DETERMINANTS OF DELAY IN SEEKING HEALTH CARE AMONG TUBERCULOSIS PATIENTS ATTENDING TUBERCULOSIS CLINIC AT HEALTH SERVICE IN JIMMA, ETHIOPIA: ACASE CONTROL STUDY

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Abstract

Background: Tuberculosis has been recognized as major public health problem and major cause of death in both developed and developing countries. Low case detection rate is one of the long standing key challenges of the TB control and prevention program in Ethiopia. An effective TB control programme requires early diagnosis and immediate initiation of treatment. Delay in diagnosis is serious because it not only adversely affects disease prognosis at the individual level but also promotes transmission within the community and enhances TB epidemics. Early detection, initiation of treatments and safeguarding cure should be the highest priority.

Objective: the aim of this study was to determine factors that influence the delay in seeking care among pulmonary tuberculosis patients attending TB clinics at Health service in Jimma Town of Oromia region, Ethiopia.

Methods: Unmatched case-control study design was employed from March–May, 2017. A total of 184 (92 cases and 92 controls) pulmonary TB patients were participated. The sample was drawn from two hospitals and five health centers that provided DOTs service. Cases were those delayed pulmonary TB patients whereas controls were those none delayed pulmonary TB patients to seek care for TB treatment. Structured questionnaire was administered to capture data from participants and for additional information review of DOTs logbook and patient card were used. Odds ratio with 95 % confidence interval was computed to assess the strength of association between dependent and independent variables.

Result: The median patient delay was 23 day (minimum 3 and maximum 240 days). After adjusting for potential confounding factors significantly associated factors were identified. Being older age above 46 years (AOR:3.58, CI:1.21, 10.56); having income less than 1000 ETB (AOR:2.5, CI:1.23, 5.11); self-medication (AOR:3.68, CI:1.58, 8.598); living place >10km distance from health facility (AOR:3.027, CI:1.01, 9.11); illiteracy (AOR:2.79, CI:1.29, 6.68) were determinant factors associated with delayed seeking health care and having secondary level education (AOR:0.23, CI:0.08, 0.54) showed protective role.

Conclusion: Those factors mainly found to be attributed to delay in seeking health care among pulmonary tuberculosis patients has been continued to be as major challenge and public health concern. For most of the determinants intervention can be made at institutional and community levels. The study provides a starting point for further examination of the importance of these risk factors. As these factors can be prevented by health education efforts and emphasis should be given to community based interventions.

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Acronym

AFB   *Acid-fast bacilli*
AIDS   *Acquired Immune Deficiency Syndrome*

AOR   *Adjusted Odis Ratio*

CDR   *Case Detection Rate*

CI   *Confidence Interval*

CO   *Central Office*

CORC   *Crud Odis Ratio*

DOTs   *Direct Observed Treatment*

EC   *Ethiopian Calendar*

EFY   *Ethiopian Physical Year*

EPT   *Extra-Pulmonary Tuberculosis*

FMoH   *Federal Ministry of Health*

HBC   *High Burden Country*

HIV   *Human Immune deficiency Virus*

MDR   *Multi Drug Resistance*

NTCP   *National Tuberculosis Control Program*

PTB   *Pulmonary Tuberculosis*

PTB+   *Smear Positive Pulmonary Tuberculosis*

PTB-   *Smear Negative Pulmonary Tuberculosis*

TB   *Tuberculosis*

WHO   *World Health Organization*

Chapter One

Introduction

1.1. Background

Tuberculosis (TB) is an infectious disease caused by the bacillus Mycobacterium tuberculosis. It typically affects the lungs (pulmonary TB) but can affect other sites as well (extra pulmonary TB). The disease spread in the air when people who are sick with pulmonary TB expel bacteria, for example by coughing. Overall, a relatively small proportion of people infected with M. tuberculosis will develop disease. However, the probability of developing TB is much higher among people infected with HIV. TB is also more common among men than women, and affects mainly adults in the most economically productive age groups[1].

Globally the burden of Tuberculosis is increasing. Various reasons including poverty, migration, HIV/AIDS, population growth are the leading factors for the unlimited risk of TB in the world, but a significant problem lies with the fact that many patients remain undiagnosed[2, 3].

According to the recent WHO global End TB strategy launched, TB is a top killer worldwide ranking alongside HIV/AIDS and placed its heaviest burden on the world's most poor and vulnerable community. The Global burden of TB is dramatically increasing over time. In 2014 an estimated 9.6 million people fell ill, of which 1.5 million men, women and children died from TB; 1.2 million people living with HIV developed TB with estimated 0.4 million associated deaths and 480 000 people developed MDR-TB (multidrug-resistant TB) with estimated 190 000 associated deaths occurred[4].

Africa, particularly sub-Saharan Africa, faces the worst TB epidemic. In Africa, there were 2.3 million new cases and 254,000 deaths in the year 2010[5]. Nine countries out of 22 high burden countries were in Africa[6]. The 22 High Burden Countries (HBCs) that have been given highest priority at the global level since 2000 accounted for 81% of all estimated cases worldwide. These countries have been the focus of intensified efforts in DOTS expansion. From the total 1.1 million deaths due to TB among HIV negative people, about 80% occurred in the 22 HBCs[7].

Ethiopia is one of the high-TB burden countries in the world with an estimated 201,914 new cases of TB (incidence rate 224 and prevalence rate of 211 per 100,000 populations) and estimated 32 per 100,000 population TB mortality as reported in 2013[8].

In Ethiopia according to the national health and health related indicators of the FMoH, tuberculosis is the second cause of death. During the year 2007 (E.C), a total of 135,831 TB cases (all forms) were reported with a TB case notification rate of 151 per 100,000 population that was higher than 133 per 100,000 population observed in EFY 2006.Out of which 35.1% were bacteriologically confirmed pulmonary TB cases, 32.4% were clinically diagnosed new TB cases, 29.8% were extra pulmonary TB and 2.7% were retreated TB cases. Noticeable regional disparity were observed in TB case notification; the highest case notification >200 TB case per 100,000 population was reported in urban areas (Dire Dawa, Addis Ababa, Harari). On the other hand; the low case notification rate was reported in Somali Region with notification rate of <100 TB cases per 100,000 populations, which is far lower than the national level[8].

1.2. **Statement of problem**

Tuberculosis has been recognized as major public health problem in Ethiopia. Efforts to control tuberculosis began in the early 1960s with the establishment of TB centers and sanatoriums in three major urban areas in the country. In 1976, in order to address effectively the TB challenge, the Central Office (CO) of the National Tuberculosis Control Programme (NTCP) was established. Direct observed treatment (DOTs) strategy was established in 1995 in order to control tuberculosis disease. Two years later Ethiopia has adopted the DOTs strategy in 1997[7].

Tuberculosis causes a challenge in the Horn of Africa including Ethiopia being the most affected country where TB cases rise at the rate of 2.6% each year [8]. Ethiopia ranked 7th among high TB Burden Countries (HBCs) in the world as WHO classifications[9].

Delayed presentation is a major problem contributing to the high burden and transmission of TB in developing countries[10]. Nearly 10% of TB patients on treatment die each year from complications arising partly from delayed presentation and/or HIV co-infection[11]. As TB is an infectious disease, delay in any part of the process of health care seeking by the patient will increase chances of disease spreading and medical complication. An untreated smear-

positive patient may infect more than 10 contacts annually, on average, and more than 20 during the entire natural history of the disease until death[12].

In Ethiopia one of the long standing key challenges of the TB control program is the very low case detection rate. The TB case detection rate was 67% in EFY 2007 (2014/15), below the target set for the year (83.0%). Differences were observed across regions, ranging from 32.6% in Somali Region to over 100% in Afar, Gambella, Harari, Addis Ababa and Dire Dawa areas where target set for the year achieved[8].

This low case detection rate in Ethiopia indicates that early detection, initiation of treatments and ensuring cure should be the highest priority[13]. In Ethiopia, where there are rising incidences of new infectious TB cases, some studies revealed that the median delay between the start of TB symptoms and initiation of seeking health care ranges from 4 to 13 weeks[14].

Early case detection and treatment is paramount importance in combating the disease. Studies conducted in different areas showed that socio-cultural factors, low knowledge, stigma, personal characteristics, economic factors and preference of self-medication are associated with delay in seeking health care among people with early symptoms of tuberculosis. Delay in TB diagnosis may lead to increased spread of infection in a community and worsen the prognosis and medical complication of the infected individual[15].

In Ethiopia many studies have documented prolonged magnitude of patient delay in seeking treatment of TB. Median delays in days reported from studies conducted in Wallo[14], Tigray[10], Amhara[16], and Bahir Dar[17]were36,31, and 30 each respectively. A study in Bale indicated that the median delay to treatment from onset of symptoms to first visit of a health provider was 63 days[13]. The study from southern Ethiopia[18], and three hospitals of Arsi Zone[19], found that the median patient delay was 30 days and in the study conducted among pastoralists of Somali region of Ethiopia the median delay was found to be 60 days[20].

In sub Saharan Africa a study from Nigeria reported a median delay of 60 days with a range of 3 to 180 days from the onset of cough to first visit to the clinic with the prevalence of prolonged patient delay of 63 (61.8%)[21]. From Angola Patient delay had a median value of 30 days[22], and from Kenya the median patient delay was 53.5[23].

There is no sufficient knowledge about the social and cultural factors responsible for delay in seeking care for TB patients and patients translate their symptom of illness in different ways.

The most effective measure to control the epidemic situation of TB is timely diagnosis and complete cure. However, findings from different studies affirm that TB patients who delay in seeking prompt treatment always affect the effective implementation of the measures. This study aimed to determine the association of socio-demographic factors, perceived stigma and other factors associated with delay in seeking healthcare among patients with TB symptoms attending TB clinic at health facility in Jimma town. Determining these factors will provide information useful for designing proper communication messages to encourage symptomatic patients to seek health care early.

1.3. Significance of the study

Early diagnosis and treatment of Tuberculosis is critical for reduction of infection rate and improving outcome of the TB treatment. The goal of tuberculosis control program is to eliminate the disease by breaking the chain of transmission. The purpose of this study is to understand the reasons for the delay in seeking TB treatment in order to effectively develop control and prevention proramme to reduce factors related to delay. Information from this study will provide evidence for improving policies and programmes that will help early TB case detection and reduction of potential disease transmission in the population. Furthermore findings from this study will provide useful information on factors affect delay in healthcare seeking among TB patients thereby data will be useful to others, who will do studies in similar area.

Chapter Two

Literature Review

Tuberculosis (TB) continued to be a major global health problem that causes ill-health among millions of people each year and the second leading cause of death from infectious disease worldwide. In 2014, there were an estimated 9.6 million new TB cases: 5.4 million among men, 3.2 million among women and 1.0 million among children. There were also 1.5 million TB deaths (1.1 million among HIV-negative people and 0.4 million among HIV-positive people), of which approximately 890 000 were men, 480 000 were women and 140 000 were children. The number of TB deaths is unacceptably high: with a timely diagnosis and correct treatment, almost all people with TB can be cured[24].

