

Original article:

Challenges in case finding of tuberculosis control program in Iran: A qualitative study

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Abstract

Introduction: weakness in case finding and delays in diagnosing patients with smear-positive pulmonary tuberculosis are considered as important factors in spreading disease. According to reports available in some parts of Iran, there is a long delay in diagnosing patients, and case finding level is less than the level predicted by Global Tuberculosis Control Program. Thus, this research was carried out to identify challenges of diagnosing tubercular patients in the framework of Iran's tuberculosis control program. **Methods:** Data of present qualitative study was collected through a semi-structured interview. Twenty two informants participated in the study who were selected purposefully. Data were analyzed using framework analysis method. **Results:** Seventeen subthemes under Six themes regarding challenges of case finding were identified in present study: Policy making and strategies; Human resources issues; Resource availability; Nature of the method used for case finding ;Coordination and communication and Community involvement. **Conclusions:** Prioritizing tuberculosis control program, providing special allowances for personnel working in this field, active case finding in patients with diabetes and HIV/AIDS, prisoners and homeless people, facilitating access to service-providing centers and making use of novel methods for patients education are among the items efficient on diagnosis of tubercular patients.

Keywords: Case finding; Iran tuberculosis control program; Qualitative; Tuberculosis

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Introduction

Tuberculosis is a chronic necrotic disease which infects various body organs especially lungs.¹⁻² Nowadays, in spite of all advanced medicines and diagnostic tools, it is spreading all over the world.¹⁻³ If the present controlling measures aren't strengthened, we will have more than 1 billion new tubercular infections, 150 million people with tuberculosis and 36 million deaths between 2002 and 2020. Tuberculosis is the tenth rank disease in global burden of disease which will keep its place until 2020.^{1, 3-6}

According to reports, the level of case finding in most parts of Iran is less than the optimum level determined by global tuberculosis control program.⁷⁻⁸ Not diagnosing a patient with smear-positive pulmonary tuberculosis can, in one year, infect 10 to

15 more people.⁸⁻⁹

This qualitative study was designed to understand the existing challenges in proper diagnosis of patients with tuberculosis in Iran indices.

METHODS

Design: Concerning the objective of this research which studies the challenges of case finding in tuberculosis control program and understands factors that improve the management of this program, a qualitative approach which presents some tools to study these factors and achieves deep and important insight of the informants has been taken¹⁰.

Inclusion criteria: The criteria for choosing participants were extended experience in different level of tuberculosis control program including planning, implementing and supervising. By these criteria we could identify twenty five participants.

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Sampling: We interviewed a purposive sample of twenty two informants who were identified in consultation with two authorities of health ministry, two authorities of tuberculosis control program at provincial level, one former authority and interviewees. **Interviews:** The participants were invited by letters explaining the objectives of the study and introducing the investigators, followed by phone calls. The interviews continued until data saturation happened at the twenty second interview i.e. The point at which the information that is being shared became repetitive and did not contain any new ideas, so we could reasonably become confident that the inclusion of additional participants is unlikely to give us new information. Interviews consisted of two face to face interviews with ministry authorities which were performed in ministry of health in Tehran (capital of Iran), eighteen interviews with different provincial authorities, providers and staff of tuberculosis control program in three northern Iranian provinces and two phone interviews with two authorities from other provinces. All interviews were tape recorded and transcribed, each interview lasting 50-70 minutes. In four cases, interviews were conducted in two sessions due to participants' fatigue. The interview questions were designed so that they captured experiences, opinions and beliefs of the informants regarding different aspects of tuberculosis diagnosis in Iranian's tuberculosis control program. In order to have a better understanding of the context, first three interviews conducted in depth. These helped us to prepare a suitable set of questions for semi-structured interviews. All interviews were conducted from March 2011 to Sep 2011 in Tehran and other cities of Iran.

