Exploration of factors facilitating adherence to anti-tuberculosis treatment in Yerevan, Armenia: a qualitative study

Master of Public Health Integrating Experience Project

Professional Publication Framework

by

Zaruhi Grigoryan, MPH Candidate

Advising team: Robert McPherson, PhD
Tsovinar Harutyunyan, MPH, PhD
Nune Truzyan, DVM, MPH

School of Public Health
American University of Armenia
Yerevan, Armenia
2015
# TABLE OF CONTENTS

ACKNOWLEDGEMENTS........................................................................................................................................... iii

ABSTRACT............................................................................................................................................................... iv

INTRODUCTION ......................................................................................................................................................... 1

  Tuberculosis .............................................................................................................................................................. 1

  Situation in Armenia .................................................................................................................................................. 1

  Adherence to anti-tuberculosis treatment .............................................................................................................. 2

  Conceptual framework ........................................................................................................................................... 3

  Research questions ................................................................................................................................................ 5

  Ethical considerations ............................................................................................................................................. 5

METHODS ................................................................................................................................................................. 6

  Study population ................................................................................................................................................... 6

  Data collection ....................................................................................................................................................... 6

  Data analysis .......................................................................................................................................................... 7

RESULTS ................................................................................................................................................................. 7

  Demographic characteristics ................................................................................................................................. 7

  Predisposing factors ................................................................................................................................................ 8

    Knowledge of TB and TB medication .................................................................................................................. 8

    Belief in effectiveness of medication ................................................................................................................ 9

    Beliefs about TB severity .................................................................................................................................. 10

    Trust in physicians ............................................................................................................................................ 11

  Reinforcing factors ................................................................................................................................................ 14

    Support from medical providers ....................................................................................................................... 14

    Support from family members, other relatives and friends ............................................................................ 16

    TB associated stigma ........................................................................................................................................ 18

    Side effects of medication ................................................................................................................................. 19

  Enabling factors .................................................................................................................................................... 20

    Accessibility and affordability of treatment ....................................................................................................... 20

    Regimen complexity ......................................................................................................................................... 21

DISCUSSION ............................................................................................................................................................ 24

CONCLUSIONS ....................................................................................................................................................... 28

RECOMMENDATIONS ........................................................................................................................................... 29

  Precede-Proceed model ...................................................................................................................................... 34
APPENDIX A ........................................................................................................................................35

English and Armenian versions of in depth interview guides for TB patients, physicians and family members ............35

APPENDIX B. IRB approval letter ..................................................................................................................56

APPENDIX C .............................................................................................................................................57

English and Armenian versions of consent forms for TB patient, family members, physicians ....................................57
ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to my advising team: to Robert McPherson for raising me up to the higher level of thinking, for never feeling the distance throughout his tutorship, and continuous support, to Tsovinar Harutyunyan for challenging ideas and immediate support during study conduct, to Nune Truzyan for assistance given at any time needed.

I acknowledge the contribution of NTBCC, all physicians and nurses of TB cabinets for readiness to help and for the engagement in the process.

Special thanks to my friend and mate Serine Sahakyan for invaluable help and inspiration during data collection.
ABSTRACT

Tuberculosis (TB) is an infectious disease caused by *M. tuberculosis* (bacilli of Koch). In 2013, the worldwide TB incidence rate was 126 per 100,000 population and the prevalence rate was 159 per 100,000 population. In Armenia, in 2013 the TB incidence rate was 49 per 100,000 population. Globally, approximately 3.7 percent of new TB cases have multidrug resistant strains (MDR) which are resistant to the first line anti TB treatment therapy. Increasing rates of drug resistant cases and low adherence to anti-tuberculosis treatment led to TB becoming a major public health concern in Armenia. The rationale for this study was to identify and characterize factors that facilitate adherence to anti-tuberculosis treatment.

The student investigator conducted 16 individual interviews with former drug sensitive (DS) TB patients who had adhered to and successfully completed treatment for TB between 2012 and 2014. To validate preliminary findings of the interviews the student investigator conducted two individual interviews with family members of former DS TB patients who had adhered to and successfully completed TB treatment and one focus group discussion with outpatient TB healthcare providers. Direct content analysis was utilized for data analysis. The PRECEDE model was used to develop a conceptual framework for the study and guide research questions.

The conceptual framework hypothesized that the main predisposing factors that would facilitate adherence to treatment would be knowledge regarding TB and TB medication and beliefs and attitude with regard to adherence to anti-tuberculosis treatment. The model predicted reinforcing factors would be support from family, friends, health providers and peers and experience of no side effects of medication. The main enabling factors were hypothesized to be accessibility and affordability of treatment and treatment regimen complexity. In our study beliefs about TB, support from family, friends and providers, accessibility and affordability of treatment were confirmed as important facilitators of adherence. Knowledge regarding TB and TB medication, side effects of medication and regimen complexity did not appear to have influence on adherence. Besides the hypothesized factors the study revealed new factors as facilitators of adherence that included personal sense of responsibility, trust in physician, and an understanding of the severity of TB.

The findings of this study can be used to improve adherence to anti-tuberculosis therapy among TB patients in Armenia and perhaps elsewhere. Factors through which the promotion of adherence could be strengthened include cultivating a sense of responsibility of TB patients and enhanced support from family, friends and providers. This will result in increased conscientiousness toward the health of the population as well as patients themselves.
INTRODUCTION

Tuberculosis

Tuberculosis (TB) is an infectious disease caused by \textit{M. tuberculosis} (bacilli of Koch).\textsuperscript{1} It is spread with air droplets through coughing, sneezing or other type of respiratory fluid transmission.\textsuperscript{1} In 2013, the worldwide TB incidence rate was 126 per 100,000 population and the prevalence rate was 159 per 100,000 population.\textsuperscript{2} In 2013, 1.5 million TB deaths were detected worldwide.\textsuperscript{2} Worldwide mortality rate from TB has fallen by 45 percent from 1990 to 2013. Ninety-five percent of deaths occurred in low- and middle-income countries.\textsuperscript{2}

A major public health issue that is associated with TB is the emergence and increasing number of drug resistant cases worldwide. Globally, approximately 3.7 percent of new TB cases have multidrug resistant strains (MDR) which are resistant to the first line anti TB treatment therapy (both isoniazid and rifampicin). MDR-TB is found in all countries surveyed for TB.\textsuperscript{3} Those cases that have resistance also to second-line drugs are called extensively drug-resistant or XDR-TB cases.\textsuperscript{4}

Situation in Armenia

In Armenia, in 2013 the TB incidence rate was 49 per 100,000 population (1,470 new TB cases).\textsuperscript{5} The TB mortality rate was 6.1 per 100,000 populations (183 deaths).\textsuperscript{5} The TB treatment success rate in Armenia (72 percent) still remains below the rate targeted by 6\textsuperscript{th} Millennium Development Goal (>90 percent).\textsuperscript{6,7} According to the WHO Global Tuberculosis Report estimates in 2013, among new notified TB cases in Armenia approximately 9.4 percent were MDR-TB and 43 percent of patients on retreatment developed drug resistance.\textsuperscript{5} Armenia remains a high MDR-TB burden country.\textsuperscript{5}

The World Health Organization (WHO) recommends the directly observed treatment short-course (DOTs) strategy for TB treatment.\textsuperscript{8} According to the DOTs guidelines all new TB patients are subjected to two months intensive (clinical) treatment phase which is then followed with continuation (ambulatory) phase that can last 4
months or more depending on whether TB patient is smear positive or negative. The core part of the strategy is to supervise the patient’s drug-taking process to improve adherence to treatment.

The two major organizations providing TB services in Armenia are the National TB Control Center (NTBCC) and Médecins Sans Frontières France (MSF France). NTBCC is the central unit of Ministry of Health of Armenia (MOH) through which management, financing, monitoring and evaluation of anti-tuberculosis services are carried out. The goal of the program throughout the 2007-2015 time period is to improve the epidemiological situation of TB in Armenia through reducing growth of TB morbidity, mortality and development of TB resistant forms. MSF France in affiliation with MOH of Armenia is working on diagnosis and treatment of drugs resistant cases (DR-TB). The goal of MSF France is to improve the capacity of the MOH in the implementation of DR-TB treatment and diagnosis services in Armenia.

Increasing rates of drug resistant cases and low adherence to anti-tuberculosis treatment led to TB becoming a major public health concern in Armenia. A study conducted in Armenia has investigated factors that lead to non-adherence to anti-tuberculosis treatment. It can be equally valuable to approach this issue from the other side and identify and explore factors that facilitate adherence to anti-tuberculosis treatment. The rationale for this study is thus to identify and characterize factors that facilitate adherence to anti-tuberculosis treatment. Findings of this study will assist in directing future intervention programs targeted on increasing adherence to anti-tuberculosis treatment.

**Adherence to anti-tuberculosis treatment**

According to the WHO definition adherence with regard to TB treatment is “the extent to which TB patient’s history of therapeutic drug-taking coincides with the prescribed treatment”. The outcome of low adherence to TB treatment is treatment failure that results in decreased rate of sputum conversion to smear-negative, spread of drug resistant forms of TB and ultimately an increased rate of drug resistant TB cases in the community.
Adherence to long-term medication is a complex process that is influenced not just by patient-provider relationships but also by factors related to the health care system as well as socio-economic and political contexts. Socio-economic factors (ineffective social support, unstable living conditions), patient-related factors (demographic characteristics, knowledge on disease, cultural beliefs), regimen complexity, supportive relationship between health provider and patient, and pattern of health care delivery (organization of clinical services, their expertise) have been shown to be influencing factors toward adherence.

As noted above, a recent study on counseling for TB patients and their family members investigated risk factors associated with non-adherence to anti-tuberculosis treatment in Armenia. According to the study the duration of the treatment, side-effects of medication, feeling cured, and difficulties in accessing the polyclinics were major obstacles in adhering to the treatment. On the other hand, the same study indicated that a strong desire to be healed was positively associated with adhering to anti-tuberculosis treatment.

Social support is defined as “process of interaction in relationships which improves coping, esteem, belonging, and competence through actual or perceived exchanges of physical or psychological resources”. A study aimed at assessing and improving adherence to multidrug therapy indicated that social support improved treatment outcome, where the treatment outcome is evaluated through three main domains: completion of treatment, clinical indicators and adherence to treatment. Experiences in developed countries like USA, Western European countries, and developing countries in Africa and Asia indicate that social support increases adherence to TB treatment. As there is evidence that shows that social support leads to long lasting adherence--specifically to anti-tuberculosis treatment--it is of particular interest to explore it among Armenian TB patients.

**Conceptual framework**

Application of a behavioral model can guide the focus of this study regarding why some TB patients adhere to prescribed treatment while others don’t. From the variety of behavioral models one should be applied that best describes the behavior of interest (i.e., adherence) and can then be used to guide the research questions.
The PRECEDE-PROCEED model developed by L. Green mostly focuses on promotion of health related behavior (Figure). The principal goal of the model is to design and evaluate behavior change program based on understanding of health related and environmental factors that explain particular behaviors. According to Green, health and risks associated with health are determined by variety of factors, hence the intervention programs targeted on behavioral, environmental and social change should encompass all the factors determining particular behavior and be multidimensional and participatory. The PRECEDE framework considers the factors that shape particular health behavior and applies those in intervention programs. It consists of five phases: Social assessment (Phase 1), Epidemiologic assessment (Phase 2), Behavioral and Environmental assessment (Phase 3), Educational and Organizational assessment (Phase 4), and Administrative and Policy assessment and intervention alignment (Phase 5).