World Health Organization (WHO) declared TB as a global public health emergency, in 1993. The global TB strategy were developed by WHO for the period 2006−2015 is the Stop TB Strategy with broad strategy to achieve 2015 global targets for reductions in the burden of disease caused by TB[1].

The best estimate of the CDR for all forms of TB globally in 2014 was 63% (range, 60−66%), up from 48−52% in 2005 and 36−40% in 1995 – the year in which the DOTS strategy began to be introduced and expanded. Among the 22 HBCs, the highest rates of case detection in 2014 (>80%) were estimated to be in Brazil, China, the Philippines and the Russian Federation. The lowest rates, with best estimates of 50% or less, were in the Democratic Republic of the Congo, Indonesia, Mozambique, Nigeria and the United Republic of Tanzania. Ethiopia had estimated CDR of 60% (range, 49-73%) in 2014[24].

Despite those achievements, the global burden of TB remains tremendous; TB cases and mortality are unbearably high given that most deaths are preventable if people can present early at health care for a diagnosis and treatment.

The review of this literature has analyzed various studies conducted at many levels and investigated delay in health care seeking behavior and its associated factors in general population and in patients with suspected TB symptoms and TB cases. Thereby studies have identified and documented several factors that are responsible and associated for late presentation and delayed diagnosis as a key problem for TB. Delay in treatment has been categorized as patient's delay which is a time taken by the patient before consulting health

facility from the onset of symptoms and health system delay, a time between receiving a patient and final diagnosis of TB.

A number of studies demonstrated that the health seeking behavior of patients and the decision to engage with particular medical services are influenced by a variety of socio-cultural influences, awareness, perceived social stigma, fear, gender differences, family support, distance to the health facilities, poverty. For the purpose of this study literatures were searched and reviewed focusing on delay in health seeking.

2.1. Factors affecting delay in healthcare seeking
2.1.1. Patient delay

TB represents a classic public health issue, as effective diagnosis, treatment and control are important for the whole society. Delay in tuberculosis detection and treatment of TB has a negative impact in a community. Delay in diagnosis results in increased infectivity in the community and it is estimated that an untreated smear-positive patient can infect, on average, 10 contacts annually and over 20 during the natural history of the disease until death[12]. Delay in tuberculosis diagnosis may also lead to a more advanced disease state at presentation, which contributes to late sequel and overall mortality. Smear-positive cases are more likely to infect other individuals.

Patient delay is the time interval from the onset of symptoms of tuberculosis until the first visit to any formal health care facility within 30 days as cut off points[14]. World Health Organization (WHO) classifies person who presents with symptoms or signs suggestive of TB most commonly a productive cough or unexplained cough with or without other respiratory or constitutional symptoms lasting 2-3 weeks as TB suspect and the patient will seek treatments within the given period[25]. However, studies added extra margin of 7 days to take 30 days as cut-off to assess magnitude of patient delay: a delay >30 days[14, 16, 26].

Various studies conducted in Ethiopia has been reported a substantially prolonged delay in health care seeking of pulmonary tuberculosis patients after the onset of symptoms to first visit to health care provider. The highest magnitude of patient delay of 89.9% in Bale zone[13], 62.3% in north Wollo[14] and in study done in Amhara with the slightly lower prevalence of (48%)[16] Compared to study in bale and Wallo zone.

Study from Nigeria showed that the median delay from the onset of cough to first visit to the clinic was 60 days with a range of 3 to 180 days. The prevalence of prolonged patient delay

was 63 (61.8%). Reasons given by respondents with prolonged delay included health facility distance, lack of awareness of DOTs service and domestic work[21].

In a study conducted in WHO Eastern Mediterranean Region of seven countries patient delay is mainly dependent upon the health-seeking behavior of tuberculosis patients which is mainly determined by their socio demographic characteristics, degree of stigma felt and knowledge regarding the disease [24]. In this study the mean duration between onset of symptoms and health-seeking behavior significantly varied across countries, being lowest in Pakistan 9.9 days and highest in Somalia 69 days [27].

Socio-demographic characteristics of the patients have a role in diagnosis and treatment of tuberculosis. As the systemic review analysis study in china showed the key individual level determinants of delays included socio-demographic and economic factors, mostly poverty, rural residence, lower educational attainment, stigma and poor knowledge of TB[28].

2.2. Socio-economic factors
2.2.1 Poverty

The relationship between economic factors and tuberculosis has long been associated and clearly noticed across the world. High TB epidemic and TB burdens are predominant in Poor countries where people are more vulnerable to tuberculosis due to their socioeconomic status, health status and living conditions of overcrowded rooms.

As indicated in different studies financial stress and underlying economic barriers are major associated factors for people to access health care. A study conducted in Ethiopia has given evidence that most of the factors associated with patient delay were economic which were cost of transport, prolonged transport time, rural residence, overnight travel, and the need to sell personal belongings to be able to afford coming to the health center[26].

The Study result in Eastern Mediterranean Region showed that socioeconomic indicators are strong determinants of the health seeking behavior of the patients which successively predict the main determinant of patient delay[27]. Other Study showed that Patients who had family income below 3000 and whose first action to seeking care from informal provider were more likely to have the longer patient delay[29].

2.2.2 Access to health facility

The Distance between patient's home and health facilities negatively affect the health care seeking decisions of patients. Studies have demonstrated a strong association between external constraints and patient delay. Distance from the health facilities, traveling costs and

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other indirect costs such as loosing work days may hinder patients from being examined. Likewise seeking treatment from traditional healers; poor knowledge about TB and the need to borrow money to get to healthcare services were associated factors that predict patient delay.

Studies in Ethiopia have showed that long walking distance between health institution and patient's home was a risk factor for seeking health care of tuberculosis. Respondents who lived beyond 10 Km radius from health institutions were 2.5 times more likely to delay[13] and 65% times higher delay[14] in seeking health care of TB treatment compared to those who live within 10 km. In Ethiopia, access to health care is defined as living within 10 km radius to the health institution [13, 14, 16].

In addition study result from BahrDar Ethiopia indicated that place of residence, education status, and occupational factors are associated with patient delay[17].

2.3. **Socio-cultural factors**
2.3.1 Alternative provider visit

Place where patient first visited have a contribution to delay in reporting to health facility. From study conducted in Ethiopia the result has showed that 46% of the patients had looked for care from informal provider (holy water, traditional healers, private practitioners and private drug stores) before they presented to health service. This study indicated that use of informal treatment has been associated with prolonged patient delay with median delay of 31 days[10].

Other study showed that 61.7% respondents initially visited non-formal health providers[16]. Traditional belief and religious factors highly influenced patient care seeking behavior that eventually resulted in delayed consultation. A study from south west Ethiopia demonstrated that 50.4% of study respondents conceived that traditional beliefs such as ''evil eye'' is commonest perceived causes of TB [30].

Patients who visited traditional healers had more delay with 5 weeks median delay to report to health facilities or before the time of their diagnosis[31]. Self-medication in time of illness has a role in patient delay as indicated in one of the study longer patients' delay substantially associated with self-treatment[16]. Delays arising from alternative treatment and inappropriate referral had particular financial cost implications to patients, their family (escorts) and the public health system[32].

2.4.   Psychosocial factors

2.4.1. Perceived Stigma

Studies presented that stigma discourages people from seeking medical care and diagnosis. Stigma in TB patients is committed and reinforced by several factors such as family, neighbors, colleague's, health staff, and other groups. Patients hold over seeking care due to uncertainty about HIV status and fear of suffering stigmatization and social action as a consequence of their HIV and TB status becoming known; Hence stigma attached to TB critically influences the health seeking behavior of TB patients and TB suspected which ultimately lead to prolonged delay. It has been reported in one of the studies from WHO eastern Mediterranean region where stigma was significantly associated with patient delay[27].

In Ethiopia a study reported that 61% of the respondents believed that TB patients are not accepted in the community[26]. In the case of Tuberculosis stigma has been described as a fear, ashamed of having TB, avoidance and isolation due to having TB and extent of TB effects on relationship, divorce, work performance and responsibility. Another study indicated that TB suspected people had perceived stigma that other people would feel less of them (51%), embarrass them (39.5%), avoid them (30.3%) if they recognized their TB status[30].

TB related stigma is highly prevalent among the patients. More than three fourth of the patients felt that TB affected their work and TB diagnosis would reduce the chances of getting married. More than 60% of the patients reported that they had to hide their diagnosis of disease from others, preferred to live isolated and affected their family responsibilities[29].

Furthermore recently HIV/AIDS stigma affect TB patients directly especially in areas with high prevalence of HIV. Therefore TB patients suffers double stigma. In one study 46% of the TB patients choose not to reveal their TB status due to fear of stigma which is most likely because other people associate TB with HIV infection[33]. Another study indicated that people who suspected themselves to have HIV infection hesitated to test for TB due to fear of HIV detection[34].

