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# Health-Seeking Behavior among Tuberculosis Suspected Cases in Major Cities of Mongolia

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**Objective:** To assess the health-seeking behavior among presumptive TB cases in a Mongolian population-based TB prevalence survey. Tuberculosis (TB) is a major public health concern in Mongolia. TB prevalence survey provides a chance to explore health seeking behavior at the population level. **Methods:** A population based, cross-sectional survey was conducted using 51 cluster samplings in Mongolia. Participants were interviewed for TB symptoms and their health seeking behavior aged 15 years and above. Participants with a cough lasting two weeks were classified as TB suspects. **Results:** Of 27,112 survey participants, 4.6% had cough more than two weeks. Forty-eight percent of them had sought health care and to reported pharmacies (26.2%), family group practitioners (45.7%), district health centers (13.3%), and private physicians (3.6%) as first point of contact. The young adults (46.8%) and students (61.0%) approached pharmacies for care more often than their counterparts. Preference for family clinics increased with age. **Conclusions:** In this survey, 48.1% of the TB suspects had visited a health-care provider. TB case detection need to be improved by retraining health staffs of family health facilities.

**Keywords:** Health Care Utilization, Tuberculosis, Mongolia, Behavior

## Introduction

Nowadays tuberculosis has become one of the major causes of death worldwide. Prevention of tuberculosis in Mongolia follows the guidelines from the World Health Organization, and it is tailored to be carried out more suitable for this country. For the diagnosis of tuberculosis, a sputum smear test was taken from people who had a chronic cough with sputum for over 2 weeks[1]. Secondary health centers such as those in different provinces and districts are the main diagnostic and treatment sites. Hence, the people who are suspected of having tuberculosis can receive needed medical treatment from those health centers or any other chosen public hospital. Evidence based on meta-analysis study showed that sufficient knowledge and good

health habits can help patients in time to receive treatment from health centers[2]. Other Ethopian study (An Ethiopian study or Other Ethiopian Studies ) found that women are less likely to seek medical care than men. Those with long duration of cough were more likely to visit a health care service[3]. In addition, A Zambian in-depth study also found that being a women, less educated, having more than several health-seeking encounters, having an outpatient diagnosis of tuberculosis, and visiting a private doctor or traditional healer are significantly associated with delayed health seeking behavior[4] , and studies from different countries have also shown that people who have symptoms of tuberculosis tend to go to pharmacies or private hospitals first to get treatment. The transference of patients from one hospital to another causes lost time for diagnosis and treatment[5]. A cross sectional survey was performed between 2013 and 2014 among 66 survey clusters in Zambia. Clusters were census supervisory areas (CSAs). Participants were identified as presumptive TB cases aged 15 years and above; having either cough, fever or chest pain for 2 weeks or more; and/or having an abnormal or inconclusive chest x-ray image[6].

It was important in our study to define the healthcare seeking habits of people with chronic cough in major cities. In 2014, we did a cross sectional study, defining the prevalence of tuberculosis with a sample that reflected the target population[7]. Our study concluded that the prevalence of tuberculosis was 3 times higher than the World Health Organization estimate which showed that there were a high number of people who hadn't been diagnosed or received treatment[8]. In a community-based cross-sectional Northwest Ethiopia survey (29, 735), 663 (2.2%) of individuals were described to be pulmonary tuberculosis suspects[9]. This West Ethiopian study found that TB patients had adequate knowledge of signs and symptoms of TB and transmission of TB and healthcare seeking behavior of TB, but their knowledge of the cause of TB, treatment of TB and prevention of TB was not satisfactory[10]. A South African Meta-Analysis study showed that there is relatively inadequate epidemiology research of TB in health care workers in South Africa[11]. A study of tuberculosis patients in rural areas of central china showed that the prevalence of health care-seeking delay among tuberculosis patients was greater in countryside areas. Thus, it suggests taking important targeted interventions to reduce[12] infection.

