

**PREDICTORS OF INITIAL TREATMENT FAILURE AMONG
PULMONARY TUBERCULOSIS PATIENS IN TWO SPECIALISED
HOSPITALS IN AFGHANISTAN**

By
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SUPERVISOR’S STATEMENT

As supervisors of Ms. Abdul Basit Niazi’s MSc Thesis work, we certify that we consider his thesis “**Predictors of initial treatment failure among pulmonary tuberculosis patients in two specialized hospitals in Afghanistan**” to be suitable for examination.

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DECLARATION

- This work has not been previously accepted in substance for any degree and is not concurrently submitted in candidature for any degree.
- This dissertation is being submitted in partial fulfilment of the requirement for the degree of MSc in Rehabilitation Science.
- This dissertation is the result of my own independent work/investigation, except where otherwise stated. Other sources are acknowledged by giving explicit references. A bibliography is appended.
- I conform that if any things identified in my work that I have done plagiarism or any form of cheating that will directly awarded me fail and I am subject to disciplinary action of authority.
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ABSTRACT

Introduction: Treatment failure of pulmonary tuberculosis patients is defined as a patient who has sputum smear (SS) positive at 5 months or later after the initiation of anti TB treatment. Tuberculosis treatment failure increased the risk of spreading infection among people that lead to increased mortality and expenditures. A cross sectional study carried out in tow specialized hospital of Afghanistan, to identify the factors associated with TB treatment failure and usage of these factors to predict those who are at high risk of pulmonary tuberculosis treatment failure. **Objectives:** To identify the predictors and factors which are associated with treatment failure among pulmonary tuberculosis patients. **Methodology:** A quantitative cross- sectional study involving 150 participants. The study was conducted in two different specialized hospitals in Kabul and Paktia, Afghanistan with advance technology, facilities and medical experts. The convenience sampling method was used for selecting sample. The standard questionnaire (Moresky scale, treatment adherence scale and personal developed question regarding to the situation of the state) was the data collecting tool. Analysis was performed using SPSS. Descriptive analysis and chi-square test was used to analyze data and results were presented in tables, charts and figures. **Results:** Female were more likely to be affected than male. Failure rate was seen more among smoker, participant from rural area and among participant with larger family members. The study found association of age of participants, herbal/traditional medicine use and pulmonary tuberculosis treatment failure. Although other factors like dealing of health professional with patients, waiting time to receive the medicine, distance to clinic, irregular drug used were essential factor for drug failure but it did not show statically significant association. **Conclusion:** the study showed those who miss clinical appointment, have contact with TB patients, smokers, people from rural area, people using herbal/traditional medicine for tuberculosis treatments and those who were face security and restricted family or social issues were statistically significant factors which that are associated with pulmonary tuberculosis treatment failure.

Key words: Pulmonary Tuberculosis, Predictors, Treatment failure.

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LIST OF ABBREVIATION AND ACRONYMS

TB= Tuberculosis

MTB= Mycobacterium tuberculosis

PTB= Pulmonary Tuberculosis

EPTB= Extra Pulmonary Tuberculosis

WHO= World Health Organization

MoPH= Ministry of Public Health

NGO= Non-Governmental Organization

NTP= National Tuberculosis Control program

CHC= Comprehensive Health Center

BHC= Basic Health Center

RH= Regional Hospital

AJCDH= Afghan-Japan Communicable Disease Hospital

PRH= Paktia Regional Hospital

BHPI= Bangladesh Health Professional Institute

HMIS= Health Management Information System

ACSM= Advocacy, Communication and Social Mobilization

AFP= Acid Fast Bacilli

SS= Sputum Smear

BCG= Bacillus Calmete-Guerin

MDR= Multiple Drug Resistance

CDC=Center for Disease Control and Prevention

IRB= Institutional Review Board

CI= Confidence interval

DOTS= Directly Observed Treatment Short-course

PTB= Pulmonary Tuberculosis

SPSS= Statistical Package for Social Science

SD= Standard Deviation

WHO= World Health Organization

χ^2 =chi-square

CHAPTER: I

1.1 INTRODUCTION

Tuberculosis (TB) is a communicable, chronic, granulomatous disease caused by *Mycobacterium Tuberculosis* (MTB) bacteria. It usually involves the lungs but may affect any organs or tissue of the body (Danish, 2012). There are two main types of tuberculosis, Latent and Active tuberculosis, in case which do not have symptoms of infection is called latent tuberculosis (WHO, 2015). The latent infection look to opportunity which is about 10% progress to active tuberculosis and kill about half of those affected if left untreated (WHO, 2015). According to WHO approximate incidence 76 cases per 10,000 population are sputum smear positive tuberculosis (WHO, 2009). Chronic cough, fever, night sweating and weight loss are the typical symptoms of pulmonary tuberculosis and other organ tuberculosis such as intestinal, skin, bone and so on has a wide range of symptoms (Dolin et al., 2010).

Tuberculosis is one of the world most widespread and deadly illnesses, Among infectious disease TB is an important cause of death in 2013 there were 9 million new cases of tuberculosis worldwide with 1.5 million dying of the disease. In the United States an estimated 11 million people are infected with *Mycobacterium tuberculosis* and in 2013 there were 95582 active cases. By 2015 the number of cases of tuberculosis increased (Papadakis, McPhee, & Rabow, 2017, p. 277). Further there were 10.4 million new TB cases globally, from the total cases in 2016, 5.4 million (52%) were PTB cases, with 1.3 million death from the disease (WHO, 2017). There is an increasing occurrence of tuberculosis among people such as homeless, malnourished, and those living in overcrowded and substandard housing (Papadakis, McPhee, & Rabow, 2017, p. 277).

Tuberculosis is the universal health well-being issue. In Southeast Asia and Western Pacific Region was the leading number of new cases of tuberculosis in 2015, about 58% of global (Qader et al., 2017). In many developing countries including South Asia and Sub-Saharan Africa, tuberculosis is a greatest cause of lower respiratory tract infection. In developing countries tuberculosis is more common due to close link to poverty, housing

status and health services access and it is a public health challenge (Saeed, Bano, & Asghar, 2013).

TB especially pulmonary tuberculosis (PTB), is easily spread through air droplets from an infected person to another person via coughing, sneezing and spitting (Syafiq, S. S., & Juni, M. H. 2018).

1. **2 TUBERCULOSIS IN AFGHANISTAN:**

Tuberculosis is one of the world's top infectious killer diseases. Afghanistan is among the 22 countries in the world that suffer from a high burden of tuberculosis – around 13 000 Afghans die each year because of TB estimated by WHO (Afghanistan, 2015). An estimated 60,000 new cases arise yearly, with 110,000 Afghans now living with TB and 14,000 Afghans died from infection of MTB in 2015. Only about two in three presumed patients are found, and the treatment success rate is only 49 percent on average in the country ("Urban Dots in Afghanistan: Fighting TB in Kabul and Beyond | Management Sciences for Health). In developing countries TB has been re-emerging in latest decades, and is more common in developing countries due to the disease's close links to poverty, health services access and housing status (Saeed, Bano, & Asghar, 2013).

The highest priorities for Ministry of Public Health (MoPH) is the control of communicable diseases because these account for 60-80% of all curative outpatient visits and over half of all deaths in Afghanistan (HMIS, 2009). The country is recuperating from the repercussion of more than 30 years of ongoing security instability, civil war, economic difficulties and nevertheless in the country, so it remain one of the TB high burden country with high ratio of females than males infected (1.85:1) (Saeed, Bano, & Asghar, 2013).

Afghanistan health facilities are providing Directly Observed Treatment-Short Course (DOTS) strategy since 1997. Medicines and diagnostics tests are available free of cost for tuberculosis patients in Afghanistan (WHO, 2017). In Afghanistan WHO were estimated 65000 cases to be infected and 11000 deaths by TB in 2016. DOTS strategy has provided universal coverage for patients with TB. Globally in 2013, 9 million people fell ill with TB and 1.5 million lost their lives. "Too many people in Afghanistan die every year because of tuberculosis which is a completely preventable and curable disease," said Dr Firozuddin Feroz, Minister of Public Health of Afghanistan (Afghanistan, 2015). Primary health care

services implemented mainly by non-governmental organizations (NGOs). DOTS strategy for control of tuberculosis integrated into Basic Package of Health Services (BPHS) of Afghanistan in 2002, then international partners have prepared funds to expand DOTS activities by building National Tuberculosis Control Program (NTP) (Sabawoon, W. et al, 2012). Currently all health centers such as whole district and regional hospitals, Comprehensive Health Centers (CHCs) and some Basic Health Centers (BHCs) can diagnose and treat tuberculosis patients (Sabawoon, W. et al, 2012). There are two surveillance system in Afghanistan, National Tuberculosis Control Program (NTP) and the Health Management Information System (HMIS) (Saeed, Bano, & Asghar, 2013). In order to find the TB patients as early as possible, Advocacy, communication and social mobilization (ACSM) is an important component of the National TB Control Program of Afghanistan. NTP has a number of main challenges (low Case detection, Stigma, low involvement of community, empowering people affected by TB, and political commitment and resources finding for TB control). Therefore, ACSM is important element for the improvement of case detection, improvement of referral system, combat stigma, Empower people affected by TB and finally to achieve the goal of end TB strategy. It is important to strengthen the surveillance systems to treat and diagnose them correctly. As known TB is a communicable disease delay and failure of the treatment increase the risk of mortality and morbidity. The key elements in controlling tuberculosis is the early diagnosis and treatment. Delay in the conformation and treatment of tuberculosis increased the risk of spreading infection in the community which lead to increased mortality and expenditures (Sabawoon, W.et all. 2012).

1. **3 BACKGROUND OF STUDY:**

According to internationally accepted definitions treatment out comes includes cure, treatment completion, death, treatment failure, transfer out and default (WHO. 2001). A cure is defined as having positive sputum Acute Fast Bacilli (AFB) test at the initiating to treatment and then have negative sputum test after the eight months of treatment, (Jibrin, Ali, Saad, & Kolo, 2013). Treatment failure of pulmonary tuberculosis patients, which is defined as a patient who has sputum smear (SS) or sputum culture positive at 5 months or later after the initiation of anti TB treatment (Nakwagala. et all. 2011, p. S105). Or Treatment failure is defined as persistence of sputum positivity for AFB while patient is on

anti-TB treatment for 5 months or more or reversion to smear positivity after initial smear negative sputum following treatment for TB (Jibrin, Ali, Saad, & Kolo, 2013). As known that tuberculosis is the communicable disease if we do not control, it will spread more, and further people will be affected by this disease. Treatment failure further increases the risk of spreading the TB infection.

