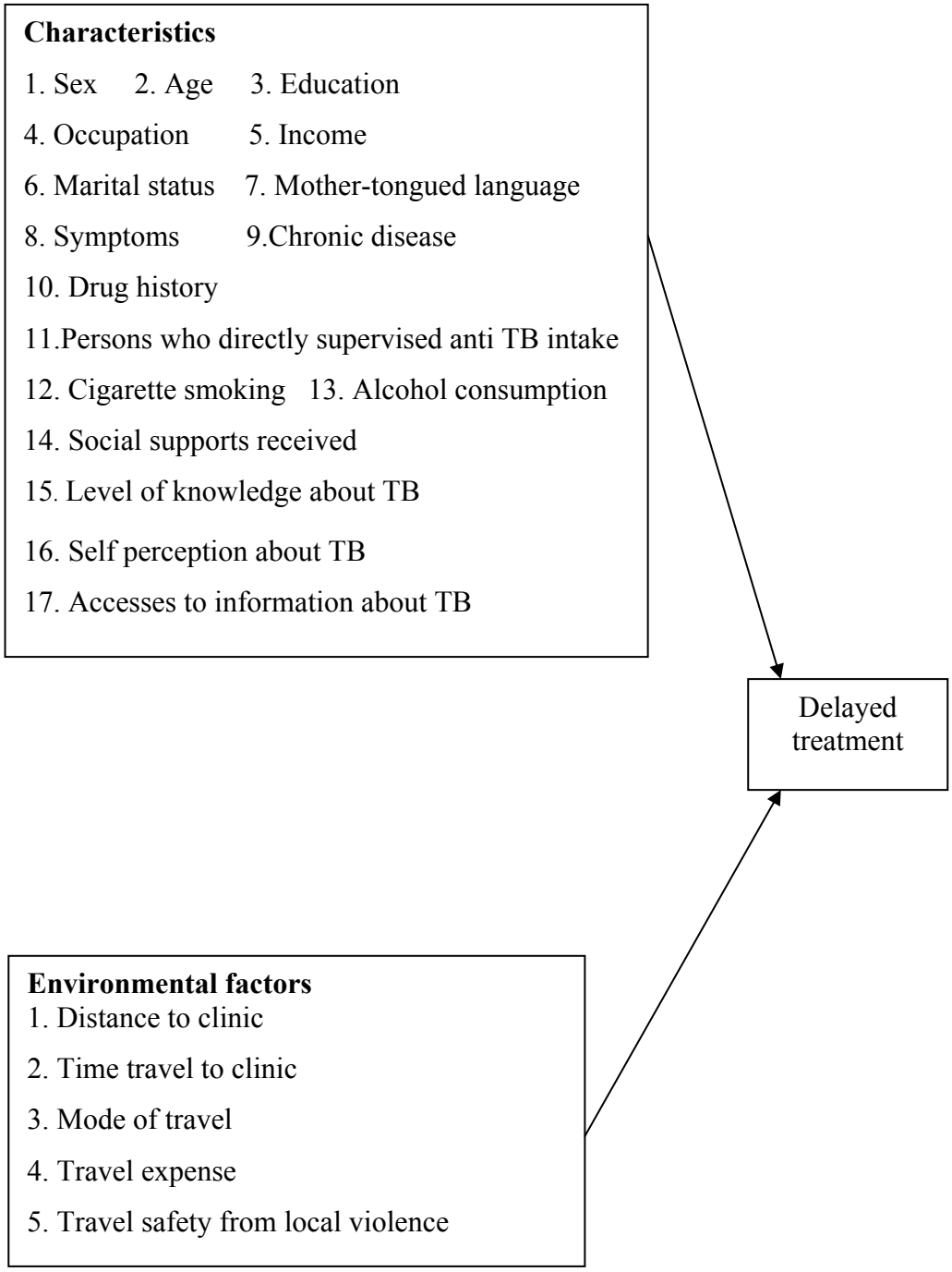

Figure 2.3 Conceptual framework

CHAPTER III
RESEARCH METHODOLOGY

The first section describes study design, followed by population study and data collection period. The next sections discuss sample size estimation, then research instruments. Validity and reliability analysis as well as data collection process are subsequently reported. The final section details out data analysis utilized in this research.

3.1 Study design

This study employed unmatched case – control study to identify various factors associated with delayed treatment of pulmonary tuberculosis among newly detected open cases pulmonary tuberculosis in Narathiwat Province. Data was retrieved from case record forms, i.e., TB03 card, OPD card, TB.01, and a structured-questionnaire was used during the interview process.

3.2 Population

The sample population was recruited from newly smear-positive pulmonary tuberculosis patients (New M^+), who had been diagnosed and registered for treatment at Tuberculosis Clinic within the hospitals situated in Narathiwat Province.

3.2.1 Inclusion criteria

3.2.1.1 The patients were diagnosed by sputum examination.

3.2.1.2 The patients were registered and treated at TB. Clinic within the hospitals situated in Narathiwat Province.

3.2.1.3 The patients aged 18 years old or more.

3.2.2 Exclusion criteria

3.2.2.1 The patients who lost follow-up from the clinic. (The researcher could not travel to interview them due to the unrest in the three southern provinces.)

3.2.2.2 The patients who were unable to provide required information and declined to participate in the data collection process.

3.2.3 Stratification criteria

Delayed treatment patient (case) referred to a patient whose time between onset of symptom and presentation to the health care provider was longer than 30 days (6).

Non-delayed treatment patient (control) referred to a patient whose time between onset of symptom and presentation to the health care provider was less than 30 days.

3.3 Data collection period

Data collection was carried out during May 2011 to October 2011

3.4 Sample size estimation

This study was a retrospective analytical study (unmatched cases – control study), which case per control = 1 per k group. The sample size had been estimated using the formula by Schlessman, 1982 (55);

$$N = \frac{[Z_{\alpha/2} \sqrt{(1 + 1/k)\, \pi^* (1 - \pi^*)} + Z_{\beta} \sqrt{\pi^*_1 (1 - \pi^*_1) + \{ \pi^*_2 (1 - \pi^*_2) / k \}}]^2}{(\pi^*_1 - \pi^*_2)^2}$$

n = sample size was calculated from the formula when : $n_1 = n$, $n_2 = k\, n_1$

n_1 = sample size for the case group

n_2 = sample size for the control group

k = replicated size of the control group, the size of control group in this study was double the size of case group.

The replicated size (2 times) of control group derived from a preliminary study done by the researcher by looking into the data of the patients treated in the clinic between 1 January 2010 to 30 September 2010. Among 236 cases retrieved, 76 cases were classified as delayed treatment group while 160 cases were labeled as non-delayed treatment group. As a result, the ratio of the delayed treatment cases to non-delayed treatment cases was 1 : 2.1. Therefore, the ratio of the delayed treatment cases to non-delayed treatment cases was set to be 1 : 2.

π^*_1 = proportion of risk in delay cases = $\dfrac{(OR)\,\pi^*_2}{(OR)\,\pi^*_2 + (1 - \pi^*_2)}$

π^*_2 = proportion of risk in non-delay cases

π^* = average of risk in two groups = $(\pi^*_1 + k\,\pi^*_2)/(1+k)$

OR = 3.00

π^*_2 = proportion of risk (low social support) in non-delay group 0.215 (33)

π^*_1 = proportion of risk (low social support) in delay group

$$= \frac{(OR)\,\pi^*_2}{(OR)\,\pi^*_2 + (1 - \pi^*_2)}$$

$\pi^*_1 = (3 \times 0.215) / [3 \times 0.215) + (1 - 0.215)] = 0.451$

$\pi^* = (\pi^*_1 + k\,\pi^*_2)/(1+k) = (0.451 + 2(0.215)) / (1 + 2) = 0.294$

$Z_{\alpha/2} = 1.96, \qquad Z_{\beta} = 1.28$

$$n = \frac{[Z_{\alpha/2}\sqrt{(1 + 1/k)\,\pi^*\,(1 - \pi^*)} + Z_{\beta}\sqrt{\pi^*_1(1 - \pi^*_1) + \{\pi^*_2(1 - \pi^*_2)/k\}}]^2}{(\pi^*_1 - \pi^*_2)^2}$$

$$n = \frac{[1.96\sqrt{(1 + 1/2)\,0.294\,(1 - 0.294)} + 1.28\sqrt{0.451\,(1 - 0.451) + \{0.215\,(1 - 0.215)/2\}}]^2}{(0.451 - 0.215)^2}$$

n = 60.20

The sample size for this study was proposed to be 195 cases consisting of 65 subjects in the case group and 130 subjects in the control group.

3.5 Research instrument

Part 1: Demographic characteristics of the subjects

The data involved both categorical data and continuous data. Categorical data consisted of sex, religion, level of education, occupation, marital status, language used, history of smoking, history of alcohol consumption. Frequency and percentage were used to present such kind of data. Continuous data included age and number of the members in the household. Mean, standard deviation, median, maximum, minimum were employed to present this kind of data.

Table 3.1 Factors and measurement of characteristics of the subjects

Factors	**Measurement**	
Sex	Nominal scale	
	1 = Male	2 = Female
Age	Ratio	
Religion	Nominal scale	
	1 = Islamism	2 = Buddhism
Level of education	Nominal scale	
	1 = No formal education	2 = Primary school
	3 = Secondary school	4 = High school
	5 = Diploma/Bachelor	6 = Higher
Occupation	Nominal scale	
	1 = Unemployed	2 = Student
	3 = Agriculturist	4 = Manual worker
	5 = Vendor	6 = Officer
	7 = Civil servant	8 = Entrepreneur
Income	Nominal scale	
	1 = Inadequate	2 = Adequate
Marital status	Nominal scale	
	1 = Single	2 = Married
	3 Widowed/Divorced/Separate	
Language used	Nominal scale	
	1 = Thai language	2 = Pattani malay language
Number of person in household	Ratio	

Table 3.1 Factors and measurement of characteristics of the subjects (cont.)

Factors	**Measurement**	
History of cigarette smoking	Nominal scale	
	1 = Current smoker	2 = Ex-smoker
	3 = Never smoke	
History of alcohol consumption	Nominal scale	
	1 = Never drink	2 = Ex-drinker
	3 = Current drinker	

Part 2: Social support assessment tool

This tool employed the concept from the theory of social supports (16) which comprised of emotional support, instrumental support, informational support and appraisal support. Close – ended questions with 3 choices were used in this part. The tool consisted of 15 items with three level rating scale ;

Agree:	The text matched your feelings
Uncertain:	Inability to decide based on your feelings.
Disagree:	The text did not match your feelings

The questions contained both positive and negative questions. The answers to positive questions in the categories of agree, uncertain, disagree were scored as 3, 2, 1 points, respectively. The answers to negative questions in the categories of agree, uncertain, disagree score were scored as 1, 2, 3 points, respectively. The total score was interpreted according to Best (56),i.e., deducting the maximum score by the minimum score and then divided by the number of group or level. The degree of social support received was classified into three levels based on the total score, as follow.

Level of social support received	Score
High level	36 – 45
Moderate level	26 – 35
Low level	15 – 25

Part 3: Knowledge about TB assessment tool

This assessment tool evaluated the knowledge about causative mechanism, mode of transmission and treatment. Only 2 options (yes or no) were provided in each question. This part included 15 items and each item scores 1 point. The total score was interpreted according to Best (56), i.e., deducting the maximum score by the minimum score and then divided by the number of group or level. The degree of knowledge about TB was classified into three levels based on the total score, as follow.