The aim of our study is to evaluate the health care seeking behavior of people over 15 year's old and suspected tuberculosis. With the obtained information about their habits, a more targeted prevention projects can be done thus it enhances the data about the prevalence of tuberculosis in Mongolia.

## Materials and Methods

### Study design

A population based cross-sectional study was carried out from May 2014 to November 2014. The study population was taken from the national Mongolian TB prevalence surveys.

### Study population and sampling

The study was conducted among 45$^{th}$ khoroo's (the smallest administrative unit) in Ulaanbaatar including 3 groups each from Darkhan and Erdenet city; a total of 51 clusters. People who had fulfilled the following criteria were included in our study: (1) those over 15 years old, (2) had chronic cough over 2 weeks, and (3) lives in selected areas. Among the total population of 33690 of all major cities, 27112 (80.5%) participated in the survey. From 27,048 (99.8%) participants, those who were suspected of having tuberculosis by a cough over 14 days totaled 1,250 (4.6%). The participation rate of the survey was 80.5%.

### Data collection

We conducted a questionnaire about health seeking behavior among people who were suspected of having tuberculosis and had a cough lasting over 2 weeks. The self-reported questionnaire included questions such as whether they had sought medical help about their condition, if not, why they hadn't, which hospital they had chosen to go to first and what kind of advice they were given. The questionnaire was administered by professional survey takers.

### Measures

People included in the study were those suspected of having tuberculosis who had a cough or fever lasting longer than 14 days. Included were those who had sought out any kind of medical treatment.

### Data analysis

The data was put into MS Access program (Microsoft Corporation, USA) by 2 different researchers; their differences were compared with each other and the original paper questionnaires.

Data analysis was done using Stata 13/SE (Stata Corporation, College Station, TX, USA). Measures were expressed in number and percentage. The Chi-Square Test was used to compare health seeking behavior with the demographic variables. The p-value of less than 0.05 was used to indicate statistical significance. The study dependent variable is a health utilization status among Tuberculosis suspected cases. It has three categories including those who receive health care, do not receive health care, and unknown. Independent variables are demographics such as age, gender, marital status, education and employment status.

**Ethical statements**

Research study methodology was approved by the Ethical Committee of the Mongolian National University of Medical Science and the National Center for Communicable Diseases. An informed consent form was obtained from each participant. The Ethical Committee Official Registration Number is 6/3/201506. All the consent or assent forms for the study were kept in a closed cabinet at the end of each cluster operation.

**Table 1.** Socio-Demographic Characteristic of Presumed Tuberculosis

| Characteristics | N | % |
|---|---|---|
| Total | 1250 | 100.0 |
| Gender | | |
| Male | 651 | 52.1 |
| Female | 599 | 47.9 |
| Age group | | |
| 15-24 | 197 | 15.8 |
| 25-34 | 280 | 22.4 |
| 35-44 | 221 | 17.7 |
| 45-54 | 247 | 19.8 |
| 55-64 | 166 | 13.3 |
| 65+ | 139 | 11.1 |
| Marital status | | |
| Single | 281 | 22.5 |
| Married | 807 | 64.6 |
| Divorced | 49 | 3.9 |
| Widow | 113 | 9.0 |
| Education | | |
| Non-educated | 23 | 1.8 |
| Elementary (graduated 4$^{th}$ class) | 58 | 4.6 |
| Middle (graduated 8$^{th}$ class) | 221 | 17.7 |
| High school (10$^{th}$ class) | 487 | 39.0 |
| Collage | 130 | 10.4 |
| University | 331 | 26.5 |
| Socioeconomic status | | |
| Employed | 607 | 48.6 |
| Student | 46 | 3.7 |
| University student | 88 | 7.0 |
| Retired | 255 | 20.4 |
| Grants | 74 | 5.9 |
| At home | 59 | 4.7 |
| Unemployed | 61 | 4.9 |
| Other | 60 | 4.8 |

## Results

In table 1, study participants gender ratio between female and male was almost 1:1. It is also consistent with the Mongolian national average sex ratio. In addition, the highest frequent tuberculosis suspect's cases were aged between 25-34 years old, following by 45-54. Married people had 64.6% which is a greater number of suspected TB cases than the other status groups. 26.5% of study participants had a university diploma and 48.6% were employed.