According to internationally accepted definitions treatment outcomes include cure, treatment completion, death, treatment failure, transfer out and default (WHO, 2001). A cure is defined as having positive sputum Acute Fast Bacilli (AFB) test at the initiating of treatment and then have negative sputum test after the eight months of treatment (Jibrin, Ali, Saad, & Kolo, 2013, p. xx). The total population of Afghanistan estimated 33 million people almost 4.4 million people live in the capital city, Kabul (Qader, G. et al. 2017). According to MoPH the health care system has weakened by conflict which led to poor quality of life and overcrowded conditions which facilitate TB transmission among people (Qader, G. et al. 2017). For all forms of TB in Afghanistan the estimated incidence is 18.9 per 10,000 population. The prevalence of all forms of TB is 34 per 10,000 population (WHO, 2015), Furthermore the death rate is 3.7 per 10,000 (Qader, G. et al. 2017). Annually, there are 37,001 new TB cases were notified of all TB in 62,370 cases in the country in 2015, in addition 87% is the treatment success rate (TSR) for all forms of TB (Qader, G. et al. 2017). The exact roles and values in predicting treatment failure among tuberculosis patients are remain unclear. However about 95% of TB cases are account as pulmonary tuberculosis (PTB) patients (WANG et al., 2017). One of the threat is the treatment failure to the control of TB, because affected patients continue to spread the TB. Patients with treatment failure compared to those who attain cure have a higher mortality and morbidity (Nakwagala et al., 2011, p. S105). The suggested diagnosis of TB treatment failure by WHO in limited resource settings is the sputum smear microscopy at 5 months or later during treatment (Nakwagala et al. 2011, p. S105). However, it is important to identify of those who are at risk of treatment failure before 5 months for reducing TB transmission, mortality and morbidity. For identification of in risk is frequent laboratory checking (sputum exam for AFB) is the ideal tool (Nakwagala et al., 2011, p. S105). Treatment failure has been associated with multiple factors including biological factors, susceptibility test such as bacillus Calmette-Guérin (BCG) vaccination, drug susceptibility

test, sociodemographic factors (large family, low education status, occupation) (WANG et al., 2017). patient personal factors (forgetting to take medicine, miss clinical appointment, careless about taking medication), drug associated factor (shortage of drug, insufficient dose, using of traditional/herbal medicine), disease related factors (re-infected, default, failed in previous TB treatment, contact with TB patient) factors related with health facilities (deals of health professional with patient and waiting time for receiving treatment) and factors which affecting accessibility to health services such as distance to health center, transportation, family restriction and insecurity issue. Actually here the predictors of initial treatment failure refer to the risk factors for treatment failure. This study is design to identify the risk factors for treatment failure among PTB patients, using an optimized model to assess their values in predicting treatment failure.

1.4 Research question

What are the predictors of initial treatment failure among pulmonary tuberculosis patients?

1.5 Goal of the study

To identify the predictors and factors which are associated with treatment failure among pulmonary tuberculosis patient.

1.6 Objective of the study:

- a) To determine the linkage of socio-demographic background with PTB treatment failure.
- b) To identify the specific factors which are related to health facilities and environment associated with PTB treatment failure.
- c) To suggest effective strategies on controlling the incidence of Pulmonary TB treatment failure. Draw some recommendation based on the findings of the study

1.7 Definition of index:

Predictors of treatment failure: is define as factors which are associated with treatment failure as well as these factors may be used to determine those who are at risk of treatment failure. These include socio-demographic, environmental, clinical, laboratory, treatment associated factors and patient personal factors related to treatment failure.

New case: patient which affect by Mycobacterium tuberculosis infection and never treated with anti TB medications or treated for less than one month period (Morsy, A. M., Zaher, H. H., Hassan, M. H., & Shouman, A. 2003).

Treatment outcome. According to National Tuberculosis Program (NTP) the treatment outcome is classified as fallow:

Cure: A sputum smear positive Pulmonary TB patient who has (after taking prescribed anti TB medication) two consecutive negative sputum smear at the last month of treatment (Morsy, A. et. all. 2003).

Treatment completion: A sputum smear-positive pulmonary TB patient who has been completed prescribed anti TB medication for sufficient period of time, (6 months).

Treatment success: A pulmonary TB patient who has been completed the treatment and is cured.

Treatment failure: It is defined as persistence of sputum positivity for AFB while patient is on anti-TB treatment for 5 months or more or reversion to smear positivity after initial smear negative sputum following treatment for TB (Jibrin, Ali, Saad, & Kolo, 2013).

Death: A pulmonary TB patient who dies from disease progression or complications including: hemoptysis, pneumothorax, pulmonary heart disease, systemic failure, extra-PTB etc.

Treatment default: or lost to follow up is defined as PTB patient treatment interrupted for two or more than two consecutive months (Dooley et al., 2011).

Retreatment type: According to National Tuberculosis Program (NTP) retreated patients was categorized into three types:

Relapse: is define as PTB patient which declared cured or who's sputum smear negative by taking prescribed anti TB medication for sufficient period of time, (6 months) but is now found to be sputum smear positive.

Initial treatment failure: A PTB patient is found to be sputum smear positive at month 5 or later during treatment.

Others: when a PTB patient cannot be defined as 'relapse' or 'initial treatment failure', including the one who returns, immigrates, or irregularly and irrationally uses anti-TB drugs over 1 month (WANG et al., 2017).

Chapter II

2.1 Literature review

Tuberculosis is caused by bacteria which is called *Mycobacterium tuberculosis* and it is affect different parts of the body but most often affect the lungs. To become infected a person need to breathe in only a few germs. As known it spread through air when people with pulmonary TB cough, sneeze or spit. According to WHO, 2019 TB is the world's top infectious killer disease, 10 million people get infected and 1.5 million people die from the TB every year. In spite of it is a curable and preventable disease. It is estimated that about one quarter of the world's population to be infected by *mycobacterium tuberculosis*, only 5-15% of these population will be suffer from active TB and the rest of them will be suffer from latent TB which means they will be infected but not have any clinical feature and cannot transmit the infection (WHO, 2019). TB present all over the world but in low and middle income countries people are more prone to be infected.

It is not an issue that the patients who failed to TB treatment is low or high in the number, but the treatment failure rate is an significant issue because the patient remains as a source of infection, and lead to economic and health load. In addition it lead to development of Multiple Drug Resistance, (MDR) TB and a part of indirect economic burden such as absence from work and inability to work. The essentials components in controlling pulmonary tuberculosis successfully are the initially diagnosis and early treatment of pulmonary tuberculosis. Early identification of Tuberculosis (TB) treatment failure using cost effective means is urgently needed in developing nation (Nakwagala, Namukwaya, Muleky, Mayanja-Kizza, & Mugerwa, 2011, p. S105). Treatment failure further increases the risk. Treatment interruption may increase the contamination in the community, worsen the disease state and increase the risk of mortality (Syafiq, S. S., & Juni, M. H. 2018).

2.2 Global studies regarding tuberculosis treatment failure

In a study which was conducted in Mulago hospital, Uganda in between June and December 2007, on 1950 TB patients in this number of patients 1087 had extra pulmonary TB (EPTB) in addition 873 had smear positive pulmonary TB (PTB). For enrolment into the study they considered the 170 of the smear positives who were at 5th, 6th, 7th month of the treatment (Papadakis, McPhee, & Rabow, 2017, p. 277). In one other study which was carried out in Federal Medical Centre, Gombe, Northeastern Nigeria from August 2008 to

August 2009, on 200 patients while 115 of the patients were sputum smear positive whereas 85 of the patients were smear negative at entry. Among 115 smear positive patients 80 patients remain positive after 2nd month and 26 patient remain positive after 5th month and 24 patients remain positive after 7th month of treatment respectively (Jibrin, Ali, Saad, & Kolo, 2013, p. 1). This pretend of the TB failure is a big risk to the community, personal close contact and to the healthcare worker. In a study which was happened in Burkina Faso entitled “Risk factors for tuberculosis treatment failure among pulmonary tuberculosis patients in four health regions of Burkina Faso, 2009: case control study” conclude that for TB treatment failure the independent factors are, failing to take TB medication for more than 14 days, those who are having liver and kidney disease, usage of herbal or traditional medication, having sputum culture positive after two months of initial treatment (Sawadogo & Sawadogo, 2018). In those patients who are taking proper regimens the possible reasons for treatment failure are drug resistance, laboratory inaccuracy, non-adherence to drug regimen, malabsorption of the drugs and biological variation in response. A study which was conducted in Finland of risk factors for poor TB treatment outcome found that important risk factors are older age, immunosuppressant without HIV related, previous history of TB and default or pause in treatment (Vasankari, T., Holmström, P., Ollgren, J., Liippo, K., Kokki, M., & Ruutu, P., 2007). In Egypt a case control study which is entitled “predictor of treatment failure among tuberculosis patients” found the significant risk factors for treatment failure were deficient health education to the patient, non-compliance to treatment, diabetes mellitus as co-morbid condition and poor patient knowledge regarding the disease (Morsy et al., 2003). Researchers found Brazil, the associated factors with treatment failure include: the previous TB treatment, delay in the treatment of TB, lifestyle factors, excessive alcohol consumption, no family support and illiteracy (Sawadogo & Sawadogo, 2018). In Nigeria 2009, a study predicted the male gender and poor knowledge of tuberculosis as a poor treatment outcome, Despite the study was design as a cohort of sputum smear positive pulmonary tuberculosis patients at the initiation of therapy who were followed up to the end of treatment (Fatiregun, A. A., Ojo, A. S., & Bamgboye, A. E. (2009). In a study which was occurred in Cameroon, conclude that age above or equal to 40 years and pretreatment sputum smear or 3+ bacillary were significantly associated with non-conversion sputum smear at the end of two months of

treatment. In addition persistent SSP at the end of two months of treatment is significantly associated with uncomplimentary treatment outcomes (Sawadogo & Sawadogo, 2018), (Kuaban C., et all. 2009). In Burkina Faso, a study occurred on 110 patients that had experienced failure, default of treatment for at least one months and relapse observed a prevalence of 67.4% with TB drug resistance (Sangare, L., 2010). In a study which was conducted in four health regions of Burkina Faso, showed the independent risk factors to TB treatment failure were: fail to take TB drugs for more than 14 consecutive days, SS positive at two months of treatment, existence of comorbidity, and use of traditional medicines or herbs (Sawadogo & Sawadogo, 2018). Early identification of the patients with above risk factors is significant to improve the TB treatment outcome. Studies have also reported that patients who fail to TB treatment are more likely to have sputum smear positive after 2 months of treatment (William JB, et all, 1997) Patients with positive cultures after 2 months of treatment should undergo careful evaluation to determine the cause (CDC, 2013). Researchers from American Thoracic Society, CDC, and Infectious Diseases Society of America also reported that for patient who have positive cultures after 2 months of treatment and have not been receiving DOT, the most common reason of non-conversion is non-adherence to the regimen (CDC, 2013). Studies from China and from Thailand also reported relationship between a positive sputum examination at two months and treatment failure (Rieder L, 1996). Munoz in Ethiopia and Singla in India reported similar findings (Munoz-Sellart M, et all, 2010) These patients will require more intense follow-up throughout their treatment including the continuation phase. Patient with SS positive at second month of treatment require more intense follow up. The national referral laboratory capacity needs to be strengthened to do drug susceptibility testing and routine drug monitoring on cases of non-conversion at second month of treatment. This study design to identify the factors associated with TB treatment failure and usage of these factors to predict those who are at high risk of pulmonary tuberculosis treatment failure in Afghan Japan Communicable disease Hospital and Paktia Regional Hospital where treatment failure is stated. It is expected that the finding of this research will be used to establish an intervention site that ensure the diagnostic and management approach to the case to reduce the rate of TB treatment failure, confirm the treatment completion of PTB patients and prevent MDR-TB.