The first Phase identifies people's perception of their needs. The second Phase, Epidemiologic Assessment, identifies important health problems in the target population. The third Phase describes behavioral and environmental factors leading to specific health condition. The educational and organizational assessment (Phase four) describes the factors that need to be changed to result in sustainable change in behavior and environment. This Phase distinguishes between predisposing, enabling and reinforcing factors that influence particular health behavior. Predisposing factors (knowledge, attitude, beliefs and values) rationalize and motivate the behavior. The environmental factors such as availability; accessibility and affordability of services that facilitate particular behavior are categorized into enabling factors. Reinforcing factors such social support, feedback from health-care providers, peer influence are reward for particular behavior and result in its repetition. And finally, the fifth Phase identifies administrative factors that influence health related behavior such as (give examples please). Since Phase four of PRECEDE is comprehensive enough to encompass all the aspects of adherence to long-term medication we used it as the theoretical framework for this study.


**Research questions**

This exploratory qualitative study describes factors facilitating adherence to/completion of anti-tuberculosis therapy among drug sensitive (DS) TB patients in Yerevan city. The first research question of the study is: “What are the factors that facilitated adherence to anti-tuberculosis therapy among TB patients in Yerevan city?” and the second one is “How do these factors facilitate adherence to anti-tuberculosis therapy?” with the following sub-questions:

- What are the TB-related knowledge, attitude, beliefs and values motivating adherence to anti-tuberculosis treatment in TB patients?
- How do TB patients describe the role of availability and accessibility of health care resources with regard to adherence to anti-tuberculosis treatment?
- How do TB patients describe the influence of the complexity of the prescribed regimen on adherence to anti-tuberculosis treatment?
- How do TB patients perceive the role of support from family, friends, health providers and peer influence concerning adherence to anti-tuberculosis treatment?
- How do TB patients perceive the role of side-effects of treatment with regards to adherence to anti-tuberculosis treatment?

**Ethical considerations**

This study has received Institutional Review Board (IRB) approval. During data collection and analysis all measures were taken to ensure safety of participants. Consent form was read before the start of each interview and accordingly obtained agreement to participate in the study. Quotes of participants are marked with codes given to each respondent to assure anonymity. In order to not violate the confidentiality of patients the first contact has been conducted by their physicians.
METHODS

Study population

The target population of the research is adult (18 years and older) Armenian former DSTB patients who both adhered to and successfully completed anti-tuberculosis treatment in 2012-2014. To encourage variability in responses participants of different genders, age, occupation, and education status have been interviewed. To assure wide geographic coverage respondents were selected from seven TB cabinets in primary health care units from different districts of Yerevan city. Participants have been identified through the NTBCC database of patients. Adherent patients’ family members and outpatient health care providers were also included in the study.

Data collection

Data were collected using in-depth interviews and focus group discussions. Sixteen former DS TB patients who have successfully completed treatment were contacted through their physicians and nurses, presented with the study purpose and only after obtaining their permission the student investigator directly contacted them and interviewed them accompanied by note taking. Interviews were audio-recorded with permission of participants. One of participants refused to be audio-recorded and only written notes have been taken for that participant. Semi-structured questionnaires with open-ended questions guided the interviews. The interview guide included questions exploring predisposing, enabling and reinforcing factors for treatment adherence based on the theoretical framework. Demographic characteristics were collected during the individual interviews, since they are categorized as factors associated with adherence to anti-tuberculosis treatment. After preliminary analysis of data and identification of categories, new interview guides for follow-up individual interviews and focus group discussions were developed. To validate the study findings and to gain additional insights into the factors influencing adherence to anti-tuberculosis treatment, the student investigator conducted 2 in-depth interviews with family members of former TB patients who have successfully completed the treatment. Since data suggested that it would be helpful to gain physicians’ perspectives on factors that facilitate adherence to anti-tuberculosis treatment, another focus group discussion was conducted with health care providers from outpatient TB centers.
Data collection started in February 2015 and lasted two months. To ensure a high response rate the individual interviews have been conducted in the outpatient TB centers, at the patient’s home or in the American University of Armenia, depending on the patient’s preference. The focus group discussion with health care providers was conducted in a policlinic.

**Data analysis**

The audio-records of individual interviews were transcribed and translated into English. Deductive content analysis was utilized. Textual data have been analyzed manually and with the help of QDA Miner Lite software\(^\text{21}\). Coding bywords and meaningful phrases of responses helped to identify sub-categories and common patterns which emerged from the data. All factors that appeared to be facilitators of adherence to anti-tuberculosis medication were categorized into three major categories: predisposing, reinforcing and enabling factors. After 16 in-depth interviews saturation was achieved.

**RESULTS**

**Demographic characteristics**

Sixteen in-depth interviews have been conducted with former DS TB patients who successfully completed anti-tuberculosis treatment. The duration of interviews varied from 20 to 60 minutes. No one refused to participate in the study. Two individual interviews have been conducted with family members of former DS TB patients who successfully completed the anti-tuberculosis treatment. One focus group discussion was held with three physicians. Table 1 describes the demographic characteristics of the respondents.
**Predisposing factors**

*Knowledge of TB and TB medication*

Predisposing factors are those factors that rationalize and motivate a patient’s behavior. The majority of respondents were knowledgeable about the basics of TB disease, i.e., that TB is treatable, and it is associated with weakened immune system. Although most of the participants were satisfied with their knowledge of TB, some of their responses indicated poor awareness about TB at a basic level. In particular, some of the participants were unaware of the routes of TB transmission. Others thought that severe pneumonia can cause the disease. Some respondents correctly identified that weakened immune system might play a role in triggering the disease.

```
“Maybe TB can be transmitted through blood. I don’t think that just because of being related to other people TB will transmit. I lived with my family for the period that I have been treated from “pneumonia” [TB was diagnosed late] and in my family nothing occurred. I don’t think that if we are related with TB patient we will get the infection ”
P8, 43 y/o male

TB can be transmitted through blood, when a man in front of you is coughing the bacilli can transmit through air. I also suspect pneumonia. If it becomes complicated pneumonia can cause TB”
P7, 45 y/o male

“It is necessary to separate the plate, spoon, towel in order not to infect other people. I know this much”
P5, 68 y/o male

“I was told that because of having diabetes my immune system was weak and the disease triggered inside me”
P8, 43 y/o male
```

Most of the respondents did not know much about TB medication. That is, they did not know what type of medicine they were taking, the names of drugs or their specific purpose. An interesting common theme that came out from the interviews is that not having adequate knowledge about TB medication they were taking hasn’t hindered good adherence. Moreover, some stated that they don’t even want to know anything about the medications. Yet some participants knew that the drugs they were taking during the treatment were antibiotics.
“Frankly saying I don’t remember the names of drugs, don’t even want to remember. I was told to take drugs and I took ever thing that was given” P8, 43 y/o male

“I don’t know anything about anti-tuberculosis medication. Anyway I have taken them and now I am good” P13, 56 y/o male

“I was not interested in drugs, or in the purpose of taking a particular drug” P3, 30 y/o male

“They are antibiotics, I don't know the names” P4, 69 y/o male

On the contrary, physicians thought that patients are knowledgeable about TB and that high level of knowledge helps to adhere to treatment.

“It is not a correct opinion that people don’t have even basic knowledge about disease... Knowledge about disease influences adherence to the treatment. I mean if patient acknowledges disease, his family members acknowledge what is TB, how it is treated, what is adherence to treatment, what are the consequences of poor adherence, all these influence the process of treatment” Phys1

“The first question they ask is “will I cure, doctor?” It is the most important question for patients. We thoroughly explain what the treatment process is, we tell that everything depends on them, if they accept the regimen, receive drugs, and notify about side effects of drugs everything will be good. The information provided to them should be complete. And adherence will be there” Phys 2

Belief in effectiveness of medication

Despite not knowing much about the medicine they have been taking, all participants unanimously agreed that it had a very important role in their recovery.

“The fact is that I am cured. Of course with the help of drugs” P5, 68 y/o male
Beliefs about TB severity

Patients’ beliefs about TB severity and its treatability appeared to be important factors that influenced adherence to anti-tuberculosis treatment. The participants have acknowledged the seriousness of disease and did everything to overcome it. The majority of respondents mentioned that untreated TB will lead to irrevocable consequences and even death. One of the respondents noted that the major consequences of untreated TB were not only increased severity of disease but also possibility to infect many other people. One of the respondents mentioned that if TB is left untreated it will ruin the body.

“One if one is not taking medicine, at most after five-six months he will not be able to resist” P2, 61 y/o male

“If not treated, this disease is death, slow death. One needs the treatment to heal” P8, 43y/o male

“If left untreated disease will lead to irrevocable consequences. With time, in approximately one and one and a half years one will be isolated from this world” P12, 19 y/o male

“What will happen? First, one will infect people unintentionally. Second, disease will become complicated and one will stand at the door of death” P6, 57 y/o female

“I knew how serious TB is” P4, 69 y/o male

“You will die if you don’t treat TB. Any untreated disease will strengthen and ruin the body” P5, 68 y/o male

One participant mentioned that she is fearful by nature and she was afraid of not treating disease.
“I was very adherent because I was scared. I was coming, taking my drugs, started eating good, and gaining weight.” P1, 47 y/o female

The fear of infecting the family was another factor that influenced patients to fight the disease. The necessity to protect surrounding people from the disease motivated some of the participants to go through the treatment and successfully complete it.

“I had responsibility for my big family. I could not let the infection enter my home and harm my children” P6, 57 y/o female

“My relatives’ health was more important to me. First and foremost my family members’ health, I have a little sister, it did not want her to feel that disease…. Also I fought the disease to relate with my family or people in my surrounding” P12, 19 y/o male

From the physicians’ perspective, fear is not typical for all TB patients. They also mentioned that physicians have a major contribution to patients’ coping with this fear.

“In the beginning of the treatment patients might be afraid of infecting the family, but when we talk to patients, explain the mechanisms of infection, they calm down. This is important especially for infectious patients. Though fear to infect the family can be present throughout the treatment and facilitate adherence….One should be motivated to treat the disease. People are different [motivation is different] ” Phys 3

Trust in physicians

Respondents’ confidence and belief in physicians played important role in remaining adherent to anti-tuberculosis treatment. Belief in physicians’ professionalism helped patients to value and adhere to their
recommendations and ultimately be adherent throughout the treatment. One of the participants mentioned that trust in physicians leads to acceptance of whatever physicians told them.

“When you believe in your physician you do everything he tells. But if you are suspicious and doubt the truthfulness of his words you don’t know what is true or false and prefer not to do as he says to avoid deterioration [of health]” P6, 57 y/o female

“I mean not the shoemaker has decided the treatment course to be six months. The doctor decides about the treatment duration. That is why I came to a doctor not to shoemaker” P3, 30 y/o male

“If one visits a doctor and does not accept his medical recommendations and authority, then why he goes and disturbs him?” P5, 68 y/o male

“Although I was older than my physician, since I knew that he is a good specialist, I adhered to his recommendation. I am satisfied with the work of the policlinic physician and nurses, they have demonstrated good attitude” P4, 69 y/o male

In agreement with the opinion of participants, physicians emphasized that besides being professionals in medicine they are psychologists who build trust with patients and give confidence that patients will cure.

“...when the patient realizes that we are always next to him... we explain that the treatment is tough and we are ready to support with everything; we tell to approach us in case of questions, give them cell phone numbers at the expense of our free time. That builds trust to us. If we told “take your drugs and go away” it would be a different story. Most probably if we don’t demonstrate such attitude they won’t come for the treatment. This is important. Besides being professionals we are psychologists, we give them confidence that they will cure if they do everything as prescribed” Phys1

“We are psychologists, psychiatrists, physicians, therapist, friend, we have all these roles...they need empathy” Phis 3
**Sense of responsibility**

The majority of respondents valued the role of being conscientious and having sense of responsibility with regards to readiness to treat TB. For this group of people being conscientious was one of the most important factors that helped them to overcome disease and become a complete, healthy person.