Conceptual framework

The conceptual frame work was developed and adopted through review of different literatures. It shows the relationship of independent variables to the outcome/dependent variable. TB patients may delay in seeking appropriate TB treatment on time due to many reasons related to patient factors such as socio-cultural, economic and demographic factors, stigma and access to health care services. This study directly focused on patient delay which has been shown to contribute mainly in total delay.
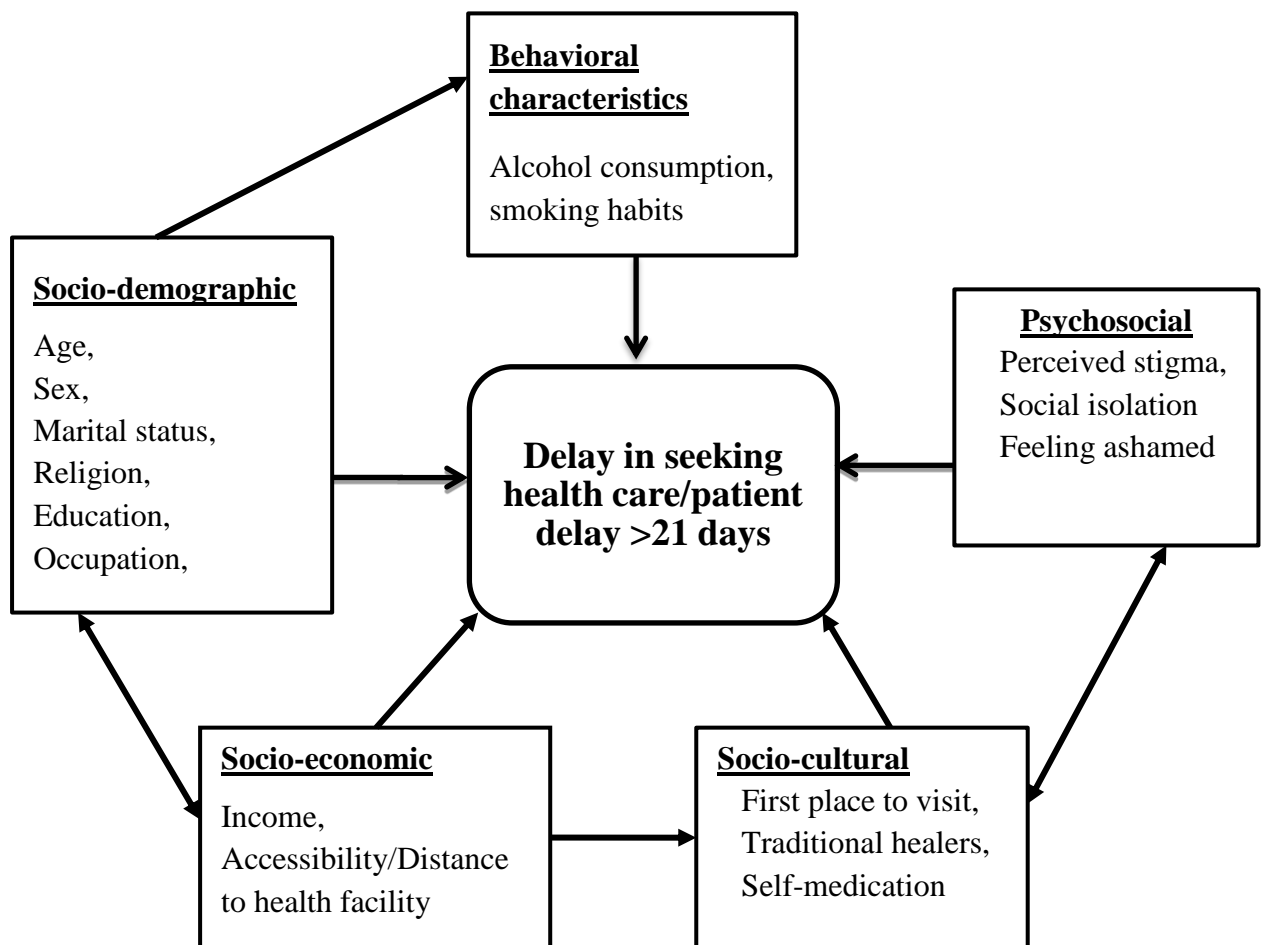
Figure 1: Conceptual Framework indicate factors influence patient delay in seeking care

Chapter Three

Objective of the study

3.1. General objective:

To determine factors associated with delayed seeking health care among pulmonary tuberculosis patients attending TB clinics at Health facility in Jimma Town.

3.2. Research Hypothesis

- **Null Hypothesis**

  There is no association between socio-cultural factors and delay in seeking health care among pulmonary TB patient

- **Alternative Hypothesis**

  There is association between socio-cultural factors and delay in seeking health care

- **Null Hypothesis**

  There is no association between perceived stigma and delay in seeking health care among pulmonary TB patient

- **Alternative Hypothesis**

  There is association between perceived stigma and delay in seeking health care

Chapter Four

4. Methods

4.1. Study area and Study period

This study was conducted from March, 2017 to May, 2017 in Jimma town which is located in Jimma zone, Oromia regional state, Ethiopia. The town is situated in south west of Ethiopia at 356Km from Addis Ababa. The town covers a total area of 14, 950 square km with an estimated population of 184, 224. Administratively the town is divided into 17 Kebeles. There are four government health centers delivering primary health care service, one charity health center, one zonal hospital and one specialized teaching hospital of Jimma University providing diagnostic and treatment of TB using DOTs under direct supervision and reporting to the administration of Jimma Health Office.

4.2. Study design

Institutional based unmatched case-control study design was employed.

4.3. Source population

In this study the source population was all TB patients seen and registered under DOTs service in private and public health facilities in Jimma town during the study period.

4.4. Study Population

The study population was all adult pulmonary Tuberculosis patients registered under DOTs service for follow up at selected health institutions in Jimma town during the study period.

4.5. Case and Control definition

In this study time interval between the onsets of major symptoms of TB to the first consultation to health facility by the patient was taken in to account to define case and control. Accordingly the standard WHO recommended cut-off point was used to define delayed patient to seek health care for PTB treatment as a case and non-delayed patients to seek health care for PTB treatment as a control. Thereby the study subjects or tuberculosis patients who had presented at health facility greater than 21 days after the onset of the disease were grouped as cases whereas those tuberculosis patients who had visited health facility in less than or equal to 21 days were taken as control category.

4.6.   Selection of cases and control

Identification and selection of cases and controls was conducted at each health facility TB clinics from TB record and medical card. To select the study subjects, list of PTB patients were prepared from TB logbook. The PTB patient's medical card were traced by card number and collected from respective health facility. The first presented symptoms with its duration that patient had complained or told to physician during his/her first visit at health facility was captured. Those patients whose duration of first presented symptom was greater than 21 days were entered in to case group whereas those patients whose duration of first presented symptom was less than or equal to 21 days entered in to control group. For interview purpose both groups were listed separately. Additional data of each patient such as TB record number, age, sex, types of PTB, treatment phase, duration of presented symptom and contact address were also extracted from the records.

4.7. Inclusion and exclusion criteria

Inclusion criteria for cases and controls

- Adult pulmonary TB patient who was aged greater than 18 years attending TB clinic or under DOTs treatment during the study period

Exclusion criteria for cases and controls

- Extra pulmonary TB patients were excluded
- Those patient who could not provide informed written consent (Seriously ill and patient with mental problem)
- Patient who was transferred to other facility outside of the study area

4.8. Sample size

The sample of participants was drown from seven health facilities (two Hospitals and five health centers providing DOTs service in Jimma town catchment. In this study the following parameters were used to calculate the sample size: expected proportion of illiterate among the controls 43.4, odds ratio (OR) of 2.29 [19], 5% significance level (at confidence level of 95%), desired power of 80%, taking a case to control ratio of 1:1 the estimated sample size was 206 pulmonary TB patient (103 delayed pulmonary TB patients (cases) and 103 non-delayed pulmonary TB patients (controls)). The sample size was calculated using Epi Info Version 7.1.1.14 software.

4.9. Sampling technique

Because of the limited number of pulmonary tuberculosis patients in the study catchment area all available cases who met the criteria were included. Patients who came to the clinic for their follow up treatment were requested and interviewed. Each group's independent list with identification code was used to classify patients.

4.10. Study variables

4.10.1 Outcome variable

- **Patient delay:** The time interval between the onset of major symptoms of TB to the first presentation to formal public health care facility within 21 days as cut off points. Hence Patients who presented at health care facilities more than 21days after the onset of the major symptoms of TB are considered as delayed based on WHO standard definition

4.10.2 Independent variable

- **Socio-demographic variables**: Age, Sex, Marital status, Religion, Educational level, Occupational status and Income.

- **Behavioral factors**: Smoking, Number of smoking per day, Duration of smoking, Alcohol consumption and Frequency of alcohol consumption.

- **Accessibility:** Distance of health facility and Time required reaching.

- **Care seeking behaviors:** Major first PTB symptom, First place to seek care, Reason for visit and Cause of delay.

- **Perceived stigma:** Likert scale was used to measure perceived stigma the item were ranged from 1being lowest degree of stigma to 5 highest degree of stigma. A total of ten stigma question statements included; patients should feel ashamed of their disease, TB patients should hide their TB diagnosis from other people, TB affects relation with others, TB disease is very costly due to its long duration of treatment, TB patients should prefer to live isolated for their disease, TB affects work performance, TB affects marital relation, TB affects family responsibility, TB affects family relation, TB patients should be concerned about HIV/AIDS[30].

4.11. Data collection procedures

In this study data was collected by face to face interview using structured questionnaires. Consecutive patients were approached after they received service; both case and control were asked for consent before interview. Separate room was used to conduct an interview. Those cases and controls that refused to participate in the study were excluded after three attempts were made to contact and interview them. For those participants who were absent from follow up data collectors have traced and interviewed them using their various contact addresses. For minimization of recall bias, patients' documents with dates were checked out prior to the interview and calendars with relevant dates including local and religious holidays; festivals etc. were used to pinpoint events by data collectors. Interview was translated to Amharic version by language expert.

4.12. Operational definition of terms

In this study the following operational definitions were used.

Patient delay: The time interval between the onset of major symptoms of TB to the first presentation to formal public health care facility within 21 days as cut off points. Hence Patients who presented at health care facilities more than 21days after the onset of the major symptoms of TB are considered as delayed based on WHO standard definition [7, 25].

Tuberculosis symptom onset: The time at which the first symptom patient experienced include Cough and other constitutional symptoms like fever or night sweating, fatigue, hemoptysis and weight loss or chest pain for which a patient's health care seeking began considered as TB symptoms[7].

Pulmonary Tuberculosis patient (PTB): Refers to Tuberculosis involving the lung parenchyma[7].

Smear-positive pulmonary TB (PTB+): A patient with at least two initial sputum smear examinations positive for AFB by direct microscopy, or a patient with one initial smear examination positive for AFB by direct microscopy and culture positive, or a patient with one initial smear examination positive for AFB by direct microscope and radiographic abnormalities consistent with active TB as determined by a clinician[7].

Smear-negative pulmonary TB (PTB-): A patient having symptoms suggestive of TB with at least 3 initial smear examinations negative for AFB by direct microscopy and no response to a course of broad-spectrum antibiotic and again three negative smear examinations by

direct microscopy and radiological abnormalities consistent with pulmonary tuberculosis and decision by a clinician to treat with a full course of anti- tuberculosis[7].

Perceived Stigma: patient was stigmatized if he/she felt ashamed of having tuberculosis; have to hide tuberculosis diagnosis from others, isolated due to tuberculosis; and if tuberculosis affects the following: relation with others; work performance, marital relations, family responsibilities, and family relations. Five levels Likert scale was used to measure perceived stigma of the patients, which range from 1being lowest degree of stigma to 5 highest degree of stigma. The response coded as 1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly agree.

Cultural factors: In this study cultural factors included, religious beliefs, traditional healing and other beliefs that influence individual decision of treatment health care seeking.

Education level: Patients were asked for the level of education they attained, and then categorized as those who never went to school (illiterate), primary education, and secondary and college/university education.

Accessibility to health facility: Patients were asked for the distance between place of residence and the nearest health facility in kilometer and Time to reach from home to that public health facility in hour providing treatment at the time of illness.