2.3 Justification

Tuberculosis is the world health critical issue especially in developing countries, Globally 9 million people fell ill with tuberculosis and 1.5 million lost their lives in 2013. According to WHO estimated that 65000 cases arise yearly and 11000 deaths in Afghanistan due to tuberculosis which is completely curable and preventable disease. Afghanistan health facilities are providing Directly Observed Treatment-Short Course (DOTS) strategy since 1997. Medicines and diagnostics tests are available free of cost for tuberculosis patients in Afghanistan (WHO, 2017).

In a study which was conducted in Mulago hospital, Uganda in between June and December 2007 shows that 170 of the smear positives who were at 5th month of the treatment which means that in 873 patients of PTB 117 patients fail to cure about 19.4% treatment fail of pulmonary TB patients and the other study which happen in Federal Medical Centre, Gombe, Northeastern Nigeria shows that in 115 smear positive PTB patients 26 patients remain positive after fifth month of the treatment which meant which means in 115 PTB patient 26 patient treatment are fail while convert to percentage it come 22.6% treatment fail of pulmonary TB patients. The most recent study which was happen in china reported and five tuberculosis epidemiological surveys showed that among total TB cases the frequency of retreated cases were 45.6%, 48.5%, 38.9%, 26.1%, and 11.8% respectively. So it is a large number of failure and we all know that TB is communicable disease these failure patients will be dangerous for the community and Treatment failure further increases the risk. Actually treatment failure increase the load in health and economic, in other hand the patient remain as source of infection that lead to continue spreading the infection in the community and it may lead to the development of multidrug resistance. Treatment interruption and failure may increase the contamination in the community, worsen the disease state and increase the risk of mortality. In addition a part from the indirect economic burden attributed to absence from work and inability to work.

Many factors were consider to be associated with pulmonary tuberculosis treatment failure such as, sociodemographic factors, biological factors, susceptibility test, drugs related factors, health related factors and accessibility factors such as security issue and family social restriction. However the exact factors in predicting the pulmonary tuberculosis

treatment failure remain unclear as pulmonary tuberculosis patients account for about 95% of the total tuberculosis cases. So that was all to choose the topic to know about the failure of TB patient, to predict the cause of treatment failure and to suggest to the effective strategies for control the disease.

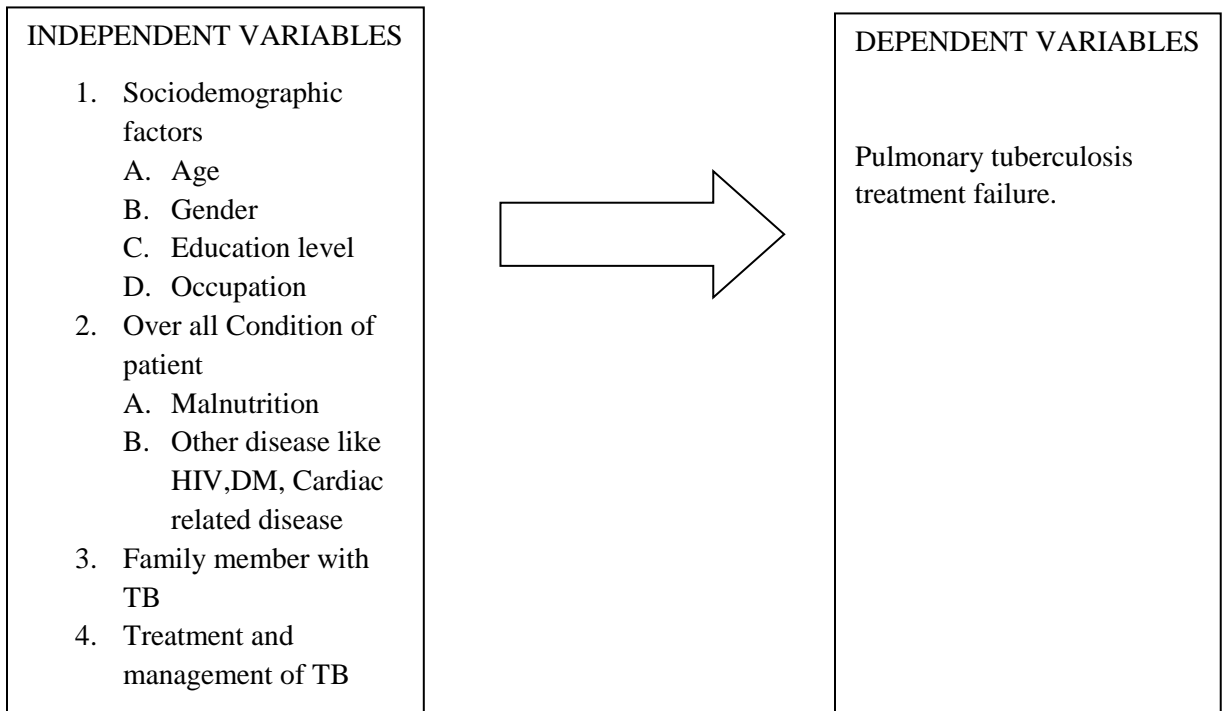
Chapter III

3.1 Research Methodology

3.1.1 Research design:

In order to achieved the goal on the selected study, quantitative method, a cross sectional study was conducted between September 2019 and December 2019. After ethical approval, the approval litter and IRB litter were shown previous to data collection in those hospitals who aim to collect the data. The participants were interviewed face to face and informed consent was given prior to data collection. The current research tried to determine the factors associated with initial treatment failure among PTB patients, as well as these factors may be used to predict those who are at risk of treatment failure. So cross sectional study is the best option to find out the factors among the patients and predict those who are at risk of treatment failure. In addition it is a reasonable method that can be conducted by the researcher. Using the questionnaires that include sociodemographic characteristics, patient personal factors which affect the treatment, drug associated factors related to treatment failure, factors related to health services and health professional associated with treatment failure and some environmental factors which affecting the accessibility to the health services, following professional interventions and protocol.

3.1.2 Conceptual Framework:



3.1.3 Study population:

The Study was conducted among the inpatients and out patients departments in two those government hospitals who deals with PTB patients in two different provinces, Paktia Regional Hospital and Afghan, Japan Communicable Diseases Hospital, Afghanistan. There is no validate data about the factors associated with treatment failure among PTB patient and predict who is at risk of treatment failure. In addition there is no survey or research has been done entitled of predictors of initial treatment failure among pulmonary tuberculosis to clear that, therefor this study design and conducted in those two hospitals, Paktia Regional Hospital is (RH) hospital which cover the population of four to five provinces and AJCDH is the center of tuberculosis program in Afghanistan which cover all the (34 million) population of Afghanistan.

3.1.4 Study area/site:

The selected area was two government hospitals in two different provinces, Afghan, Japan Communicable Diseases Hospital (AJCDH) in Kabul which is the capital city of Afghanistan and Paktia Regional Hospital (PRH) in Paktia refined with advance technology, facilities and medical experts.

3.1.5 Study period:

The duration of the study was 6 months. The study was started after the acceptance of protocol, following which data collection was started after permission by the ethical committee and the study period was over after the submission of the final report.

3.1.6 Study size:

As the exact population of PTB patient is unknown for researcher, so he calculated sample size by using the Cochran formula. This method is conducted when researcher has no more information about population which allows us to calculate samples given an appropriate level of accuracy by considering the level of confidence and estimate of proportion of the present population, so The Cochran formula allows you to calculate an ideal sample size given a desired level of precision, desired confidence level, and the estimated proportion of the attribute present in the population and this formula can be used when we face to a

large population. So researcher started to collect samples from September 2019 to December 2019 for achieving the entire sample size by using the Cochran formula as follow:

$$n_0 = \frac{Z^2 pq}{e^2}$$

Where:

- e is the desired level of precision (i.e. the margin of error),
- p is estimate proportion of the entire population,
- q Is $1 - p$.
- The Z-value is define base of confidence level from Z table.

As we have no information about our subject, we assume maximum variability to the formula, by this we mean $p = 0.5$. Form another side we say 95% confidence with 5% accuracy or standard of error in this study. In that case Z value of 95% confidence is equal to 1.96 per normal table. Finally we will have:

$$[(1.96)^2 (0.5) (1-0.5)] / (0.05)^2 = 384.16 \text{ which is almost } 385$$

About 385 patients in our target population could be appropriate to give us the confidence level that we need.

As calculated number of sample size shown in above formula was 385 person however, due to limited time allocation for data collection, financial problem and some security issues traveling to both provinces for data collection researcher selected the sub-population of 150 patients which is the number of person with sputum smear positive PTB patients refer to PRH and AJCDH hospitals, from September 2019 to December 2019. All clients were selected by non-probability/convenience sample technique that were hospitalized. Self-selection or non-response bias is one of the most common forms of bias and is difficult to manage. Similarly, data was voluntarily collected from participants by filling informed consent form recipient. For which first they were explained about the study that they are going to respond. The confidentiality regarding the personal identity and the data they provide were maintained. For preventing the bias, there was not any omission, manipulation and correction of the actually collected data for no any researcher's own purpose.

3.1.7 Inclusion and exclusion criteria:

Inclusion:

- All the patients with sputum smear positive pulmonary tuberculosis which are admitted in selected hospital.

Exclusion:

- Mentally disable or with dementia patients.
- All patients with extra pulmonary tuberculosis.

3.1.8 Sampling technique

Convenience sampling technique has been used as the type of sample in this research. Convenience sampling method is a kind of non-probability sampling technique that include the sample by selecting from that part of the population which is close and handy to use or is accessible and ease for the researcher. This method of sampling has used because researcher had no access to all list of patients as well as there were no inpatient beds for PTB patients except for MDR, TB and complicated patients, and the time of study was not sufficient to conduct long term sampling technique. That is why the researcher chose convenience sampling method for this study. Convenience sampling technique has several advantages which make it desire method for collecting data such as, ready availability, cost effectiveness, ease of research and expedited sample collection.