Level of knowledge about TB.	Score
High level	11 – 15
Moderate level	6 – 10
Low level	0 – 5

Part 4: Access to information about TB assessment tool

The questions were designed to assess whether the patients had previously received information on TB or not (receive/not receive) and the source of information was also asked. The data was presented as frequency and percentage.

Part 5: Perception about TB assessment tool

This tool employed the concept from the theory of Health Belief model (16) which incorporates perceived susceptibility of TB infection, perceived severity of TB infection, perceived benefit of prompt treatment and perceived barrier of access to health care. Twenty close – ended questions with three level rating scale were used, as shown.

Agree:	The text matched your feelings
Uncertain:	Inability to decide based on your feelings.
Disagree:	The text did not match your feelings

The answers to positive questions in the categories of agree, uncertain, disagree were scored as 3, 2, 1 points, respectively. The answers to negative questions in the categories of agree, uncertain, disagree score were scored as 1, 2, 3 points, respectively. The total score was interpreted according to Best (56),i.e., deducting the

maximum score by minimum score and then divided by the number of level. The level of perception about TB was classified into three levels based on the total score, as follow.

Level of perception about TB	Score
High level	11 – 15
Moderate level	6 – 10
Low level	0 – 5

Part 6: Environmental factor assessment tool

The assessment tool assesses mode of transportation and travel safety. These categorical data was presented as frequency and percentage. The continuous data included distance between home and clinic, time travel to clinic and travel expense. These continuous data was presented as mean, standard deviation, median, maximum, minimum. Details of measurement were shown as follow:

Table 3.2 Environmental factors and measurement of characteristics of the subjects.

Factors	**Measurement**		
Distance between home and clinic	Ratio scale		
Time travel to clinic	Ratio scale		
Travel expense	Ratio scale		2 = Female
Mode of travel	Nominal scale		
	1 = Walk		2 = Bicycle
	3 = Motorcycle	4 = Car	5 = Bus
Travel safety in the unrest area of three	Nominal scale		
southern provinces	1 = Safe		2 = Not safe

Part 6: Other characteristics of the subjects

The categorical data, assessing direct supervision of anti TB intake, chronic disease, drug history, presenting symptoms, HIV infection, chest radiographic finding and history of BCG vaccination, were presented as frequency and percentage.

3.6 Validity and reliability

3.6.1 Content Validity

The complete structured-questionnaire was reviewed and modified by the main supervisor and the co-supervisors. The revised questionnaire was again sent to the experts for further review. Based on their comments, it was amended and finalized.

3.6.2 Reliability

In order to ensure the reliability, the completed questionnaire was tested on 30 subjects recruited with the same criteria as mentioned in the original research design. Cronbach's Alpha coefficients were then analyzed. The coefficients of social support assessment tool and knowledge on TB assessment tool were 0.73 while that of perception on TB assessment tool was 0.62.

3.7 Data collection

The following steps of data collection were done, as shown :

3.7.1 The research approval was proposed to the Research Ethic Committee, Faculty of Medicine, Siriraj Hospital, Mahidol University.

3.7.2 Issuing the formal letters from the Faculty of Graduate Studies, Mahidol University to chief officer of local public health authority and the directors of 12 community hospitals in Narathiwat Province requesting allowance and cooperation in data collection process.

3.7.3 Making contact with local TB coordinators in the community.

3.7.4 Planning of data collection

Table 3.3 The schedule for data collection in the community

Date / Time	Morning	Afternoon
Monday	Sukhirin hospital	Su-ngaipadi / Yi-ngo hospital*
Tuesday	Rueso hospital	Si-sakhon hospital
Wednesday	Waeng hospital	
Thursday	Su-ngai-kolok / Ra-ngae hospital *	Tak bai / Ba cho hospital *
Friday	Cho-airong hospital	chanae hospital

* In case of the overlapping clinic time between the two hospitals, the number of appointed patients would determine the priority hospital where the researcher would go to interview the patients

3.7.5 Data collection procedure

3.7.5.1 TB registry, OPD card and TB treatment card of the patients were retrieved. The useful data would be recorded by the researcher.

3.7.5.2 The purpose of this study was introduced to the patients and they were asked to participate the study. After the consent form was signed, the interview process would take place.

3.8 Data analysis

3.8.1 Data checking

3.8.1.1 The filled structured-questionnaire and case record form would be checked for any mistake and for completeness. Encoding the answers of each question was done afterward.

3.8.1.2 Data entry into computer program. To ensure the correctness, two persons were assigned to do data entry using the same data set independently. Then, both files were compared electronically. Any error identified will be checked through the original questionnaire and case record form for the correct value.

3.8.1.3 The data was analyzed using the commercial statistical software package “STATA”.

3.8.2 Statistical analysis

3.8.2.1 Descriptive statistics

(1) Frequency and percentage were used for categorical data, i.e., sex, religion, education, occupation, income, marital status, language used, smoker, alcohol consumption, mode of travel, travel safety in the unrest area of the three southern provinces, access to information about TB, source of information, direct supervision of anti TB intake, chronic disease, drug history, symptoms, HIV infection, chest radiographic finding and history of BCG vaccination.

(2) Mean, standard deviation, median, maximum and minimum were used for continuous data, i.e., age, number of person in the same household, social support received, level of knowledge about TB, perception about TB, distance between home and clinic, time travel to clinic and travel expense.

3.8.2.2 Inferential statistics

(1) Univariate analysis was used to analyze the associations between each variable and delayed treatment of pulmonary tuberculosis among newly detected open cases. Crude odds ratio, 95% confidence interval and p – value were calculated.

(2) Logistic regression was used to estimate the magnitude of association with delayed treatment. Then, the factors with p – value < 0.25 (57) were selected into the estimated model. Stepwise multiple logistic regression with back ward elimination was employed. Adjusted odds ratio and 95% confidence interval were calculated at the significant level of p – value < 0.05.

CHAPTER IV
RESULTS

The objective of this study was to determine factors associated with delayed treatment of smear positive newly detected pulmonary tuberculosis in Narathiwat Province. Two hundred and seven cases of AFB positive smear were recruited. Sixty nine cases were classified as delayed group (case) and 138 patients were in non-delayed treatment group (control). The results had been presented as frequency percentage, mean, standard division, median, maximum and minimum.

4.1 Independent variables of the study

1. Socio-demographic characteristics include sex, age, religion, education, occupation, income, marital status, number of person living in the same house, language used, smoking, alcohol consumption, access to information about TB, source of information, chronic disease, drug history for any chronic disease, the person who supervised anti TB drug intake, history of BCG vaccination, HIV infection, chest radiography result, symptoms, social support received, knowledge about TB and self perception about TB.

2. Environmental factors include distance between home and clinic, time travel to clinic, mode of travel, travel expense and travel safety in the unrest area of the three southern provinces.

Univariate analysis between independent variables and the delayed treatment were shown in Table 4.4 and Table 4.5. The magnitude of independent association between the independent variables and delayed treatment was analyzed using multiple logistic regression as shown in Table 4.6.

Table 4.1 Number and percentage of patients recruited, classified by each local hospital between May to October 2011

Hospitals	Number of register	Number of data collection	Percentage
Ra-ngae (ระแงะ)	49	44	89.8
Cho-airong (เจาะไอร้อง)	13	11	84.6
Si-sakhon (ศรีสาคร)	6	5	83.3
Su-ngai padi (สุไหงปาดี)	18	14	77.8
Takbai (ตากใบ)	27	21	77.8
Yi-ngo (ยี่งอ)	33	25	75.8
Waeng (แว้ง)	12	9	75.0
Bacho (บาเจาะ)	22	16	72.7
Su-ngai-kolok (สุไหงโก-ลก)	68	48	70.6
Rueso (รือเสาะ)	12	8	66.7
Chanae (จะแนะ)	5	3	60.0
Sukhirin (สุคิริน)	5	3	60.0
Total	270	207	76.7

The total number of delayed treatment group was 69 cases. More than half (63.8%) of the subjects were male and 36.2% were female. Most of the subjects (88.4%) aged 18 – 59 years old and 11.6% aged 60 years old or more (median = 43 years old; min-max = 18 - 74 years old). Most of the subjects (79.7%) were Islamism and 20.3% were Buddhism. Regarding the education level, the majority (39.1%) achieved primary school, 23.2% had no formal education, 17.4 % had secondary school education and also 17.4% had high school education. Regarding the occupation, the majority (31.9%) were agriculturists, 27.5% were manual workers and 18.8% were unemployed. More than two-third (68.1%) had inadequate income and, 31.9% had adequate income. More than two-third (69.6%) were married, 15.9% were single and 14.5% were widowed/ divorced/separated. More than half (60.9%) had 1 – 4 persons living in the same house, and 39.1% had 5 or more persons living the same house (median = 4, min – max = 1 - 20). More than half (63.8%) used Thai language as their mother-tongued language. 39.1% were current smokers, 39.1% were non smokers and 21.7% were ex-smokers. Only 14.5% were current alcoholic drinking.

More than two-third (79.7%) of subjects had previous history of receiving information about TB. Among these subjects, 47.8% received information from television, 23.2 % from family members and 23.2% from neighbors and health volunteers.

Regarding the chronic diseases, only 20.3% had chronic diseases. More than half (57.1%) of them had hypertension and 50.1% had diabetes. 18.8% of delayed treatment group currently received some drugs for their chronic diseases. Concerning the persons who supervised anti TB intake by the subjects, 91.3% were directly supervised by their relatives and 8.7% were supervised by the ones who were not the subjects' relatives.

More than half (58.0%) received previous BCG vaccination. Most of the subjects (84.1%) were not HIV-infected patients. More than half (53.6%) had abnormal chest radiography result. Most of them (100.0%) had cough, 73.9% had purulent sputum, 65.2% had fever, 53.6% had chest pain, 47.8% had weight loss, 43.5% had tiredness, 34.8% had anorexia and 29.0% had hemoptysis.

The majority of the subjects (71.0%) had high level of social support and 29.0% had moderate level of social support (median = 37 points, min – max = 27 - 43 points).

The majority of the subjects (72.5%) had high level of knowledge about TB and 27.5% had moderate level of knowledge about TB (median = 12 points, min – max = 5 – 15 points)

Regarding the four dimensions of self-perception about TB, more than half (60.9%) of the subjects had high level of perceived susceptibility, 37% had moderate level and 1.4% had low level of perceived susceptibility. The majority of the subjects (87.0%) had high level and 13% had moderate level of perceived severity of TB infection. A large majority of them (95.7%) had high level and 4.3% had moderate level of perceived benefit of prompt treatment. The majority of the subjects (76.8%) had high level, 20.3% had moderate level and 2.9% had low level of perceived barrier of access to health care. In conclusion, most of the subjects (75.4%) had high level and 24.6% had moderate level of total self perception score (median = 49 points, min – max = 33 – 58 points).