4.13. Data Analysis

Data was entered into computer, cleaned and checked for completeness using Epidata version 3.1. Using SPSS version-20 data was processed using descriptive and analytical methods. Likert scale items were used to assess and measure respondent's perceived stigma to a particular stigma series question statements with five levels Likert scale items. For each respondent calculated a summed total score for the multiple items. Mean, standard deviation, percentage of respondents who experienced stigma were calculated. For summed total histogram was constructed and checked the normality. Frequency and percentage of respondents who choose each option of response calculated and table constructed. Mean score of summed total was used to categorize perceived stigma, for those greater than or equal to mean value had experienced stigma and for those less than mean value had not experienced stigma. Descriptive results such as frequency; percentage was calculated for main variables related to the objectives of the study to describe the proportion of delay. Median delay was calculated from delay time patients reported to a health facility since the onset of the symptoms. Bivariate and Multivariate logistic regression analysis was employed

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to control the possible confounding effect and assess the separate and multiple effects and P-value <0.05 was considered statistically significant. Odds ratio with 95 % confidence interval was computed to assess the strength of association between dependent and independent variables. Automatic by Forward likelihood ratio and backward likelihood ratio methods were employed to run multiple logistic in selection of variable. Finally the predictive ability of the model was tested with the goodness-of-fit with Hosmer-Lemeshow test; at a p-value of 0.57 suggesting a non-significant and narrow discrepancy between the observed and predicted scores and additionally Area under Receiver Operating Characteristics (ROC) curve was performed and suggested model fit to data with score of (0.8).

4.14. Data quality control

To maintain and increase the reliability and validity of the study the interview instrument was pre tested in Agaro hospital and health center. Questions were adjusted according to the pre-test results to achieve better understanding. Four health professional data collectors and one supervisor were recruited and trained for two day about administering the instrument. Close follow up was done during the phase of data collection. After data collection, data was checked and edited for errors at field level by the investigator and also cleaned before analyses. Further all of the entered data was checked again before final analysis to avoid missing data.

4.15. Ethical consideration

The study protocol was approved by the ethical review committee. Official letter of cooperation was written to all health facilities included in the study. Written Informed consent was secured from each study participant before interview. Participants' Privacy and confidentiality was guaranteed for the information they have provided and their names was not mentioned and included in the questionnaire.

4.16. Dissemination plan

The result of the study will be communicated and disseminated to the concerned governmental officials such as Jimma town and zonal health department and administrative office and Jimma University Health science Institute, finally the result will be communicated to interested group such as non-governmental organization and community members through using different communication strategies such as report, presentation, and discussion. Efforts will be made to publish the findings in a scientific journal.

Chapter Five

5. Results

5.1. Socio-demographic characteristics of study participants(cases and control)

Although the calculated sample size was 208 (104 cases and 104 controls) pulmonary tuberculosis patients, because of the limited number of Pulmonary tuberculosis patients in the study catchment area during the study period only 184 Pulmonary tuberculosis patients (92 case and 92 controls) were identified from two hospitals and five health centers of TB treatment clinics located in Jimma town. Number of participants varied amongst the facility. The highest was being 22.8% patients from charity health center, 21.7% from Jimma University Hospital, 16.3% from Jimma health center, 15.7% from Shanan Gibe hospital, 8.2% from Jimma Higher II, and the least was 7.0% each from Mendera Kochi health center and Bacho Bore health center. The distribution of cases and controls in the study facilities is illustrated in (*Table 1*). Some patients were seriously ill and some had refused to participate in the study.

Table 1: Number of cases and controls selected in two hospitals and five health centers in Jimma Town, 2017

Name of Health facility	Total Number of Cases	Total Number of Controls	Sample size	
			Cases	controls
Charity Health center	29	16	28	16
Jimma University Hospital	19	24	17	23
Shanan Gibe Hospital	18	11	18	11
Jimma Health Center	15	16	14	16
JImma Higher II Health center	9	8	7	8
Mendera Kochi Health Center	5	8	5	8
Bacho Bore Health Center	4	10	3	10
Total	**99**	**93**	**92**	**92**

Among study participants more than half 70% of cases and 56.6% of controls were male. Age was checked out for consistency with age reported in DOTs registration logbook. The median age for cases was 30 year (IQR: 22-45) with minimum age of 18 year old and maximum age of 70 year old. For controls the median age was 26 years (IQR: 21-35) with minimum age of 18 year and maximum age of 60 year. For the purpose and convenience of data management respondent age was categorized in to four classes. Number of older age group were higher in cases as compared to controls, 31.5% of cases and 45% of controls belonged in young age (18 to 25) group and the total number of cases were more than 46 years of age was 20.7%. In terms of marital status 48.9% of cases and 43.5% controls were married, 42.4% of cases and 52.2% controls were single or not married. Higher proportion of cases was married as compared to controls. Regarding educational attainment of the respondents 34.8% of cases and 13.05% of controls were unable to read and write and 37.0% of cases and 25.0% of controls attained primary education. About 45.7% of cases and 60.9% of controls were employed. Half of cases (50%) and 22.8% of controls were reported that their monthly income was below one thousand ETB (1000). In this study 42.4% of cases and 54.3% of controls were from Orthodox religion, and 48.9% of cases and 30.4 of controls were Muslim. Detailed information of socio-demographic characteristics of cases and controls is indicated in (*Table 2*).

Table 2 Socio-demographic profile of cases and controls among Pulmonary TB patients, Jimma, 2017

Socio-demographic variables	Cases (n=92) n (%)	Control (n=92) n (%)	Total n (%)
Sex			
Female	27 (29.3)	40 (43.5)	67 (36.4)
Male	65 (70.7)	52 (56.5)	117 (63.4)
Age			
18-25	29 (31.1)	42 (45.7)	71 (38.6)
26-35	29 (31.5)	27 (29.3)	56 (30.6)
36-45	15 (16.3)	15 (16.3)	30 (16.3)
>46	19 (20.7)	8 (8.7)	27 (14.7)
Religion			
Orthodox	39 (42.4)	50 (54.3)	50 (54.3)
Muslim	45 (48.9)	28 (30.4)	28 (30.4)
Catholic	0	3 (3.3)	3 (3.3)
Protestant	8 (8.7)	11 (12.0)	11 (12.0)
Marital status			
Married	45 (48.9)	40 (43.5)	85 (46.2)
Single	39 (42.4)	48 (52.2)	87 (47.3)
Divorced/Widow	8 (8.7)	4 (4.3)	12 (6.5)
Educational level			
No education	32 (34.8)	12 (13.0)	44 (23.9)
Primary level	34 (37.0)	23 (25.0)	57 (31.0)
Secondary level	7 (7.6)	34 (37.0)	41 (22.3)
Higher(collage/University	19 (20.7)	23 (25.0)	42 (22.8)
Occupational status			
Employed	42 (45.7)	56 (60.9)	98 (53.3)
Unemployed	50 (54.3)	36 (39.1)	86 (46.5)
Income			
>1000 ETB	46 (50.0)	71 (77.2)	117 (63.6)^
<1000 ETB	46 (50.0)	21 (22.8)	67 (36.4)

Among respondents 60.9% of cases and 52.2% of controls were smear-positive pulmonary TB and 39.1% of cases and 47.8% of controls were smear-negative pulmonary TB in this study (*Figure 2*). On the bases of treatment phases 65% cases and 59 % controls were in the intensive phase whereas 35% of cases and 41% of controls were in the continuation phase of their treatment.
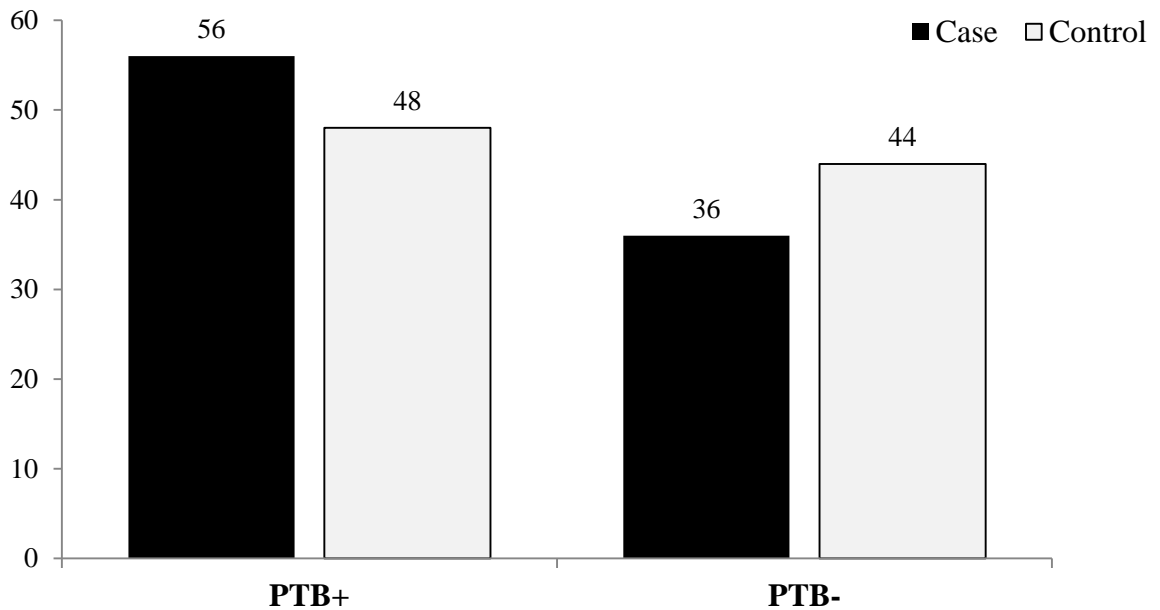
Figure 2. Distribution of cases and controls by Smear Positive and Negative Pulmonary Tuberculosis

Regarding the frequency of the major symptoms experienced by tuberculosis patients (cases and controls) during the onset of their illness , the majority of the respondents 39.1% of cases and 52.2% of controls reported cough as the first major symptom that made them to seek health care followed by chest pain 13% cases and 8% controls, hemoptysis (coughing up blood) 5.5% of cases and 13% of controls, loss of appetite 13% of cases and 3.3% of controls, breathlessness 9.8% of cases and 6.5% controls, fever 4.3% of cases and 9.8% of controls (*Figure 3*).