3.1.9 Data collection tools/materials:

The instrument that we have been used was Questionnaire which designed by researcher from Moresky scale, treatment adherence scale and personal developed question regarding to the situation of the state. The researcher developed a close ended structured questionnaire to collect relevant data on patient's demographic and economic conditions, environmental related information and some accessibility related information to the health services. This form was developed since no more information found in the literature to address all issues which are necessary to be found related to the objectives of a study.

3.1.10 Data management and analysis:

All the collected data was checked for accuracy, utility and completeness. Any errors, incompleteness and inconsistencies in the data that would affect the result was omitted. Data was analyzed by using descriptive statistical method presenting in the chart and table by using MS excel and Statistical Package for Social Science (SPSS) version 24.0 and reflected as descriptive statistic of frequency, mean, standard deviation and percentages. Researcher used chi-square test (χ^2) to see the association between descriptive variable such as, demographic and economic conditions, factors influencing treatment of PTB patients' related information and accessibility to the health services with the dependent variable. In addition Chi- square test was also used to compare between dependent variable with different independent categorical data. The degree of association between different variables will also be determined through SPSS and result is withdrawn.

3.1.11 Quality control and quality assurance:

Whereas conducting the study, the researcher took help from the supervisor whenever it is needed. During the data collection and data analysis, the result was not influenced by the researcher biases, value or own perspectives. Data was maintained with confidentiality through the whole period of research. Researcher was accept the answers of participant whether they are right or wrong without any others influences. The researcher took responsibility to apply a clear research project. Data collector got training about how to fill the questionnaire and prepare to ask the question appropriately to ensure the competence of data collection. The researcher maintained the research records according to the supervisor guideline. Samples and materials were handled and maintained carefully by the researcher. At final, the researcher was checked all data several times to maintain accuracy and outcome of the result obtained without any influence of any personal interpretation.

3.1.12 Ethical consideration:

After the ethical review board of BHPI (Bangladesh health professional institute) accepts the re-search proposal, next step is to take approval from the local review board of respective institute with respect to the Government policy of Afghanistan. And after obtaining necessary ethical approval, formal permission will also be obtained from concerned hospital where the study would be taken. Similarly, data will be voluntarily collected from participants by filling informed consent form recipient. For which first they

will be explained about the study that they are going to respond. The confidentiality regarding the personal identity and the data they provide will be maintained. There will not be any omission, manipulation and correction of the actually collected data for no any researcher's own purpose.

Chapter IV

4.1 Results:

This study is design as comparative cross sectional study to determine the factors associated with treatment failure among pulmonary tuberculosis patients and predict who is at high risk of PTB treatment failure. Based on inclusion criteria's a total of 150 participants selected for the sturdy where 100 participants from initial treatment failure group (means their sputum smear positive after 5th months of TB treatment) and other 50 participants from cured or success in treatment group (means their sputum smear negative after 5th month of TB treatment). As show in Table 4.1 success and failure groups were comparable for gender, living area, marital status, family member and occupation.

Table 4.1: Frequency distribution of Sociodemographic of the participants.

Characteristics		Success Group	Failure Group
		Frequency (%)	Frequency (%)
Gender	Male	20 (40.0)	39 (39.0)
	Female	30 (60.0)	61 (61.0)
Living area	Urban	19 (38.0)	25 (25.0)
	Rural	16 (32.0)	43 (43.0)
	Semi-rural	15 (30.0)	32 (32.0)
Marital status	Married	27 (54.0)	47 (47.0)
	Single	10 (20.0)	42 (42.0)
	Widowed/divorced	13 (26.0)	11 (11.0)
Family members	<6	4 (8.00)	6 (6.00)
	6-10	25 (50.0)	54 (54.0)
	>10	21 (42.0)	40 (40.0)
Occupational Status	Day laborer	1 (2.00)	3 (3.00)
	Farmer	0 (0.00)	4 (4.00)
	House keeping	12 (24.0)	22 (22.0)
	Student	6 (12.0)	22 (22.0)
	NGO employed	2 (4.00)	2 (2.00)
	Self-business	5 (10.0)	8 (8.00)
	Government job	2 (4.0)	5 (5.00)
	Jobless	22 (44.0)	34 (34.0)
Total		50 (100)	100 (100)

Interpretation: The total of 150 participants (39.3%) were male and (60.7%) were female and male and female ratio is about 2:3, which means females are at high risk than male to affected by TB. In addition from total of 50 patients who were cured or success in pulmonary TB treatment 40% (20) of them were male and 60% (30) of them were female and on the other hand a total of 100 patients who were failed in pulmonary TB treatment 39% of them were male and 61% of them were female.

Among 150 participants, 19 (38%) were from urban area, 16 (32%) were from rural area and remaining 15 (30%) were from semi-rural area within success group. The failure group had participants of 25 (25%), 43 (43%) and 32(32%) respectively from urban, rural and semi-rural areas.

The data showed 27 (54%) of the participants were married, 10 (20%) of participants were single which never married and 13 (26%) of participants were divorced or widowed within success group. Furthermore in the failure group 47, 42, and 11 numbers of the participants were married, single and divorced or widowed respectively.

The study classified the family members of the participants into three categories i.e. less than 6 persons in family (<6), from 6-10 persons in family and more than 10 persons in family (>10). Within a success group 8% of the participants had less than 6 members in family, 50% had from 6-10 members in family and 42% of the participants had more the 10 member in the family. However in failure group 6%, 54% and 40% of the participants had <6, from 6-10 and >10 members in family. The Table 4.1 also showed that almost half of the participants had more than 10 members in their family.

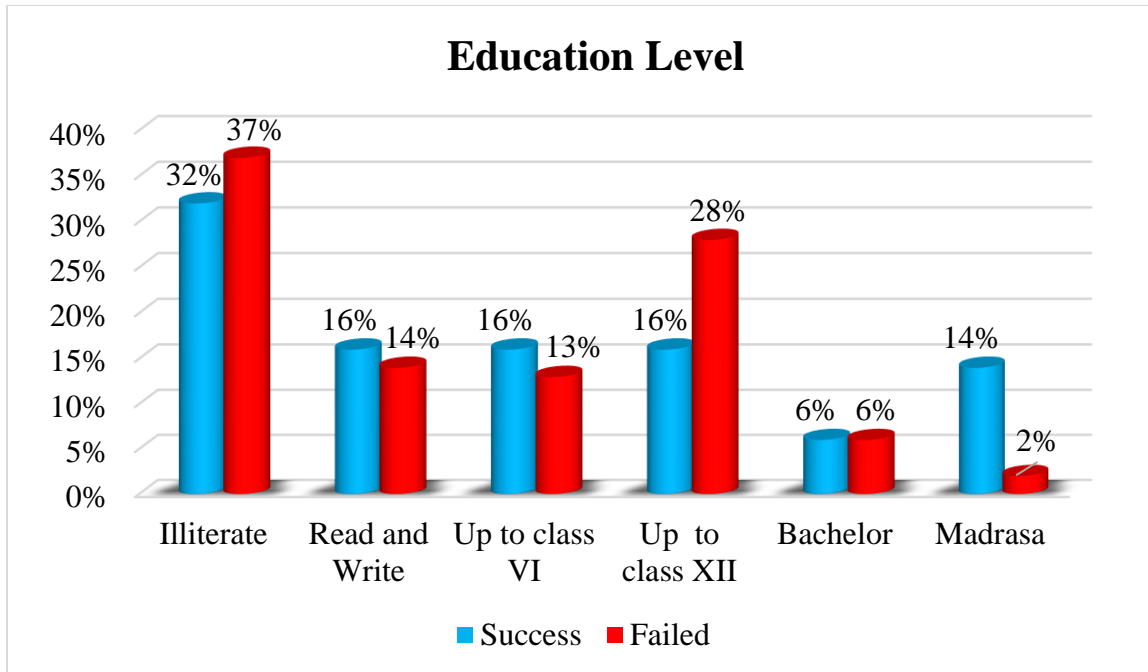


Figure 4.A: Display the educational level of the participants.

Interpretation: remain Figure 4.A show the education level of the participants among the 50 participants 32% were illiterate and the rest of them literate within success group. In other hand within failure group from the total of 100 participants 37% were illiterate and the remaining were literate and can read and write.

Table 4.2: Sociodemographic characteristics of participants.

Characteristics	Number	Minimum	Maximum	Mean	Std. Deviation
Success					
<i>Age</i>	50	5	80	40.44	18.844
<i>Monthly family income (in Afghani currency)</i>	48	1000	32000	18137.50	7777.563
<i>Family member</i>	50	2	18	10.14	3.499
Failure					
<i>Age</i>	100	2	80	30.43	18.393
<i>Monthly family income</i>	92	2000	40000	18652.17	7587.489
<i>Family members</i>	100	4	22	10.23	3.651

Interpretation: The data shows that among the success group of participants the minimum age was 5 year and maximum age was 80 years, the mean age within success group is 40.44 years and SD±18.844. In other hand the minimum age was 2 years, maximum was 80 years and the mean age within failure group is 10.14 years and SD±18.393. The minimum monthly family income within success group was 1000, maximum was 32000, the mean of monthly family income was 18137.50 and the SD±7777.563. In other hand the minimum monthly family income within failure group was 2000, maximum was 40000, the mean of monthly family income was 18652.17 and the SD±7587.489. Among the success group the minimum members in a family were 2 and maximum members were 18 in a family with mean of 10.14 members in a family. In addition within failure group the minimum members in a family were 4 and maximum members were 22 in family with mean of 10.23.