“Anyway I acknowledged that treatment was necessary, otherwise physicians would say “take the drugs and go home”. It was necessary for me to stay in the hospital. What could I do?” [He did not have an option to choose] **P13, 56 y/o male**

“Generally I am patient and consider everything very conscientiously. Emotions are always moved back. If it is necessary, then it is necessary. The understanding that treatment is necessary and that if you want to become a complete person and overcome the situation you should pass through all of this” **P6, 57 y/o female**

“You know what, if one wants to heal he should be conscientious, if he is foolish then he won’t complete the treatment. Fortunately I was conscientious and I did what was recommended by physicians” **P10, 49 y/o male**

Physicians agreed that sense of responsibility is important and added that patients’ understanding of the importance of treatment depends on their intellectual level.

“Another factor is intellectual level of patients. People have different levels. One understands and acknowledges what he is told, another tells “I won’t take this drug, it affects me badly” **Phys 2**

“We try to raise everybody to the same level of conscientiousness: sometimes we do, sometimes we fail. It is very important for adherence. We try to change their way of thinking. It is necessary to mention that due to our efforts they become completely different people. Our work is to educate them” **Phys 3**
Reinforcing factors

Reinforcing factors are reward for particular behavior and result in its repetition. Respondents shared their experience of support they have received from healthcare providers and relatives/friends from the time of diagnosis until the end of the treatment. The majority of participants mentioned that the support they have received has played an important role in getting used to having TB and overcoming it.

Support from medical providers

One of the examples of support that patients received from medical personnel was way that their doctors let them know about their diagnosis. For all participants the way physicians told about the diagnosis was very appropriate. The providers’ attitude and behavior throughout the phases of treatment were also considered very important for their successful adherence. The majority of patients appreciated physicians’ interest in them and that they did not leave them alone with their disease. Physicians were ready to answer questions at any time. Moreover physicians’ explanation of disease and their emphasis on the importance of treatment gave the patients the power to fight the disease.

“The doctor was very good, she demonstrated very good approach, explained everything, and told that it is not the end of the world... She told in a very good manner” P1, 47 y/o female

“I would not like a physician to tell the diagnosis in another way. It is important that they told the truth, so I took it seriously” P4, 69 y/o male

“He did not tell [the diagnosis] immediately. I felt that he was trying to say in such a way as he was also caring for me and for what has happened to me. That is why I accepted disease. And believed that it is treatable” P7, 45 y/o male

“I am thankful to them [medical personnel] for having done their work very dutifully. They did what they were supposed to do” P13, 56 y/o male
“Medical personnel were influential with their recommendations. With their words that if not treated it will lead to complications. They did not force me they made good recommendations to treat” **P12, 19 y/o male**

“Every morning the doctor, was necessarily coming, asking how I am, of there are any concerns. Any second I knocked the door, I enter his room. There was not any situation when I was told to wait. Everywhere this issue was ok” **P2, 61y/o male**

Family members supported the findings about the vital role that healthcare providers play in TB patients’ coping with the disease and remaining adherent to treatment.

“Medical personnel’s support ... is very important, cheering him up, giving hope. They were careful, supportive. The doctor was very tolerant and diligent. They were giving hope, power. They were so confident when replying to questions. Physicians and nurses are very important for patients not to get disappointed, be sure that they will be cured” **FM2**

“Our physician was very good. She was calling, asking about my husband, how is he doing. Attention was always there and that helped. When we were going to the physician to take drugs, she was asking “how are you?” He was replying “very good”. The physician would say “you will be even better”. It is very important for the patient” **FM1**

Some of participants mentioned that they were afraid of not obeying their physician. These patients noted that their physician was too strict and she would not accept non-adherent behavior. This factor appeared to facilitate the adherence to anti-tuberculosis treatment for certain participants. Some physicians explained that this fear is more typical for younger patients.
“I was afraid of the doctor, dear. It was not possible to be non-adherent. I needed to accept doctor’s recommendations like a “melted butter”” P5, 68 y/o male

“My physician would not like it if a patient did not go and take the medicines for a week” P12, 19 y/o male

“Fear of physician is about young patients; maybe we ask heatedly why he did not come for medicine. But it passes. We treat them like our relatives” Phys1

Support from family members, other relatives and friends

With regards to the support provided by the family members and other relatives, some participants mentioned that none of their relatives knew about their disease. The rest of the participants mentioned that they told about it to those who were interested and came to visit them. Some supportive actions by family members mentioned by respondents included reminding the patient to take medicine, providing them with food, paying attention to them, moral support, and financial support of children who started working at an early age to make money. Physicians agreed that family members’ support is a facilitator of adherence to treatment.

“I told to everybody: “whoever is afraid, do not visit me”. My small boy was supporting me. My sister, her husband, neighbors, friends were visiting me” P2, 61 y/o male

“They [relatives] called, asked about me so I told that I was in hospital. They came to visit me. I did not call anybody to tell about disease. My mother and wife supported me during the treatment. The most important support was their reminders to take the medicine” P3, 30 y/o male

“I did not lose my hope because there were people next to me. Even if something happens there are people who stand by my family. It gave hope” P7, 45 y/o male

“Of course I was the only working man at home; my children were not working, so my relatives have supported me. My family: my daughter started working; my son left studies and started working” P8, 43 y/o male
“No one from our relatives knew about it except my family members. My wife, mother has assisted me. They were giving food on time, paying attention, cheering. If there was no such support the treatment would not be as good. Of course I acknowledge their importance” P10, 49 y/o male

“Naturally family members’ attention helps to remain adherent” Phis1

Family members felt responsibility for the treatment outcome of their relative. The factors that helped the family member to cope with disease were love, respect and positive attitude. The most influential things they did to assist their husbands to remain adherent to the treatment were support and attention to the patient’s needs.

“My love to him helped me to cope with disease. When I was alone I was feeling very bad, did not know what to do but when we were together I was pulling myself together, getting serious. And I think he was expecting me to be strong because if I was weak he would despair. That strong support is important. We did not let anything to pass through our fingers. Our power, our love, respect, positive attitude helped” FM2

“When he was in a home treatment phase I calmed down thinking that he is now before my eyes, under my control. I was thinking that I am the person who will raise him up” FM2

“The most influential thing is that we knew about the disease from the beginning and did not show our feelings to him in order for him not to feel bad” FM1

For two participants the idea of their presence at home, the respect they were getting from family members, and their role in the family were facilitating factors. They wanted to heal in order to keep leading their family. This indirect social support played a vital role for these patients to adhere to treatment.

“No one from my relatives knew. Only my boys and my wife. Who is closer than they?! Support is that from these three [family members] I am respected. In the family my word is a law, my presence is their happiness. My sons and wife do not want my death. They wanted to help me in order for me to continue heading the family” P5, 68 y/o male
“First, I coped for myself and then for my family. I value my role among people. People need me, I am very important for my family. This supported me during the treatment” P12, 19 y/o male

One of the physicians confirmed the importance of this factor as a motivator to complete the treatment. One of family members agreed and mentioned that it was the case with their family.

“It is a motivation….He needs to be healthy to be able to head his family, return to his job, and accomplish goals, live and build his life as he wants, and not to be a slave of his disease. It is a serious motivation which is very important for a patient” Phys 3

“The most important is to be with the family but to be healthy when with the family. If not healthy, who needs that? Or who do you live for, if not for children? Children need you and need you to be healthy. It was definitely an important factor in our case” FM2

“We give importance to his presence” FM1

TB associated stigma

When asked about TB associated stigma, many respondents mentioned that they have not experienced it. Nevertheless some participants mentioned that they avoided disclosing their condition to people so as not to let the disease affect their relationship.

“I did not have such difficulties. I did not even think about stigma. Let those who are worried think about it” P3, 30 y/o male

“Absolutely no issues with stigmatization” P4, 69 y/o male

“I tried to not let people know... neighbors, surrounding, I tried to not let them know. On my own, in secluded environment, I received my treatment” P1, 47 y/o female
“I was trying to avoid people. I was going to take the social package at a time when all patients have received their portion. I was coming by car, trying to quickly take my portion and escape” P5, 68 y/o male

“I tried to talk about disease with those people who would not tell about it to others. I did it in order to avoid becoming an object of assail. I tried to speak to those people who would not make the disease a reason for not offering a job or restricting me from entering their home” P7, 45 y/o male

Two participants mentioned that being diagnosed with TB was even worse than having cancer. Their perception of TB stigma pushed them to do everything to get rid of it.

“You know in the population even contacts with TB physicians are not accepted. They know that from the past TB comes as a very bad disease. We rather say that we had appendicitis? Or an ulcer but not TB. The disease as I have explained is shameful, it is better to get rid of it as soon as possible” P5, 68 y/o male

“When I knew about TB I thought I’d rather have cancer” P10, 49 y/o male

“I am guilty that such thing happened to me. But now my family and surrounding people suffer. [That is why he needed to get rid of it]” P16, 46 y/o male

Side effects of medication

The majority of respondents did not have side effects caused by medication and only two participants had side effects due to taking the medicine on an empty stomach. After learning about the correct way of taking the medicine he was able to prevent side effects, which most probably helped him to remain adherent to the treatment.

“I did not have side effects. I checked my liver because first effect of drugs is on liver, but it was ok” P4, 69 y/o male
“I did not have side effects. I did not complain for having a pain here or there. Maybe I had head ache, stomach pain, but I was thinking ‘ah, it will pass’” **P8, 43y/o male**

“If I took drugs when hungry I had some side effects. Knowing preventive measures I tried not to have such problems” **P12, 19 y/o male**

“In the beginning I had side effects because I was taking several medicines on an empty stomach” **P3, 30 y/o male**

Even though physicians did not agree with the point that there are preventive measures against serious side effects, nonetheless they stated that taking drugs after the meal could prevent some mild consequences of drugs.

“There are no preventive measures for serious side effects. Unless we have side effects we can’t have preventive measures. That is true about meal. Patients take drugs after the meal to lessen side effects. We tell about it immediately to the patients. First day we work with patients for a long time” **Phys 1**

**Enabling factors**

*Accessibility and affordability of treatment*

The environmental factors that facilitate particular behavior are categorized into enabling factors. The respondents were asked about the complexity of prescribed regimen, as well as accessibility and affordability of services received as factors that could influence their adherence to medication. All participants mentioned that drugs in hospitals and policlinics were always accessible.

“There was not any issue with access to the drugs. I have never seen anything like that” **P2, 61 y/o male**

“The drugs were always accessible” **P5, 68 y/o male**
“If one wants the treatment everything is accessible. In the ambulatory treatment I have seen her almost every
day, she gave her phone number. Any time when needed one can call her. In the hospital physician is always
there. Any question you have, you can approach her” P6, 68 y/o female

“Drugs were always accessible. I was going to the policlinic on my schedule; nurses were making injections,
giving the drugs and I was swallowing drugs there, signing in the journal. I did not have problems there” P8,
43 y/o male

Affordability of services including free of charge examinations, hospitalization and medication also emerged
as supportive factors.

“Thanks God it is free of charge and examinations are not associated with expenditures” P7, 45 y/o male

“Support was that drugs were free of charge. I haven’t paid for anything. I received the treatment” P9, 54 y/o
male

Regimen complexity

For the majority of participants the treatment regimen did not create any difficulty. For one patient receiving
medication for a long period in complex regimen was very difficult but the understanding that TB treatment could
not be delayed and that she should be cured helped her to overcome unpleasant feelings and go through the
treatment. As another patient stated the living conditions in the hospital were poor but the only solution was to
ignore it.

“Treatment regimen was ordinary. But living in the hospital was very hard. In the ward there were males. Then I
tried not to pay attention to it. I was coming every day and receiving my drugs” P1, 47 y/o female
“If somebody has decided that I need to take medicine for six months that is right. One should receive the treatment for six months. If there was one month treatment I would pass through one-month treatment. I cannot imagine the treatment to be easier than this one” P3, 30 y/o male [this patient has previous history of TB]

“Nothing disturbed me in particular, I just took capsules and received ten injections” P4, 69 y/o male

“Frankly saying during the last two-three months it was very difficult to administer those drugs. I had very unpleasant events; dizziness, nausea. Very unpleasant. But I acknowledged that I need to headland it is not that disease to say ‘That is ok, not today, I will take drugs tomorrow’” P6, 57 y/o female

According to the results of the study 11 major sub-categories were explored and characterized that are depicted in the Table 2. The table maps the factors suggested by the conceptual model that were confirmed (or not confirmed) by the study as well as those that were not originally in the model but were suggested by the study findings. The table demonstrates two possible directions of influences that the explored factors had on study participants. The factors that appeared to be facilitators has positive effect on adherence to anti-tuberculosis treatment while the factors that are suggested by the literature as barriers of adherence were hypothesized to have negative influence on adherence.