Figure 3. Distributions of cases and controls by major first PTB Symptom

5.2. Care seeking behavior of study participant (cases and controls)

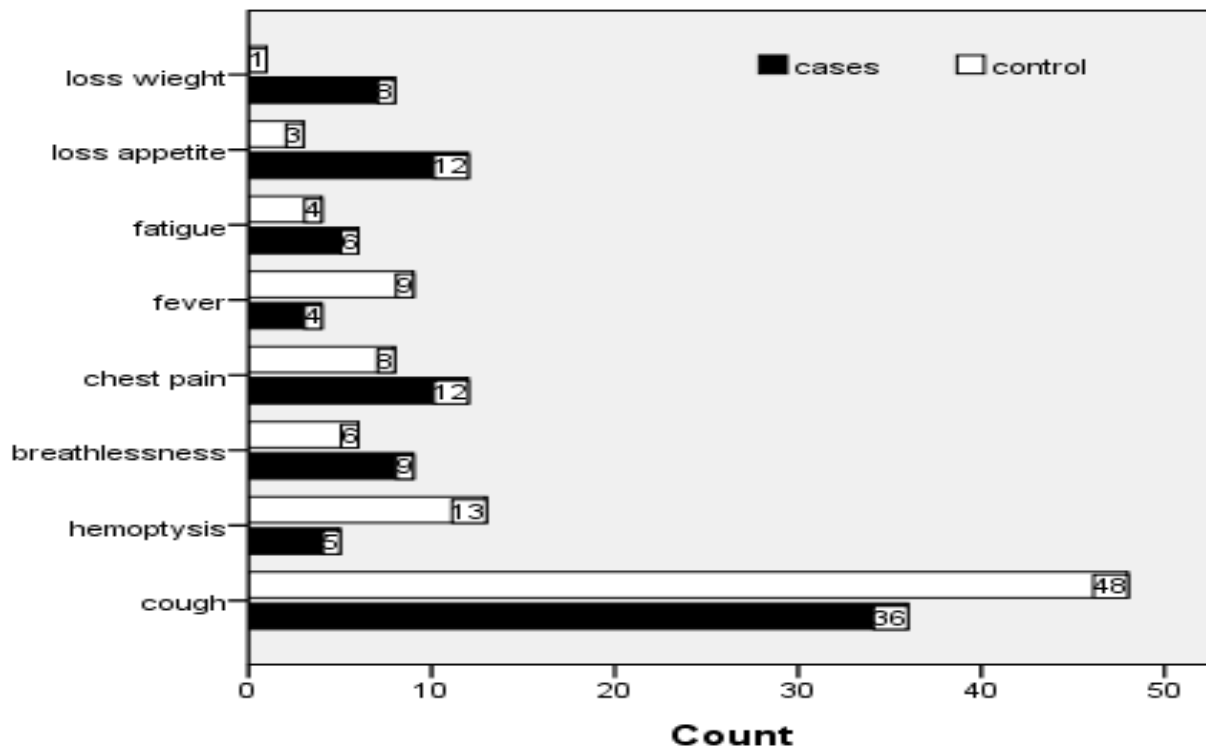In this study the median patient delay was 23 days (IQR: 15-43), the delay time ranges from minimum 3 and maximum 240 days. The consistency of interval between the first onset of symptom and the first health provider consultation for each patient were checked out with individually reported duration of symptom on their patient card.

It was found that 51.1% of cases and 82.6% of controls sought treatment in Hospital/Health centers, while 34.8% of cases and 10.9% of controls reported self-medication/pharmacy as first place or action to seek health care. Traditional healer/holy place was first visited by 14.1% cases and 6.5% controls.

Both cases and controls indicated different reasons why they went to their first place: High proportion of cases 60.9% reported confidence in getting cure as a reason to visit their first place as compared to controls 26.1% (*Figure 4*). Community treatment related to TB patients, 52.2% of cases and 43.5% of controls felt that community supported them and 27.2% of cases and 44.6% of controls believed that most people in the community treated them as friendly. But 20.7% of cases and 12% of controls assumed that most people in the community rejected them because of their TB disease.

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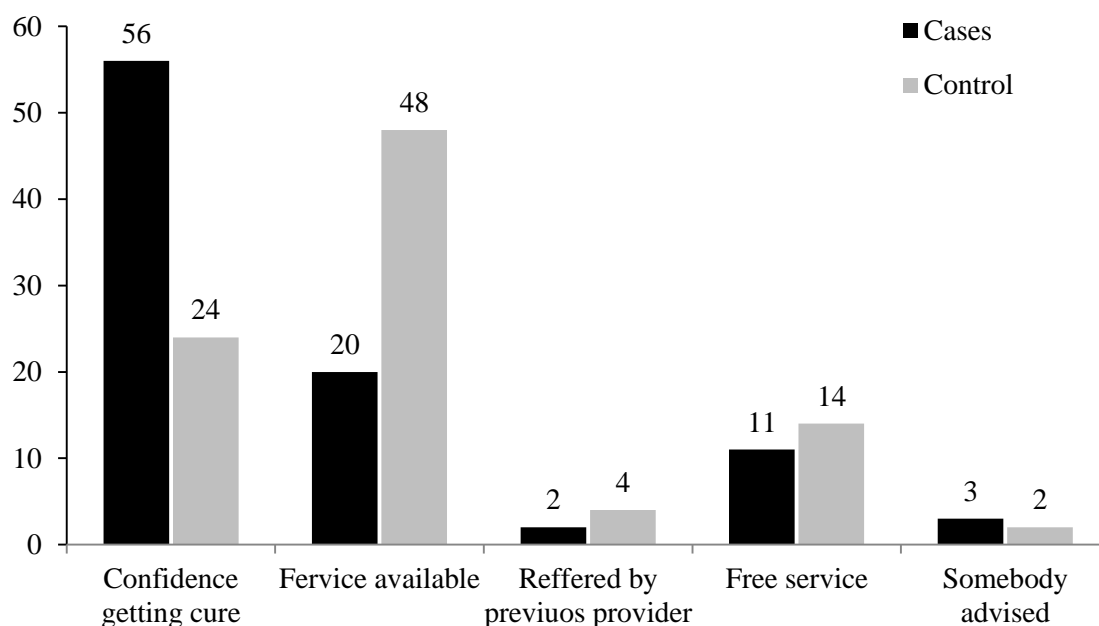
Figure 4. Distribution of cases and control based on provided reasons for first place visite

5.3. Perceived stigma

The mean summed total score was 30.8 and 18 and 43 were the minimum and maximum score respectively. Ninety nine (53.8%) were above the mean score and 85(46.2%) of respondents were below the mean score. It was found that stigma was not associated with delayed seeking health care in this study. Regarding stigma the highest proportion in both group 81.5% of cases and 90.2% of controls perceived that TB affect work performance, 77.2% of cases and 82.6% of controls believed that TB disease is very costly due to its long duration of the disease; 76.1% of case and 81.5% of controls believed that HIV/AIDS should be a concern for TB patients; 72.8% of cases and 69.6% of controls felt that TB would affect family responsibility. Only 48.9% of cases and 47.8% of controls perceived that TB would affect relation with other people. Detailed result of perceived stigma of cases and controls are indicated in (*Table 3*).

Table 3 Perceived stigma of case and control related to tuberculosis, Jimma, 2017

Stigma questions items	cases		controls	
	No Stigma N (%)	**stigma N (%)**	**No Stigma N (%)**	**Stigma N (%)**
TB patients should feel ashamed of their disease	78(84.9%)	14(15.1%)	88(95.5%)	4(4.3%)
TB patients should hide their TB diagnosis from other people	80(84.0%)	12(13.0%)	75(81.5%)	17(18.5%)
TB affects relation with others.	47(51.1%)	45(48.9%)	48(52.2%)	44(47.8%)
TB disease is very costly due to its long duration of treatment	21(22.8%)	71(77.2%)	16(17.4%)	76(82.6%)
TB patients should prefer to live isolated for their disease	52(56.5%)	40(43.5%)	72(78.3%)	20(32.6%)
TB affects work performance	17(18.5%)	75(81.5%)	9(9.8%)	83(90.2%)
TB affects marital relation	57(62.0%)	35(38.0%)	64(69.6%)	28(30.4%)
TB affects family responsibility	25(27.2%)	67(72.8%)	28(30.4%)	64(69.6%)
TB affects family relation	50(54.3%)	42(45.7%)	66(71.7%)	26(28.3%)
TB patients should be concerned about HIV/AIDS	22(23.9%)	78(76.1%)	17(18.5)	75(81.5%)

5.4. Bivariate analysis of factors associated with Delayed seeking care for PTB

5.4.1. *Socio-demographic factors related with delayed health care seeking*

It was found that Socio-demographic factors: Sex, Age, Educational level, Occupation status and estimated monthly income were significantly associated with delayed seeking health care for PTB treatment. Detailed result of bivariate analysis is shown in (*Table 4*)**.**

Table 4 Bivariate analysis of socio-demographic variable associated to delay in seeking care among tuberculosis patients, Jimma, 2017

Socio-demographic variables	Cases (n=92) n (%)	Control (n=92) n (%)	COR	P value
Sex				
Female	27 (29.3)	40 (43.5)	1[*]	
Male	65 (70.7)	52 (56.5)	1.85 (1.0, 3.4)	0.046
Age				
18-25	29 (31.1)	42 (45.7)	1	
26-35	29 (31.5)	27 (29.3)	1.55 (0.76, 3.15)	0.22
36-45	15 (16.3)	15 (16.3)	1.44 (0.47, 2.83)	0,398
>46	19 (20.7)	8 (8.7)	3.44 (1.33, 8.91)	0.011
Marital status				
Married	45 (48.9)	40 (43.5)	1	
Single	39 (42.4)	48 (52.2)	1.38 (0.76, 2.52)	0.288
Divorced/Widow	8 (8.7)	4 (4.3)	1.78 (0.497, 6.35)	0.37
Educational level				
No education	32 (34.8)	12 (13.0)	3.23 (1.31, 7.94)	0.011
Primary level	34 (37.0)	23 (25.0)	1.79 (0.80, 4.01)	0.157
Secondary level	7 (7.6)	34 (37.0)	0.25 (0.09,0.69)	0.007
Higher(collage/University)	19 (20.7)	23 (25.0)	1	
Occupational status				
Employed	42 (45.7)	56 (60.9)	1	
Unemployed	50 (54.3)	36 (39.1)	1.85 (1.03, 3.33)	0.038
Income				
>1000 ETR	46 (50.0)	71(77.2)	1	
<1000 ETB	46 (50.0)	21(22.8)	3.38 (1.81, 6.38)	0.001

Reference

5.4.2. *Care seeking behavior, Accessibility and co-morbid factor related with delayed*

In bivariate analysis of care seeking behavior first place visited; distance of health facility and time required to reach health institution and alcohol consumption were found to be significantly associated with delayed seeking health care. Detailed information included in (*Table 5*).