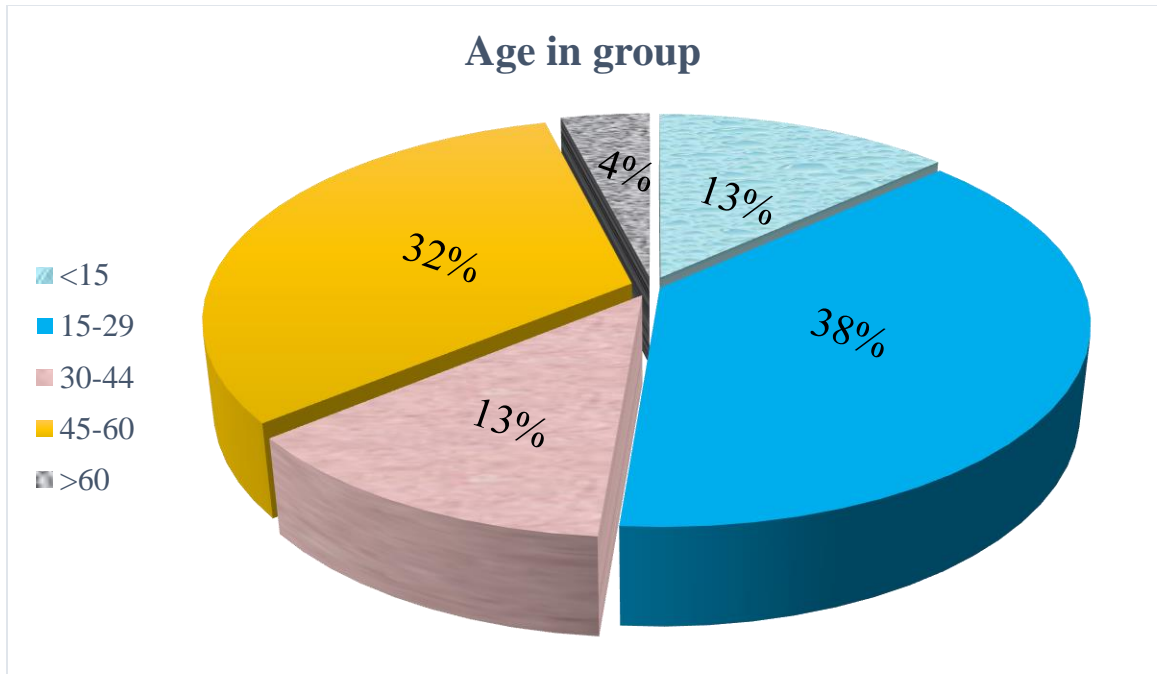


Figure 4.B: Display the Age of the participants in groups:

The mean age of the patients were 33.77 years and the standard deviation was ± 19.078 . As figure 4.B: show that 38% of the patients were in between the 15-29 years old and 32% of the patients were in 45-60 year old, 13% of the patients were in <15 years as same number of the patients were in 30-44 years old and the rest of them were belong to >60 years old as in above pie chart.

Table 4.3: Sociodemographic factors of the participants associated with PTB failure.

Variable	Success N (%)	Failure N (%)	Chi squared	P- value	OR	(95% CI) LL-UL
Age			6.380 ^a	0.012	0.408	0.202-0.825
<45 years	25 (50)	71 (71)				
45+ years	25 (50)	29 (29)				
Gender			0.014 ^a	0.906	1.043	0.521-2.087
Male	20 (40)	39 (39)				
Female	30 (60)	61 (61)				
Education			0.365 ^a	0.546	1.248	0.608-2.563
Literate	34 (68)	63 (63)				
Illiterate	16 (32)	37 (37)				
Total	50 (100)	100 (100)				

Interpretation: In Table 4.3, the data reveals that among the total 50 participants within success group 50% participants have less than 45 years of age and other 50% have 45 plus years age. Where in the failure group from the total 100 participants 71% have less than 45 years of age and 29% have 45 plus year of age. Furthermore 40% of the participants were male and 60% of them were female within success group and 39% were male and 61% were female within failure group. In other hand 68% of them were literate which include those participants who can read and write to master level of education and 32% were illiterate within success group. In addition in failure group 63% were literate and 37% were illiterate.

In Bivariate analysis, in Table 4.3, age is significantly associated with PTB treatment failure, such as the chi square value of the participants age ($\chi^2= 6.380$) and p value with 95% of Confident Interval (CI), is ($p=0.012$) which is less than (0.05) which means the result is statistically significant and failed to accept null hypothesis. This indicate that there is association between age of the participants and pulmonary tuberculosis treatment failure.

Table 4.4. Patient related factors associated with pulmonary TB treatment failure:

Factors		Success N (%)	Failure N (%)	P- valu e	OR	(95%CI) LL-UL
<i>Missed clinical appointment</i>	Yes	5 (10.0)	42 (42.0)	.000	.153	.056-0419
	No	45 (90.0)	58 (58.0)			
<i>Have contact with TB patients</i>	Yes	4 (8.00)	25 (25.0)	.013	.261	.085-.798
	No	46 (92.0)	75 (75.0)			
<i>When you feel better do you sometime stop medication?</i>	Yes	5 (10.0)	25 (25.0)	.030	.333	.119-.933
	No	45 (90.0)	75 (75.0)			
<i>Smoking</i>	Yes	0 (0)	8 (8.00)	.040	.000	NA
	No	50 (100)	92 (92.0)			
<i>Do you ever forget to take the anti TB medicine?</i>	Yes	20 (40.0)	25(25.0)	.059	2.000	.969-4.128
	No	30 (60.0)	75(75.0)			
<i>Family member with TB</i>	Yes	6 (12.0)	21 (21.0)	.176	.513	.193-1.366
	No	44 (88.0)	79 (79.0)			
<i>When you feel worse due to taking TB medication did you stop taking it?</i>	Yes	15 (30)	23 (23.0)	.353	1.435	.669-2.078
	No	35 (70)	77 (77.0)			

<i>Have problems remembering to take medication?</i>	Yes	5 (10)	7 (7.00)	.523	1.476	.444-4.909
	No	45 (90)	93 (93.0)			
<i>Careless about the schedules.</i>	Yes	1 (2)	3 (3.00)	.720	.660	.067-6.510
	No	49 (98)	97 (97.0)			

Interpretation: The above **Table.4.4.** Show the patient related factors which are associated with pulmonary tuberculosis treatment failure, among all the above factors, these factors are statistically significant and associated with PTB treatment failure and their p value is less than point zero five ($P < 0.05$) and failed to accept null hypothesis such factors as, miss clinical appointment, 47 patients (52%) were miss clinical appointment among 150 participants but out of 47 (52%) only 5 (10%) success and 42 (42%) were failure, (OR=0.153, and 95% CI ranging from .056 to 0.419), this indicate the effectiveness of miss clinical appointment. have contact with TB patients, 4 (8%) patients had and 46 (92%) were not have within success group and 25 (25%) had and 75 (75%) were not have contact with TB patients within failure group, (OR=0.261, and 95% CI ranging from .085 to .798), sometime stop taking medication due to feeling good, 5 (10%) of the participants were stop the TB drug and 45 (90%) of them were not stop due to feeling good within success group in other hand 25 (25%) patient were stop and 75 (75%) were not stop the drug due to better feeling during taking of the TB drug, (OR=0.333, and 95% CI ranging from .119 to .933), and smoking within success group none of the patients were smoke but in failure group 8 (8%) of the patients were smoking, (OR=0.000). There are some more patient related factors which are associated with PTB treatment failure such as forget to take drugs, family member with TB, stop taking of drug due to feeling worsening, problem remembering to take drugs and careless about drugs schedule, these factors are important but statistically are not significant.

Table 4.5. Drugs related factors associated with pulmonary TB treatment failure:

Factors		Success N (%)	Failure N (%)	P- value	OR	(95%CI) LL-UL
<i>Take insufficient dose of TB drugs.</i>	Yes	4 (8.00)	29 (29.0)	.003	.213	.070-.646
	No	46 (92.0)	71 (71.0)			
<i>Paid for the TB drugs.</i>	Yes	17 (34.0)	17 (17.0)	.019	2.515	1.148-5.509
	No	33 (66.0)	83 (83.0)			
<i>Tolerate the TB medication.</i>	Yes	25 (50.0)	68 (68.0)	.032	.471	.235-.943
	No	25 (50.0)	32 (32.0)			
<i>Used of traditional/herbal medicine for TB treatment.</i>	Yes	4 (8.00)	22 (22.0)	.033	.308	.100-.951
	No	46 (92.0)	78 (78.0)			
<i>Do you have knowledge about free TB treatment policy?</i>	Yes	49 (99.0)	91 (91.0)	.105	4.846	.596-39.37
	No	1 (2.00)	9 (9.00)			
<i>Stop TB drugs due to drugs shortage.</i>	Yes	8 (16.0)	10 (10.0)	.286	1.714	.631-4.656
	No	42 (84.0)	90 (90.0)			

Interpretation: In Table.4.5. The data display drugs related factors which are associated with pulmonary tuberculosis treatment failure, there are some TB drugs related factors which are statistically significant and associated with PTB treatment failure and their p

value is less than point zero five ($P < 0.05$) and failed to accept null hypothesis such factors as, take insufficient doses of TB drugs with in success group 4 (8%) patients were taking and 46 (92%) patients did not take insufficient doses of TB drugs, in other hand 29 (29%) patients were took and 71 (71%) patients did not take insufficient doses of TB drugs within failure group, and (OR=.213, with 95% CI ranging from .070 to .646), paid for TB drugs 17 (34%) of the patients were paid and 33 (66%) patient were not paid within success group further 17 (17%) of the patients were paid and 83 (83%) were not paid for the TB drugs within failure group, (OR=2.515, with 95% CI ranging from 1.148 to 5.509), tolerate the TB medication 25 (50%) of the patient were tolerate and 25 (50%) were not tolerate within success group, in other hand 68 (68%) patient were tolerate and 32 (32%) were not tolerate the TB medication while taking within a failure group, (OR=.471 with 95% CI ranging from .235 to .943), Used of traditional/herbal medicine for TB treatment, 26 people (77.3%) used herbal/traditional medicine among 150 participants but out on 26 there are only 4 (30.8%) success in treatment of TB and (69.2%) were failure, (OR=.308 with 95% CI ranging from .100 to .951).

Odd ratio for used of traditional/herbal medicine for TB treatment is .308, $p = .033$ which is less than 0.05. This indicates that the participants who used traditional/herbal medicine for TB treatment had .308 times more likely to have chance of PTB treatment failure with significant and $p = .033$ which indicate that failed to accept null hypothesis. There are some more important factors which are related with PTB treatment failure but not statistically significant, such factors as knowledge about free TB treatment policy, knowing about the duration of TB drugs usage, default of treatment and stop TB drugs due to drugs shortage.

4.6 Factors affecting accessibility to health services

Factors		Success N (%)	Failure N (%)	P- value	OR	(95%CI) LL-UL
<i>Faced insecurity issue to prevent on visiting the doctor.</i>	Yes	5(10.0)	24(24.0)	.041	.352	.125-.987
	No	45(90.0)	76(76.0)			
<i>Faced social and family restriction to prevent you from visiting the doctor.</i>	Yes	2(2.00)	27(27.0)	.001	.113	.026-.496
	No	48(98.0)	73(73.0)			

Interpretation: The data display factors which are affecting accessibility to the health services and lead to TB treatment failure, there are some factors which are statistically significant and associated with PTB treatment failure and their *p*-value (labeled Asymp. Sig.) Less than .05? If so, we can conclude that the variables are not independent of each other and that there is a statistical relationship between the categorical variables such factors are faced insecurity issue to prevent on visiting the doctor 29 people were faced insecurity issue among total of 150 participants but from 29 only 5 people were success in treatment of PTB and 24 were failure in PTB treatment. Faced social and family restriction to prevent you from the doctor, 29 people were face family restriction among 150 participants which were most of them female but only 2 success and 27 were failure in initial PTB treatment.