Table 2 describes study participant's general demographics by health seeking behavior. Almost sixty percent of those who did not receive medical service were male. However, female domination was 56.1%, higher than the male group who obtain medical care. So then, there is a highly significant difference between gender groups. Unfortunately, we don't have information

**Table 2.** Study participant's demographics by health care seeking behavior

| Answer | Obtained Health Care | | Not Obtained Health Care | | Unknown | | Total | p-value* |
|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | | |
| Total | 588 | | 623 | | 39 | | 1,250 | |
| Sex | | | | | | | | <.0001 |
| Male | 258 | 43.9 | 368 | 59.1 | N/A | N/A | 626 | |
| Female | 330 | 56.1 | 255 | 40.9 | N/A | N/A | 585 | |
| Age groups | | | | | | | | .002 |
| 15-24 | 94 | 16.0 | 97 | 15.6 | 6 | 15.4 | 197 | |
| 25-34 | 118 | 20.1 | 152 | 24.4 | 10 | 25.6 | 280 | |
| 35-44 | 85 | 14.4 | 131 | 21.0 | 5 | 12.8 | 221 | |
| 45-54 | 120 | 20.4 | 117 | 18.8 | 10 | 25.6 | 247 | |
| 55-64 | 83 | 14.1 | 78 | 12.5 | 5 | 12.8 | 166 | |
| 65+ | 88 | 15.0 | 48 | 7.7 | 3 | 7.7 | 139 | |
| Marital status | | | | | | | | .331 |
| Single | 123 | 21.0 | 150 | 24.0 | 10 | 25.6 | 283 | |
| Married | 379 | 64.4 | 400 | 64.2 | 26 | 66.7 | 805 | |
| Separated | 21 | 3.6 | 27 | 4.3 | 1 | 2.6 | 49 | |
| Widow | 65 | 11.0 | 46 | 7.8 | 2 | 5.1 | 113 | |
| Education | | | | | | | | .439 |
| No education | 7 | 1.1 | 14 | 2.2 | 2 | 5.1 | 23 | |
| Low (4 grade) | 29 | 5.0 | 29 | 5.0 | 0 | 0.0 | 58 | |
| Middle (8 grade) | 99 | 16.8 | 114 | 18.2 | 8 | 20.5 | 221 | |
| Highschool (10 grade) | 225 | 38.2 | 248 | 39.8 | 14 | 35.9 | 487 | |
| Professional / technical | 66 | 11.2 | 61 | 9.7 | 3 | 7.7 | 130 | |
| High | 162 | 27.5 | 157 | 25.2 | 12 | 30.8 | 331 | |
| Employment status | | | | | | | | .069 |
| Employed | 258 | 44.0 | 336 | 54.0 | 14 | 1.0 | 608 | |
| Student /High school/ | 24 | 4.1 | 22 | 3.5 | 0 | 0.0 | 46 | |
| Student /University/ | 41 | 7.0 | 42 | 6.7 | 5 | 12.8 | 88 | |
| Retired | 143 | 24.3 | 105 | 17 | 7 | 17.9 | 255 | |
| Invalid / disability | 43 | 7.31 | 26 | 42.0 | 5 | 12.8 | 74 | |
| Home worker | 31 | 5.2 | 26 | 1.7 | 2 | 5.1 | 59 | |
| Cannot find work | 18 | 3.0 | 39 | 6.3 | 4 | 10.2 | 61 | |
| Other | 30 | 5.1 | 27 | 4.3 | 2 | 5.1 | 59 | |

*p-value calculated with Pearson Chi-Square Test; p value is considered as a significant less than 0.05; N/A Not Known

in an unknown group. Among age groups, two groups between 25-45 years of age were not actively searching for medical services for their suspected TB infection. On the other side, 20.4 % of the 45-54 aged study participants were seeking health care service. There was also a significantly difference between age groups. Married people had a highest percentage in both groups of 64, 4% and 64.2%, respectively. Approximately 40% of the university students were suspected TB cases. Between those obtaining or not obtaining health service by employment status, half of employed people had presumed TB cases. Marital status, education and employment were not significantly associated with health-seeking behavior.