Table 2  Facilitators of adherence to TB treatment, by conceptual category

<table>
<thead>
<tr>
<th>Findings</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>In conceptual model, confirmed by data</td>
<td>Predisposing factors</td>
</tr>
<tr>
<td>- Belief in effectiveness of medication (Positive influence)</td>
<td>- Support from medical providers (Positive influence)</td>
</tr>
<tr>
<td>- Beliefs about TB severity (Positive influence)</td>
<td>- Support from family members, other relatives and friends (Positive influence)</td>
</tr>
</tbody>
</table>
In conceptual model, not confirmed by data

- Knowledge about TB and TB medication (Positive influence)
- Side effects of medication (Negative influence)
- Regimen complexity (Negative influence)

Not in conceptual model, emerged from data

- Trust in physician (Positive influence)
- Sense of responsibility (Positive influence)
- TB associated stigma (Negative influence)
- –

The category of predisposing factors suggests two new facilitators that were discovered during the interviews with former TB patients. In the category of reinforcing factors two that were hypothesized from the literature to have negative influence on adherence (TB associated stigma, side effects of medication) were found to not have hindered adherence of study participants to treatment. Finally, the category of enabling factors suggests the least number of facilitators of adherence confirmed by the study and does not reveal new ones.
DISCUSSION

This study has explored the predisposing, reinforcing and enabling factors that have facilitated adherence to anti-tuberculosis treatment in a group of former TB patients who have successfully completed DS TB treatment in Yerevan, Armenia. In order to validate and better understand the results that were obtained from TB patients, other key informants including family members and TB physicians were also interviewed. The major facilitators that were found in the study were consistent with those from the literature, nevertheless the study revealed some additional factors that have not been reported in the literature before.

The predisposing factors that were explored in our study as possible facilitators of adherence to anti-tuberculosis treatment were knowledge about TB and TB medication, belief in effectiveness of medication, TB severity, trust in physicians and sense of responsibility.

Knowledge about TB was not always a facilitating factor for our study participants, since many of them did not have even basic knowledge about TB. This finding contradicts the reports of researchers who studied adherence to DOT among TB patients in Ethiopia and China, where TB knowledge was as a facilitator of adherence. Even though majority of participants did not know what TB is and what TB medications are it hadn’t hindered their adherence to and successful completion of the treatment. On the other hand, this finding was not validated by physicians who mentioned that patients do have adequate knowledge about TB. Yet their opinions might have been influenced by their intention to protect their professional competence and verify their ability to adequately educate patients about TB.

Patients’ beliefs in the severity of their disease and the effectiveness of treatment were strong facilitators of adherence to treatment in our study. Understanding about severity of TB and being aware of its consequences if left untreated was also facilitator of adherence. Seeing the positive effects of the treatment and attributing it to the medicine they were taking, patients believed in effectiveness of the treatment thus remained adherent to it. This finding is consistent with several studies conducted on this topic. Gebremariam et al revealed that beliefs in severity and curability of disease were positive factors for adherence to the treatment, while in the study conducted
by Munro et al belief in treatment effectiveness determined confidence in medical system.\textsuperscript{22,25} The patients interviewed in our study have acknowledged possible complications of disease if left untreated, which forced them to overcome TB. For many, the fear of infecting the family member with TB was an important facilitator of adherence to anti-tuberculosis treatment.

Trust in physicians was an important factor supporting adherence to the treatment in this group of patients. Belief in physicians’ competence in performing their medical duties such as recommendations and prescription of medicine helped participants to follow physicians’ recommendations. Literature suggests that in general, trust in physician has crucial role in building credible patient-physician relationship that in its turn can influence on patient outcomes.\textsuperscript{26} The fact that knowledge about disease was not a strong facilitator of adherence could be explained by their strong beliefs in competency of their treating physicians. The latter could have been enough to assist them to overcome their disease.

Our study shows that being conscientious and responsible was one of the most important factors that determined patients’ readiness to pass through the treatment. In spite of acknowledging the role of medicine that they were taking all of participants mentioned that without their own conscientious attitude physicians would not be able to help them.

The support from healthcare providers and family members appeared to be a strong facilitator of the adherence to treatment. In fact the findings of this study were consistent with the literature.\textsuperscript{14,17,10,18} The study conducted by Jakubowiak et al indicates that social support reduces default especially among population at risk of default.\textsuperscript{14} Other studies that focused on factors leading to non-adherence of the long-lasting treatment indicate that lack of adequate social support is a determinant of default from the treatment.\textsuperscript{13,10} Another study conducted to assess the role of social support among TB patients outlines several aspects of social support, i.e. family, healthcare providers, perceived stigma, of which family support was one of the most important supportive factors.\textsuperscript{18}

In our study, the role of family members’ support was also perceived to be influential on adherence to anti-tuberculosis medication. In fact all participants in average had 4 family members in their household, were supported
at home and valued their family members’ role. Our study revealed two aspects of family support that have facilitated adherence to treatment. First, family members were an emotional, moral, and financial buttress for our participants that helped them to overcome disease. Throughout the treatment family members were always there with recommendations, reminders to take their medicine and eat. These factors were perceived by our participants as important facilitators of successful recovery from disease. This finding is consistent with the literature.18,19 Second, for male participants in particular, their perceived importance and leading role in the family was a strong facilitator of adherence to anti-tuberculosis treatment.

Even though patients had clear understanding of the strongest supportive factors they have experienced, physicians and family members highlighted their own contribution to patients’ adherence and stated that it was the most influential one. This demonstrates the subjectivity in physicians' and family member’s perceptions of their role in TB patients’ recovery.

According to the WHO report empathic relationships between physician and patient are an important determinant of adherence to treatment.10 Participants in our study valued the role of medical personnel for their encouragement to adhere to treatment. Family members were also congenial that medical personnel did have important facilitating role for their patient in remaining adherent.

Somewhat surprisingly, another factor that positively influenced adherence to anti-tuberculosis medication was patients’ fear of physicians which made patients “obey” them and complete the treatment. Patients gave complete authority to the treating physician and acknowledged that their role was to be obedient to physicians’ orders.

The literature indicates that experience of stigma hinders support and care for patients, nevertheless our study findings are mixed in this regard.19 The majority of our participants haven’t experienced stigma but those who were stigmatized did not perceive it as a barrier to treatment. On the contrary, some of them mentioned that they wanted to get rid of the disease as soon as possible because of the associated stigma.
Side effects caused by anti-tuberculosis medication have been shown to be major contributors to poor adherence to treatment.\cite{11,10,27} Only a few of our participants had side effects and those who experienced side effects stated that they either could prevent them, or did not pay attention to them. Our study team hypothesized that the absence of serious side effects in the particular group of former TB patients that we interviewed was a determinant of good adherence.

The last set of factors that has positively influenced adherence to anti-tuberculosis treatment among study participants were enabling factors. Accessibility to and affordability of health care services were perceived to be important factors for the patient. This finding was predictable, since the DOTs regimen implies the accessibility to and affordability of intensive, continuation phases for all patients.\cite{28} The literature suggests that complexity of prescribed regimen; its duration, and the variety of drugs are potential barriers of adherence to treatment.\cite{10} In contrast to the literature in our study population few participants complained about the treatment course. Participants’ understanding of the necessity of treatment has eased the process.

Our study has several limitations that should be mentioned. First, our sampling strategy, which involved identifying and contacting patients through physicians, could lead to the inclusion of those patients who experienced good support from physicians and who had no issues with accessibility and affordability of TB treatment services. At the same time, the inclusion criterion set by our research team planned to include patients for whom the treatment process was easier resulting in their adherence to the treatment. Secondly, because of the sensitivity of the research topic some questions were skipped, or answers were not given in depth. Since during the individual interviews and focus group discussions we were discussing the social support, those who were in fact supporters of former TB patients may have overestimated their role in promoting good adherence.

To our knowledge this was the first study that focused on factors that promote adherence to anti-tuberculosis treatment in Armenia. The validation of findings through individual interviews with family members and focus group discussion with physicians increased the credibility of study findings.
CONCLUSIONS

We used the PRECEDE framework to identify factors that might influence adherence to anti-tuberculosis treatment in the Armenian context. In the case of our study population, knowledge about TB and TB medication did not have a significant influence on adherence to the treatment. Among those participants who experienced side effects of medication, side effects did not appear to affect adherence to the treatment, while many patients reported that they did not experience side effects. Stigmatization of disease was not perceived an important barrier toward good adherence to treatment. Even though all participants were exposed to lengthy treatment of six months or more, in general they did not consider the treatment course to be difficult to the point where they considered abandoning treatment. The inappropriate manifestations of the factors mentioned above are strong predictors of non-adherence to the treatment according to the literature; our study of patients who successfully adhered to treatment shows that some patients are able to confront and defeat factors that lead others to default. For our study population the effect of supporting factors was apparently much stronger than the effect of barriers such as of side effects, complexity of treatment, and stigmatization.

In addition to above mentioned factors our study suggests several facilitators of adherence to anti-tuberculosis treatment. Conscientious and responsible behavior was one of the most important predictors of both adherence to and successful completion of the treatment for all participants without exception. An understanding of the severity of TB as a disease and beliefs about the effectiveness of TB medication facilitated acceptance of and adherence to the treatment. Social support in all manifestations was an important factor that helped the patients to cope with disease and overcome it. Accessibility to and affordability of TB treatment services made intention to treat and overcome TB disease possible. This study revealed patients’ best practice of accepting disease, coping with it, treating and finally overcoming it. The results of the study could serve for improvement of adherence among all TB patients by identifying the factors that are most effective in influencing adherence and promoting adherent patients’ best experience of TB treatment among other TB patients.
Even though only one enabling facilitator was suggested by the study (accessibility and affordability of treatment), the latter remains one of the crucial components of successful TB treatment delivery with the outcome of good adherence to treatment. As findings of the study indicate treatment was always accessible and affordable for study participants, this factor is clearly one of the major contributions made by NTCC in promotion of adherence to TB treatment. It is clearly very important for NTCC to ensure that this affordability and accessibility is available to all TB patients as a key step towards improving adherence to anti-tuberculosis treatment.

The study explored and characterized various predisposing and reinforcing facilitators of adherence to anti-tuberculosis treatment. Capturing them in national programs’ provision of TB treatment services could even more assist in fighting a public health concern of non-adherence to anti-tuberculosis treatment in Armenia.

RECOMMENDATIONS

By focusing on participants who have successfully completed the treatment our study emphasizes the relative effectiveness of TB treatment services in Yerevan for DS TB cases. Despite relative easiness of treatment for study participants, the study team has identified areas for strengthening efforts to prevent non-adherence among Armenian TB patients. The target audience of the study recommendations is NTBCC and MSF France who together comprise the main providers of TB treatment services in Armenia. Medical personnel should be encouraged to extensively convey to patients regarding the results of good adherence to treatment and consequences of poor adherence, which should in turn cultivate conscientiousness regarding the patient’s responsibility to successfully complete treatment. Psychological assistance is important for this vulnerable population which will focus on strengthening responsible and conscientious behavior. To ensure more effective appreciation of severity of disease and facilitation of responsible behavior, medical personnel should describe complications of disease on the individual level and demonstrate those with visual aids (for instance comparison of X-ray images of successful outcome vs. failure). Meantime, the manifestation of successful outcomes of cured patients is vital which should facilitate desire to imitate them.
Since family members are supportive elements for the patients they should be maximally involved in patient care. Our study suggests that integration of family members counseling into the patient treatment course may strengthen this important facilitator of adherence. Discussions with family members will promote a high level of understanding regarding TB patients’ needs and promote individual treatment approaches resulting in comprehensive care for the patients. During counseling sessions for patients and their family members medical personnel should be encouraged to more actively notify them about possible side effects of medication and basic measures for their prevention. The goal of these sessions is to engage family members in the treatment process which in turn will result in enhanced support from them.