CHAPTER V

5.1 DISCUSSION

This study “research” predictors of initial treatment failure among pulmonary tuberculosis is the first ever research in Afghanistan. Treatment failure of pulmonary tuberculosis patients, which is defined as a patient who has sputum smear (SS) or sputum culture positive at 5 months or later after the initiation of anti TB treatment (Nakwagala. et all. 2011, p. S105). This study is one of the unique inquires done among the pulmonary tuberculosis patients in Afghan, Japan communicable disease hospital and in Paktia regional hospital, Afghanistan. In Afghanistan due unreasonable drug use, irregular and mismanagement use of drug lead to increase in the number of treatment failure.

In this chapter we will interpret and describe the significant of finding and compare it what is already known about the particular research problem being investigated. Here the researcher explain how your study gave advance information to the reader which might not have been given by previous research. It highlights the importance of the study and how it can contribute to the understanding the research problem. It should state how the findings from your study and helped fill gaps in the literature that had not been previously exposed or adequately described (Baldwin, 2018, p. 39-56).

The purpose of this study was to highlights the factors associated with initial treatment failure among pulmonary tuberculosis patients these factors are: Miss clinical appointment, contact with TB patient, stop the TB medication due to feeling good, Smoking, take insufficient does of TB drugs, paid for TB drugs, tolerate the TB medication, used of herbal/traditional medicine for TB treatment, face insecurity issue that prevent to visit doctor, face social and family restriction that prevent from visiting the doctor, sputum smear positive after 2 months of treatment. Failure in the TB treatment and retreated patients has server adverse reaction and mood disorder such as depression (WANG et al., 2017). The failure of TB treatment lead to effect on treatment compliance and confidence

in other hand influence the burden on families and care-giver (WANG et al., 2017). The goal of this chapter is the interpretation of important findings.

5.2 Socio-Demographic features

5.2.1 Age and Gender:

The data reveals that among the total 50 participants within success group 50% participants were below 45 years of age and other 50% were above 45 years age. Where in the failure group from the total 100 participants 71% have less than 45 years of age and 29% have 45 plus year of age. Furthermore 40% of the participants were male and 60% of them were female within success group and 39% were male and 61% were female within failure group. , age is significantly associated with PTB treatment failure, such as the chi square value of the participants age ($\chi^2= 6.380$) and p value with 95% of Confident Interval (CI), is ($p=0.012$) which is less than (0.05) which means the result is statistically significant and failed to accept null hypothesis. This indicate that there is association between age of the participants and pulmonary tuberculosis treatment failure.

From the total of (100%) $N=150$ participants 60.7% were female and 39.3% were male, male and female ratio is about 2:3, which indicate that female is more likely to be affected than male by pulmonary tuberculosis.

5.3 Patient related factors related to pulmonary TB treatment failure

The researcher mention only significant factors here which are associated with pulmonary TB treatment failure, among all the above factors which are mention in the chapter II these factors are statistically significant and associated with PTB failure cause their P value is less than point zero five ($P=<0.05$) and failed to accept null hypothesis. Miss clinical appointment, in this study we found those who miss clinical appointment were 4.2 time more likely to fail in the treatment failure, the most common reason for missing the clinical appointment was the long duration of taking TB medicine from health care services because in Afghanistan the DOT program is applying so the patient need to come and take TB medicine in front of the Doctor, other reason for missing the clinical appointment was restricted family, insecurity issue, and long distance to health care service. In the Morsy's Egypt study reported that 8 missed doses are more likely lead to risk of TB treatment failure

(Morsy AM, et al., 2003) . In other study which was happen in Bukina Faso found that cases were 18 times more likely to fail to take their TB medication (Sawadogo et al., 2015).

Have contact with TB patients, 29 (33%) patients were had contact with TB patient among 150 (100%) participants, out of 29 (33%) patients only 4 (8%) success in the treatment of PTB and 25 (25%) were failure, their (OR=0.261, and 95% CI ranging from .085 to .798), this indicate that those who have contact with TB patients more likely to be fail in PTB treatment. Stop taking TB medication due to feeling better, 30 participants (35%) stop taking medication among 150 participants only 5 (10%) success and 25 (25%) were failure (OR=0.333, and 95% CI ranging from .119 to .933), which indicate the effectiveness of stopping the TB medication. Smoking is the other factor for treatment failure, 8% of the participant were smokers among 150 patients which were all related to the group of failure. There are some more patient related factors which are associated with PTB treatment failure such as forget to take drugs, family member with TB, stop taking of drug due to feeling worsening, problem remembering to take drugs and careless about drugs schedule, these factors are important but statistically are not significant.

5.4 Drug related factors related to PTB treatment failure

There are some TB drugs related factors which are statistically significant and associated with PTB treatment failure and their p value is less than point zero five ($P < 0.05$) and failed to accept null hypothesis such factors as. Taking of insufficient does of TB drugs, 33 participants were took insufficient does of TB drugs among the total of 150 participants only 4 participants success and 29 were failure, (OR=.213, with 95% CI ranging from .070 to .646).). Tolerate the TB medication 25 (50%) of the patient were tolerate and 25 (50%) were not tolerate within success group, in other hand 68 (68%) patient were tolerate and 32 (32%) were not tolerate the TB medication while taking within a failure group, (OR=.471 with 95% CI ranging from .235 to .943). Used of herbal/traditional medicine for TB treatment, the usage of herbal/traditional medicine associated with TB treatment failure that may lead to kidney and liver disease, herbal/traditional medicine may interact with the absorption and metabolism which inhibit the effect of the TB drug (Sawadogo, B., & Mamadou, S., 2018). In this study the usage of herbal/traditional medicine in the TB treatment is also the significant factor which explain with fact, those who use

herbal/traditional medicine is .303 time more in failure than in success. Such hypothesis for herbal/traditional medicine say:

H₁: There is association between the usage of herbal/traditional medicine for TB treatment and PTB treatment failure.

H₀: There is not any association between the usage of herbal/traditional medicine for TB treatment and PTB treatment failure.

Odd ratio for used of herbal/traditional medicine for TB treatment is .308, $p = .033$ which is less than 0.05. This indicates that the participants who used traditional/herbal medicine for TB treatment had .308 times more likely to have chance of PTB treatment failure with significant and $p = .033$ which indicate that failed to accept null hypothesis. There are some more important factors which are related with PTB treatment failure but not statistically significant, such factors as knowledge about free TB treatment policy, knowing about the duration of TB drugs usage, default of treatment and stop TB drugs due to drugs shortage.

5.5 Factors affecting accessibility to health services

This study find some factors which are affecting accessibility to the health services and lead to TB treatment failure, there are some factors which are statistically significant and associated with PTB treatment failure and their p -value (labeled Asymp. Sig.) Less than .05? If so, we can conclude that the variables are not independent of each other and that there is a statistical relationship between the categorical variables such factors are faced insecurity issue to prevent on visiting the doctor 29 people were faced insecurity issue among total of 150 participants but from 29 only 5 people were success in treatment of PTB and 24 were failure in PTB treatment. Faced social and family restriction to prevent you from the doctor, 29 people were face family restriction among 150 participants which were most of them female but only 2 success and 27 were failure in initial PTB treatment. Possible remaining factors that are associated with TB treatment failure could be Drug Resistance because due to lack and low quality of laboratory investigation at initiation of TB which was not considered in this study. According to a study which was happen in East Wollega Zone of Etheiopia, a substantial proportion of the total delay to treatment of tuberculosis was attributed to health system delay, and important preventable period of infectiousness in the community caused probably by the failure of the recognized health service and inadequate of the clinical services to diagnose tuberculosis among symptomatic

individuals and start treatment (Wondimu et al., 2007). The fact that majority of patients with symptoms of tuberculosis were not examined correctly for tuberculosis or referred to diagnostic facilities upon their first arrival, rather most of them (76.1%) were given treatment for diseases other than tuberculosis (Wondimu et al., 2007). So late diagnosis of pulmonary TB is associated drug resistance which may lead to treatment failure and worse prognosis.

Chapter VI

6.1 Conclusion

This study conducted to determine the factors associated with pulmonary treatment failure, the prevalence of pulmonary tuberculosis treatment failure was more among female than in male. The people from rural area and from the crowded living condition had higher prevalence. There are some more important factors such as knowledge about free TB treatment policy, knowing about the duration of TB drugs usage and stop TB drugs due to drugs shortage contribute to PTB treatment failure but not statistically significant. The failure rate was seen among the people who faced security issue and social and family restriction from visiting doctors contributing to more failure rate among them. The study also showed that female face social and security restriction for reviving treatment from health centers. The study showed that minimal failure was due to drug shortage. The pulmonary tuberculosis treatment failure was seen among the people who used traditional/herbal medicine for tuberculosis treatment. From the study we could conclude that the pulmonary tuberculosis treatment failure was associated with age, area of living and sex of individual in Afghanistan. The social securities and family restriction were also the major contributing factor of failure, mainly for the females. The avoidance of modern treatment and false believed in traditional / herbal medicine for treatment of pulmonary tuberculosis was also the major contributors in Afghanistan. The social system of lots of family member staying together, low immunity and poverty could be the main factor of pulmonary tuberculosis treatment failure in Afghanistan. Some factors related to health care services were investigated such as, Doctor was receptive to question and concern, dealing of health professional with patients and waiting time to receive treatment were statistically not significant. To reduce the failure rate those patients who have smear positive after two months of treatment require strong follow up in addition to extension of phase of treatment.

6.3 Limitation

This study was only limited to two hospitals (Afghan-Japan Communicable Disease Hospital and Paktia Regional Hospital) of particular cities, it may not be consider to whole Afghanistan PTB treatment. Also the interviews were conducted in the TB diagnostic and treatment centers in front of the health care worker which may lead to participants respond to answers most socially or least stigmatizing rather than answering with complete honesty. No enough literature was available to discuss in national context due to lack of researches in this area in Afghanistan. Limited samples was consider issue which in thin study it did not met the standard sample size.

6.2 Recommendation

As it is a small scale study so further research can be done with large sample size for validity and reliability of the result. The result could be utilized by the organization involved in prevention and treatment of tuberculosis. The government could utilize the finding to make policies to reduce treatment failure of tuberculosis. The future study could be conducted in the community levels involving larger sample so that those who not utilizing health services could also be involved. The qualitative study would be better to understand the factor contributing to failure rate.