Table 5 Bivariate analysis of care seeking behavior, Accessibility and co-morbid factor variables associated to delay in seeking care among   tuberculosis patients, Jimma, 2017

Health care seeking variables	Cases (n=92) n (%)	Control (n=92) n (%)	COR (CI)	P value
First place visited				
Hospital/Health center	47 (51.1)	76 (82.6.0)	1	
Traditional	13 (14.1)	6 (6.5)	2.35 (0.855, 6.50)	0.017
Self-medication	32 (34.8)	10 (10.9)	4.37 (1.996, 9.58)	0.001
Smoking				
No	61 (66.3)	71 (77.2)	1	
Yes	31 (33.7)	21 (22,8)	1.78 (0.96, 3.29)	0.103
Alcohol consumption				
No	50 (54.3)	66 (71.7)	1	
Yes	42 (45.7)	26 (28.3)	2.132 (1.16, 3.93)	0.015
Frequency of consumption				
Daily	12 (28.6)	4 (15.4)	0.38 (0.087, 1.57)	0.178
3-4 days per week	20 (47.6)	13 (50.0)	1.38 (0.44, 4.32)	0.576
Once per week	10 (23.8)	9 (34.6)	1	
Time required to reach facility				
<1 hour	66 (71.1)	83 (90.2)	1	
>1 hour	26 (28.3)	9 (9.8)	3.63 (1.59, 8.28)	0.002
Distance from Health Facility				
<10 km	70 (76.1)	87 (94.6)	1	
>10 km	22 (23.9)	5 (5.4)	5.47 (2.70, 15.17)	0.001
Perceived stigma				
Yes	39(42.4)	46(50)	1	
No	53(57.6)	46(50)	1.36 (0.76,2.43)	0.301

* Reference

5.5. Multivariate analysis of factors associated with Delayed seeking health care for PTB

After adjustment for possible potential confounders, age group above 46 years (AOR=3.58, CI=1.21, 10.56); estimated monthly income less than 1000 ETB (AOR=2.5, CI=1.23, 5.11); first place visited or first action to seek care self-medication/pharmacy (AOR=3.68,CI=1.577, 8.598); living place greater than 10km distance away from public health facility (AOR=3.027, CI=1.006, 9.11); Those patients who had not attended education (AOR=2.79, CI=1.289, 6.667) and secondary level education (AOR=0.23, CI=0.076, 0.54) were significantly associated with delayed seeking health. Interaction test among Illiteracy, income, distance, self-medication and older age variables was tested and showed no statistical significance. Test for correlation was performed and all of independent variables were found insignificant or below acceptable range (0.7).

Table 6 Multivariate analysis of Factor associated with delayed seeking health care among pulmonary TB patient, Jimma, 2017

variables	Cases (n=92) n (%)	Control (n=92) n (%)	COR	AOR	P value
Sex					
Female	27 (29.3)	40 (43.5)	1 *	1	
Male	65 (70.7)	52 (56.5)	1.85 (1.0, 3.4)	1.25(0.54, 2.89)	0.59
Age					
18-25	29 (31.1)	42 (45.7)	1	1	
26-35	29 (31.5)	27 (29.3)	1.56 (0.47, 2.83)	1.47 (0.68, 3.190)	0.32
36-45	15 (16.3)	15 (16.3)	1.44 (0.61, 3.42)	1.77 (0.324, 5.33)	0,27
>46	19 (20.7)	8 (8.7)	3.44 (1.33, 8.91)	**3.58 (1.21, 10.56)**	**0.02**
Educational level					
No education	32 (34.8)	12 (13.0)	3.23 (1.31, 7.94)	**2.79 (1.289, 6.667)**	**0.009**
Primary level	34 (37.0)	23 (25.0)	1.79 (0.933, 3.31)	1.52 (0.782, 2.94)	0.217
Secondary level	7 (7.6)	34 (37.0)	0.25 (0.09,0.69)	**0.23 (0.076, 0.54)**	**0.001**
Higher	19 (20.7)	23 (25.0)	1	1	
Income					
>1000	46 (50.0)	71 (77.2)	1	1	
<1000	46 (50.0)	21 (22.8)	3.38 (1.81, 6.38)	**2.5 (1.23, 5.11)**	**0.011**
Alcohol consumption					
No	50 (54.3)	66 (71.7)	1	1	
Yes	42 (45.7)	26 (28.3)	2.132 (1.16, 3.93)	1.94 (0.936, 4.022)	0.075
Occupational status					
Employed	42 (45.7)	56 (60.9)	1	1	
Unemployed	50 (54.3)	36 (39.1)	1.85 (1.03, 3.33)	1.913 (0.82, 4.459)	0.133
First place visited					
Hospital/Health C.	47 (51.1)	76 (82.6)	1	1	
Traditional/Holy P.	13 (14.1)	6 (6.5)	2.35 (0.855, 6.50)	1.27 (0.356, 4.579)	0.178
Self-medication	32 (34.8)	10 (10.9)	4.37 (1.996, 9.58)	**3.68 (1.577, 8.598)**	**0.003**
Distance					
<10 km	70 (76.1)	87 (94.6)	1	1	
>10 km	22 (23.9)	5 (5.4)	5.47 (2.70, 15.17)	**3.027 (1.006, 9.11)**	**0.049**
Time required to reach					
<1 hour	66 (71.1)	83 (90.2)	1	1	
>1 hour	26 (28.3)	9 (9.8)	3.63 (1.59, 8.28)	0.64 (0.15, 2.748)	0.549

*** Reference**

Chapter six

Discussion

In this study the median delay was 23 with IQR from 15-43, the delay time ranges from minimum 3 and maximum 240 days. In comparison with other studies in Ethiopia, this median patient delay was the shortest delay after the onset of first symptom. According to studies done in Bahrdar[17], Southern Ethiopia[18], and Arsi Zone [19], median patient delay of 30 days was reported. Studies from Tigray[10], and Wollo[14], reported 31 and 36 days respectively, and the longest median delay reported was 60 days in Bale[13] and 63 days in Somali region[20]. The observed shorter delay might be due to difference in study setting (this study only included urban catchment) and cultural difference. However median delay reported in the current study is higher than 4 days from Sudan, 14 days (range: 0-180 days) from Tanzania[3]and 15 days from Chad [35]. These differences could be attributed to their improved health system and differences in socio-demographic characteristics of the study population. This could justify the need to strengthen community based TB control programs in order to reach patients and promote health care seeking.

This study showed that age is a significant predictor of delayed seeking health care. Individuals aged $\geq$ 46 years were more delayed in seeking healthcare compared to younger age group. Different studies observed that older age groups are more at risk of delayed seeking care[16, 21]. In other study age of the patient $\geq$ 55years was associated with patient delay[19]. This difference may be explained by the fact that older age groups are economically dependent and may need physical assistance that could help them to travel and seek care without delay.

Sex does not show any relation with delay in health care seeking. This study finding is consistent with other studies in Ethiopia [10, 14, 16, 18, 36]. Studies from Tanzania[3] and Nigeria[21] however reported that females are more delayed compared to males. In contrast to this, a study done in south Africa indicated that males were more delayed in seeking health care[37].

Educational status of respondents had effect on delay in seeking TB care. Those patients who had no formal education were more than two folds delayed and Secondary educational level respondents were statistically significantly less likely to delay (AOR=0.23, CI=0.076, 0.54). This result support the finding of a similar study carried out in Ethiopia which established that delay in seeking health care among tuberculosis patients was longer in those who did not attend school. Other studies conducted found out that illiterate (OR=1.74, CI=1.08, 2.82) patients were more delayed in seeking health care[14]. Another study reported that illiterate patients and patients with primary educational status were 3.7 and 2.7 times more likely to delay when compared to patients with higher educational status[17]. Similarly a study conducted in Tigray showed that illiteracy was associated with patient delay in seeking health care (AOR= 1.4 , CI=1.1, 1.9)[10]. Other study result showed that patients with good educational status were less likely to delay in seeking health care for TB[32, 33]. This could be due to the fact that improved educational status is attributed to increased awareness and health information.

Economic status seems to play an important role in patient delay to seek health care for TB treatment. It was found that income had significant association with delayed seeking health care. Those patients who earned estimated monthly income of less than 1000 EBR were 2.5 times more likely to delay in seeking health care. As indicated in different studies financial stress and underlying economic barriers are major associated factors for TB patient to early visit health care. A study conducted in Ethiopia has given evidence that most of the factors associated with patient delay were economic; low income or poor income [14, 19, 26]. Socioeconomic indicators are strong determinants of patient delay[27]. This observed relationship indicate that patient with low income awaited longer to seek health care that would result in delay and worsen their disease. Besides this could indicate that most people did not know TB treatment service are free of charge.

In this study, accessibility to health care was measured by physical distance in kilometers from the patients' residence to the nearest public health facility that provided TB service. Distance has been shown to significantly associate with a delay in seeking health care for TB service. Patients who traveled more than 10 kilometers were more likely to delay than patients who lived within 10 kilometers radius. Finding of this study was consistent with studies done in other regions of Ethiopia [13, 14, 16]. In the context of this study the association might be due to the fact that scattered settlement of some population surrounding

the catchment area and inaccessibility of DOTS services. In Ethiopia, access to health care is defined as living within 10 km radius to the health institution [13, 14, 16].

Regarding use of an informal treatment sources as the first choice had a strong effect on TB patient to access formal treatment source at the right time. As demonstrated in this study self-medication or visiting pharmacies were more than three folds more likely to delay in seeking health care for TB treatment. Similarly study reported that Self-medication in time of illness were significantly associated with increased patients' delay (OR=1.69, 95% CI:1.04–2.75)[16]. This is similar with findings from Ethiopia[19, 36] and study from Tanzania also indicated that the self-medication and purchasing drugs from pharmacy as first action during the onset of pulmonary TB was associated with delayed seeking health care[38]. This could be due to low awareness among community about TB symptoms and easily accessible and purchasable drugs without prescription and added advantage of cost minimization as drug store do not charge for cards and other services.

In this study alcohol and smoking were not found to be strong risk factors for TB patient to delay in seeking health care. But those common risk factors are more frequent in cases than control. However it is essential that all patients are discouraged from smoking and alcohol to avoid delay because other studies reported significant effect on delay [19, 27].

Stigma associated with TB often discourages patients from seeking health care. This study established that 53.8% of the respondents had perceived stigma. However it was found that perceived Stigma attached to TB patient was not associated with delayed health care seeking. In this study participants had perceived stigma of tuberculosis on work performance, relation with others, family responsibility and concern for HIV/AIDS. Other study reported that the association of stigma with delay in TB treatment and role of stigma in determining the health seeking behavior of tuberculosis patients [27]. TB related stigma was highly prevalent among the patients and More than three fourth of the patients felt that TB affected their work and TB diagnosis would reduce the chances of getting married[33].

Limitation

In this study there might be some limitation, particularly due to the nature of the study and the way to obtain this type of data from patient recall. The study subject were pulmonary TB patient in both intensive and continuation phase. For this reason patient might had difficulty in remembering and reporting events that has been occurred in the past. For instance the first symptom made them to seek care, the time interval between the onset of illness and first consultation to health facility and other information relied on self-reports. However different measures were taken to minimize the recall bias, such as patient was interviewed by trained health professional, efforts was made to minimize discrepancy in estimating the time between the onset of illness and first consultation using holiday events and calendar during interview and pretested questionnaires to ensure that all questions were understandable.