To address the issue of low knowledge level about TB and TB treatment procedures among patients the study team recommends initiation of educational activities with the patients. As far as in the continuation phase of the treatment the patient is given a relative freedom with respect to treatment process, it is of vital importance from the beginning of the phase to educate the patients, explain the treatment and main procedures. During the first meeting with outpatient health care provider at the beginning of the continuation phase, in addition to the awareness-raising materials that are already available in TB cabinets, patients and their family members should be provided with educational materials on TB along with materials that describe the patient’s role and responsibilities in his or her treatment outcome and the role of family members in patient’s recovery.

Since DOTs strategy provides accessible and affordable TB treatment services, maintenance of this level would provide equal access and affordability to all TB patients.

The underlying idea of aforementioned set of recommendations is active emphasis of adherence to anti-tuberculosis treatment and delivery of the issue to each and every TB patient.
REFERENCES


TABLE

Table 1. Demographic characteristics of patient-respondents

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, Mean (range)</td>
<td>51 years (19-77)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13</td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>12</td>
</tr>
<tr>
<td>Single</td>
<td>2</td>
</tr>
<tr>
<td>Separated</td>
<td>1</td>
</tr>
<tr>
<td>Divorced</td>
<td>1</td>
</tr>
<tr>
<td>Adults living in the household, mean</td>
<td>4 people</td>
</tr>
<tr>
<td>Highest level of education</td>
<td></td>
</tr>
<tr>
<td>School (less than 10 years)</td>
<td>4</td>
</tr>
<tr>
<td>School (10 years)</td>
<td>5</td>
</tr>
<tr>
<td>Professional technical education (10-13 years)</td>
<td>2</td>
</tr>
<tr>
<td>Institute/University or higher</td>
<td>5</td>
</tr>
<tr>
<td>Type of TB</td>
<td></td>
</tr>
<tr>
<td>Sputum smear negative</td>
<td>15</td>
</tr>
<tr>
<td>Sputum smear positive</td>
<td>1</td>
</tr>
</tbody>
</table>
FIGURE

**Precede-Proceed model**

Planning phase

What can be achieved? What needs to be changed to achieve it?

<table>
<thead>
<tr>
<th>Identify the administrative &amp; financial policies needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policies, Resources, Organisation, Service or programme components</td>
</tr>
</tbody>
</table>

Identify education, skills & ecology required

<table>
<thead>
<tr>
<th>Predisposing factors</th>
</tr>
</thead>
</table>

Identify desirable outcomes:

- Behavioural
- Environmental
- Epidemiological
- Social

Impact: What are the programme's intended and unintended consequences? What are its positive and negative effects?

Process: Why are there gaps between what was planned and what is occurring? What are the relations between the components of the programme?

Outcome: Did the programme achieve its targets?

What can be learned? What can be adjusted?

Evaluation phase

Start

Finish

Hello. Thank you for agreeing to participate in the study. Your full participation in the interviews is very important to us. There is no “right” or “wrong” answers. We are interested in your opinion and feelings. Please, feel free answering and expressing your thoughts during the interview.

The interview will be confidential. Your name or participation in the in-depth interview will be secured. Your answers will be used only for research purposes. Also upon your permission we will tape record the interview to make sure not to lose any comment you will make.

Can we start and may I turn on the recorder?

Today we will talk about your TB treatment experience. I can imagine how difficult it was and I would like to understand what helped you to go through it.

1. Please tell me about what it was like to get TB and go through the treatment for it. Probes: What did it feel like to have TB before you were diagnosed? What treatment did you take? For how long? What was your experience with the treatment?

2. How would you describe your routine day during TB treatment?

3. I am interviewing you because your physician told me that you had been adherent to the TB treatment – that is, you took the medicine and followed the treatment as you were told to by your doctor. To what extent were you adherent to the TB treatment? In what ways were you not adherent?

Knowledge about TB

Now I would like to ask you some questions about your knowledge of TB and its treatment.

4. What do you know about TB? What is TB? How would you describe TB in your own words? How do you get TB?

5. If you have TB and you don’t treat it, what will happen? Probe: How will the severity of TB change if TB is not treated?
6. What do you know about anti-tuberculosis drug therapy? How important do you think anti-tuberculosis medicines are for recovery?

**Social support**

*Now I would like to talk about support you have received starting from your diagnosis till the end of the treatment.*

7. How did the doctor let you know about your diagnosis of having TB? What did you think about the way s/he told you about your diagnosis? *Probe: What would have been a better way to let you know about your diagnosis?*

8. How did you tell your relatives about your disease? Who was there to assist you during the course of treatment? What kind of support did you receive from them? How important was it for you to receive this support while undergoing the treatment? What was the support that you received from them that most helped you adhere to your treatment?

9. How influential was the role of your doctor and other medical personnel on your adherence to treatment? How did they help you adhere to your treatment?

10. What did you do when you wanted to give up and stop treatment? How did you overcome this feeling and keep going with your treatment? What or who helped you to overcome that situation?

11. What experience did you have with stigmatization of disease? How did that influence or could influence on your adherence to anti-tuberculosis treatment?

**Anti-tuberculosis treatment regimen**

*Now let’s talk a little about your experience of taking anti-tuberculosis medication.*

12. Please describe what it was like for you to take TB medications? What do you think about the complexity of the treatment? How did the complexity of the treatment influence your adherence to the treatment?
Side effects of anti-tuberculosis medication

Now I would like to talk about your experience of side effects during anti-tuberculosis treatment.

13. What was your experience with side effects during your treatment? What side effects did you have? How severe were the side effects?

14. How did you overcome the side effects? What helped you to overcome the side effects?

Accessibility to health care services

I would like to ask about how easy or difficult it was for you to get health care services during your treatment.

15. Please describe your experience with being seen by the doctors that you needed to treat you during your illness.

16. Please describe your experience with obtaining the medicine that you needed during your treatment. Probe: How did any difficulties you experienced obtaining your medicine influence your adherence to treatment?

General questions

And finally, here are some general questions about your perceptions of treatment process.

17. Please tell me what you would recommend be changed about the treatment that you received so that it would be easier for other patients like you to adhere to the treatment.

18. In general, what were other major factors that contributed to your adherence to anti-tuberculosis treatment that we did not discuss but you would like to mention?

19. Please let me know if you have any questions that you would like to ask me.

Thank you for participating in our study – your answers have been very interesting and helpful!
Հարցազրույցի ուղեցույց ՏԲ հիվանդների համար

Պատ: ______________
Օր: ______________
Ժամանակ: ______________

Բարև՝ Ձեզ:
Շնորհակալություն եմ հայտնում հետազոտությանը մասնակցելու համար:
Մեզ համար կարևոր է Ձեր ամբողջ մասնակցությունը:
Հարցման ընթացքում չեն լինի “ճիշտ” կամ “սխալ” պատասխաններ:
Մենք հետաքրքրված ենք ծանոթանալու Ձեր անձնական կարծիքի և մտքերի հետ:
Խնդրում եմ, ազատ զգացեք պատասխանելու հարցերին և արտահայտելու Ձեր կարծիքը:
Հարցումը ամբողջովին գաղտնի է:
Ձեր անունը և հարցման մասնակցությունը կմնան թաքուն:
Ձեր պատասխանները կօգտագործվեն միայն հետազոտության նպատակներով:
Միայն Ձեր համաձայնությամբ ես կձայնագրեմ հարցազրույցը որպեսզի բաց չթողնեմ որևից մեկնաբանություն որ Դուք կանեք:

Կարող ենք սկսել հարցազրույցը:
Այսօր կզրուցենք Ձեր բուժման ընթացքի մասին:
Ես կարող եմ պատկերացնել որքան բարդ է եղել բուժումը և կցանկանայի հասկանալ ինչը օգնեց Ձես անցնել այդ ամենի միջով:

1. Խնդրում եմ ասեք, ինչի՞ ն էր նման տուբերկուլոզով ախտորոշվելը և նրա բուժումը:

2. Ինչպե՞ս կնկարագրեք Ձեր առօրյան տուբերկուլոզի բուժման ընթացքում:

3. Ես անցկացնում եմ այս հարցազրույցը Ձեր հետ, որպեսզի Ձեր որպես որևէ երեխայի համար լուսավորիչ կլող լինի, ինչը կին է ոչ ու կին է տեսնեք ինչպես կարողանում են կայսերե այս հարցազրույցով:

Սովորողների վարոր գիտակցություն

Այսօր կարող եմ քերել միջոցով և սովորողների վարոր նրանն իրականացնեմ.
4. Ի՞նչ քննարկում են տուբերկուլոզի մասին: Թույլ տալու համար: Հայրենիքն ու կարմիրության ավելի Չְ declarations: Համաձայն ու համաձայն է պատասխանել միայն կարծիքի շրջանցիկ:

5. Ի՞նչ կերպով ընդունում, եթե հիվանդությունը սովորական է, և ընդունում այս գրավում: Ինչպե՞ս կնկարագրեք այն Ձեր խոսքերով:

6. Ի՞նչ կերպով հայտնաբերվում է էթությունը որպես մասին: Որոշում է երկիրը և երկիրը էթության հայտնում:

7. Համաձայն իր բժիշկի համարի, թեև այսօր մարդաբանության առաջարկության մասին: Եթե հայտնում էք թեև այսօր մարդաբանության առաջարկության մասին:

8. Եթե կերպով հայտնում են էթության մասին: Ո՞վ է գրական և պատմական դիմումը: Ո՞վ էք շնորհին իրենց հետազոտություններում են վերարտադրել այսօր մարդաբանության առաջարկության մասին:

9. Որոշում է երկիրը և երկիրը բուժեց այսօր մարդաբանության համար հետազոտություններ:

10. Եթե կերպով հայտնում են էթության մասին: Ո՞վ Էք շնորհին իրենց հետազոտություններում են վերարտադրել այսօր մարդաբանության առաջարկության մասին:

11. Եթե կերպով հայտնում են էթության մասին: Ո՞վ է նշել իրենց հետազոտություններում այսօր մարդաբանության առաջարկության մասին:
Հակատուբերկուլոզային բուժում

Այժմ զրուցենք հակատուբերկուլոզային բուժման փորձի մասին:

12. Մշակենք ինչկենսպելության, որ ծանոթանալիքով ձեզ նկարագրենք հակատուբերկուլոզային բուժումից ձեզ հակադրությունը: Ինչպես է զգալից, բուժանումները ձեզ տեղակայում են ինչպես անհրաժեշտ են կապված հակատուբերկուլոզային բուժման հետևանքների հետ:

Հակատուբերկուլոզային բուժման նպատակների բնությունը:

Այժմ զրուցենք նպատակների ձևավորման փորձի մասին:

13. Ինչպես կարգապատկերին կարող են զգալից դեղամիջոցները: Ինչպես է դեղամիջոցներին կարող են զգալ ձեզ հակադրությունը:

14. Ինչպես է առաջանալ հարաբերությունները կանխացուցակայից: Ինչպես է գալ զգալից ձեզ հակադրությունը կեցիների համար:

Առողջապահական ծառայությունների հասանելիությունը:

15. Խնդիրներ են յուրաքանչյուր փորձի վրա ինքնակարգելու հիմնականությունների բնությունը զգալից կարող են զգալ ձեզ հակադրությունը:

16. Խնդիրներ են յուրաքանչյուր փորձի վրա իհարկում կանխացուցայից ինքնակարգելու հիմնականությունների բնությունը զգալից կարող են զգալ ձեզ հակադրման հետևանքների հետ:

Ընդհանուր հարցեր

Եվ վերջապես մի քանի հարցեր դառնում են Ձեր կարիքի մասին ինքնակարգելու հիմնականությունների բնությունը:
17. Ի՞նչ փոփոխություններ կպատահեք դիպում էքսպլորերիսկի, որ դեր կիրառի, քանդեք ձեզ բուժման վերաբերյալ, որ ավելի կհեշտացնի Ձեր նման այլ հիվանդների բուժմանը հետևողական մնալը:

18. Որո՞ք էին այն հիմնական գործոնները, որոնք նպաստել են բուժման հետևողական լինելուն, որ չեն նշվել հարցազրույցի ընթացքում, բայց Դուք կցանկային նշեք: Խնդրում եմ հայտնեք ցանկացած հարց, որ Դուք կցանկային տալ:

Շնորհակալություն եմ հայտնում հետազոտության մասնակցելու համար: Ձեր պատասխաններին զգան

հետաքրքրելի է ու օժտվածություն էքսպլորերիսկի.
Interview guides for focus-group discussion with physicians

Hello, my name is Zaruhi. I am a pharmacologist and the graduate student in the Master of Public Health program in the School of Public Health at the American University of Armenia. We are conducting a research aiming at exploring major factors facilitating adherence to anti-tuberculosis treatment.