6.2.1 Recommendation for policy makers

National referral laboratory capacity need to be strengthened to do drug susceptibility testing and routine therapeutic drug monitoring. National TB Control Program should train health workers in the TB center regarding TB case diagnosis and management to improve the compliance to TB treatment. Avoid the usage of herbal/traditional medicine by the TB patients.

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APPENDIX-I

CONSENT FORM



Bangladesh Health Professional Institute

Information Sheet & Consent Form

Title: Predictors of initial treatment failure among pulmonary tuberculosis patients in Paktia regional hospital and in Afghan, Japan communicable diseases hospital, Afghanistan.

Dear participant

I Abdul Basit, a student of Dhaka University, currently pursuing Master's degree in Rehabilitation Science under the supervision of Professor **Dr. Md. Julker Nayen**. I would like to request you to participate in the research study to find out about **Predictors of initial treatment failure among pulmonary tuberculosis patients** in Paktia regional hospital and in Afghan, Japan communicable diseases hospital, Afghanistan. Your participation in this study is voluntary. If you do not agree to participate at all you can withdraw your support to the study anytime you want. Your answer will be recorded in this questionnaire which will take approximately 20 minutes and will be kept highly confidential and private. These answers will be helpful in enhancing our health services and meeting your needs. This study will not cause any risk or harm to you. Please try to give truthful answers as much as possible. If you have any questions regarding the survey and questionnaire you may ask the researcher.

I have read or have been explained to me the information. I have got opportunity to ask any query and discuss about the study with the data collector, I have been answered to my satisfaction. I have informed about the risk and benefit of the research. I have understood that I am free to withdraw from the study at any time, without having any reason and without affecting present and future medical care. I am informed that all my answer will remain highly confidential.

I agree to take part in this study.

Name of Participant: _____

(Thumb print for illiterate participant)

Signature of Participant: _____

Date: _____

Right Thumb	Left Thumb
----------------	---------------

موافقت نامه

انستیتیوت صحتی بنگلادیش، برنامه ماستری علوم توان بخشی (2018- 2019)

اشتراک کننده عزیز!

از شما صمیمانه دعوت به عمل می آید که در تحقیق تحت عنوان پیش بینی اولیه تداوی های نا موفق در بین افراد مبتلا به توپرکلوز ریوی در شفاخانه های ساحوی پکتیا و شفاخانه توپرکلوز افغان جاپان- کابل. اشتراک نماید. من فعلا محصل بر حال انستیتیوت صحتی بنگلادیش بوده و در حال حاضر مصروف نوشتن پایان نامه تحصیلی ام در مقطع ماستری میباشم.

قابل ذکر است که اشتراک شما درین تحقیق کاملا اختیاری می باشد. شما اختیار دارید که تمام سوالنامه ویا یک بخش از ان را که نمی خواهید جواب ندهید. و هم چنان اشتراک درین تحقیق در زنده گی روز مره تان کدام مشکل را مواجه نکرده و جواب تان کاملا محفوظ، رمزی و پوشیده خواهد ماند. معلومات تنها به صورت نتیجه کلی گزارش داده خواهد شد و هیچ کس به استثنای محقق از جوابات شخصی که شما به سوال نامه ارایه کرده اید نخواهد دانست.

در صورت موافقت به این پروژه تحقیقی، لطفا به سوال نامه تا حد ممکن به شکل درست پاسخ دهید. مجموعا پاسخ به این سوالنامه حداا بیست و پنج الی سی دقیقه وقت را در بر خواهد گرفت.

تشکر از همکاری تان!

APPENDIX-II

QUESTIONNAIRE

Questionnaire for Data collection

Part I: Socio-demographic

1. Participant ID: _____ Date: _____/_____/_____.
2. Age: _____.
3. Gender: Male Female Other.
4. Living Area: Urban area Rural area Semi-rural.
5. Marital status: Married Single
Widowed/Divorced.
6. Education level:
 Illiterate Read and Write Up to class VI Up to class
 XII Bachelor Master or above NA
7. Monthly family income: _____.
8. Family members: _____.
9. Are you the main earning member of the family? Yes
No.
10. Occupation:

Day laborer	Farmer	House keeping	Student	NGO	Self-business	Government job	Jobless

Part II: Patient personal factors related to treatment failure

1. Do you ever forget to take your Anti TB medicine? Yes No.
2. Do you ever have problems remembering to take your Anti TB medication? Yes No.
3. When you feel better, do you sometimes stop taking your Anti TB medicine? Yes No.
4. Sometimes if you feel worse when you take Anti TB medicine, do you stop taking it? Yes No.
5. Are you careless at times about taking your medication? Yes No.
6. Smoking: Yes No.
7. Did you miss clinical appointment? Yes No.

Part III: Factors related to drugs associated with treatment failure

1. Have you ever paid for the TB drugs? Yes No.
2. Have you ever stop taking TB drugs due to drugs' shortage? Yes No.
3. Have you ever take insufficient dose of TB drugs? Yes No.
4. Did you use Traditional/Herbal medicine for TB treatment: Yes No.

5. Could you tolerate medication? Yes No.
6. Do you have knowledge about free TB treatment policy? Yes No.
7. Do you know about the duration of TB treatment? Yes No.

Part IV: Factors related to the disease

1. Positive sputum smear at two months. Yes No.
2. Any family member with TB: Yes No.
3. Do you have contact with TB patient? Yes No.
4. Re-infection: Yes No.
5. Do you cough often regardless the TB treatment? Yes No.
6. Have you failed in previous TB treatment? Yes No.
7. Presence of other disease: Walking Disability Diabetes No.
8. Time from initial treatment of TB (months).
 2 3 4 5 6 7

Part V: Factors related to satisfaction of care delivered in health facilities

1. Do you think that the doctor is receptive to your questions and concerns?
 Yes No.
2. How health professional(Doctor, Nurse) deals with patient:
 Very Good Good Bad.
3. Waiting time to receive treatment in minutes:
 <15 15-30 >30

Part VI: Factors affecting accessibility to health services

1. Time needed to reach clinic (minutes):
 <30 30-60 >60
2. Distance to clinic:
 <5 5-10 >10
3. Could you afford transportation cost? Yes No.
4. Have you ever faced social or family restriction on visiting the Clinic?
 Yes No.
5. Have you ever faced insecurity issue to prevent you on visiting the doctor?
 Yes No.
4. How would you rate your overall experience on health care delivery:
 Satisfied Natural Unsatisfied.

Thank you for sharing your thoughts with us

Wish you all the best.

د معلوماتو راټولولو لپاره پوښتنلیک

نېټه

د ناروغ ID: _____.

_____/____/____:

د ناروغ عمر: _____.

1. جنسیت: مزرک مؤنث بل.
2. د اوسیدلوځای: ښار کلی نیمه کلی.
3. مدنی حالت: متاهل مجرد کونډ، کونډه.
4. د تعلیم سويه: نالوست لیک او لوست تر ۶ صنف تر ۱۰ صنف
5. میاشتنی عواید:
6. د کورنی د غړو
7. ایا کورنی ته مو د گټی یواځینی زریعه یاست؟ نه
8. دنده:

بی وظیفی	حکومتی وظیفه	شخصی تجارت	NGO	محصل	کورساتونکی	دهقان	غریبکار

✓ د ناروغ شخصي فکتورونه چې د درملنی ناکامی پوری اړه لري

9. ایا ستا کله هم درمل اخستل هیر شوی؟ هو نه
10. ایا ته کله هم داسی حافظوي مشکل سره مخ شوی بی چی د درملو اخستل دی هیر شوی؟ هو نه
11. کله چی دی د بهتري احساس کری ایا درمل اخستل دی پریښی؟ هو نه
12. کله چی دی د درمل اخستلو سره د بدتري احساس کری ایا درمل اخستل دی پریښی؟ هو نه
13. ایا تا کله هم د درمل اخستلو کی بیغوری کری؟ هو نه
14. ایا ته سکرت سکوی؟ هو نه
15. ایا ته کله هم په ټاکلی وخت کلینک ته نه بی تللی؟ هو نه

✓ د درملو اړوند فکتورونه چې د درملنی ناکامی پوری اړه لري

16. ایا کله دی هم د توبرکلوز درمل پیرلی؟ هو نه
17. ایا د درملو د نشتوالی له کبله دی درمل اخستل پریښی؟ هو نه
18. ایا کله دی هم درمل په کمه اندازه اخیستی؟ هو نه
19. ایا کله دی هم کورنی/حکیمی درمل د توبرکلوز د تداوی لپاره اخیستی؟ هو نه
20. ایا کله هم درمل اخیستلو ته دی حوصیله لرله؟ هو نه
21. ایا دی توبرکلوز د مفت علاج پالیسی په اړه پوهه لری؟ هو نه

22. ایا د توبرکلوز د علاج د وخت په اړه پوهه لری؟
 هو نه
- ✓ د ناروغی اړوند فکتورونه
23. ایا د تداوی دوه میاشتی وروسته دی د بلغمو معاینه مثبت وه؟
 هو نه
24. ایا تاته د توبرکلوز ناروغی د بل چا څخه انتقال شوی.
 هو نه
25. ایا ستاسو د کورنی کوم غړی د توبرکلوز په ناروغی اخته دی؟
 هو نه
26. ایا د توبر کلوز ناروغ سره اړیکه لری؟
 هو نه
27. ایا د دوهم ځل لپاره په توبرکلوز ناروغی اخته شوی بی؟
 هو نه
28. د نورو ناروغیو موجودیت لکه:
 د تگ نا توانی شکر هیڅ یو
29. څومره وخت کیری چی توبرکلوز درملنه دی پیل کیری (په میاشتنو).
 2 3 4 5 6 7

✓ هغه فکتورونه چی په روغتونونوکی د ناروغ د درملنی د ډاډگیری پوری اړه لری

30. ایا ډاکتران په غور سره سنا مشکل او پوښتنو ته غور ږدی؟
 هو نه
31. د ډاکترانو او نرسانو رویه د ناروغ سره:
 ډیره ښه ښه خرابه
32. د درملو تر لاسه کولو د انتظار وخت (په دقیقو)
 <15 30-15 >30

✓ هغه فکتورونه چی د صحی خدماتو لاس رسی پوری اړه لری

33. څومره وخت کی کلینک ته رسیږی (په دقیقو)
 <30 0-30 >60
34. په څومره واټن کی کلینک موجود ده؟
 < 5km 30-15 km > 30km
35. ایا کلینک ته د تللو او راتللو مالی توان لری؟
 هو نه
36. ایا کله هم کلینک څخه د کورنی یا د تولنی لخوا منع شوی یاست؟
 هو نه
37. ایا کله هم تاسو د امنیتی ستونزو له امله ډاکتر ته د تگ څخه پاتی شوی یاست؟
 هو نه
38. درملنه مو په ټوله کی څنکه ارزوی؟
 راضی ناراضه نورمال

د افکارو شریکولو څخه مو نری مننه

د روغ صحت په هیله

داکتر عبدالباسط

د روغتون رئیس

APPENDIX-III
APPROVAL OF THE THESIS PROPOSAL



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)
(The Academic Institute of CRP)

Ref: CRP-BHPI/IRB/07/19/1308

Date: 06/07/2019

To,
Abdul Basit
M.Sc. in Rehabilitation Science (MRS)
Session 2018-2019, Student ID: 181180123
BHPI, CRP-Savar, Dhaka-1343, Bangladesh

Subject: Predictors of Initial Treatment Failure among Pulmonary Tuberculosis Patients in Paktia Regional Hospital and in Afghan, Japan Communicable Diseases Hospital, Afghanistan.