The total number of non-delayed treatment group (control group) was 138 cases. More than half (68.1%) of the subjects were male and 31.9% were female. Most of the subjects (80.4%) aged 18 – 59 years old and 19.6% aged 60 years old or more (median = 41 years old, min – max = 18 – 82 years old). The majority of them (85.5%) were Islamism and 14.5 were Buddhism. Regarding the education level, the majority (42.8%) achieved primary school, 21.0% had no formal education and also 16.7% had secondary education. Regarding the occupation, the majority (31.2%) were agriculturist, 24.6% were manual workers and 18.1% were unemployed. More than half (56.5%) had inadequate income and 43.5% had adequate income. More than half (66.7%) were married, 18.8% were single and 14.5% were widowed/divorced/separated. More than half (52.2%) had 5 or more persons living the same house, and 47.8% had 1 – 4 persons living the same house (median = 5, min – max = 1- 17). Most of them (87.7%) used Thai language as their mother-tongued language 40.6% were current smokers, 37.7% were non smokers and 21.7% were ex-smokers. Only 10.9% were current alcoholic drinking.

More than two-third (81.9%) of subjects had previous history of receiving information about TB. Among these subjects 46.0% received information from television, 38.1% from neighbor, 36.3 % from health personal and 32.7% from family member.

Regarding the chronic diseases, only 15.2% had chronic diseases, more than half (52.4%) of them had diabetes and 33.3% had hypertension. 14.5% of non-delayed treatment group currently received some drugs for their chronic diseases. Concerning the persons who supervised anti TB intake by the subjects, 97.8% were directly supervised by their relatives and 2.2 % were supervised by the ones who were not the subjects' relatives.

More than half (52.9%) receive previous BCG vaccination. Most of the subjects (77.5%) were not HIV-infected patients. More than half (54.3%) had normal chest radiography result A large majority (93.5%) had cough, 68.1% had purulent sputum, 62.3% had fever, 47.1% had chest pain, 39.9% had dyspnea, 33.3% had weight loss, 31.9% had tiredness and 30.4% had hemoptysis.

The majority of the subjects (76.1%) had high level of social support and 23.9% had moderate level of social support (Median = 38 points, Min – Max = 25 - 45 points)

The majority of the subjects (77.5%) had high level of knowledge about TB and 22.5% had moderate level of knowledge about TB. (Median = 12 points, Min – Max = 5 – 15 points)

Regarding the four dimensions of self-perception about TB, more than half (60.9%) of the subjects had high level of perceived susceptibility, 37.7% had moderate level and 1.4% had low level of perceived susceptibility. The majority of the subjects (89.9%) had high level of perceived severity of TB infection and 10.1% had moderate level of perceive severity of TB infection. A large majority of them (95.7%) had high level and 4.3% had moderate level of perceive benefit of prompt treatment. The majority of the subjects (80.4%) had high level, 18.1% had moderate and 1.4% had low level of perceived barrier of accesses to health care. In conclusion, most of the subjects (76.1%) had high level and 23.9% had moderate level of total self perception score (Median = 50 points.5, Min – Max = 38 - 59 points)

Table 4.2 Characteristics of the overall subjects recruited

Characteristics	Case (n = 69)		Control (n = 138)	
	Numbers	Percent	Numbers	Percent
Sex				
Male	44	63.8	94	68.1
Female	25	36.2	44	31.9
Age (Years) Median (Min - Max)	43 (18 - 74)		41 (18 - 82)	
≥ 60 years	8	11.6	27	19.6
18 – 59 years	61	88.4	111	80.4
Religion				
Islamism	55	79.7	118	85.5
Buddhism	14	20.3	20	14.5
Education				
No formal education	16	23.2	29	21.0
Primary school	27	39.1	59	42.8
Secondary	12	17.4	23	16.7
High school	12	17.4	17	12.3
Diploma / Bachelor / Higher	2	2.9	10	7.2

Table 4.2 Characteristics of the overall subjects recruited (cont.)

Characteristics	Case (n = 69)		Control (n = 138)	
	Numbers	Percent	Numbers	Percent
Occupation				
Unemployed	13	18.8	25	18.1
Student	1	1.4	11	8.0
Agriculturist	22	31.9	43	31.2
Manual worker	19	27.5	34	24.6
Vendor	6	8.7	12	8.7
Office worker	3	4.3	9	6.5
Civil servant	3	4.3	2	1.4
Entrepreneur	2	2.9	2	1.4
Income				
Adequate	22	31.9	60	43.5
Inadequate	47	68.1	78	56.5
Marital status				
Single	11	15.9	26	18.8
Married	48	69.6	92	66.7
Widowed/Divorced/Separated	10	14.5	20	14.5
Number of person lived in the same house				
Median (Min - Max)	4 (1 - 20)		5 (1 - 17)	
1 – 4 persons	42	60.9	66	47.8
$\geq$ 5 persons	27	39.1	72	52.2
Mother-tongued language				
Thai language	44	63.8	121	87.7
Pattani Malay language	25	36.2	17	12.3
Cigarette smoking				
Non smoker	27	39.1	52	37.7
Ex smoker	15	21.8	30	21.7
Current smoker	27	39.1	56	40.6
Alcohol consumption				
Non alcoholic drinker	53	76.8	116	84.1
Ex drinker	6	8.7	7	5.1
Current drinker	10	14.5	15	10.9

Table 4.2 Characteristics of the overall subjects recruited (cont.)

Characteristics	Case (n = 69)		Control (n = 138)	
	Numbers	Percent	Numbers	Percent
Accesses to information about TB.				
No	14	20.3	25	18.1
Yes	55	79.7	113	81.9
Source of information (more than one source also applicable)				
Television program	33	60.0	52	46.0
Family member	16	29.1	37	32.7
Neighbor	16	29.1	43	38.1
Health volunteer	16	29.1	33	29.2
Health personal	12	21.8	41	36.3
Article printed in formal book	6	10.9	9	7.9
Radio program	5	9.1	4	3.5
Poster	1	1.8	8	7.1
Local broadcasting in community	0	0.0	1	0.9
Chronic diseases				
No	55	79.7	117	84.8
Yes	14	20.3	21	15.2
Hypertension	8	57.1	7	33.3
Diabetes	7	50.0	11	52.4
COPD	0	0.0	3	14.3
Rheumatoid /Asthma /Allergy	2	14.3	1	4.8
Drug history				
No	56	81.2	118	85.5
Yes	13	18.8	20	14.5
Persons who directly supervised anti TB intake				
Relatives	63	91.3	135	97.8
Non relatives	6	8.7	3	2.2
History of BCG vaccination				
No	29	42.0	65	47.1
Yes	40	58	73	52.9

Table 4.2 Characteristics of the overall subjects recruited (cont.)

Characteristics	Case (n = 69)		Control (n = 138)	
	Numbers	**Percent**	**Numbers**	**Percent**
HIV infection				
No	58	84.1	107	77.5
Yes	2	2.9	9	6.5
Unknown	9	13.0	22	15.9
Chest radiography result				
Normal	32	46.4	75	54.3
Abnormal	37	53.6	63	45.7
Symptoms				
Cough				
No	0	0.0	9	6.5
Yes	69	100	129	93.5
Hemoptysis				
No	49	71.0	96	69.6
Yes	20	29.0	42	30.4
Purulent Sputum				
No	18	26.1	44	31.9
Yes	51	73.9	94	68.1
Fever				
No	24	34.8	52	37.7
Yes	45	65.2	86	62.3
Chest pain				
No	32	46.4	73	52.9
Yes	37	53.6	65	47.1
Weight loss				
No	36	52.2	92	66.7
Yes	33	47.8	46	33.3
Anorexia				
No	45	65.2	101	73.2
Yes	24	34.8	37	26.8

Table 4.2 Characteristics of the overall subjects recruited (cont.)

Characteristics	Case (n = 69)		Control (n = 138)	
	Numbers	Percent	Numbers	Percent
Tiredness				
No	52	75.4	94	68.1
Yes	17	24.6	44	31.9
Night sweating				
No	66	95.7	131	94.9
Yes	3	4.3	7	5.1
Dyspnea				
No	39	56.5	83	60.1
Yes	30	43.5	55	39.9
Difficult breathing				
No	67	97.1	135	97.8
Yes	2	2.9	3	2.2
Vomiting				
No	67	97.1	133	96.4
Yes	2	2.9	5	3.6
Sore throat				
No	66	95.7	135	97.8
Yes	3	4.3	3	2.2
Rhinorrhea				
No	68	98.6	132	95.7
Yes	1	1.4	6	4.3
Dizziness				
No	68	98.6	136	98.6
Yes	1	1.4	2	1.4
Headache				
No	69	100.0	132	95.7
Yes	0	0.0	6	4.3

Table 4.2 Characteristics of the overall subjects recruited (cont.)

Characteristics	Case (n = 69)		Control (n = 138)	
	Numbers	Percent	Numbers	Percent
Social support received				
Median (Min - Max)	37 (27 - 43)		38 (25 - 45)	
High level	49	71.0	105	76.1
Moderate level	20	29.0	33	23.9
Level of knowledge about TB.				
Median (Min - Max)	12 (5 - 15)		12 (5 - 15)	
High level	50	72.5	107	77.5
Moderate level	19	27.5	31	22.5
Perceived susceptibility of TB infection				
Median (Min - Max)	11 (5 - 15)		11 (5 - 15)	
High level	42	60.9	84	60.9
Moderate level	26	37.7	52	37.7
Low level	1	1.4	2	1.4
Perceived severity of TB infection				
Median (Min - Max)	13 (8 - 15)		13 (8 - 15)	
High level	60	87.0	124	89.9
Moderate level	9	13.0	14	10.1
Perceived benefit of prompt treatment				
Median (Min - Max)	14 (9 - 15)		14 (9 - 15)	
High level	66	95.7	132	95.7
Moderate level	3	4.3	6	4.3
Perceived barrier of access to health care.				
Median (Min - Max)	13 (5 - 15)		13 (5 - 15)	
High level	53	76.8	111	80.4
Moderate level	14	20.3	25	18.1
Low level	2	2.9	2	1.4
Total self perception				
Median (Min - Max)	49 (33 - 58)		50.5 (38 - 59)	
High level	52	75.4	105	76.1
Moderate level	17	24.6	33	23.9

Environmental factors

The case group: the average distance between home to clinic was 6.1 kilometer (Median = 4 kilometer, Min – Max = 0.3 – 20 kilometer) the average time travel was 14.3 minute (Median = 10 minute, Min – Max = 2 – 40 minute) the average travel expense was 25.4 baht. (Median = 20 baht, Min – max = 5 – 100 baht) Most of the subjects (82.6%) used motorcycle and 14.5% drove cars to travel to clinic. The most of the subjects (82.6%) felt safe to be free from local violence in the.

The control group: the average distance between home to clinic was 6.3 kilometer. (Median = 4 kilometer, Min – Max = 0.3 - 80 kilometer) and the average time travel was 14.4 minute (Median = 15, Min – Max = 3 – 60). The average travel expense was 27.1 baht (Median = 20, Min – Max = 0 – 250). Most of the subjects (85.5%) travel on motorcycle and 13.8% drove car to clinic. Most of the subjects (89.1%) felt safe to be free from local violence in the areas.

Table 4.3 Environmental factors of the overall subjects recruited

Characteristics	Case (n = 69)	Control (n = 138)
Distance to clinic, mean (SD); km.	6.1 (5.0)	6.3 (8.0)
Time travel to clinic, mean (SD); min	14.3 (9.2)	14.4 (9.2)
Travel expense mean (SD); baht	25.4 (17.4)	27.06 (28.2)
Mode of travel (number, %)		
Bicycle / Motorcycle	57 (82.6)	118 (85.5)
Car	10 (14.5)	19 (13.8)
Bus	2 (2.9)	1 (0.7)
Travel safety from local violence. (number, %)		
Safe	57 (82.6)	123 (89.1)
Not safe	12 (17.4)	15 (10.9)

4.2 The associations between independent factors and delayed-treatment of pulmonary tuberculosis.

Table 4.4 revealed the univariate analyses of each qualitative factor, while table 4.5 presented the univariate analyses of each quantitative factors associated with delayed treatment.