Thank you all for joining to our discussion. This discussion is important for us to validate findings we have found from our interviews with patients. During our conversation I will emphasize the most common and controversial themes that emerged from the interviews to gain your opinion.

Can we start and may I turn on the recorder?

During our study we were studying factors that have facilitated adherence to anti-tuberculosis treatment among former TB patients who have successfully completed their treatment. In scope of the interview patients’ experience regarding knowledge about TB, the social support that they received, complexity of regimen, accessibility of services, and treatment side effects have been discussed. Now I would like start from the knowledge section.

1. Majority of participants had basic understanding about TB and were satisfied with knowledge level they had. However, most patients had little to no knowledge regarding the medicines that they took. What do you think regarding how knowledge about TB may influence adherence to the treatment?

2. Participants of our study had beliefs about anti-tuberculosis medication effectiveness, such as they are cured by virtue of drugs, drugs are very important, drugs will help everybody if taken in time. These beliefs appeared to be important factors influencing adherence. How would you comment on this statement?

3. Some patients’ believe that TB is a shameful, stigmatized disease and that belief pushed them to go through the treatment to get rid of disease. According to your experience to what extent does this factor increase patients’ adherence to the treatment?

4. All the patients we have talked to understood the seriousness of TB disease and the consequences of TB if left untreated. What do you think about the role of the mentioned factor on patients’ adherence to anti-tuberculosis treatment?
5. Some of patients have mentioned about their belief in professionalism of physicians. This encouraged or convinced them to obey physicians’ recommendation regarding treatment for TB. This belief thus appears to positively influence patients’ adherence to TB treatment. What do you think about this statement?

6. We found that physicians were demonstrating interest with patients’ treatment process, they were not leaving patients locked with disease, and they were explaining importance of fighting TB. This attitude helped patients remain adherent to treatment. How would you comment on this statement and what is your experience?

7. According to our participants physicians had several strategies of telling diagnosis to the patient. Some physicians were precise, some came from the distance, and the rest was calm when telling the diagnosis in order not to confuse the patient. What do you think about these approaches and what is your approach of telling diagnosis to TB patients?

8. According to patients, family members’ actions and behaviors that supported their adherence to treatment included reminding to take medicine, providing with food, attention, and moral support, financial support from children who started to work and make money earlier children who started to work and make money. To what extent do you agree with these factors? Are there any missing factors you would like to add regarding family members’ support of patients’ adherence?

9. In our study we met an interesting response that being not infectious helped patient to cope with stigmatization. How would you comment on this statement?

10. In our study majority of participants didn’t have side effects from anti-tuberculosis medication. What is your experience or observation in this regard? How do you think this factor is associated with adherence to the treatment?

11. For all patients treatment was accessible and affordable. What is your experience or observation in this regard? To what extent do you feel that these two factors are important for adherence?

12. For some participants the treatment regimen was very ordinary and not very difficult, others faced some difficulties but tried to not pay attention on it and for the third category of participants it was very difficult
but they acknowledged necessity of treatment. What is your observation regarding this finding? What do you feel are the major challenges regarding adherence for these three groups?

13. What do you think how being coward and fear from physician can influence adherence to anti-tuberculosis treatment?

14. From previous interviews we found that participants were afraid to infect family members or other people. What do you think to what extent this feeling can improve on adherence?

15. The majority of our participants were conscious about the treatment necessity. This was important factor that improved adherence. What is your experience and observation in this regard?
Բժիշկների հետ հարցազրույցի նպատակ

Բարել Ձեզ, ես Զարուհի Գրիգորյանն եմ: Ես մասնագիտությամբ դեղագործ եմ և միաժամանակ սովորում եմ Հայաստանի ամերիկյան համալսարանի Հանրային առողջապահության բաժնի ավարտական կուրսում:

Մեր բաժինը ներկայումս իրականացնում է հետազոտություն, որի նպատակն է բացահայտել այն հիմնական գործոնները, որոնք նպաստում են հակատուբերկուլոզային բուժմանը հետևողական մնալուն:

Սնորհակալություն մեր զրույցին միանալու համար:

Այս զրույցի նպատակը հաստատել հիվանդների հետ հարցազրույցներից ստացված նախնական տվյալները:

Կարո՞ղ ենք սկսել հարցազրույցը:

Մեր հետազոտությանը բարձրացնելու միջոցով ներկայացնալով միայնակ նման իրադարձանքները, որոնք նպաստում են հակատուբերկուլոզային բուժմանը հետևողական մնալուն կարգավորմամբ:

1. Մասնակիցների մեծամասնությունը տեսնել մի տար տարի հաջողությամբ ավարտական կուրսի վերանայություն: Ունիցխակույց մասնակիցների մեկ տար տարի հաջողությամբ ավարտական կուրսի վերանայություն: Ունիցխակույց մասնակիցների մեկ տար տարի հաջողությամբ ավարտական կուրսի վերանայություն:
2. Մեր հետազոտության մասնակիցները ունեցել են հավատքներ հակատուբերկուլոզային դեղամիջոցների արդյունավետության վերաբերյալ ինչպիսիք են՝ իրենք բուժվել են դեղերի շնորհիվ, դեղերը շատ կարևոր են, և դեղերը օգնեն բոլորին եթե ընդունեն ժամանակով: Այս գործոնները կարևոր են հետևողական մնալու համար: Ինչպե՞ս կմեկնաբանեք այս միտքը:

3. Որոշ հիվանդներ կարծում են, որ առաջընթացից շարունակվեց այս հիվատկությունը, և այս հավատքը ունի այդպիսի հիվատակություն: Նրանց փորձը կարևոր է հետևողական մնալու համար: Ձեր փորձից ելնելով որքանո՞վ է այս գործոնը մեծացնում բուժման հետևողականությունը:

4. Բոլոր մասնակիցներն այս հիվանդների բուժումն ու հիվանդության վերաբերյալ հիվանդություններ: Հույն ես ես դադարեցնել զգալով բուժումն ու հիվանդության վերաբերյալ հիվանդություններ

5. Որոշ մասնակիցներ դիմել են բժիշկների առաջընթացից շարունակվող հիվատակության միջոցով իրենց հավատքը: Այս գործոնը կարևոր է հետևողական մնալու համար: Փաստացի այս հավատքը դրականորեն է ազդում հիվանդների բուժման հետևողականության վրա: Ինչ եք կարծում սրա մասին և որի է ախտորոշումը հայտնելու Ձեր մոտեցումը:

6. Հարցազրույցներից մենք գտելենք, որ բժիշկներ հատուկ մեծածավալով են հիվանդների բուժումի վերաբերյալ դիմումներ են, որոնց իրարը հիվանդանոցի պարտադիր հիվանդության հետ, բացառվում է հիվանդության համար քանի կարևոր է հիվանդության և այս հնարավորությունը: Փաստացի այս հիվանդության ուղեկցությունը չէ հիվանդության միջև հնարավորությունը: Փաստացի այս հիվանդության ուղեկցությունը չէ հիվանդության միջև հնարավորությունը:

7. Համաձայն մեր հետազոտության, բժիշկները նույնպես պահանջումներ են հագեցնել երեք տարի: Նրանց բժիշկներ հայտնել են հիվանդություններ սկսվում են, բայց բժիշկներ հայտնել են միայն մի մասը հիվանդություններ և այս հիվանդություններ ընդունել են համար: Փաստացի այս հետևողական մնալու համար, որի է ախտորոշումը հայտնելու Ձեր մոտեցումը:
8. Համաձայն մեր մասնակիցների, պատմական առաջաբանների կարգավորման աշխատության արդյունքների, գրանցման և քաղաքական ուղղությունների, մշակութային, սոցիալական ու կրթական գործունեության և կրթությունի զարգացման գործունեության, նպատակների կարգավորման գործունեության, երկրների տնտեսական և զարգացման գործունեության և որոշ այլ նպատակների: Այսպիսով, համաձայն երկու այս գործոնների հետ կարող են ստանալ ոսկրի պատրաստիկ: Ո՞ր գործոնն էր ամենակարևորը հետևողականության համար:

9. Մեր հետազոտության սահմաններում այս գործոնների հետ համաձայն, որ նպատակների շարունակության և կրթական զարգացման և ռազմական զարգացման գործունեության կարևորությունը: Ինչպե՞ս կմեկնաբանեք այս գործոնների հետ?

10. Մեր հետազոտության սահմաններում այս գործոնների կարևորությունը և այս նպատակների ներկայացուցակը այս գործունեության կարևորությունը: Երբ իրականիստ նպատակն է տալիս հանդես այս գործոնների կարևորության կարգի ներկայացուցակը:

11. Մեր հետազոտության սահմաններում այս գործոնների կարևորությունը և հանդես առնող նպատակների կարևորությունը:

12. Մեր հետազոտության սահմաններում այս գործոնների կարևորությունը և նպատակների ունեցող այս գործոնների կարևորությունը:

13. Ինչ եք կարծում ինչպե՞ս կարող են ուղևորվել այս գործոնների կարևորությունը:
14. Նախորդ հարցազրույցից մեկը գտնել ենք: Մեքենայի կամ բուժման կարևորությունը մասնակիցները վախեցել են վարակել ընտանիքը կամ այլ մարդկանց:

Ինչ եք կարծում որքանո՞վ կարող է այս զգացողությունը հետուհետ լավացնել:

15. Մասնակիցների մեծամասնությունը գիտակցում են բուժման կարևորությունը:

Սա կարևոր գործոն է եղել, որ նպաստել է հետևողական մնալուն: Ինչպիսի՞ն է Ձեր փորձը և դիտորդությունը այս հարցի վերաբերյալ:
English and Armenian versions of in depth interview guide for family members

Hello, thank you for agreeing to participate in this study. I understand that this is very sensitive topic for you and appreciate your readiness to share your feelings with us. Your full participation in the interviews is very important to us. There is no “right” or “wrong” answers. We are interested in your opinion and feelings. Please, feel free answering and expressing your thoughts during the interview.

Today we will talk about support you have demonstrated toward your family member when he/she had TB.

Can we start and may I turn on the recorder?

Let’s talk a little about the moment when you have initially heard that your family member has TB.

1. How did you react to the news that your family member has TB? How did you behave at that moment?
2. How your family member was behaving? How did you react to that behavior? What type of support have you offered then? How helpful was support for your family member at that moment?
3. What helped you to cope with the fact that your family member has TB?
4. Now looking back at that day what better way you could behave to ease your family member’s feelings?

Now we will talk about support you have demonstrated when he/she was in the intensive and ambulatory treatment phases.