Dear Abdul Basit,
Congratulations,

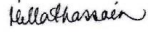
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above mentioned thesis, with yourself, as the principal Investigator. The following documents have been reviewed and approved:

S.N.	Name of Documents
1.	Thesis Proposal
2.	Questionnaire
3.	Information sheet and consent form.

The study involves answering a questionnaire to address predictors of initial treatment failure among pulmonary tuberculosis patients in Paktia Regional Hospital and in Afghan, Japan Communicable Diseases Hospital, Afghanistan that takes about 20 to 25 minutes to answer. Since, there is no likelihood of any harm to the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 12.00 AM on 17th February 2019 at BHPI.

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working accordance to Nuremberg Code 1947, World Medical Association Declaration of Helsinki, 1964 - 2013 and other applicable regulation.

Best regards,


Mohammad Millat Hossain
Assistant Professor, Dept. of Rehabilitation Science
Member Secretary, Institutional Review Board (IRB)
BHPI, CRP-Savar, Dhaka-1343, Bangladesh

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ, ফোন : ৭৭৪৫৪৬৪-৫, ৭৭৪১৪০৪ ফ্যাক্স : ৭৭৪৫০৬৯

CRP-Chapain, Savar, Dhaka-1343, Tel : 7745464-5, 7741404, Fax : 7745069, E-mail : contact@crp-bangladesh.org, www.crp-bangladesh.org



Islamic Republic of Afghanistan
Ministry of Public Health
Afghanistan National Public
Health Institute
Institutional Review Board



د افغانستان اسلامي جمهوریت
د عامې روغتیا وزارت
د افغانستان د عامې روغتیا ملي انستیتوت
د اخلاقیات بررسی بورډ



Date: September 07, 2019

IRB Code No: E.0919.0070

To: Abdul Basit
M.Sc. in Rehabilitation science (MRS)
Bangladesh Health Professions Institute (BHPI)

Subject: Exempt of proposal entitled “Predictors of Initial Treatment Failure among Pulmonary Tuberculosis Patients in Paktia Regional Hospital and in Afghan, japan Communicable Diseases Hospital, Afghanistan”.

Dear Abdul Basit,

The research proposal entitled “Predictors of Initial Treatment Failure among Pulmonary Tuberculosis Patients in Paktia Regional Hospital and in Afghan, japan Communicable Diseases Hospital, Afghanistan” is exempted from Institutional Review Board Examination Because this study is Approved by IRB of BHPI with the reference number of (CRP-BHPI/IRB/07/19/1308), we are pleased to accept your request for exemption and approve the study.

We reserve to the rights to monitor and audit your study and any violation of ethical norms during the course of study shall lead to withdrawal of given approval.

The duration of approval for a study to begin the research project is valid for one year and the exact date of research project implementation (start and end) should be informed to IRB secretary.

You are bound to share the result of your study with MoPH prior any dissemination plan.

Sincerely,

Bashir Noormal MD, MPH
Director General
Afghanistan National Public Health Institute (ANPHI) &
Chairman, Institutional Review Board (IRB)
Ministry of Public Health

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اډرس الکترونیکی: anphi@moph.gov.af
اډرس پستی: منزل پنجم و ششم تعمیر بانک خون مرکزی عقب پوښی کلینیک مرکزی،
واقع سونمای پامیر، کابل افغانستان

APPENDIX-IV
PERMISSION LETTER FOR DATA COLLECTION



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)
(The Academic Institute of CRP)

Ref. CRP/BHPI/MRS/07/2019/0294

Date: 06/07/2019

To Whom It May Concern

This is to inform that **Abdul Basit**, is a student of Part II of M.Sc in Rehabilitation Science program at the Bangladesh Health Professions Institute (BHPI), an academic institute of Centre for the Rehabilitation of the Paralysed (CRP), under the Faculty of Medicine of the University of Dhaka, Bangladesh.

As per the course curriculum the above mentioned students needs to complete an individual thesis. Thus he requires to conduct data collection and research related activities during the period of 20th July, 2019 to September, 2019. Therefore, this is our request to help him through necessary procedures to complete data collection for this thesis on time.

Sincerely,

Prof. Dr. Md. Omar Ali Sarker
Principal
BHPI



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)
(The Academic Institute of CRP)

Ref.

CRP/BHPI/MRS/07/2019/0289

Date: 06/07/2019

To Whom It May Concern

This is to certify that **Abdul Basit**, passport no. **O1446535**, country of citizen: **Afghanistan**, is a student of M.Sc. in Rehabilitation Science program of Bangladesh Health Professions Institute (BHPI). His student ID is **181180123**, his session is **2018-2019**. BHPI has been running M.Sc in Rehabilitation Science program under the project of Regional Inter-professional Masters program in Rehabilitation Science (MRS) funded by SAARC Development Fund (SDF). It is noted that **Abdul Basit** has been awarded “**SAARC Development Fund Scholarship**” which covers his tuition fee, accommodation and food cost for both two years of his study in this program. **Abdul Basit** is not engaged in any job or private practice here. He has been staying here in the international hostel of CRP.

According to the Academic calendar, of MRS Part II, his data collection period will be from July, 2019 to September, 2019. His data collection place will be in Afghanistan.

We wish his every success in life.

Muhammad Millat Hossain
Assistant Professor, Course and Project coordinator,
Regional Inter-professional Masters program in
Rehabilitation science (MRS), BHPI, CRP

Prof. Dr. Md. Omar Ali Sarker
Principal
BHPI

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ, ফোন : ৭৭৪৫৪৬৪-৫, ৭৭৪১৪০৪ ফ্যাক্স : ৭৭৪৫০৬৯

CRP-Chapain, Savar, Dhaka-1343, Tel : 7745464-5, 7741404, Fax : 7745069, E-mail : contact@crp-bangladesh.org, www.crp-bangladesh.org



Islamic Republic of
Afghanistan
Ministry of Public Health
Afghanistan National Public
Health Institute
Directorate of Public Health
Research & Clinical Studies



جمهوری اسلامی افغانستان
وزارت صحت عامه
انستیتوت ملی صحت عامه افغانستان
ریاست تحقیقات صحت عامه و مطالعات کلینیکی

د افغانستان اسلامی جمهوریت
د عامی روغتیا وزارت
د افغانستان د عامی روغتیا ملی
انستیتوت
د عامی روغتیا تحقیقات و
کلینیکی مطالعاتو ریاست



تاریخ: ۱۳۹۸.۰۶.۰۱

نمبر: ۹۰۰۰۰۰۰۰۰۰

به ریاست محترم عمومی طب معالجوی !

بدین وسیله احتراماً مینگاریم اینکه محترم عبدالباسط محصل ماستری رشته توانبخشی مجدد پوهنتون داکه کشور بنگلادیش، میخواهد تحقیق علمی را که موضوع تیزس شان است، تحت عنوان بررسی علت ناکام شدن تداوی از مریضان توبرکلوز ریوی در شفاخانه افغان جاپان انجام دهد ایشان اجازه نامه بورد اخلاقیات پوهنتون متذکره همراه با اجازه نامه بورد اخلاقیات وزارت صحت عامه را اخذ نموده و مطابق پروتوکول تحقیق متذکره پروسه جمع آوری ارقام را آغاز مینماید، امید در زمینه جمع آوری ارقام با ایشان همکاری نمایید. کاپی اجازه نامه ها بورد اخلاقیات به زبان انگلیسی ضم مکتوب هذا گسیل است.

با احترام

پوهندوی دوکتور بشیر نورمل
رئیس عمومی انستیتوت ملی صحت عامه افغانستان
و رئیس بورد اخلاقیات وزارت صحت عامه

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آدرس پستی: منزل پنجم و ششم تعمیر بانک خون مرکزی عقب
پوئی کلینیک مرکزی، واقع سینمای پامیر، کابل افغانستان

ملاحظه شد.
ریاست محترم سفارتخانه افغان جاپان!
در زمینه اجراءات اصولی نماید.

لطفاً

مستفاد
13.07.99

شف محترم MDR!
در مورد اوراق = اصولی نماید.

آریت محترم لوی کلنت!

در مورد حقایق درخورد - التفتوت - علی محمد عامه از همکاری لازم

دیوچ تقربانید
13.4.98



د افغانستان اسلامي جمهوریت
د عامې روغتیا وزارت
د روغتیا خدمتونو د وړاندې کولو معینیت
دمعالجوي طب عمومي ریاست
د تخصصي او ټولني روغتونو ریاست
د افغان جاپان دساری امراض روغتون



Islamic Republic of Afghanistan
Ministry of Public Health
G D of Curative Medicine
Directorate of Curative and Tertiary
Hospitals
Afghan Japan Communicable
Disease Hospital



دولت جمهوري اسلامي افغانستان
وزارت صحت عامه
معینیت عرضه خدمتې صحې
ریاست عمومي طب معالجوي
ریاست شفاخانه هاي تخصصي و ټولني
ریاست شفاخانه امراض ساری افغان جاپان

Certificate of Completion

This is to certify that **Mr. Abdul Basit Niazi s/o Raees Khan** Student of BHPI, Dhaka University pursuing Master's Degree in Rehabilitation Science has successfully completed the data collection in Afghan Japan Communicable Disease Hospital. For the purpose of research entitled 'Predictor of Initial Treatment Failure among Pulmonary Tuberculosis Patients in Paktia Regional Hospital and in Afghan Japan Communicable Disease Hospital'

From 07-Sep-2019 to 28-Dec-2019.

During This period, we found him resourceful and diligent and we wish him all the best in his future endeavour. I shall be glad to provide additional information if required.

Dean of Hospital: Dr. Rahmatullah "WAZIRI"

Designation: Medical Director.

Organization: Afghan Japan Communicable disease Hospital.

Contact: 0093776657550

Official Email: r.waziri123@gmail.com