Analysis: All interviews were transcribed into Persian while listening to the audio-tapes and simultaneously checking with the notes taken during interview. The entire transcriptions were read while listening to the audio-tape for accuracy of transcription. All these Persian transcripts were translated into English by one of the authors (M.A). However, some portions of the Persian transcripts were translated separately by other author, and some were back translated to check linguistic reliability and correctness in translation. Framework method was used for the analysis. This framework consists of five steps of familiarization, identifying a thematic framework, indexing, charting and mapping and interpretation.¹¹⁻¹² A contact and content summary form was developed for each interview during familiarization process. An initial thematic framework was developed using interviews, prior thoughts. A preliminary framework was

developed and then discussed in a series of repetitive sessions between the researchers then the thematic framework was checked against the interviews through repeating the familiarization process, then sections of data were indexed with one or more codes where necessary appropriate, then the coded text was discussed and coding was adjusted where appropriate, this process was repeated several times for all the interviews. We produced one table for each theme and assigned rows to sub-themes and columns to interviewees, then data were transferred on to the tables to produce analysis chart. We compared the views of each interviewee across different sub themes (looking across the columns) and the views of different interviewees about each sub theme (looking across rows). The relationships between sub themes and themes were also investigated. We consulted the transcribed interviews and added extracts to chart wherever necessary. The interpretation of the themes followed an iterative process similar to what explained for the indexing. The initial framework contained six themes which didn't change but sub themes changed several times during the analysis.

Ethical considerations: We asked verbal consent of all participants to take part in the study and also we asked them if we could audio record the interviews. Additionally, we ensured all participants that the data will be reported anonymously.

Results

In this research, 6 themes and 17 subthemes were identified (table 1) according to the framework method. In the following sections, some quotes are brought followed by a parenthesis in which the number next to "P" indicates a participant of whom the phrases is quoted.

Theme 1: policy-makings and strategies:

This theme examines macro policy-makings and strategies related to tuberculosis case finding process. In this regard, participants believed that tuberculosis control program is less important than other programs and its importance hasn't been explained well. For example, some participants believed that "In reporting system, where reporting side effects of vaccination is essential and important, tuberculosis program has no defined place"(P5) "Tuberculosis case finding will not succeed unless with a comprehensive national intention and attempt."(P2).

Some participants, believing in authorities good understanding of importance of tuberculosis and in their developing suitable decisions and guidelines at national level, stated that there are some structural and motivational obstacles which prevent the authorities from putting these decisions into practice:

“There is no defined position for tuberculosis physician in organizational structure.”(P3). In addition, other participants were not optimistic to retention strategies, stating: “Nobody remains in this job because they receive no special or double salary and benefits proportional to their hard work.”(P11) “The amount of money determined for every case finding is not easily payable.”(P13).

Although some actions are now being taken to improve efficiency of case finding, they are not very effective due to several reasons, some of which are, according to participants, bureaucracy and weakness in inter-section coordination: “We were not successful in finding cases in prisons, social security centers and disciplinary centers due to poor coordination.”(P2) or another participant believed other sectors do not take joint meetings seriously “In inter-sectional meetings the members don’t participate actively and don’t pursue the ratifications.”(P3)

In addition, another challenge in tuberculosis case finding is the absence of comprehensiveness in defining at-risk groups in tuberculosis program. According to one participant: “the present grouping doesn’t take most high-risk people into account and thus the chance of finding new cases decreases”(P11) or the other criticized: “Every year we have about 2500 cancerous cases, most of which undergo chemotherapy; do these people undergo tuberculosis control tests?”(P8).

Weakness in monitoring and assessing by treatment section is another problem pointed out by participants; as one of the participants believed: “No monitoring is carried out by treatment section which always works separately.”(P7) or “Tuberculosis coordinating physician has weak supervision on other pertinent units.”(P8) Other participants believed that weakness in evaluation process is due to lack of suitable feedback to units which underwent assessment. “Periodic feedback isn’t sent to physicians in private sector, physicians working in hospitals, clinics and health centres so that they can’t understand the status of tuberculosis incidence in the society and don’t take it seriously.”(P11). “No effective measure is taken to remove laboratory shortcomings”(P1).

Theme 2: Human resources issues

Another challenge mentioned by the participants was the human resources issues. Some believed that lack of suitable motivation in employees can prevent effective and appropriate cooperation; in this regard, various reasons have been proposed. “Long follow-up period combined with low allowances and possibility of catching disease discourage personnel to identify patients.”(p22).

Attitude of employees toward tuberculosis is another reason which, according to participants, can inhibit active participation of employees in tuberculosis case finding. One of the participants mentioned an interesting point here: “most physicians and personnel working in health and treatment centers view tuberculosis as an old disease which doesn’t exist anymore.”(p13). “Emphasizing the necessity of personnel’s intellectual involvement in tuberculosis program, one participant mentioned that “physicians and other employees don’t think about tuberculosis when they visit patients and when one doesn’t think of it he/she can’t diagnose patients at the initial phases.”(P19). Another problem attributable to human resources was highlighted by a participant who mentioned: “Taking sputum samples isn’t pleasant for some personnel.” (P1).