5. What did you do to support your family member when in he/she was in the hospital? What do you think was important for him/her during that period?
6. What was your assistance when he/she was in home treatment?
7. Which particular steps have you taken to help him/her remain adherent to the anti-tuberculosis treatment?
8. What was the single most important thing that you did to help him remain adherent?
9. What was the single most important thing that you did to help him successfully complete his treatment?
From previous interviews with patients we have outlined several themes that we would like to share with you and have your opinion on those. Medical personnel and family members' support, as well as stigmatization of TB patients, are main topics of interest for today’s conversation.

10. We found that physicians were demonstrating interest with patients’ treatment process, they were not leaving patients locked with disease, and they were explaining importance of fighting TB. This attitude helped patients remain adherent to treatment. How would you comment on this statement and what was your family experience?

11. According to the patients that we interviewed, family members’ supportive factors were reminding to take medicine, providing with food, attention, and moral support, also financial support from children who started to work and make money earlier. Do you agree with these factors? Are there any missing factors you would like to add? Which factor was most important?

12. Some of participants mentioned that no one of their relatives’ knew that he had TB. The rest of participants mentioned that they told to those who were interested in and were visiting them. Which of these two situations occurred in your family? Which approach helped the patient to remain adherent to anti-tuberculosis treatment in your family?

13. The majority of participant did not have any stigmatization issue concerning disease. Nevertheless some participants mentioned that they avoided, did not tell people, not to make a disease a criterion. What type of stigmatization did the patient in your family experience? What type of stigmatization did you experience? What helped your family to overcome stigmatization?

14. In our study we met an interesting response that being non infectious helped patient to cope with stigmatization. How would you comment on this statement?

15. Among our participants desire to live and to be with family were two very strong factors that helped them to overcome TB. Which one occurred in your family? How would you comment on these factors?
Հարցազրույցի ուղեցույց
ՏԲ հիվանդների ընտանիքի անդամների համար

Բարև Ձեզ շնորհակալություն հետազոտությանը մասնակցելու համար:

Պատկերացնում ենք որքան նորության է Ձեր համար և գնահատում ենք Ձեր պատրաստական տվյալները կիսելու Ձեր զգացողությունները մեզ հետ:

Հարցման նպատակն է հաստատել այս հետազոտության նախնական տվյալները:

Այսօր կզրուցնենք այն օժանդակության մասին, որ Դուք ցուցաբերել եք Ձեր ընտանիքի անդամի նկատմամբ, երբ նա հիվանդ էր տուբերկուլոզով:

Մեզ համար կարևոր է Ձեր ամբողջական մասնակցությունը:

Հարցմանը տանում ենք այն նպատակով, որ մեզ կհետաքրքրվի Ձեր անձնական կարծիքի և մտքերի հետ:

Խնդրում եմ, ազատ զգացեք պատասխանելու հարցերին և արտահայտելու Ձեր կարծիքը:

Կարո՞ղ ենք սկսել հարցազրույցը:

Եկեք զրուցենք այն պահի մասին երբ առաջին անգամ իմացանք, որ Ձեր ընտանիքի անդամը հիվանդ էր տուբերկուլոզով:

1. Ինչպե՞ս արձագանքեցիք այն նորությանը որ Ձեր ընտանիքի անդամը հիվանդ է տուբերկուլոզով: Մեզ նպատակն է զգացվել Ձեր պահում իրեն և նրա հանդեպ օգնություն ցուցաբերելու: Ինչե՞ք կարծում որքանո՞վ էր կարևոր այդ օգնությունը նրա համար այս պահին:

2. Ինչպե՞ս էր Ձեր ընտանիքի անդամը պահվում իրեն: Ինչպե՞ս արձագանքեցիք նրա պահվածքին: Ինչ էք կարծում որքանո՞վ էր կարևոր այդ օգնությունը նրա համար այս պահին:

3. Ինչը օգնեց Ձեզ համակերպվել այն փաստի հետ, որ Ձեր ընտանիքի անդամը հիվանդ է տուբերկուլոզով:
4. Այժմ հետաձգվող հայացքներում նմանությամբ չի կարող զարգացրել իր փախստականությունները:

5. Այժմ եկեք զրուցենք այն որ որոշակի վնասների առյությունը նոր ցրտելիքը լր. եթե այն պատճառների շնորհիվ:

6. Այժմ եկեք զրուցենք այն որ որոշակի վնասների առյությունը նոր ցրտելիքը լր. եթե այն պատճառների շնորհիվ:

7. Այժմ ոգութենչում եկեք այն որ որոշակի վնասների առյությունը նոր ցրտելիքը լր. եթե այն պատճառների շնորհիվ:

8. Այժմ եկեք զրուցենք այն որ որոշակի վնասների առյությունը նոր ցրտելիքը լր. եթե այն պատճառների շնորհիվ:

9. Այժմ եկեք զրուցենք այն որ որոշակի վնասների առյությունը նոր ցրտելիքը լր. եթե այն պատճառների շնորհիվ:

10. Այժմ եկեք զրուցենք այն որ որոշակի վնասների առյությունը նոր ցրտելիքը լր. եթե այն պատճառների շնորհիվ: Բուժանձնակազմի օժանդակությունը, ընտանիքի օժանդակությունը, ինչպես նաև հիվանդների պիտակավորումը այսօր հիվանդների հետ ամենազարգացված բնապահանջների միջոցով մենք համարակալվում են:
11. Համաձայն մեր մասնակիցների, դրանք մտնում են համաձայն գործողությունների կարևորություններ՝ իրենց ծրագիրների, սույններ, պետականություններ, հոգևոր օգնություններ և զրահավորության պատմական օգնություններ, որից են կարևոր ծանբեր բացահայտում։ Այսինքն, համաձայն մեր մասնակիցների կողմից գտնվող գործոններն են՝ կարևոր է որպեստ իրականները, սնունդը, ուշադրությունը, հոգևոր օգնությունը և երեխաների ֆինանսական օգնությունը, որոնք շուտ են սկսել փող աշխատել։ Արդյո՞ք համաձայն եք այս գործոնների հետ՝ Կա՞րո՞ր գործոն կուզենայիք ավելացնել։ Ո՞ր գործոնն էր ամենակարևորը հետևաբար՝ Մնացած մասնակիցները ասել են, որ հայտնել են այդ բարեկամներին ովքեր շուտ են սկսել փող աշխատել։ Այսինքն, պատահել Ձեր ընտանիքում։ Ո՞ր մոտեցում է օգնել հիվանդին մնալ հետևողական Ձեր ընտանիքում։ Ի՞նչ տեսակի պիտակավորում էքս Դուք վերապրել։ Ի՞նչը է օգնել Ձեր ընտանիքին հաղթահարել պիտակավորումը։ 14. Մեր հետազոտության սահմաններում մենք հանդիպել ենք հետաքրքիր պատասխան, որ վարակիչ չլինելը օգնել է հաղթահարել պիտակավորման բարդությունները։ Ինչպե՞ս կմեկնաբանեք այս միտքը։ 15. Մեր մասնակիցների մոտ ապրելու և ընտանիքի հետ լինելու ցանկությունները երկու շատ կարևոր գործոններ են, որ օգնել են հաղթահարել տուբերկուլոզ հիվանդությունը։ Ո՞ր է ձեզ հանդիպել Ձեր ընտանիքում։ Ինչպես կմեկնաբանեք այս գործոնների վերաբերյալ։
**English and Armenian versions of demographic questionnaire for TB patients**

Sex: Male _____ Female _____

What is your age in years? __________

What is your marital status?
a. Married  
b. Divorced  
c. Separated  
d. Single  

How many adult (18 years older) people live at your house? (Include yourself) ________________

What is your highest level of education?

1. No education  
2. School (less than 10 years)  
3. School (10 years)  
4. Professional technical education (10-13 years)  
5. Institute/University or higher
Հարցվողի սեռը: Արակա Իգակա

Որքա՞նէ Ձեր տարիքը

Ինչպիսին է Ձեր ամուսնական կարգավիճակը
1.Ամուսնացած
2.Բաժանված/ամուսնալուծված
3.Այրի
4.Քանի չափահաս

Ձեր լիանապահանջը (18 տարեկան և բարձր) մարդիկ և այլն լույս տալու: (Ներառյալ Ձեզ)

Ինչպիսի է Ձեր կրթությունը:
1.Չկա կրթություն
2.Թերի միջնակարգ (10 տարի)
3.Դպրոց (10 տարի)
4.Ուսումնարան/տեխնիկում (10-13 տարի)
5.Բարձրագույն
APPENDIX B. IRB approval letter

Sarah H. Kagan PhD, RN

January 30, 2015

PRINCIPAL INVESTIGATOR: Robert McPherson, PhD
STUDENT INVESTIGATOR: Zaruhi Grigoryan
TITLE: Exploration of factors facilitating adherence to anti-tuberculosis treatment in Yerevan, Armenia
SPONSORING AGENCY: None
PROTOCOL #: AUA-2015-003

Robert McPherson, PhD, Zaruhi Grigoryan
Via Email: rmcphers@gmail.com; zaruhi_grigoryan@edu.aua.am

Dear Dr. McPherson and Ms. Grigoryan,

The above referenced protocol was reviewed and approved by the Chair of the Institutional Review Board of the American University of Armenia using the expedited procedure set forth in 45 CFR 46.110, category 6.7, on 30 January, 2015. This study will be due for continuing review on or before 30 January, 2016. Annual continuing reviews will be required for this proposal. The proposed study can proceed as it is approved by the AUA IRB. However, please note, the IRB must be kept apprised of any and all changes in the research that may have an impact on the level and type of IRB review needed for a specific proposal. You are required to notify the AUA IRB if any changes are proposed in the study that might alter its IRB status and consent procedures. New procedures that may have an impact on the risk-to-benefit ratio cannot be initiated until IRB approval has been given. Please retain this letter as documentation of the IRB’s determination regarding your proposal. Please contact me, at skagan@nursing.upenn.edu with a copy to skagan@aua.am and auairb@aua.am, should you have any questions about the information in this letter. Thank you.

Sincerely,

Sarah H. Kagan PhD, RN
Chair, AUA IRB
Adjunct Professor, AUA
Professor of Gerontological Nursing, University of Pennsylvania
APPENDIX C

English and Armenian versions of consent forms for TB patient, family members, physicians

TB patients

Title of Research Project: Exploration of factors facilitating adherence to anti-tuberculosis treatment in Yerevan, Armenia

Hello, my name is Zaruhi. I am a pharmacologist and the graduate student in the Master of Public Health program in the School of Public Health at the American University of Armenia.

We are conducting a research aiming at exploring major factors facilitating adherence to anti-tuberculosis treatment.

You and other former TB patients who successfully completed anti-tuberculosis treatment have been invited to participate in this study to assist us in expanding our understanding on factors that facilitate adherence to anti-tuberculosis treatment. You are one of fifteen former TB patients, who have been selected from National TB Control office’s database and who have successfully completed anti-tuberculosis treatment. From the list of patients successfully completed anti-tuberculosis treatment and upon physicians’ advice you have been randomly selected to participate in this study.

Your participation in this study is completely voluntary. Your participation involves only taking part in the interview. You can skip any questions you do not want to answer. You may also terminate the interview at any time. There is no penalty if you refuse to participate in this study. Your participation in the study will pose no risk or direct benefit to you. It will help us to acquire better understanding on factors that facilitate adherence to anti-tuberculosis treatment.

The interview will last approximately one hour. If you give your permission we will tape record our interview and take notes during the interview to make sure not to lose any comment you will make. Do you agree with the recording? You are free to ask to stop recording at any point during the interview. If yes, I will turn on the recorder at the start of the interview. If no, we will only take notes with your permission.

The information you provide will not be accessible to any person other than me and my advisors and will be used only for research purposes without revealing your identity. To ensure your privacy any information that could enclose your personality will be destroyed upon the completion of data collection. Notes, final report will not contain any information that could lead to identification of your identity.