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Chapter seven

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Conclusion

Delay in seeking health care among pulmonary tuberculosis patients continued as major challenge and public health concern. Those factors mainly found to be attributed to delay in seeking health care were self-medication, low income, illiteracy or low education and inaccessibility which resulted in low awareness and health information. If attention is not given possibly delayed seeking treatment for PTB will promotes transmission and enhances TB epidemics within the community thereby leads drug resistant tuberculosis. For most of the determinants intervention can be made at institutional and community levels.

The result of this study was indicated that the need to put more effort and emphasis on community based interventions and early case detection in order to effectively prevent and control factors related to delay in health care seeking among tuberculosis patients.

Recommendation

This study has attempted to identify determinant factors associated with delay in seeking health care for PTB patients in Jimma town. This recommendation is for Jimma Zonal and Jimma town Health office TB prevention and control programme and other organization working in the area on TB program. Hence in view of this it is proposed to:

- Establish appropriate information, education and communication (IEC) strategy at all levels of community, Health Extension, Health institution that can improve health seeking of individuals by raising awareness.
- Strengthening the involvement of outreach community health workers and health development army, on community outreach education in order to reach marginalized individuals and identify vulnerable populations to create better access to treatment services.
- Special effort should be made to increase higher institution students and public awareness about the disease and those identified risk factors.
- Involving tuberculosis patient in advocacy, health education program and activities to prevent stigma towards tuberculosis,
- strengthening inter-sectorial collaboration among agencies working on tuberculosis control and prevention including privet clinics and drug venders

- Generally, further study is recommended focusing on health seeking behavior of TB patient and related factors of TB treatment delay should be undertaken to explore detailed information and strengthen and develop factor specific TB prevention and control strategy.

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THE DATA COLLECTION INSTRUMENT, ENGLISH VERSION

QUESTIONNAIRE ID NO.:_____

QUESTIONS CATEGORIES_____

KEBELE: _____

JIMMA UNIVERSITY INSTITUTE OF HEALTH SCIENCE DEPARTMENT OF EPIDEMIOLOGY

This questionnaire is to assess and determine delay in seeking health care among tuberculosis patients attending TB clinics at Health facility in Jimma Town, Oromia Region, Ethiopia

Consent Form, **Introduction**:

My name is _____. I am data collector and working with Mr. Mohammed Abdo who is doing a research as partial fulfillment for the requirement of MastersDegreein Public Health at Jimma University, Institute of health science, Department of Epidemiology. We are interviewing Tuberculosis patient under DOTs follow up to know factors associated with delay in seeking care.

I am going to ask you some questions that are very important for this study and eventually for prevention and control of TB programme improvement and planning.

Your name will not be written in this form and the information you give are kept confidential. You have the right to stop the interview any time if you don't want to answer all of or some of the questions. However your willingness to answer all of the questions would be appreciated. The interview will take about 10-15 minute. Would you participate in responding to the questions in this questionnaire?

Agree proceed_____   **Disagree stop_____**

_____Signature of interviewer/data collector (certifying that respondent has given informed consent verbally)

Response Codes:

1. Completed   1   3. Partially completed   3

2. Refused   2   4. Other (specify)_____   4

CHECKED BY SUPERVISOR

Name _____ Signature _____Date_____

Part I <u>Socio-Demographic question</u>

1. Age of patient (in completed years)

   _____

2. Sex of the patient(observe)

   1) Male

   2) Female

3. What is your religion?

   1) Orthodox

   2) Muslim

   3) Catholic

   4) other (specify)

4. What is marital status?

   1) Married

   2) Single

   3) Divorced,

   4) Widow

5. What is the educational level you attained?

   1) No formal education

   2) Primary school

   3) Secondary school

   4) College/University

6. What is your current occupation?

   1) Employed

   2) Farmer

   3) Merchant/Commercial

   4) Not employed

   5) Housewife

   6) Others (specify).

7. What is your monthly income (household head monthly income in ETB)?

   1) <500

   2) 600-1000

   3) 1100-1500

   4) >1600

8. Do you smoke cigarette?

   1) Yes, (if yes go to question no.9)

   2) No (if no go to question no.11)

9. How many cigarettes do you smoke per day?

Specify amount of daily consumption: _____

10. Duration of smoking.

    1) Year_____

    2) Month_____

11. Do you drink alcohol?

    1) Yes (if yes, go to question no.12)

    2) No (if no, go to question no.13)

12. Specify the frequency of alcohol consumption.

    1) Daily

    2) 3-5 days per week

    3) One per week

    4) Other specify_____

Part II   Care seeking Behavior

13. State symptom (s) that first made you to seek care for your illness.

    1) Cough   6) Fatigue/weakness

    2) Coughing up blood   7) Loss of weight

    3) Breathlessness   8) Loss of appetite

    4) Chest pain   9) Others (Specify)

    5) Fever/night sweating

14. How long did it take from the time you first feel sick and the time you went to health facility?(Use to recall and estimate the date of onset of TB. Local or religious holiday and National events)

    1) Days----------------   3) Months------------------

    2) Weeks------------------

15. Do you consider this time is a delay or not?

    1) Yes(if yes, go to question no.16)   2) No (if no, go to question no.17)

16. Where was your first place to seek care?

1) Traditional healer/Use of traditional medicine
2) Pharmacy shop/Dispensary
3) Health center
4) Hospital
5) Self-medication
6) Prayers/holy place
7) Others (specify)

17. Why did you go to that place? (Refer the place where he/she has mentioned in the above question).

1) Confidence in getting cure
2) Services available anytime
3) Referred by previous provider
4) Free services
5) Advised by somebody
6) Others (specify)

Part II   Accessibility

18. Time to reach from home to the nearest public health facility:

1) <1/2 hr
2) ½-1 hr
3) >1hr

19. How far do you live from home to the nearest health facility providing treatment? (Distance in Km)

1) Less than 2 kilometers
2) 3–5 kilometers
3) 6–10 kilometers
4) More than 10 kilometers

Part IV   Stigma Question

20. TB patients should feel ashamed of their disease.

1) Strongly disagree
1) Disagree
2) Neutral
3) Agree
4) Strongly agree

21. TB patients should hide their TB diagnosis from other people.

    1) Strongly disagree   4) Agree

    2) Disagree   5) Strongly agree

    3) Neutral

22. TB affects relation with others.

    1) Strongly disagree   4) Agree

    2) Disagree   5) Strongly agree

    3) Neutral

23. TB disease is very costly due to its long duration of treatment.

    1) Strongly disagree   4) Agree

    2) Disagree   5) Strongly agree

    3) Neutral

24. TB patients should prefer to live isolated for their disease.

    1) Strongly disagree   4) Agree

    2) Disagree   5) Strongly agree

    3) Neutral

25. TB affects work performance.

    1) Strongly disagree   4) Agree

    2) Disagree   5) Strongly agree

    3) Neutral

26. TB affects marital relation.

    1) Strongly disagree   4) Agree

    2) Agree   5) Strongly agree

    3) Neutral

27. TB affects family responsibility.

    1) Strongly disagree   4) Agree

    2) Disagree   5) Strongly agree

    3) Neutral

28. TB affects family relation.

    1) Strongly disagree   4) Agree

    2) Disagree   5) Strongly agree

    3) Neutral

29. TB patients should be concerned about HIV/AIDS.

    1. Strongly disagree   4. Agree

    2. Disagree   5. Strongly agree

    3. Neutral

30. How is a person who has TB usually regarded/treated in the community?

    1) Most people reject him or her

    2) Most people are friendly, but they generally try to avoid him or her

    3) The community mostly supports and helps him or her

    4) Other (please explain):

Thank you

መረጃመሰብሰቢያቅጽበአማሪኛየተዘጋጀ

ጂማዩኒቨርሲቲጤናኢንስቲትዩትየሕብረተሰበጤናሳይንስበኢፒደሚዮሎጂትምህርትክፍል

የመጠየቄመለያቁጥር---------------------------

የጥያቄዉ ነራ (category) -----------------------

የሚኖርበትቀበሌ------------------------------

መግቢያ

ስሜ---ይባላል:: በጅማ ዩኒቨርሲቲ በጤና ኢንስቲትዮት በሚገኘዉ የሕብረተሰብጤናሳይንስበኢ.ፒዲሚዮሎጂትምህርትክፍልየተካሄደላለዉጥናታዊጥናትላይ ዘግተሽ፡፡መጠየቀየተዘጋጅ ዉለሳንባ (ቲ.ቢ.) ህሙማን ለሆኑትና መድኃኒት በመከታተል ላይ ላሉትሲሆንጥቱየሚያተኩረዉየሳንባ (ቲ.ቢ.) ሆሙማን የበሽታቸሁን ምልክት እንደታየባቸዉ ወደሕክምና ተቋም እንዳይሄዱ የሚያደርጉዋቸዉን ምክኒያትለ ማወቅ የሚጠቅም መረጃ ለማግኘትነዉ::

ይህንንአላማለማሳካትለተዘጋጅትጥያቄዎችየሚሰጡትእዉነተኛመረጃየሳንባ (ቲ.ቢ.) በሽታ ለመከላከልና ለመቆጣተር በጣም ጠቃሚ ስለሆነለትብበርዎትልናመስግንእንወዳለን::

በቅድሚያአንዳንድስዎችለመመለሲያስቸግራቸዉየሚችሉየሚጠየቆ የሚካተተንና ምንጠይቅመሆኑንእንገልጸ ለን::በመጠየቁመሠረትየሚሠጡንመልሶችናመረጃዎችበሚስተርእንደሚያዘናስምፖዉይምየሮማ ነነንንትየሚገልጽማናቸዉም ዓይነትነገርእንደማይጸፍ በጣም እንዲረዱን እንፈልጋለን:: በመጠይቆ ወቅት መመለስም የማይፈልጉት ማንኛዉንም ዓይነት ጥያቄ መተዉ. ወይም በማንኛዉም ሰዓት ማቋረጥ ይችላሉ::ነገርግን ለጥያቄዎቹ የሚሰጡ መልሶች ለሚናደርጉዉ ጥናት በጣም ጠቃሚና የሳምባ(ቲ.ቢ.)በሽተኞችለ ምንወደ ሕክምና ተቋም ከመሄድ የሚያዘገያቸዉን ምክኒያቶች ይበልጥ ለመረዳት እንድንችል ይጠቅመናል:: ቃለመጠይቁን ለማካሄድ በ10-15 ደቂቃ ይወስድብናል:: በቅድሚያ ለትብበርዎት ምስጋናችን ከልብነዉ:: ስለሆነም በዚህ ጥናት መሳተፍ ይችላሉ?