In addition to motivational issues, some executives of tuberculosis program don’t have enough knowledge and skill in this field. “Low practical ability of some personnel who examine sputum is another problem we face in this area.”(P10) and or “Most physicians have no information about tuberculosis diagnosis algorithm” (P4).

On the other hand, participants believed that only knowledge is not important in tuberculosis case finding, and it is important that this knowledge change to practice: “Our problem with some of tuberculosis authorities is that although they have enough knowledge, they behave differently in practice.”(P20). “Sputum smear test isn’t taken seriously as a main test in diagnosing tuberculosis.”(P17) “Some of our physicians use only radiography to diagnose this disease.”(P11) “Physicians in public and private sections do not observe state algorithm.”(P6).

Theme 3: Resource availability:

Like other sectors resource scarcity is a challenge affecting case finding in tuberculosis control program, as one respondent believed: “we don’t have enough experienced laboratory technicians and laboratory personnel have several duties.”(P17) In addition to resource scarcity, continuous rotation of the personnel was another obstacle: “laboratory personnel aren’t fixed thus laboratory work quality gets weak.”(P2) or “Another problem is lack of tuberculosis coordinating physician; it causes the program supervisor to change time to time and the new supervisor needs time to get familiar with the program.”(P21). Another participant stressed an interesting point in this regard: “In a health and treatment network, tuberculosis coordinating physician changes six times a year.”(P1).

Lack of equipment and vehicles was among other

shortages mentioned by participants in tuberculosis control program: “lack of equipment and vehicles overshadows tuberculosis program.”(P8). “Air conditioners don’t work in some centers; in some centers, physical area is not suitable for examining sputum sample and is dangerous for safety and security of personnel.”(P11)

Theme 4: Nature of work method:

One of the main topics extracted from participants’ viewpoints was the method which is used for case finding; this method sometimes interferes with case finding process: “Sensitivity of sputum smear for case finding is low.”(P9) Or “Patients who are thought to have tuberculosis aren’t evaluated and referred correctly and timely.”(P11). Another participant believed: “Centrifuge is not used in some laboratories; if they use it, sensitivity increases.”(P4). In addition to the above-mentioned methods, processes which are now used to diagnose disease can inhibit case finding trend: An informant believed: “quality of sputum samples sent to the laboratory is low.”(P15) “Sputum samples are sent to laboratories with a delay and thus fungus grows on them.”(P19) A participant criticized the current process by stating: “Laboratory personnel are busy, don’t dye the samples carefully and don’t spend enough time to see slides under microscope.”(P14).

Theme 5: Coordination and communications:

Another challenge recognized in tuberculosis case finding process was weakness in inter and intra organizational coordination. A participant believed that there is not a good coordination even inside the health sector. “There is not a good relationship between tuberculosis coordinating physician and tuberculosis laboratory; they don’t meet each other even once a year and their records don’t conform to each other.”(P5). Other interviewee mentioned: “Tuberculosis coordinating physician has a weak connection with a physician who works in behavioral diseases consulting center (HIV/AIDS).” (P12) or “Treatment deputies and treatment supervision center don’t interact well with health center and health isn’t supported.”(P20)

In addition to problems related to inter-section coordination, no good intra-section cooperation and interaction is observed as mentioned by an informant: “our interaction with prisons is not suitable.” (P11) Or “We don’t use the potential available in Education Department.”(P16) “We don’t have a good relationship with medical council organization.”(P13)

Theme 6: Community involvement:

The last challenge found in this field is related to

problems faced to active community involvement, which are mainly because of poor knowledge. Participants believed that some community members perceive tuberculosis as an unthinkable disease: “people consider tuberculosis as an impossible disease.”(P17). So they don’t actively participate in case finding: “when we tell them that they should give us three sputum samples, they get angry and go to another doctor.” (P14). They try to hide it: “People still view tuberculosis as a dangerous disease, try to hide it and don’t believe that tuberculosis is curable.”(P9) Sometimes, people think that health personnel aren’t trustworthy so they don’t participate in this program: “they don’t trust health personnel; they think these people aren’t reliable.”(P18) Some people even consider this disease as a stigma: “they consider it as a social stigma.”(P20).

Participants believed that the above behaviors and reactions are rooted in general and specific literacy level of people: “patient knowledge of tuberculosis is very low and they think that tuberculosis doesn’t exist anymore.”(P7).