From the patients who didn't go to a primary care physician, 13.1% went to a health center at Districts, 26.8% to a pharmacy, and 3.7% to a private hospital, while only one person went to a traditional medicine practicing hospital.

Of the people aged between 15 to 24, most (47.4%) went to the pharmacy. Study participants aged over 65 tend to receive medical care from Family Health Centers (FHC) (Figure 2).

From Figure 3, we can see that those who visit the pharmacy first are single, uneducated, university students, and those who are unemployed.

From those who had received medical treatment, 28.6% received a chest X-ray, and 14.3% (86) gave a sputum smear test (Table 3).

The main reason people didn't seek out medical treatment were that they thought it would heal eventually on its own (17.8%), or that they didn't have any serious pains (Table 4).

As shown in (Table 5) Module 1 a 1.71 times more males than females had less likely to have obtain TB medical care(with range of CI 1.36-2.14 ; P<.0001). Similarly, the lack of TB health care was 2.18 times higher in non-educated participants compared to the people studied in university, while elementary and middle school educated people were 1.15 times less likely to receive TB health care have than the compared group. This was marginally statistically significant (p=0.067). Moreover, among all age groups, 35-44 aged people had 2.75 times greater risk not taking health care (with range of CI 1.77-4.28 ; p<.0001), followed by the 25-34-age group 2.18 times more (95% CI 0.9-2.5) than over 65+ aged group people with p<.0001. Moreover divorced people were 1.25 times more like the possibility to get infected by TB than married people (p=.442).

Regarding Module 2, demographic characteristics and risk to have TB were simultaneously adjusted for. The findings were similar to Module 1. Male respondents were 1.59 times less likely to receive TB health care than female (p<.001). Divorced participants were 1.25 times less likely to have risk to TB health care than those married people (p=.399). Respondents with no

**Table 3.** Medical Service given to the people who sought out medical treatment (n=601)

| Service Type | N | % |
|---|---|---|
| Chest X-ray | 172 | 28.6 |
| Sputum smear test | 86 | 14.3 |
| Complete blood count | 80 | 13.3 |
| Tuberculosis dispensary | 59 | 9.8 |
| Medication against tuberculosis | 35 | 5.8 |

**Table 4.** Reasons why no medical treatment was sought out (n=649)

| Reason | N | % |
|---|---|---|
| Thought it would heal by itself | 210 | 17.8 |
| There was no serious pains | 177 | 15.0 |
| Not possible to take a day off from work | 172 | 14.6 |
| Didn't know whom to go to | 14 | 1.2 |
| Hospital is too far way | 11 | 0.9 |
| Can't afford the treatment | 12 | 1.0 |
| Have no insurance, can't pay the bill | 11 | 0.9 |

**Table 5.** Multiple Logistic Regression of TB health care seeking behavior associated with demographic factors

| Indicators | Model 1 Crude OR (95% CI) | p-value | Model 2 Adjusted OR (95% CI) | p-value |
|---|---|---|---|---|
| Age group | | | | |
| 15-24 | 1.83 (1.17-2.87) | .008 | 1.69 (0.93-3.10) | .085 |
| 25-34 | 2.18 (1.43-3.33) | .0001 | 1.94 (1.13-3.31) | .015 |
| 35-44 | 2.75 (1.77-4.28) | .0001 | 2.42 (1.41-4.14) | .001 |
| 45-54 | 1.65 (1.07-2.53) | .022 | 1.52 (0.92-2.50) | .097 |
| 55-64 | 1.68 (1.05-2.67) | .028 | 1.65 (1.01-2.72) | .046 |
| 65+ | 1.0 | | | |
| Gender | | | | |
| Female | 1.0 | | | |
| Male | 1.71 (1.36-2.14) | .0001 | 1.59 (1.25-2.03) | .0001 |
| Education | | | | |
| Low | 2.18 (0.94-5.04) | .067 | 2.3 (0.92-5.70) | .072 |
| Middle | 1.15 (0.66-2.02) | .607 | 1.77 (0.95-3.27) | .067 |
| University | 1.0 | | | |
| Marital status | | | | |
| Married | 1.0 | | | |
| Single | 1.12 (0.85-1.47) | .407 | 1.17 (0.80-1.71) | .399 |
| Employment status | | | | |
| Non-employed | 1.0 | | | |
| Employed | 1.55 (1.24-1.94) | .0001 | 1.31 (0.99-1.74) | .053 |