After univariate analyses, sex, age, education, occupation, income, marital status, smoking, alcohol consumption, chronic disease, drug history, symptoms of hemoptysis, purulent sputum, fever, chest pain, dyspnea, anorexia, social support received, knowledge about TB and total self perception score about TB were not found to be significantly associated with delayed treatment (p-value > 0.05). However, only type of mother-tongued language used, having relatives to directly supervise anti TB intake and symptom of weight loss were found to be significantly associated with delayed treatment (p-value < 0.05).

The patients who used Pattani malay language were more likely to be associated with delayed treatment (OR = 4.04, 95%CI: 1.99 – 8.81).

The patients who were directly supervised for anti TB intake by non relatives were significantly associated with delayed treatment (OR = 4.29, 95%CI: 1.04 – 17.69).

The patients who had weight loss were significantly associated with delayed treatment (OR = 1.83, 95%CI: 1.02 – 3.31).

None of environmental factors, i.e., distance between home and clinic, time travel to clinic, travel expense, mode of travel and travel safety in unrest areas of the three southern provinces were found to be associated with delayed treatment (p – value > 0.05).

Table 4.4 Univariate analysis of qualitative factors between the case and control groups

Characteristics	Pulmonary Tuberculosis		Crude OR	95% CI	p-value*
	Case (n = 69) Number (%)	Control (n = 138) Number (%)			
Sex					0.533
Male	44 (63.8)	94 (68.1)	1		
Female	25 (36.2)	44 (31.9)	1.21	0.66 – 2.23	
Age (Years)					0.107
≥ 60 years	8 (11.6)	27 (19.6)	1		
18 – 59 years	61 (88.4)	111 (80.4)	1.85	0.79 – 4.33	
Education					0.488
Diploma / Bachelor and Higher	2 (2.9)	10 (7.3)	1		
No formal education	16 (23.2)	29 (21.0)	2.76	0.54 – 14.17	
Primary	27 (39.1)	59 (42.8)	2.29	0.47 – 11.16	
Occupation					0.455
Un employ	13 (18.8)	25 (18.1)	1		
Student	1 (1.4)	11 (8.0)	0.17	0.02 – 1.51	
Agriculturist	22 (31.9)	43 (31.2)	0.98	0.42 – 2.29	
Manual worker	19 (27.5)	34 (24.6)	1.07	0.45 – 2.58	
Vendor	6 (8.7)	12 (8.7)	0.96	0.29 – 3.15	
Officer worker	3 (4.3)	9 (6.5)	0.64	0.15 – 2.78	
Civil servant	3 (4.3)	2 (1.4)	2.88	0.43 – 19.49	
Entrepreneur	2 (2.9)	2 (1.4)	1.92	0.24 – 15.26	
Income					0.105
Adequate	22 (31.9)	60 (43.5)	1		
Inadequate	47 (68.1)	78 (56.5)	1.64	0.89 – 3.01	
Marital status					0.871
Single	11 (15.9)	26 (18.8)	1		
Married	48 (69.6)	92 (66.7)	1.23	0.56 – 2.71	
Widowed/Divorced	10 (14.5)	20 (14.5)	1.18	0.42 – 3.33	
Mother-tongued language					<0.001*
Thai language	44 (63.8)	121 (87.7)	1		
Pattani Malay	25 (36.2)	17 (12.3)	4.04	1.99 – 8.19	

Table 4.4 Univariate analysis of qualitative factors between the case and control groups (cont.)

Characteristics	Pulmonary Tuberculosis		Crude OR	95% CI	p-value*
	Delay (n = 69) Number (%)	Non delay (n = 138) Number (%)			
Cigarette smoking					0.976
Non smoker	27 (39.1)	52 (37.7)	1		
Ex smoker	15 (21.7)	30 (21.7)	0.96	0.44 – 2.09	
Current smoker	27 (39.1)	56 (40.6)	0.93	0.48 – 1.78	
Alcohol consumption					0.426
Non alcoholic drinker	53 (76.8)	116 (84.1)	1		
Ex drinker	6 (8.7)	7 (5.1)	1.87	0.60 – 5.85	
Current drinker	10 (14.5)	15 (10.9)	1.46	0.62 – 3.46	
Accesses to information about TB					0.707
Yes	55 (79.7)	113 (81.9)	1		
No	14 (20.3)	28 (18.1)	1.15	0.55 – 2.39	
Chronic diseases					0.3642
No	55 (79.7)	117 (84.8)	1		
Yes	14 (20.3)	21 (15.2)	1.41	0.67 – 2.99	
Drug history					0.426
No	56 (81.2)	118 (85.5)	1		
Yes	13 (18.8)	20 (14.5)	1.37	0.64 – 2.95	
Persons who directly supervised anti TB intake					0.037*
By relative	63 (91.3)	135 (97.8)	1		
Non relative	6 (8.7)	3 (2.2)	4.29	1.04 – 17.69	
Hemoptysis					0.830
No	49 (71.0)	96 (69.6)	1		
Yes	20 (29.0)	42 (30.4)	0.93	0.49 – 1.76	
Purulent sputum					0.387
No	18 (26.1)	44 (31.9)	1		
Yes	51 (73.9)	94 (68.1)	1.33	0.69 – 2.53	

Table 4.4 Univariate analysis of qualitative factors between the case and control groups (cont.)

Characteristics	Pulmonary Tuberculosis		Crude OR	95% CI	p-value*
	Delay (n = 69) Number (%)	Non delay (n = 138) Number (%)			
Fever					0.683
No	24 (34.8)	52 (37.7)	1		
Yes	45 (65.2)	86 (62.3)	1.13	0.62 – 2.07	
Chest pain					0.376
No	32 (46.4)	73 (52.9)	1		
Yes	37 (53.6)	65 (47.1)	1.30	0.73 – 2.32	
Weight loss					0.044*
No	36 (52.2)	92 (66.7)	1		
Yes	33 (47.8)	46 (33.3)	1.833	1.02 – 3.31	
Anorexia					0.239
No	45 (65.2)	101 (73.2)	1		
Yes	24 (34.8)	37 (26.8)	1.46	0.78 – 2.71	
Tiredness					0.277
No	52 (75.4)	94 (68.1)	1		
Yes	17 (24.7)	44 (31.9)	0.69	0.36 – 1.34	
Night sweat					0.817
No	66 (95.7)	131 (94.9)	1		
Yes	3 (4.3)	7 (5.1)	0.85	0.21 – 3.39	
Dyspnea					0.6180
No	39 (56.5)	83 (60.1)	1		
Yes	30 (43.5)	55 (39.9)	1.16	0.65 – 2.08	
Social support received					0.434
High level	49 (71.0)	105 (76.1)	1		
Moderate level	20 (29.0)	33 (23.9)	1.30	0.68 – 2.49	
Level of knowledge about TB.					0.425
High level	50 (72.5)	107 (77.5)	1		
Moderate level	19 (27.5)	31 (22.5)	1.31	0.68 – 2.54	

Table 4.4 Univariate analysis of qualitative factors between the case and control groups (cont.)

Characteristics	Pulmonary Tuberculosis		Crude OR	95% CI	p-value*
	Delay (n = 69) Number (%)	Non delay (n = 138) Number (%)			
Total self perception					0.909
High level	52 (75.4)	105 (76.1)	1		
Moderate level	17 (24.6)	33 (23.9)	1.04	0.53 – 2.04	
Mode of travel					0.485
Bicycle / Motorcycle	57 (82.6)	118 (85.5)	1		
Car	10 (14.5)	19 (13.8)	1.09	0.48 – 2.49	
Bus	2 (2.9)	1 (0.7)	4.14	0.37 – 46.62	
Travel safety from local violence					0.197
Safe	57 (82.6)	123 (89.1)	1		
Not safe	12 (17.4)	15 (10.9)	1.73	0.76 – 3.93	

Table 4.5 Univariate analysis of quantitative factors between the case and control groups

Characteristics	Delay (n = 69)		Non delay (n = 138)		p-value*
	Mean ± SD	Median	Mean ± SD	Median	
Distance to clinic	6.11 + 5.0	4.0	6.27 + 8.0	4.0	0.872
Time travel to clinic	14.25 + 9.2	10.0	14.41 + 9.2	15.0	0.901
Travel expenditure	25.36 + 17.4	20.0	27.06 + 28.2	20.0	0.639

After using the multiple logistic regression analysis and backward elimination, the factors significantly associated with delayed treatment were ; patients who used pattani malay languages (OR = 10.50, 95% CI = 4.15 – 26.61), direct supervision of anti TB intake by non relatives (OR = 9.79, 95% CI = 2.09 – 46.00), patients aged under 60 years old (OR = 5.21, 95% CI = 1.79 – 15.19) and symptom of weight loss (OR = 2.56, 95 % CI = 1.30 – 5.03)

Table 4.6 Multiple logistic regression analysis of factors associated with delayed treatment

Factor	Crude OR	Adjusted OR	95% CI for adjusted OR	P-value
Mother-tongued language				
Thai language	1	1		
Pattani Malay language	4.04	10.50	4.15 – 26.61	<.001
Persons who directly supervised anti TB intake				0.004
Relatives	1	1		
Non relatives	4.29	9.79	2.09 – 46.00	
Age (Years)				
≥ 60 years	1	1		
18 – 59 years	1.85	5.21	1.79 – 15.19	0.003
Weight loss				
No	1	1		
Yes	1.83	2.56	1.30 – 5.03	0.006

CHAPTER V
DISCUSSION

The objective of this study is to determine factors associated with delayed treatment of newly detected smear positive pulmonary tuberculosis in Narathiwat province. The significant factors associated with delayed treatment were those aged under 60 years old, the patients who used Pattani Malay language as their mother-tongued language, those who were directly supervised for anti-TB intake by non-relatives, and patient who experienced weight loss.

Age: In this study the patients aged under 60 years old were more likely to receive delayed treatment (OR = 5.2) as compared to patients aged 60 years old or more. (p – value = 0.003). This might be the result of living in an extended family where the older people were looked after by the family members, so they received attention from the younger family members. On the other hand, those who aged less than 60 years old tend to ignore their illness and might not stop their daily work to seek health care unless the disease progresses into a very severe stage. This is similar to what was found by Gershon AS (42), Rojpibulstit M (6) and Chiang CY (49) who reported that there was an association between age less than 65 years old and delayed treatment. However, there were studies found in the opposite direction. Farah MG (50), Karim F (32) and Lin CY (53) found that patients aged more than 60 years old were more likely to be associated with delayed treatment.

Languages used: This study found that those who used Pattani Malay language had higher likelihood to receive delayed treatment as compared to patients who used Thai languages or understood Thai languages (OR = 10.50). In Narathiwat province, the Muslims usually use Pattani Malay language to communicate with other people and might not understand Thai language. Therefore, these subjects lacked the opportunities to gain knowledge and access to health information from public media or other sources. When the symptoms of TB occured, they might not be aware of TB because the initial TB symptoms were similar to other common respiratory diseases such as common cold

resulting in delayed treatment. The finding was also similar to the study of Mesfin MM (43) who found that patients who were illiterate were significantly associated with delayed treatment (OR = 1.7)

Direct supervision for anti-TB intake: Those who were directly supervised for anti-TB intake by non-relatives were more likely to receive delayed treatment (OR = 9.79). According to social psychology, the closed relatives are vital to any individual to follow the advice of health workers. When a member of the family has any abnormal symptom, the other members can easily identify illness and give the patient the necessary care. A closed family relationship is therefore able to reduce the problem of delayed treatment (14).