Discussion

In this research, Policy making and strategies; Human resources issues; Resource availability; Nature of the method used for case finding; Coordination and communication and Community involvement were recognized as factors affecting case finding in tuberculosis control program. The key principle in controlling tuberculosis in high-prevalent areas is to decrease disease transfer through diagnosing and curing cases immediately.¹³ The present study showed that tubercular patients in Iran face different problems due to disease low priority, ineffectiveness of actions, vague decision making, non-comprehensiveness of at-risk groups like the homeless and people with AIDS, lack of insurance coverage and weak monitoring and evaluation. It was shown in a research that tuberculosis has increased as a result of AIDS and other factors including increased number of homeless people, injecting addicted people, and underestimating tuberculosis control programs.¹⁴ In a study, 32% of patients with tuberculosis were homeless or lived temporarily with their friends.¹⁵ In a study on HIV-infected people, only 33% of patients with smear-positive pulmonary tuberculosis were diagnosed in passive case finding;¹⁶ it’s worth mentioning that tuberculosis is the most common infection in people with HIV.¹⁷ It was shown in a qualitative study that tuberculosis control program must pay more attention to some issues like co-incidence of TB and HIV, treatment-resistant tuberculosis, comprehensive education of society,

providing services to patients with HIV/AIDS and treating the related infections.¹⁸ It is also reported that lack of health insurance can cause patients not to refer to health centers and thus can result in delay in diagnosing and finding new cases.¹⁹

Human resources working in the program were an item whose role was emphasized by participants on case finding. Inappropriate knowledge and performance of personnel, disobeying “national tuberculosis diagnosis protocol” by some physicians, employees’ low motivation for working with tuberculosis program (due to some reasons like hard work, fear of disease, low salary and benefits) and their negative attitude toward tuberculosis are among the issues examined here.

It was reported in a research that direct participation of health personnel, especially general practitioners, in tuberculosis control programs can strengthen the status of these programs in the society.²⁰ In another research, it was shown that insufficient care by health centers and general practitioners (who are mainly the first or the only people tubercular patients refer to), inappropriate application of tuberculosis diagnosis protocols, and unsuitable relationship between physicians and patients can threaten case finding.²¹ In a qualitative study, some factors including numerous references to health care centers due to weakness in diagnosing disease and low sensitivity of physicians toward tuberculosis, extra charges requested by physicians to diagnose disease are presented as the obstacles to case finding and to provide cares for tubercular patients.²²

Since 70% of population in Iran seek health care directly from private sector, this sector is one of the most important elements in diagnosing tuberculosis; however, services provided by these sections are very undesirable especially regarding delays in diagnosis and lack of registering and keeping information and records.²³⁻²⁶ Several studies have shown that public and private physicians’ awareness of tuberculosis is weak.²⁷⁻²⁹ Moreover, quality of tuberculosis management services in private sector is generally low. Lack of real public-private mix is a main obstacle to success of tuberculosis control program.³⁰⁻³¹

In their study, SaeidpourDolati et al concluded that share of health network system in diagnosing smear-positive pulmonary tuberculosis is 3.4% in Tabriz, while share of centers and offices outside health network system is 96.6%; it highlights the importance of cooperation of private sector in success of tuberculosis case finding in Iran. Reviewing various patterns of public private mix (PPM) in different parts of the world showed that PPM can both increase

treatment success rate and case finding.³²The above studies match the results of this research which emphasizes the importance of private sector role in tuberculosis case finding program.

Another challenge in tuberculosis case finding process in Iran is shortage of resources and facilities; a problem which has been emphasized in most studies. For example, in a meta-synthesis qualitative study, financial resources were determined as an effective factor in tuberculosis program.³³ Equipping laboratories with standard diagnostic facilities can improve diagnosis quality; allocating a suitable physical area, improving personnel’s security conditions and making use of effective and useful air conditioners and safety systems encourage employees to work in tuberculosis sections.

Other issues which affect tuberculosis case finding process are the methods used in patients’ diagnosis process. It was recognized in a study that delay in diagnosing patients in tuberculosis control program is a result of inflexible and tough processes.³⁴ Reviewing diagnostic methods, preparing sputum sample and sending it to the laboratory, correct staining, allocating enough time to examine slide under microscope, controlling the quality of sputum smear slide continuously through random selection, improving higher access to more advanced diagnostic laboratory techniques, increasing sputum culture facilities and making use of centrifugal method increase sensitivity and specificity of methods used in case finding process.