መልሱኤክሆነወደሚቀጥለዉአለፍ/ፈ---------------   መልሶዋአልችልምከሆነመጠይቁንአቁርጥ/ጪ----------

የተጠየቂዉንፍቃደኝነትለማረጋገጥየመረጃሰብሳቢዉ/ዋፊርማ---

የተጠየቂዉጠትመለያቁጥር

1) የተጠናቀቀ	1	3) በከፍልየተመለሰ	3
2) የተቃወመ	2	4) ሌላ/ይግለ	4

ያረጋገጠዉተቆጣጣሪ

ስም-- ፊርማ------------------------ቀን-------------------

ከፍልአንድ:የህሙማኑማህበራዊናኮኖሚያዊሁኔታ(Socio-Demographic question)

1. የህሙማኑ ዕድሜ (በሙሉዓመትይፃፍ)

   ----

2. የህሙማኑ ጾታ(በማየት)

   1) ወንድ

42

2) ሴት

3. ሃይማኖትዎ ምንድን ነዉ?

    1) ኦርቶዶክስ

    2) ሙስልም

    3) ካቶሊክ

    4) ሌላ(ግለፅ)

4. በአሁኑ ዓትየትዳር ሁኔታዎ እንዴት ነዉ?

    1) ያገባ

    2) ያላገባ

    3) አግብቶ የፈታ

    4) በሞት የተለየ

5. ያጠናቀቁት ከፍተኛ የትምህርት ደረጃ ምንድን ነዉ?

    1) ማንበብናመፃፍአልቻላም

    2) የመጀመሪያ ደረጃ እጠናቂቄያለዉ.

    3) ሁለተኛ ደረጃ እጠናቂቄያለዉ.

    4) ከፍተኛ ደረጃ እጠናቂቄያለዉ.

6. በአሁኑ ሰዓት ስራዎ ት ምንድን ነዉ?

    1) የመንግስት/የግልሰራተኛ ወይም ተቀጣሪ

    2) አርሶአደር

    3) ነጋዴ

    4) ምንም ስራ የለዉም/የላትም

    5) የቤት እመቤት

    6) ሌላ(ግለፅ)------------

7. አጠቃላይ የቤተሰብ ዎ ርሀ ወርሀዊ ቢገ ቢስ ን ት ነዉ.

    1) ከ 500 ብር በታች

    2) 600-1000 ብር

    3) ከ1100-1500 ብር

    4) ከ1600 ብርበላይ

8. ትንባዎ ወይም ሲጃራ ያጨሳሉ/ይጠቀማሉ?

    1) አዎአጨሳለዉ (ጥያቄቁጥር 9 ቀጥል/ይ)

    2) አላጨስም ((ጥያቄቁጥር 11 ቀጥል/ይ)

9. በቁጥር ምን ያህል ሲጃራ በቀን ያጨሳሉ/ይጠቀማሉ?

    በቀን የሚጠቀሙ ትንን ሲጃራ ቁጥር ይግለጹ--------------------

10. ምን ያክል ግዜ አጭሰዋል/ተጠቅመዋል?

    1) በዓመት----------------------

    2) በወር---------------------

11. አልኮል መጠጥ ይጠጣሉ/ይጠቀማሉ?

    1) አዎ እጠጣለዉ (ጥያቄቁጥር 12 ቀጥል/ይ)

    2) አልጠጣም (ጥያቄቁጥር 13 ቀጥል/ይ)

12. የሚጠጡትን የአልኮል መጠጥ ይግለጹ?

    1) ሁሌእጠጣለዉ.

    2) በሳምንት 3-5 ቀን እጠጣለዉ.

    3) በሳምንት 1(አንድ) ቀን እጠጣለዉ.

    4) ሌላ (ይግለጹ)---------------

ክፍልሁለት፡ የጤና አገልግሎት የመጠቀም ማድ(Care seeking Behavior)

13. መጀመርያወደሕክምናማዕከልእንዲሄዱካደረጎትየሀመምዎምልክትይጥቀሱ?

1) አክታ/ደረቅሳል
2) ደምየቀላቀለአክታሳል
3) የመተንፈስችግር
4) የደረትዉጋት/ህመም
5) ትኩሳት

6) የሰዉነትመድከምምልክት
7) የምግብፍላጎትመቀነስ
8) የሰዉነትክብደትመቀነስ
9) ሌላ (ግለጹ)----------------------

14. የህመሙምልክትከታየዎትስዓትጀምሮናመጀመርያወደሕክምናማዕከልየሄዱበትግዜምንያክልይሆናል?
(ለማስታወስየተለያየሀያምኖትንና የ ሀገርአቀፍበዐላትንናእንዲሁምየጊዜሠሌዳተጠቀም/ሚ)

1) በቀናትከገለጹ ------
2) በሳንምትከገለጹ----------
3) በወራትከገለጹ------------

15. ከላይየጠቀሱትጊዜወደሕክምናማዕከልለመሄድዘግይቶዋልወይስአልዘገየምብሎያስባሉ?

1) አዋዘዋግቶዋል ((ጥያቄቁጥር 16 ቀጥይ/ል)
2) አይደለምአልዘገየም (ጥያቄቁጥር 17 ቀጥል/ይ)

16. የሕክምናእርዳታአገልግሎትለማግኘትመጀመርያየሄዱበትቦታየትነዉ.?

1) የባዕልሕክምና
2) መድኃኒትመደብር
3) ጤናጣቢያ
7) ሌላ (ይግለጹ)--------------------

4) አስፒታል
5) እራሴንእያከምኩ
6) የጸሎት/ቅዱስቦታ

17. ለምንየሕክምናእርዳታአገልግሎትፍለጋወደዛቦታለመሄድመረጡ/ከላይየጠቀሱትንቦታ?

1) ከበሽታየፈወሳለዉበማለት
2) አገልግሎትበማንኛዉምግዜይገኛል
3) ቀድሞበታከሙሰዎችተጠቁሜ

4) ነጻአገልግሎት
5) ሰዎችመክሮኝ
6) ሌላ (ይግለጹ)

ክፍልሦስት፡ የአገልግሎትተደራሽነት (Accessibility)

18. ከሚኖሩበትቤትእስከአቅራቢያወደሚገኘየሕዝብጤናድርጅትለመድረስምንያዕልሰዓትይወስድዎታል?(በግምት)

1) 1/2 (ግማሽ) ሰዓት
2) ከ1/2-1 (ከግማሽእስከአንድ) ሰዓት
3) ከ1 (ከአንድ)ሰዓትበላይ

19. ከሚኖሩበትቤትእስከአቅራቢያወደሚገኘየሕዝብየጤናድርጅትለመድረስምንያዕልርቀትይወስድዎታል?
(በኪሎሜትርይገገጹ፡)

1) ከ2 (ሁለት) ኪ.ሜበታች
2) ከ3-5 (ሦስትእስከአምስት) ኪ.ሜ

3) ከ6-10 (ከስድትእስከአሥር) ኪ.ሜ
4) ከ10 (አሥር) ኪ.ሜበላይ

ክፍል አራት፦ የማግለል(Stigma)መጠይቅ

20. የሳንባ (ቲ.ቢ) ህሙማንስለበሽታቸዉሊያፍሩይገባል፡፡
    1. አጥብቄአልስማማም
    2. አልስማማም
    3. ምንምህሳብየለኝም

    4. እስማማለዉ
    5. በጥብቅእስማማለዉ

21. የሳንባ (ቲ.ቢ) ህሙማንበሽታቸዉከሌሎችሰዎችመደበቅአለባቸዉ፡፡
    1. አጥብቄአልስማማም
    2. አልስማማም
    3. ምንምህሳብየለኝም

    4. እስማማለዉ
    5. በጥብቅእስማማለዉ

22. የሳንባ (ቲ.ቢ) በሽታየስዎችንግንኙነትይጎዳል፡፡
    1. አጥብቄአልስማማም
    2. አልስማማም
    3. ምንምህሳብየለኝም

    4. እስማማለዉ
    5. በጥብቅእስማማለዉ

24. የሳንባ (ቲ.ቢ) በሽታሕክምናክትትልረጂምጊዜበመሆኑበጣምይወደዳል፡፡
    1. አጥብቄአልስማማም
    2. አልስማማም
    3. ምንምህሳብየለኝም

    4. እስማማለዉ
    5. በጥብቅእስማማለዉ

25. የሳንባ (ቲ.ቢ) በሽታሕሙማንለበሽታቸዉሲሎለብቻቸዉከሰዉተነጥሎመኖርይመርጣሉ፡፡
    1. አጥብቄአልስማማም
    2. አልስማማም
    3. ምንምህሳብየለኝም

    4. እስማማለዉ
    5. በጥብቅእስማማለዉ

26. የሳንባ (ቲ.ቢ) በሽታየሥራክንዉንንወይምበብቃትመወጣትንያስተጓሉላል፡፡
    1. አጥብቄአልስማማም
    2. አልስማማም
    3. ምንምህሳብየለኝም

    4. እስማማለዉ
    5. በጥብቅእስማማለዉ

27. የሳንባ (ቲ.ቢ) በሽታየትዳርግንኙነትንይጎዳል፡፡
    1. አጥብቄአልስማማም
    2. አልስማማም
    3. ምንምህሳብየለኝም

    4. እስማማለዉ
    5. በጥብቅእስማማለዉ

28. የሳንባ (ቲ.ቢ) በሽታየቤተሰብአላፈነትንበብቃትእንይወጡያስተጓላል፡፡
    1. አጥብቄአልስማማም
    2. አልስማማም
    3. ምንምህሳብየለኝም

    4. እስማማለዉ
    5. በጥብቅእስማማለዉ

29. የሳንባ (ቲ.ቢ) በሽታበቤተሰብዉስጥያለዉንግንኙነትንይጎዳል፡፡
    1. አጥብቄአልስማማም
    2. አልስማማም

    3. ምንምህሳብየለኝም
    4. እስማማለዉ

5. በጥብቅእስማማለዉ.

30. የሳንባ (ቲ.ቢ) በሽተኞችስለኤች.አይ.ቪ.ኤ.ድ.ስሊ ያሳስባቸዉይገባላ::

1. አጥብቄአልስማማም
2. አልስማማም
3. ምንምሀሳብየለኝም
4. እስማማለዉ.
5. በጥብቅእስማማለዉ.

31. አንድየሳንባ (ቲ.ቢ) በሽታ ያለበትሰዉበማሕበረሰቡእንዴትይታያል

1. አብዛኛዉሰዉ ያርቀዋል/ቃታል
2. አብዛኛዉሰዉ እንደጓደኛነገርግንበጠቃላይሊ ያገሉት/ሊ ጽይሞክራሉ
3. አብዛኛዉሰዉ ድጋፍናእርዳታ ያረግለታል/ላታል
4. ሌላ (ይግለጹ)--------------------------

ከልብአመስግንዎታለዉ.::

Independent list for pulmonary TB patients Underfollow up at TB clinics

Name of health facility_____

S. no.	Full Name	Age	Sex M/F	Total Duration in day*	Type of TB PTB+/PTB-	RxPhase of (I/C)	Contact address/mobile no.	TB record No.

* The interval between the first symptom patient experienced and the first time he/she had visited the health provider (duration of chief complaint)
Information Collected from TB patient individual medical card.