Symptoms

Weight loss: Weight loss of the patients had significant association with delayed treatment (OR = 2.56). Weight loss would be the result of delayed treatment rather than the cause since a long duration of untreated TB would bring about more weight loss. This finding also agreed with those reported by Schneider D (37) who found that weight loss was significantly associated with delayed treatment (OR = 2.99). The studies by Lacroix C (44), and dos Santos (47) and Rojpibulstit M (6) also found the same association.

Hemoptysis: The study found that 29.0% of the case group while 30.4% of the control group had hemoptysis. As such, hemoptysis was not associated with delayed treatment. All the subjects in both groups admitted that if they had the symptom of hemoptysis, they would seek medical treatment as soon as possible. In the case group, chronic cough was viewed as a benign condition. As soon as the disease progressed and hemoptysis occurred, it was viewed as an alarming condition which brought them to see the doctor. Our result was similar to those found by Narawut Khamhom (28), Schneider D (37), Ngadaya ES (39), Lacroix C (44), Yimer S (46), dos Santos MA (47) Yimer S (30) Lin CY (53) and Farah MG (50)

Chest pain: The study found that 53.6% of the case group and 47.1% of the control group had chest pain. It can be concluded that chest pain does not associate with delayed treatment. The same conclusion was reported by Narawut Khamhom (27), Schneider D (37), Yimer S (46), Yimer S (30) and Farah MG (50).

Fever: The study found that 65.2% of the case group and 62.3% of the control group had fever. Hence, fever is not associated with delayed treatment. This was also reported by Narawut Khamhom (27), Schneider D (37), Ngadaya ES (39), Lacroix C (44), Yimer S (46) and Farah MG (50)

Night sweating : The study found that 4.3% of the case group and 5.1% of the control group had night sweating. It can be concluded that this factor does not associate with delayed treatment. Similar result was also found by Narawut Khamhom (27), Lacroix C (44), Yimer S (46) and Yimer S (30). However, Schneider D (37) found that night sweating was associated with prompt seeking medical treatment (OR = 0.48 : 95% CI 0.24 – 0.96).

Dyspnea: The study found that 43.5% of the case group and 39.9% of the control group had dyspnea. The conclusion can be made that this factor does not associated with delayed treatment. Similar result was also supported by the studies of Narawut Khamhom (27), Yimer S (30), Lin CY (53) and Farah MG (50). However, Schneider D (37) revealed a significant association between dyspnea and delayed treatment.

Tiredness: The study found 24.7% of the case group and 31.9% of the control group reported tiredness. This factor was not associated with delayed treatment. Similar result was also supported by the studies of Narawut Khamhom (27) and Yimer S (46).

Sex: Among the case group, 63.8% and 36.2% were male and female respectively. Among the control group, 68.1% and 31.9% were male and female correspondingly. In both groups of patients, the number of male is higher than female. Hence, sex did not associate with delayed treatment. Similar result was found by Kampanart Chaychoowong (33) Kiwuwa MS (34) Demissie M (35) Narith Ratha (36) Schneider D (37) Aye R (38) Ngadaya ES (39) Gele AA (40) Mahendradhata Y (41) Gershon AS (42) Mesfin MM (43) Lacroix C (44) Basnet R (45) Yimer S (46) dos Santos MA (49) Rojpibulstit M (6) Mfinanga SG (48) Chiang CY (49) Farah MG (50) Odusanya OO (51) and Mirsaeidi SM (52). A different result was reported by Narawut Khamhom (27) which found that male was more likely to have delayed treatment as compared to female (OR = 4.1). This finding was also supported by Hoa NP (28), Wang J (29) and Yimer S (30). In addition, female had significant association with delayed treatment reported by Needham DM (31) and Karim F, (32).

Education: Although a person who has higher education would be more likely to gain more information and knowledge about healthcare service and can easily access to the best health care and disease prevention. (58). In this study found that education level did not relate to delayed treatment. This might be the results of the availability of various public media such as television, radio, etc. countrywide. These provided the patients the access to information and knowledge about TB. Our finding was also supported by Narawut Khamhom (27), Kampanart Chaychoowong (33), Kiwuwa MS (34), Demissie M (35), Narith Ratha (36), Schneider D (37), Ngadaya ES (39), Gele AA (40), Basnet R (45), Hoa NP (28), dos Santos MA (47), Yimer S (30) and Mirsaeidi SM (52). Needham DM (31) and Mfinanga SG (48). However, those who had no formal education were more likely to receive delayed treatment compared to those who had formal education (OR = 1.74).

Occupation: In this study, there was no association between occupation and delayed treatment. The finding was also revealed by Narawut Khamhom (27), Kampanart Chaychoowong (33), Demissie M (35), Schneider D (37), Aye R (38), Gele AA (40) and Mesfin MM (43). Kiwuwa (34). However, those who were agriculturists received delayed treatment (OR = 4.7). The studies of dos Santos MA (47) and Mfinanga SG (48) found that those who were unemployed were more likely to receive delayed TB treatment. (OR = 1.77)

Income: This study found that 68.1% of the case group and 56.6% of the control group had inadequate income. It was concluded that there was no association between income and delayed treatment. The result was similar to the studies of Kampanart Chaychoowong (33), Narith Ratha (36), Hoa NP (28), Yimer S (46), Needham DM (31) and dos Santos MA (47). However, according to the study of Narawut Khamhom (27), the patients who had monthly income of less than 1,500 baht were more likely to have delayed TB treatment (OR = 2.7). Yilmaz A (54) also found that the economic hardship related to delayed treatment.

Marital status: This study found that marital status did not associate with delayed treatment. This finding agreed with those supported by Kampanart Chaychoowong (33), Schneider D (37), Gele AA (40), and Mesfin MM (43). However, the patients who were single were significantly associated with delayed treatment reported by Narawut Khamhom (27) (OR = 3.0).

Smoking : This study found that the history of smoking does not associate with delayed treatment, because the percentage of both smoker and non-smoker groups are comparable. The result was similar to the studies of Kampanart Chaychoowong (33), Lacroix C (44), Rojpibulstit M (6) and Chiang CY (49). However, Basnet R (45) found that the patients who smoked more than 5 cigarettes per day had higher risk of delayed treatment (OR = 2.7).

Alcohol consumption : This study found that history of alcohol consumption did not associate with delayed treatment. As the majority of the population in Narathiwat province is Muslims, alcohol drinking is prohibited. Only few patients in this study had history of alcohol consumption. The result was also confirmed by the studies of Kampanart Chaychoowong (33), Basnet R (45) and dos Santos MA (47). However, according to the study by Narawut Khamhom (27), alcohol drinking was significantly associated with delayed treatment (OR = 2.8). Daily alcohol consumption was found to be an independent predictor of delayed treatment reported by Kiwuwa MS (34) (OR = 3.7).

Accesses to information about tuberculosis : This study found the level of access to information did not associate with delayed treatment. This might be the results of the availability of various forms of public media, such as television. In addition, they might receive information from the family members and health volunteers who were very close to them. The result was also similar to what was found by Kampanart Chaychoowong (33). However, Narith Ratha (36) found that those who never got information about TB were more likely to receive delayed treatment.

Social support : Social support included attention, care, necessary material, advice and the necessary information the patients received from other people. The social support may affect the morals of the patients (59). In this study, this factor did not associate with delayed treatment. This might be due to the fact that most patients in both groups received high level of social support. However, Kampanart Chaychoowong (33) found that low level of social support was significantly related to delayed treatment (OR = 3.7).

Knowledge about tuberculosis: This study revealed that the majority of both groups had high level of knowledge about TB. This factor therefore did not associate with delayed treatment. Health behavior could be determined by many factors. Those who had a good knowledge about TB might choose to delay the treatment due to lack

of motivation to get prompt treatment (59). In this study, all subjects were seen after having received treatment. So both groups had already gained necessary knowledge about TB from health workers during their clinic visits. The result was also similar to the studies of Chaychoowong (33) Kiwuwa MS (34) and Mesfin MM (43). However, Hoa NP (28) reported that the patients who had better knowledge of tuberculosis were more likely to seek treatment at clinics and hospitals. Narith Ratha (36) found that knowledge of tuberculosis was significantly associated with delayed treatment. The study of Demissie M (35) done in Ethiopia found that lack of knowledge could cause delayed diagnosis of TB. Gele AA (40) found that low level of knowledge on TB was significantly associated with more than 60-day delayed treatment (OR = 2.02).

Distance between home and clinic: This factor did not associate with delayed treatment because the average distance between home and clinic of both groups were similar. This the result was also supported by the studies of Narawut Khamhom (27), Kampanart Chaychoowong (33), Kiwuwa MS (34), Gele AA (40), Yimer S (30) and Mfinanga SG (48). However, the studies done by Demissie M (35), Narith Ratha (36), Yilmaz A (54) and Gele AA (40) revealed a significant relationship between the distance from home to health institute and delayed treatment. Mfinanga SG (48) reported that patients living more than 5 km. from health facilities were more likely to delay their TB treatment (OR = 2.24).

Traveling time to clinic: The average traveling time to clinic in both groups were not different. So, traveling time to clinic did not associate with delayed treatment. Kampanart Chaychoowong (33) Ngadaya ES (39) and Basnet R (45) also reported the same result. However, Narith Ratha (36) claimed that traveling time was a significant factor associated with delayed treatment. Narawut Khamhom (27) further found that those who had to take 30 minutes or more to travel to clinic would be more likely to delay their treatment (OR = 3.3).

Mode of travel: Because most of the subjects traveled by a motorcycle, this factor did not associate with delayed treatment. The result was similar to those reported by Kampanart Chaychoowong (33), However, travel by public transport was found to be associated with delayed treatment revealed by the study of Narawut Khamhom (27) (OR = 3.7).

Travel expense: Because the average travel expense was quite low in our study, travel expense was therefore not associated with delayed treatment. During the interview, the patients confirmed that travel expense was not a significant barrier for seeking treatment at hospital. The result was similar to the studies of Narawut Khamhom (27), Kampanart Chaychoowong (33) and Narith Ratha (36).

Travel safety in the unrest area of the three southern provinces : Because most of them felt safe and believed that they were not the target group of the violence, therefore, this factor did not associate with delayed treatment. In short, local violence was not the significant barrier to seeking treatment at hospital.

CHAPTER VI
CONCLUSION AND RECOMMENDATIONS

This study employed unmatched case – control study to identify various factors associated with delayed treatment of pulmonary tuberculosis among newly detected open cases in Narathiwat province. Data collection was carried out during May 2011 to October 2011.