In future you can contact co-investigators of this study Dr. TsovinarHarutyunyan by (060) 61 25 60, if you have any other questions regarding this study even after the interview. If you feel you have not been treated fairly or think you have been hurt by joining the study you should contact Dr. Kristina Akopyan, the Human Subject Protection Administrator of the American University of Armenia (060) 61 25 61.

Can we start and may I turn on the recorder? Before proceeding to the interview I would like to make sure that you are satisfied with the answers to questions you had. Do you have any additional question or comment? Have you received answers to all questions that have interested you?

Do you agree to participate? Thank you. If yes, shall we continue?
Հեռախոսահամարով վիրավորել հաշվետվությունը Ձեր կիրականացնենք թող հետազոտությանը սպառնում ցանկանա կենտրոնական հակատուբերկուլոզային գորշուները բաժինը Հետազոտության անձի Հետագայում Հարցազրույցը Ձեր նախկին գրասենյակի գորշուները Երևանում հիվանդներից: Գրառումներ, որոնց սահմանափակվում այս հետազոտության մասնակցությամբ եք, հանգեցնի 060 Իրազեկ այն ոչնչացվի բուժումը կամ եք հակատուբերկուլոզային ունենալու, իսկ սահմանի Այն առանց բոլոր հեռախոսահամարով մենք ինֆորմացիայից և հայաստանը գործոնների վերնագիրը գրառումներ: Հայաստանի կամ որոնք Դուք գրասենյակի գորշուները հակատուբերկուլոզային նպատակն ունենալու որոնց եք հարցազրույցի վերաբերյալ վերաբերյալ հիվանդների համար և իմ ինձ հետևյալ կամ որևէ հետազոտությանը այս հետազոտության համար միաժամանակ, տվյալների համար հառնել սպառում ցանկանա և ինֆորմատիվ համալսարանի վարկածներորոշման պատճառով մեզ և որոնք Հարությունյանին հակատուբերկուլոզային լինելու մասնակցել ես այն հակասությունը էական պահպանման տվյալների համար այս հակատուբերկուլոզային իրավունքների և տվյալների համար միաժամանակ եք: Հայաստանի կամ որոնք Դուք գրասենյակի գորշուները հակատուբերկուլոզային նպատակն ունենալու, իսկ սահմանի Այն առանց բոլոր հեռախոսահամարով մենք ինֆորմացիայից և հայաստանը գորշուների վերնագիրը գրառումներ: Հայաստանի կամ որոնք Դուք գրասենյակի գորշուները հակատուբերկուլոզային նպատակն ունենալու, իսկ սահմանի

58
Կարո՞ղ ենք սկսել: Կարո՞ղ եմ միացնել ձայնագրիչը:

Նախքան հարցազրույցը սկսելը կուզենայի համոզվել, որ Դուք բավարարված եք Ձեր հարցերի պատասխաններով:

Դուք ունե՞ք քորևէ այլ հարց:

Դուք ստացել ե՞ք պատասխաններ բոլոր այն հարցերին որ հետաքրքրում էին Ձեզ:

Համաձայներ եք մասնակցել:

Շնորհակալություն: Եթե այո, կարո՞ղ եք տես շատ ավելին:
**Consent form for family members**

**Title of Research Project:** Exploration of factors facilitating adherence to anti-tuberculosis treatment in Yerevan, Armenia

Hello, my name is Zaruhi. I am a pharmacologist and the graduate student in the Master of Public Health program in the School of Public Health at the American University of Armenia.

We are conducting a research aiming at exploring major factors facilitating adherence to anti-tuberculosis treatment.

You and other family members of former TB patients who successfully completed anti-tuberculosis treatment have been invited to participate in this study to assist us in expanding our understanding on factors that facilitate adherence to anti-tuberculosis treatment by validating findings from interviews with former TB patients. You are one of three family members of former TB patients who have been selected from National TB Control office’s database as a contact person of former TB patients. From the list of contact information of patients who have successfully completed anti-tuberculosis treatment you have been randomly selected to participate in this study.

Your participation in this study is completely voluntary. Your participation involves only taking part in the interview. You can skip any questions you do not want to answer. You may also terminate the interview at any time. There is no penalty if you refuse to participate in this study. Your participation in the study will pose no risk or direct benefit to you. It will help us to acquire better understanding on factors that facilitate adherence to anti-tuberculosis treatment.

The interview will last approximately one hour. If you give your permission I will tape record our interview and take notes during the interview to make sure not to lose any comment you will make. Do you agree with the recording? You are free to ask to stop recording at any point during the interview. If yes, I will turn on the recorder at the start of the interview. If no, I will only take notes with your permission.

The information you provide will not be accessible to any person other than me and my advisors and will be used only for research purposes without revealing your identity. To ensure your privacy any information that could enclose your personality will be destroyed upon the completion of data collection. Notes, final report will not contain any information that could lead to identification of your identity.

In future you can contact co-investigators of this study Dr. Tsovinar Harutyunyan by (060) 61 25 60, if you have any other questions regarding this study even after the interview. If you feel you have not been treated fairly or think you have been hurt by joining the study you should contact Dr. Kristina Akopyan, the Human Subject Protection Administrator of the American University of Armenia (060) 61 25 61.

Can we start and may I turn on the recorder? Before proceeding to the interview I would like to make sure that you are satisfied with the answers to questions you had. Do you have any additional question or comment? Have you received answers to all questions that have interested you? Do you agree to participate? Thank you. If yes, shall we continue?

Do you agree to participate? Thank you. If yes, shall we continue?
Գրադարանի հավասարակշռության և թեկնածության ազգանություն

Զոհերային վերաբերյալ, Հայաստանի ազգային համալսարանի իրավունքները այնպիսի պահանջների ընդունման պատճառով ընդունվել են, Հայաստան:

Այս հաշվետվությունը բնորոշում է Հայաստանի ազգային համալսարանի զարգացման և զարգացման այս ծրագիրը ընդունման պատճառով և օգնության, որ ընդունված է կառուցվածքի համար հատկացվել է հետազոտման, որի նպատակներն են մասնակցության հետազոտման ծրագրի համար հատկացվել է հետազոտման մետաղազարդում, որը նպատակների համար հատկացվել է հետազոտվողի պահանջների համար հատկացվել է հետազոտման մետաղազարդում:

Դրանց մեջ են նաև այս հետազոտման նպատակներն է: Այս անցածությանը է պահանջվել այս հետազոտման մետաղազարդում, որը ընդունված է կառուցվածքի համար հատկացվել է հետազոտման, որի նպատակներն են մասնակցության հետազոտման ծրագրի համար հատկացվել է հետազոտության մետաղազարդում:

Այս հետազոտման նպատակները նպատակներն են հետազոտության մետաղազարդում, որը ընդունված է կառուցվածքի համար հատկացվել է հետազոտության մետաղազարդում:

Ձեր մասնակցությունը պահանջվում է այս ծրագրի ընդունման համար: Այս անցածությանը է պահանջվել այս հետազոտման մետաղազարդում, որը ընդունված է կառուցվածքի համար հատկացվել է հետազոտության, որի նպատակներն են մասնակցության հետազոտման ծրագրի համար հատկացվել է հետազոտության մետաղազարդում:

Այս հետազոտության նպատակները նպատակներն են հետազոտության մետաղազարդում, որը ընդունված է կառուցվածքի համար հատկացվել է հետազոտության, որի նպատակներն են մասնակցության հետազոտման ծրագրի համար հատկացվել է հետազոտության մետաղազարդում:
Համալսարանի գիտական էթիկայի հանձնաժողովի համակարգող Քրիստինա Հակոբյանին հետևյալ հեռախոսահամարով (060) 61 25 61:

Կարո՞ղ ենք սկսել: Կարո՞ղ ենք միացնել ձայնագրիչը:

Նախքան հարցազրույցը սկսվենք, որ Դուք բավարարված եք Ձեր հարցերի պատասխաններով:

Ըստ մի կիսակետի, երբ ունենք իրավիճակ, որ վերջինիս ենթակայված են մի ցուցանիշ:

Համաձայն եք մասնակցել: Շնորհակալություն: Եթե այո, կարո՞ղ ենք շարունակել:
Title of Research Project: Exploration of factors facilitating adherence to anti-tuberculosis treatment in Yerevan, Armenia

Hello, my name is Zaruhi. I am a pharmacologist and the graduate student in the Master of Public Health program in the School of Public Health at the American University of Armenia.

We are conducting a research aiming at exploring major factors facilitating adherence to anti-tuberculosis treatment.

You and other TB patients have been invited to participate in this study to assist us in validating the preliminary findings from past interviews with former TB patients who have successfully completed and adhered to treatment.

Your participation in this study is completely voluntary. Your participation involves only taking part in the interview. You can skip any questions you do not want to answer. You may also terminate the interview at any time. There is no penalty if you refuse to participate in this study. Your participation in the study will pose no risk or direct benefit to you. It will help us to acquire better understanding on factors that facilitate adherence to anti-tuberculosis treatment.

The focus group discussion will last approximately one hour. If you give your permission we will tape record our interview and take notes during the interview to make sure not to lose any comment you will make. Do you agree with the recording? You are free to ask to stop recording at any point during the interview. If yes, I will turn on the recorder at the start of the interview. If no, we will only take notes with your permission.

The information you provide will not be accessible to any person other than me and my advisors and will be used only for research purposes without revealing your identity. To ensure your privacy any information that could enclose your personality will be destroyed upon the completion of data collection. Notes, final report will not contain any information that could lead to identification of your identity.

In future you can contact co-investigators of this study Dr. TsovinarHarutyunyan by (060) 61 25 60, if you have any other questions regarding this study even after the interview. If you feel you have not been treated fairly or think you have been hurt by joining the study you should contact Dr. Kristina Akopyan, the Human Subject Protection Administrator of the American University of Armenia (060) 61 25 61.

Can we start and may I turn on the recorder?

Before proceeding to the interview I would like to make sure that you are satisfied with the answers to questions you had. Do you have any additional question or comment? Have you received answers to all questions that have interested you?

Do you agree to participate? Thank you. If yes, shall we continue?
Գիտական հասարակածության և դերասանների համար

Հանձնաժողովը, Հայաստանի գիտական բուժում հասարակածության համար։

Այն տեղի է ունենում Հայաստանի գիտական բուժման հասարակածության կողմից, որը պահուստային է իր աշխատությունները մեծապես զարգացնելու նպատակով։

Այդ ժամանակ, այս Գիտական հասարակածության համար

Հայաստանի գրասենյակը համարվում է Հայաստանի գիտական բուժման հասարակածության մասնակիցը և այս հասարակածությունը սպառնում է տարբեր ցանցային և հետազոտության սպառան համար։

Բացիզն է հանձնաժողովը ենթակա է Հայաստանի գիտական բուժման հասարակածության համար նախագծի ու ռեժիմի մասնակիցների բացարձակ շնորհակալության համար։

Այս հանձնաժողովը համարվում է ձայնագրիչը գրվել է Հայաստանի գիտական բուժման հասարակածության համար։

Հայաստանի գիտական բուժում հասարակածության կողմից այս համարակացությանը համարվում է Հայաստանի գիտական բուժում հասարակածության համար նախագծի և ռեժիմի մասնակիցների բացարձակ շնորհակալության համար։
Ներկայումս եւ նաև համարժեքություն կատարիչներին թույլ է տրվել նախքան հարցազրույցի սկսման առաջը կպարզել, որ Դուք բավարարված եք Ձեր հարցերի պատասխաններով:

Դուք ունե՞ք որևէ այլ հարց:

Դուք ստացել եք ոչ պատասխաններ բոլոր այն հարցերին որ հետաքրքրում էին Ձեզ:

Համաձայն եք մասնակցել:

Շնորհակալություն:

Եթե այո, կարո՞ղ եք շարունակել: Այսպես այս հարցազրույցը կարող է նաև շարունակվել: 

65