Other aspect identified in this qualitative research was “coordination” issue. It was reported in a research that some issues like relations between different health service sections must be taken into account in tuberculosis control program.¹⁹ Strengthening good relationships between laboratory personnel and tuberculosis coordinators, holding inter and intra-section meetings, organizing tuberculosis technical committee and following committee ratifications are some of the ways to improve case finding trend.

Issues related to awareness, attitude and performance of people toward tuberculosis are another effective factors in case finding.

In a research, removing disease stigma, support and motivation were considered the factors affecting tuberculosis control program.³³ Gender, age and low knowledge are the factors that cause delays in referring to health care units.³⁵⁻³⁶ Different studies have shown that the less people know about disease symptoms, its transfer ways and its control methods, the more tuberculosis will appear in the society.³⁷⁻³⁹ Vandvalv et al showed in Tanzania that only 30% of

people who died from tuberculosis were aware of this disease.⁴⁰ A study in Vietnam showed that awareness of disease caused early diagnosis and also increased success rate. They showed in their study that more than 90% of patients who were diagnosed early had high awareness of tuberculosis (70%).⁴¹

Limitations

The findings of this study may not be generalizable, although this was not our aim. We did not focus enough on any of health services provision level (macro, meso, micro) because of study limitations, if we could focus more on these levels better understanding could be achieved and more barriers and facilitators of case finding in tuberculosis control program could be identified.

Conclusions

Present study indicated that Iran’s tuberculosis control program performance regarding case finding is influenced by various factors mentioned in the previous section. The mentioned subjects must be considered as interrelated chains. Hence, overcoming the barriers in each of chains is the necessary condition for success of case finding and for achieving

the predicted targets. Improving the relationship between physician and patient, paying enough attention to tuberculosis treatment and diagnostic protocol in public and private health centers, training physicians, nurses, experts and personnel (who are in charge of testing sputum) continuously, submitting reports about tuberculosis incidence to physicians and employees who work in public and private health centers, reviewing patients’ diagnostic process precisely and completely and removing probable shortcomings, making diagnostic methods flexible, active case finding in high-risk patients such as people who have been at tuberculosis exposure, prisoners with HIV/AIDS, patients with diabetes, renal and dialysis patients, increasing the salary of employees working in tuberculosis section, paying some benefits to them and continuous and serious attempts to increase patients’ knowledge of nature of disease and treatment methods are considered the main elements in controlling disease.

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Table 1. Challenges of tuberculosis case finding in Iran.

No.	Themes	Subthemes	Suggested solutions
1	Policy-making and strategies	1- Disease priority	1- Rising sensitivity and paying special attention to reporting system in tuberculosis program 2- Assuring decision implementation 3- Changes in executive trend of educational programs and making use of provincial and national media 4- Suitable and rapid feedback to experts’ supervision results 5- Active case finding in patients with AIDS, diabetes and renal failure and homeless patients
		2- Applicability and decision-making uncertainties	
		3- Efficiency measures	
		4- Monitoring & evaluation	
		5- Comprehensiveness of at-risk groups	
2	Human resources	1- Motivational factors	1- Assigning special allowances for personnel working in tuberculosis 2- Making use of new educational methods to improve awareness of health and treatment personnel 3- Designing a suitable method to make physicians obey national protocol for tuberculosis prevention 4- Informing physicians of tuberculosis status quo in Iran
		2- Attitudinal factors	
		3- Performance factors	
		4- Awareness factors	
3	Resource availability	1- Human resources	1- Having specific tuberculosis coordinating physician and laboratory personnel 2- Providing sputum culture facilities in the cities and adequate ventilation in the lab 3- Properevaluation of suspected people to TB
		2- Physical resources	
4	Nature of the method used for case finding	1-Process	1- Providing appropriate and high quality sputum samples 2- Devote enough time to check sputum smears slides under a microscope 4- Laboratory use of standard colours for dyeing 1- Suitable cooperation between tuberculosis coordinating physician and laboratory personnel
		2-laboratory diagnostic tests	
5	Coordination and communications	1- Inter-section coordination	2- Suitable interaction and cooperation between health deputy and treatment deputy 3- Establishing relationships between prison organizations and education department
		2- intra-section coordination	
6	Community involvement	1- Cultural-attitudinal	1- Attempts to remove disreputability of tuberculosis 2- Educating the society and improving awareness of patients, their families and friends
		2- Awareness	

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