6.1 Conclusion

6.1.1 General characteristics.

The total number of delayed treatment cases was 69 cases. More than half were male, most of the subjects aged between 18 – 59 years old (Median = 43 years old, Min – Max = 18 – 74 years old). Most of the subjects were Muslims, had primary school education and worked in agricultural sector. More than two-thirds earned inadequate monthly income and were married. More than half of the subjects had 1 – 4 persons living in the same house (Median = 4 persons, Min – Max = 1 – 20 persons) and were able to use Thai language. The number of cigarette smokers was the same as non-smokers. Most of them did not drink alcohol. More than two-thirds could access to health information via television, family members, neighbors and health volunteers. Only few subjects had chronic diseases such as hypertension and diabetes. A large majority of subjects received direct supervision of anti TB intake by relatives and more than half received BCG vaccination. Most of them were negative for anti HIV testing. Their chest radiography results were not normal. The majority of them had cough, 73.9% had purulent sputum, 65.2% had fever, 53.6% had chest pain, and 47.8% experienced weight loss, 43.5% suffered from tiredness, 34.8% had anorexia and 29.0% had hemoptysis. Most of subjects received high level of social support, and had good knowledge and self perception about TB.

The total number of the control group was 138 cases. More than half were male, aged between 18 – 59 years old (Median = 41 years old, Min – Max = 18 – 82 years old). The majority of them followed Islamic religion, had primary school education, and earned their livings in agricultural sector. More than half could not earn adequate monthly income, were married, and had 5 persons living in the same house. Most of them could communicate in Thai language. The majority of them was not current smokers and did not drink alcohol. More than two-thirds had ever accessed to information about TB from television, neighbors and health workers. Only few patients had chronic diseases and more than half of them had diabetes and hypertension. The majority of them received a direct supervision of anti TB intake by relatives and over half received BCG vaccination. Most of them were negative for anti HIV testing and more than half had normal chest radiographic finding. The majority suffered from cough, 68.1% had purulent sputum, 62.3% had fever, 47.1% had chest pain, 39.1% suffered from dyspnea, 33.3% and 31.1% experienced weight loss and tiredness respectively. 30.4% had hemoptysis. The most of subjects had high level of social support, knowledge and self perception about TB.

6.1.2 Environmental factors

The case group: the average distance between home to clinic was 6.1 Km. (Median = 4 Km, Min – Max = 0.3 – 20 Km) and the average time travel was 14.3 minute (Median = 10 minute, Min – Max = 2 – 40 minute). The average travel expense was 25.4 baht (Median = 20 baht, Min – Max = 5 – 100). Most of the subjects used motorcycle to travel to clinic and felt safe to be free from local violence in the areas.

The control group: the average distance between home to clinic was 6.3 Km. (Median = 4 Km, Min – Max = 0.3 – 80 Km) and the average time travel was 14.4 minute (Median = 15 minute, Min – Max = 3 – 60 minute). The average travel expense was 27.1 baht. Most of the subjects traveled on motorcycle to clinic and felt safe to be free from local violence in the areas.

6.1.3 Statistical analysis to identify the independent factors associated with delayed treatment using multiple logistic regression analysis

By selecting the variables which achieved the p – value of < 0.25, 7 variables was selected in the estimated model, i.e., age, income, language used, direct supervision

anti TB intake, weigh loss, anorexia, and travel safety from local violence in the areas. Sequentially, four independent variables were identified to determine the delayed treatment. Those who used Pattani Malay language was significantly associated with delayed treatment (OR = 10.50) as compared to the patients who used Thai language. Patients who received direct supervision of anti TB intake from non-relatives was significantly related to delayed treatment (OR = 9.79) compared to the patients who were supervised by their own relatives. Age between 18 – 59 years old was significantly associated with delayed treatment (OR = 5.21) as compared to age 60 years old or more. Patients who suffered from weight loss was significantly associated with delayed treatment (OR = 2.56) as compared to those who did not.

6.2 Recommendations.

Since case finding and prompt treatment is the key component of tuberculosis control. However, tuberculosis is commonly subjected to delayed diagnosis and treatment due to its slow progression giving rise to the occurrence of non-specific symptoms during the early stage of disease. Meanwhile, non-specific symptoms can also mislead the correct diagnosis of TB resulting in delayed treatment. Therefore, following our study results, some suggestions can be proposed to prevent delayed treatment of tuberculosis as follow;

6.2.1 The people at risk, e.g., age less than 60 years old, using local Malay language or inability to understand Thai language, living alone, should be visited by local health volunteers on a regular basis. When he/she has any health problem, the local health volunteers can offer some help without delay.

6.2.2 Health education involving the causes, symptoms, severity, method of transmission and treatment of tuberculosis should be promoted through public media. All the process and content of health education should be adapted according to the local socio-cultural context. Using local Malay language during the health education will be a powerful tool to deliver the message across the Malay speaking community like in Narathiwat Province.

6.2.3 Health volunteers should receive the updated knowledge about TB regularly. This can support their active roles in controlling TB in the community.

6.2.4 The effective screening campaign of TB should be organized by the district health care workers. The co-ordination program between the local health care workers and the physicians working in the hospital should be also set up for the effective referral system in the area.

6.2.5 The practice guideline for caring the patients who are the suspects of TB should be implemented. Equity, quality and effectiveness of the health service would, therefore, be created in our health care system.

6.2.6 In addition to providing care for the TB patients, their relatives or family members should be involved in the health care. Since the relatives can offer encouragement and support leading to the acceptance of treatment by the patients

6.3 Recommendations for future study

6.3.1 A study on delayed diagnosis and treatment caused by health care provider and their associated factors should be undertaken.

6.3.2 A study on the adverse outcomes of delayed treatment, such as treatment failure, development of lung lesion and stage of disease and the disease transmission within the same household should be carried out.

6.3.3 A study on health behavior in seeking health care among tuberculosis patients

6.3.4 A qualitative study (in-depth interview) of factors associated with delayed treatment.

6.4 Limitation of this study

6.4.1 The dropped out case who did not follow the treatment regimen were not identified due to the unrest in the three southern provinces.

6.4.2 The majority of population living in Narathiwat province use Pattani Malay language for their daily communication and some people cannot understand Thai language totally. Therefore, the researcher should be fluent in Pattani Malay language and be able to conduct an in-dept interview.

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APPENDIX

เอกสารหมายเลข 4

หนังสือแสดงเจตนายินยอมเข้าร่วมโครงการวิจัย

(Informed Consent Form)

วันที่..... **เดือน**..... **พ.ศ**.....

ข้าพเจ้า..... **อายุ**.....**ปี**

อาศัยอยู่บ้านเลขที่.....**ถนน**..... **แขวง/ตำบล**.....

เขต/อำเภอ.....**จังหวัด**.....**รหัสไปรษณีย์**.....

โทรศัพท์ .....

ขอแสดงเจตนายินยอมเข้าร่วมโครงการวิจัยเรื่อง "ปัจจัยที่มีความสัมพันธ์ต่อความล่าช้าในการเข้ารับการรักษาวัณโรคของผู้ป่วยที่เสมหะพบเชื้อรายใหม่ ในจังหวัดนราธิวาส"

ชื่อผู้วิจัย นางสาวชุติมา นุเคราะห์วัด

สถานที่ทำวิจัย คลินิกวัณโรค โรงพยาบาลในจังหวัดนราธิวาส

สถานที่ทำงานและหมายเลขโทรศัพท์ของหัวหน้าโครงการวิจัยที่ติดต่อได้ทั้งในและนอกเวลาราชการ .สำนักงานสาธารณสุขอำเภอเจาะไอร้อง จังหวัดนราธิวาส 96130 หมายเลขโทรศัพท์ 080 - 0370424

ผู้สนับสนุนทุนวิจัย ไม่มี

ระยะเวลาในการวิจัย 1 ปี 6 เดือน

โครงการวิจัยนี้ทำขึ้นเพื่อ ให้ทราบข้อมูลทั่วไปของผู้ป่วยวัณโรคที่มีผลเสมหะพบเชื้อและเพื่อทำให้ทราบว่าว่ามีสาเหตุอะไรบ้างที่ทำให้ผู้ป่วยที่มีอาการคล้ายกับวัณโรคเข้ารับการตรวจรักษาล่าช้า

ประโยชน์ที่คาดว่าจะได้รับจากการวิจัย เพื่อเป็นแนวทางในการแก้ไขปัญหาการเข้ารับการรักษาที่ล่าช้าของผู้ป่วย

ข้าพเจ้าได้รับเชิญให้เข้าร่วมการวิจัยนี้เพราะเป็นผู้ป่วยวัณโรคปอดเสมหะพบเชื้อรายใหม่ที่มีอายุมากกว่า 18 ปี และขึ้นทะเบียนรักษาวัณโรคในโรงพยาบาลในจังหวัดนราธิวาส ตั้งแต่วันที่ 1 ตุลาคม 2553

จะมีผู้เข้าร่วมการวิจัยนี้ทั้งสิ้นประมาณ 195 คน

- **หากข้าพเจ้าตัดสินใจเข้าร่วมการวิจัยแล้วจะมีขั้นตอนการวิจัยดังต่อไปนี้คือ**.ข้าพเจ้าจะต้องตอบคำถามจากการสัมภาษณ์ 1 ครั้งตามความเป็นจริงทุกประการ

ความเสี่ยงที่อาจจะเกิดขึ้นเมื่อเข้าร่วมการวิจัย ผู้วิจัยสามารถทราบข้อมูลส่วนตัวรวมทั้งประวัติการเจ็บป่วยของผู้เข้าร่วมการวิจัยได้ และนอกจากนี้ความเสี่ยงอาจจะเกิดขึ้นจากการสัมภาษณ์ผู้ป่วย ได้แก่ ผู้ป่วยอาจรู้สึกหงุดหงิดรำคาญ ไม่พึงพอใจ ถ้าต้องตอบคำถามเป็นเวลานาน ดังนั้นเวลาในการสัมภาษณ์คาดว่าจะใช้เวลาไม่เกิน 15 นาที

หากข้าพเจ้าไม่เข้าร่วมในโครงการวิจัยนี้ ข้าพเจ้าก็จะได้รับการตรวจเพื่อการวินิจฉัยและรักษาโรคของข้าพเจ้าตามวิธีการที่เป็นมาตรฐานคือ.การดูแลรักษาวัณโรคตามมาตรฐานสากล

หากมีข้อข้องใจที่จะสอบถามเกี่ยวข้องกับการวิจัย หรือหากเกิดผลข้างเคียงที่ไม่พึงประสงค์จากการวิจัย ข้าพเจ้าสามารถติดต่อนางสาวชุติมา นุเคราะห์วัด .หมายเลขโทรศัพท์ 080 – 0370424 ในการเข้าร่วมการวิจัยครั้งนี้ข้าพเจ้าจะไม่ได้รับค่าตอบแทน และไม่มีค่าใช้จ่ายที่ข้าพเจ้าต้องรับผิดชอบ

หากมีข้อมูลเพิ่มเติมทั้งด้านประโยชน์และโทษที่เกี่ยวข้องกับการวิจัยนี้ ผู้วิจัยจะแจ้งให้ข้าพเจ้าทราบโดยรวดเร็วและไม่ปิดบัง

ข้อมูลส่วนตัวของข้าพเจ้าจะถูกเก็บรักษาไว้โดยไม่เปิดเผยต่อสาธารณะเป็นราย บุคคล แต่จะรายงานผลการวิจัยเป็นข้อมูลส่วนรวมโดยไม่สามารถระบุข้อมูลรายบุคคลได้ ข้อมูลของผู้เข้าร่วมการวิจัยเป็นรายบุคคลอาจมีคณะบุคคลบางกลุ่มเข้ามาตรวจสอบได้ เช่น ผู้ให้ทุนวิจัย สถาบัน หรือองค์กรของรัฐที่มีหน้าที่ตรวจสอบ รวมถึงคณะกรรมการจริยธรรมการวิจัยในคน เป็นต้น