Dependent variable: obtained health service and not obtained health service; 1.0 reference group;

formal education were 2.3 times more likely to have the lack of access to medical care risk than those with formal education (p=.072), besides middle and elementary educated people have the same risk to TB than tertiary education people with p=1.77 and p=1.18 respectively. A confidence level of this study was 95%. The employed people were less likely to receive the health care than non-employed (95% CI 0.99-1.74).

## Discussion

This is the first nationally representative population-based survey to examine health-seeking behavior among presumptive TB cases in Mongolia. The study elaborates that of those suspected cases only 48.1% received medical care. Of those who went to get treatment, most went to their primary care physician (45.3%), or to the pharmacy (26.8%). More than half of the University students who had a cough, go to the pharmacy for their symptoms (61.9%). Male gender is more likely to utilize public medicine whereas female gender uses more traditional care. The most important factors are cost of treatment and fear of discrimination[12]. Comparatively, the private practitioners and private hospitals were the predominant health providers preferred in the study subjects for the first consultation in Kerala, India[13].

In our study the fact that 14.3% were given the main diagnostic test, which is the sputum smear test. This is higher than the one conducted in Vietnam, where 7.3% were given the sputum smear test[8]. The prevalence of the sputum smear test could be due to the fact that people went to the doctor earlier than the people in Vietnam[14]. TB patient care in the community is mainly by family members (74.8%). There is no follow up by heath workers and social support group is minimal at (11.4%)[15]. In the study of the Central region of Ghana, it was revealed that factors such as staff attitude, distance to treatment centers, gender, employment and education are the key factors that affect the health seeking behavior of TB patients[16].

According to the Ibadan, Nigeria study, it was shown that appropriate health-seeking behavior was found to be high among civil servants[17-20].

Main strength of the cross-sectional study which had a large sample size that reflected the target population, did not only give information about the health care seeking habits of the people, it also educated the participants about tuberculosis.

The limitations of our study cross-sectional design which included those who had a cough longer than 14 days were that it is may not be enough data to present all the initial tuberculosis symptoms. We only asked about which hospital the participant went to and didn't ask more about their chest X-ray or their sputum test results, which is another limitations of our study. In order to decrease the prevalence of tuberculosis and its mortality, an early diagnosis and treatment is necessary. Thus primary care physicians need to think about when to suspect tuberculosis, their diagnostic criteria and treatment guideline. We also have found from this studies that pharmacies are one of the main information booths about health to the public. With that in mind, we need to involve pharmacies for primary prevention projects. We need to give pharmacists information about the symptoms of tuberculosis, where to get professional help, and other essential information about their diagnosis and treatment.

Further research for a more comprehensive understanding of the prevalence of tuberculosis is needed involving the following: (1) the results of the different health seeking behavior on health; (2) more specific information about what kind of treatment is received; and (3) where information about tuberculosis is received.

**Conclusion**

In major cities, those who had a cough lasting over 14 days and hence suspected of having tuberculosis, received medical treatment in half of cases (48.1%). From those who went to the doctor, 45.3% of them visited their primary care physicians first. University students and young adults are more likely to go to the pharmacy first, rather than to the doctor. Accordly, of those who received medical treatment, only 14.3% were consulted about giving a sputum test.

## Conflict of Interest

The authors declare that they have no competing interests.

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