ข้าพเจ้ามีสิทธิ์ถอนตัวออกจากโครงการวิจัยเมื่อใดก็ได้ โดยไม่ต้องแจ้งให้ทราบล่วงหน้าหรือระบุเหตุผล และการไม่เข้าร่วมการวิจัยหรือถอนตัวออกจากโครงการวิจัยนี้ จะไม่มีผลกระทบต่อการบริการและการรักษาที่สมควรจะได้รับตามมาตรฐานแต่ประการใด

หากข้าพเจ้าได้รับการปฏิบัติที่ไม่ตรงตามที่ได้ระบุไว้ในเอกสารชี้แจงนี้ ข้าพเจ้าสามารถแจ้งให้ประธานคณะกรรมการจริยธรรมการวิจัยในคนทราบได้ที่ สำนักงานคณะกรรมการจริยธรรมการวิจัยในคน ตึกอดุลยเดชวิกรม ชั้น 6 ร.พ.ศิริราช โทร. (02) 419-6405-6 โทรสาร (02) 419-6405

ข้าพเจ้าได้ทราบถึงสิทธิ์ที่ข้าพเจ้าจะได้รับข้อมูลเพิ่มเติมทั้งทางด้านประโยชน์และโทษจากการเข้าร่วมการวิจัย และสามารถถอนตัวหรืองดเข้าร่วมการวิจัยได้ทุกเมื่อ โดยจะไม่มีผลกระทบต่อการบริการและการรักษาพยาบาลที่ข้าพเจ้าจะได้รับต่อไปในอนาคต และยินยอมให้ผู้วิจัยใช้ข้อมูลส่วนตัวของข้าพเจ้าที่ได้รับจากการวิจัย แต่จะไม่เผยแพร่ต่อสาธารณะเป็นรายบุคคล โดยจะนำเสนอเป็นข้อมูลโดยรวมจากการวิจัยเท่านั้น

ข้าพเจ้าได้รับทราบข้อมูลของโครงการข้างต้น ตลอดจนข้อดี ข้อเสีย ที่จะได้รับจากการเข้าร่วมโครงการในครั้งนี้และข้าพเจ้ายินยอมที่จะเข้าร่วมในโครงการดังกล่าว จึงลงลายมือชื่อไว้

ลงชื่อ..... ผู้เข้าร่วมการวิจัย/วันที่.....

(.....)

ลงชื่อ.....ผู้ให้ข้อมูลและขอความยินยอม/หัวหน้าโครงการวิจัย/วันที่.....

(.....)

ในกรณีผู้เข้าร่วมการวิจัยอ่านหนังสือไม่ออก ผู้ที่อ่านข้อความทั้งหมดแทนผู้เข้าร่วมการวิจัยคือ .....

จึงได้ลงลายมือชื่อไว้เป็นพยาน

ลงชื่อ..... พยาน/วันที่.....

(.....)

ID [ ] – [ ][ ]

แบบสัมภาษณ์

เรื่อง ปัจจัยที่มีความสัมพันธ์ต่อความล่าช้าในการเข้ารับการรักษาวัณโรคของผู้ป่วยที่เสมหะพบเชื้อรายใหม่ในจังหวัดนราธิวาส

ส่วนที่ 1.แบบสัมภาษณ์ข้อมูลผู้ป่วยวัณโรคปอดเสมหะพบเชื้อรายใหม่

ตอนที่ 1. ข้อมูลด้านบุคคลของผู้ป่วยวัณโรค

<u>คำชี้แจง</u> โปรดทำเครื่องหมาย / หรือเติมคำในช่องว่างให้สมบูรณ์ที่สุดตามความเป็นจริง

1. เพศ

[ ] ชาย [ ] หญิง

2. อายุ.....ปี

3. ศาสนา

[ ] อิสลาม [ ] พุทธ [ ] อื่นๆ ระบุ.....

4. ระดับการศึกษา

[ ] ไม่ได้เรียนหนังสือ [ ] ประถมศึกษา

[ ] มัธยมศึกษาต้อนต้น [ ] มัธยมศึกษาตอนปลาย

[ ] ปวส./อนุปริญญา/ปริญญาตรี [ ] สูงกว่าปริญญาตรี

5. อาชีพ

[ ] ไม่ได้ประกอบอาชีพ [ ] นักเรียน/นักศึกษา

[ ] เกษตรกรรม [ ] รับจ้างรายวัน/กรรมกร

[ ] ค้าขาย [ ] ลูกจ้างประจำ/พนักงานบริษัทเอกชน

[ ] รัฐวิสาหกิจ/ข้าราชการ [ ] อื่นๆ ระบุ.....

6. รายได้ของผู้ป่วย

[ ] ไม่ดี (มีหนี้สิน เงินไม่ค่อยพอใช้) [ ] ปานกลาง (บางเดือนพอใช้บางเดือนไม่พอใช้)

[ ] ดี (มีเงินเก็บบ้างบางเดือน) [ ] ดีมาก (มีเงินเก็บทุกเดือน)

7. สถานภาพสมรส

[ ] โสด [ ] สมรส

[ ] หม้าย/หย่า/แยก

8. ท่านสามารถสนทนาภาษาไทยได้เข้าใจกับผู้อื่น

[ ] ได้ [ ] ไม่ได้

9. จำนวนสมาชิกในครอบครัวที่อาศัยอยู่ด้วยจริง.....คน

10. ท่านสูบบุหรี่หรือไม่

[ ] สูบ [ ] เคยสูบ หยุดสูบเป็นระยะเวลา.....ปี.....เดือน

[ ] ไม่สูบ

11. ท่านดื่มเครื่องดื่มที่มีแอลกอฮอล์หรือไม่

[ ] ไม่ดื่ม

[ ] เคยดื่ม หยุดดื่มเป็นระยะเวลา.....ปี.....เดือน

[ ] ดื่ม

11.1 เครื่องดื่มที่ท่านนิยมดื่มมากที่สุด

[ ] เบียร์ [ ] เหล้าสี (เช่นแม่โขง, หงษ์ทอง, รีเจนซี่ ฯลฯ)

[ ] สุราพื้นบ้าน [ ] น้ำตาลเมา/ตะหวาก

[ ] อื่นๆ ระบุ.....

11.2 ปริมาณที่ท่านดื่มในแต่ละครั้ง.....เป็ก/ก๊ก/แบน/ขวดเล็ก/ขวดกลม/กระป๋อง

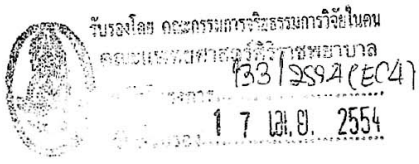
11.3 ท่านดื่มเครื่องดื่มที่มีแอลกอฮอล์บ่อยเพียงใด

[ ] ดื่มทุกวัน [ ] ไม่เกิน 1 ครั้งต่อสัปดาห์

[ ] เฉพาะงานเลี้ยงสังสรรค์หรือเทศกาลต่างๆ

12. แรงสนับสนุนทางสังคม

ข้อความ	เห็นด้วย	ไม่แน่ใจ	ไม่เห็นด้วย
<u>การสนับสนุนด้านอารมณ์</u> 1. เมื่อท่านเจ็บป่วยสมาชิกในบ้านคอยซักถามหรือเอาใจใส่ในอาการป่วยของท่าน			
2. ไม่มีใครรับฟังท่านเมื่อท่านอยากระบายความไม่สบายใจเกี่ยวกับอาการเจ็บป่วย			
3. เมื่อเพื่อนบ้านทราบว่าท่านไม่สบาย เพื่อนบ้านมักมาเยี่ยมให้กำลังใจท่าน			
4. บุคคลในครอบครัวแสดงความรำคาญเมื่อท่านป่วย			
5. เมื่อมีคนมาปลอบโยนท่าน ทำให้ท่านมีกำลังใจในการต่อสู้กับความเจ็บป่วย			
<u>การสนับสนุนด้านเครื่องมือ</u> 6. มีสมาชิกในบ้านจัดเตรียมอาหารให้ท่านขณะป่วย			
7. เมื่อท่านเจ็บป่วยไม่มีสมาชิกในบ้านสามารถนำท่านไปตรวจรักษาที่สถานบริการสาธารณสุขของรัฐ			
8. ในขณะที่ท่านป่วยมีผู้ทำความสะอาดเสื้อผ้า เครื่องนุ่งห่มให้ท่าน			
9. เมื่อท่านมีปัญหาด้านการเงินท่านไม่สามารถขอความช่วยเหลือจากบุคคลใกล้ชิดได้			
10. เมื่อท่านเจ็บป่วยสมาชิกในบ้านสามารถช่วยแบ่งเบาภาระหน้าที่ความรับผิดชอบของท่านได้			
<u>การสนับสนุนด้านข้อมูลข่าวสาร</u> 11. เมื่อท่านมีอาการไอ/มีไข้/ไอเป็นเลือด สมาชิกในบ้านแนะนำให้ท่านมารับบริการตรวจรักษาที่สถานบริการสาธารณสุขของรัฐ			
12. เมื่อท่านมีอาการไอ/มีไข้/ไอเป็นเลือด ท่านสามารถขอคำแนะนำเกี่ยวกับอาการเจ็บป่วยของท่านจากสถานบริการสาธารณสุขของรัฐได้			
13. ในชุมชนหรือหมู่บ้านของท่านมีแหล่งข้อมูลหรือห้องสมุดประชาชนที่สามารถค้นหาความรู้เกี่ยวกับอาการความเจ็บป่วยได้สะดวก			
14. ท่านเคยได้รับข้อมูลข่าวสารเกี่ยวกับวัณโรคจากสื่อของรัฐเช่น ทีวี/วิทยุ			
15. บุคลากรทางสุขภาพ (จนท.สาธารณสุข/อสม.) ในหมู่บ้านของท่านเคยนำข้อมูลข่าวสารเรื่องวัณโรคมาแนะนำท่าน			



ตอนที่ 2 ข้อมูลด้านปัจจัยนำ

2.1 ความรู้เกี่ยวกับวัณโรค

ข้อความ	ใช่	ไม่ใช่
1. วัณโรคปอดเป็นโรคที่เกิดจากการติดเชื้อ		
2. วัณโรคปอดสามารถติดต่อจากคนหนึ่งสู่อีกคนหนึ่งได้		
3. ผู้ป่วยวัณโรคปอดที่ไอ จาม โดยไม่ปิดปากปิดจมูก ทำให้มีการแพร่เชื้อสู่ผู้อื่นได้		
4. การทำงานหนัก พักผ่อนไม่เพียงพอ ขาดสารอาหาร มีโอกาสทำให้ป่วยเป็นวัณโรคได้		
5. ผู้ที่ป่วยเป็นโรคเอดส์/ติดเชื้อเอชไอวี มีโอกาสป่วยเป็นวัณโรคมากกว่าคนปกติทั่วไป		
6. อาการไอเรื้อรังเกินกว่า 3 สัปดาห์ หรือไอเป็นเลือดคืออาการนำของการป่วยเป็นวัณโรค		
7. อาการไอเรื้อรัง ติดต่อกันเกิน 3 สัปดาห์ หรือไอเป็นเลือดสามารถรักษาโดยการซื้อยากินเองได้		
8. วัณโรคปอดสามารถวินิจฉัยได้โดยการตรวจเสมหะ		
9. เมื่อกินยารักษาวัณโรคแล้วอาการดีขึ้น สามารถหยุดยาได้เอง		
10. ผู้ป่วยวัณโรคปอดที่ได้รับการรักษาล่าช้า อาจทำให้การรักษาใช้เวลานานหรืออาจเสียชีวิตได้		
11. การรักษาวัณโรคต้องใช้เวลาในการรักษานานอย่างน้อย 6 เดือน		
12. ยารักษาวัณโรคที่ได้รับสามารถแบ่งกินหลายครั้งในแต่ละวันได้		
13. การเลิกดื่มสุรา หรือเลิกสูบบุหรี่ จะทำให้หายป่วยเร็วขึ้น		
14. ถ้าในตอนเด็กๆ ได้รับวัคซีนป้องกันวัณโรค เมื่อเป็นผู้ใหญ่จะไม่ป่วยเป็นวัณโรค		
15. การรับประทานอาหารที่มีประโยชน์ จะช่วยทำให้ผลการรักษาได้ผลดี		

2.2. ท่านเคยได้รับข้อมูลเกี่ยวกับวัณโรคก่อนจะป่วยเป็นวัณโรคหรือไม่

[ ] ไม่เคย

[ ] เคยได้รับ จาก (ตอบได้มากกว่า 1 ข้อ)

[ ] บุคคลในครอบครัว/ญาติ [ ] เพื่อนบ้าน

[ ] อสม. [ ] เจ้าหน้าที่สาธารณสุข

[ ] ป้ายประชาสัมพันธ์ในชุมชน [ ] หอกระจายข่าวในชุมชน/มัสยิด

[ ] วิทยุ [ ] ทีวี

[ ] อื่นๆ ระบุ.....

รับรองโดย คณะกรรมการจริยธรรมการวิจัยในคน
133 129SA (EC1)
17 มิ.ย. 2554

2.3 การรับรู้เกี่ยวกับวัณโรค

ข้อความ	เห็นด้วย	ไม่แน่ใจ	ไม่เห็นด้วย
<u>การรับรู้โอกาสเสี่ยงของการเกิดโรค</u>			
1. ท่านคิดว่าเพศชาย/เพศหญิงมีโอกาสป่วยเป็นวัณโรค			
2. ท่านคิดว่าคนในวัยของท่านมีโอกาสเสี่ยงต่อการป่วยเป็นวัณโรค			
3. ท่านคิดการทำงานในอาชีพของท่าน มีโอกาสเสี่ยงต่อการป่วยเป็นวัณโรค			
4. ท่านคิดว่าในชุมชนของท่านไม่น่าจะมีความเสี่ยงต่อการติดเชื้อวัณโรค			
5. ท่านคิดว่าแม้ไม่มีโรคประจำตัวก็อาจมีโอกาสเสี่ยงต่อการป่วยเป็นวัณโรค			
<u>การรับรู้ความรุนแรงของโรค</u>			
6. ท่านคิดว่าผู้ที่ป่วยเป็นวัณโรคแล้วไม่ได้รับการรักษาจะทำให้เสียชีวิตได้			
7. ท่านคิดว่าถ้าท่านป่วยเป็นวัณโรคจะทำให้รายได้ของท่านลดลง			
8. ท่านคิดว่าการรักษาวัณโรคช้า ยิ่งทำให้โรครุนแรงขึ้น			
9. ท่านคิดว่าถ้าท่านป่วยเป็นวัณโรคก็จะไม่มีผลกระทบต่อการใช้ชีวิตประจำวันของท่าน			
10.ท่านคิดว่าการป่วยเป็นวัณโรคไม่มีทางรักษาให้หายขาดได้			
<u>การรับรู้ประโยชน์ของการตรวจรักษา</u>			
11. ท่านคิดว่า การปฏิบัติตามคำแนะนำของแพทย์และเจ้าหน้าที่สาธารณสุขช่วยป้องกันการแพร่กระจายของเชื้อวัณโรคได้			
12. ท่านคิดว่า การรักษาวัณโรคสามารถรักษากับหมอพื้นบ้านได้			
13. ท่านคิดว่า การได้รับการรักษาในระยะแรกของการเจ็บป่วยจะทำให้การรักษาหายเร็วขึ้น			
14. ท่านคิดว่าเจ้าหน้าที่สาธารณสุขในสถานบริการสาธารณสุขของรัฐใกล้บ้านท่านไม่มีความสามารถรักษาอาการเจ็บป่วยของท่านได้			
15. ท่านคิดว่า สถานบริการสาธารณสุขของรัฐไม่มีเครื่องมือที่ดีพอในการตรวจวินิจฉัยโรค			

การรับรู้อุปสรรค 16. ท่านคิดว่า การไปรับบริการตรวจรักษาในสถานบริการสาธารณสุขของรัฐต้องเสียเวลาคอยนาน			
17. ท่านคิดว่าในการเดินทางไปรับบริการตรวจรักษาในสถานบริการสาธารณสุขของรัฐ ท่านต้องเสียค่าใช้จ่ายมาก			
18. ท่านคิดว่าเจ้าหน้าที่สาธารณสุขในสถานบริการสาธารณสุขของรัฐจะให้การบริการไม่ดีกับท่าน			
19. ท่านคิดว่า ในการไปรับบริการตรวจรักษาในสถานบริการสาธารณสุขของรัฐ ทำให้ท่านไม่สามารถทำกิจประจำวันได้			
20. ท่านคิดว่าขั้นตอนในการเข้ารับบริการในสถานบริการสาธารณสุขของรัฐ มีความยุ่งยากซับซ้อน เช่น ต้องมีการติดต่อเจ้าหน้าที่หลายแผนก			

ตอนที่ 3 ข้อมูลด้านปัจจัยทางสิ่งแวดล้อม

1. ระยะทางจากบ้านท่านถึงสถานบริการสาธารณสุขของรัฐที่ใกล้ที่สุด.....กิโลเมตร.....เมตร

2. ส่วนใหญ่ในการเดินทางมาสถานบริการสาธารณสุขของรัฐท่านเลือกเดินทางโดยวิธีใด

[ ] เดิน [ ] รถจักยาน

[ ] รถมอเตอร์ไซค์ [ ] รถยนต์ส่วนบุคคล

[ ] รถโดยสารจ้างเหมา [ ] รถประจำทาง

3. ในการเดินทางด้วยวิธีดังกล่าวท่านใช้เวลาในการเดินทาง.....ชั่วโมง.....นาที

4. ในการเดินทางมาสถานบริการสาธารณสุขของรัฐแต่ละครั้งท่านเสียค่าใช้จ่าย.....บาท

5. ท่านคิดว่าในการเดินทางจากบ้านท่านถึงสถานบริการสาธารณสุขของรัฐมีความปลอดภัยจากเหตุการณ์ความไม่สงบหรือไม่

[ ] มี [ ] ไม่มี

7

แบบคัดลอกประวัติผู้ป่วย

ส่วนที่ 2 แบบคัดลอกข้อมูลจากเวชระเบียน Tuberculosis Treatment Card (TB01) และ TB register (TB03)

1. ผู้กำกับการกินยา

[ ] เจ้าหน้าที่สาธารณสุข [ ] อสม./ผู้นำชุมชน

[ ] ญาติ [ ] ไม่มีผู้กำกับการกินยา

2. ประวัติการเจ็บป่วย/โรคประจำตัว

[ ] ไม่มี [ ] มี ระบุ.....

3. ยาอื่นๆ ที่ได้รับ (ระบุ).....

4. อาการสำคัญที่มาพบแพทย์ในการรักษาในครั้งนี้

[ ] ไอเรื้อรังเกิน 3 สัปดาห์ [ ] ไอมีเลือดปน/ไอเป็นเลือด

[ ] มีเสมหะ [ ] เหนื่อยหอบ

[ ] เจ็บหน้าอก [ ] มีไข้ตอนบ่าย

[ ] เหงื่อออกตอนกลางคืน [ ] อ่อนเพลีย

[ ] น้ำหนักลด [ ] เบื่ออาหาร

[ ] อื่นๆ ระบุ.....

5. ผลการตรวจ Anti – HIV

[ ] Negative

[ ] Positive วันที่ทราบผล.....

[ ] ก่อนการวินิจฉัยวัณโรค [ ] หลังการวินิจฉัยวัณโรค

6. ผลการ X-Ray ปอด

[ ] Negative

[ ] Positive

7. ผลการวินิจฉัยโรคครั้งแรกของแพทย์

[ ] วัณโรค

[ ] โรคอื่นๆ ระบุ.....

8. ประวัติการได้รับวัคซีนบีซีจี

[ ] เคย แผลเป็นบีซีจี [ ] มี [ ] ไม่มี

[ ] ไม่เคยได้รับ

9. จำนวนผู้สัมผัสโรค

9.1 จำนวนผู้สัมผัสโรคอายุ< 5 ปี / ได้รับการตรวจ...../.....

9.2 จำนวนผู้สัมผัสโรคอายุ ≥ 5 ปี / ได้รับการตรวจ...../.....

10. ผลการทดสอบความไวต่อยารักษาวัณโรค

[ ] ไม่ทดสอบ

[ ] ทดสอบ

ว.ด.ป.	H	R	E	Z	S	K	O	C

หมายเหตุ: H หมายถึง Isoniazid

R หมายถึง Rifampicin

E หมายถึง Ethambutol

Z หมายถึง Pyrazinamide

S หมายถึง Streptomycin

K หมายถึง Kanamycin

O หมายถึง Ofloxacin

C หมายถึง Cycloserine

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MAHIDOL UNIVERSITY
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Siriraj Institutional Review Board

Certificate of Approval

COA no. Si 212/2011

Protocol Title : Factors Associated with Delayed Treatment of Pulmonary Tuberculosis among Newly detected open cases Pulmonary Tuberculosis in Narathiwat Province.

Protocol number : 133/2554(EC4)

Principal Investigator/Affiliation : Miss Chutima Nukhraohwat / Department of Preventive and Social Medicine Faculty of Medicine Siriraj Hospital, Mahidol University

Research site : Faculty of Medicine Siriraj Hospital

Approval includes :

1. SIRB Submission Form
2. Informed Consent Form
3. Questionnaire
4. Principle Investigator's curriculum vitae

Approval date : April 18, 2011

Expired date : April 17, 2012

This is to certify that Siriraj Institutional Review Board is in full Compliance with International Guidelines For Human Research Protection such as the Declaration of Helsinki, the Belmont Report, CIOMS Guidelines and the International Conference on Harmonization in Good Clinical Practice (ICH-GCP).

Jarupim Soongswang

(Prof. Jarupim Soongswang, M.D.)
Chairperson

April 19, 2011
date

T-Kulthanan

(Clin. Prof. Teerawat Kulthanan, M.D.)
Dean of Faculty of Medicine Siriraj Hospital

21 APR 2011
date

หน่วยพิมพ์โรงพยาบาลศิริราช 2341 / 3,000 แผ่น / ก.ย 51 / Mat. 10023252

BIOGRAPHY

NAME	Miss Chutima Nukhraohwat
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INSTITUTIONS ATTENDED	Sirindhorn College of Public Health, Yala, 2002-2005 Bachelor science community of Public Health Mahidol University, 2010-2012 Master of Science (Epidemiology)
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