Obstacles of ending TB: What does health system think?

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Abstract

Background: Despite the importance of Tuberculosis (TB) control program and elimination of disease as its target, only a few studies have been carried out to evaluate tuberculosis control in Iran. In the present study, we intended to ask the opinions from experts and managers of Iran University of Medical Sciences about the TB control program in Iran.

Methods: A Qualitative study was carried out to determine experts' and managers' opinions about the national TB control program. Experts and stakeholders were listed for focus group discussions (FGD) and interviews using purposive sampling method. We interviewed all levels of staff involved in the tuberculosis control program (managers, physicians, and administrative and executive staffs). Three FGD sessions were held with 28 participants. The participants were excluded if they had less than six months of experience in TB program. FGD and interviews were manually coded and the themes and sub-themes were extracted. After analyzing the results, the final report was drafted.

Results: The results were classified into four themes and 15 subthemes (6 in input, 3 in process, 2 in outputs, and 4 in outcome). There were positive points and problems in each part. To achieve the goal of End TB, we will need to review the process, incorporate with other sectors, apply new diagnostic methods, and participate with other stakeholders (internal and external).

Conclusion: Because of the effects of socio-economic factors on tuberculosis, considering the current implementation of the program; it is not possible to eliminate tuberculosis.

Introduction

Tuberculosis is one of the first ten causes of death worldwide, which led to 1.7 million deaths in 2016 (1), and according to DALY, it has been estimated that no change will occur until 2020 (2). Forecast of the results shows a growing trend of Tuberculosis (TB) cases in Iran (3). The incidence of smear-positive tuberculosis and all forms of TB cases has been a rising trend over the period between 2005 and 2012 in Iran (4).

In 2014, the World Health Organization proposed the strategy of elimination of tuberculosis by 2050 (5).

TB elimination has been defined as a decline in TB cases to less than one case per million populations (6). The strategy aims to termination of the global TB epidemic, with targets to reduce TB deaths by 95% and to cut new cases by 90% between 2015 and 2035, and to make sure that no household is troubled with disastrous expenses because of TB (7). There are limited studies to evaluate the TB control program at the national level (8). In one qualitative study in 2012, the participants' experiences showed that weaknesses in the processes of the TB control program in Iran, such as diagnosis and treatment, TB reporting system, acceptance of doctors from the National TB protocol program, the public education, and so on are obvious (9). The TB control programs in Iran University of Medical Sciences and also other universities in the country include an effective structure for diagnosis (sputum smear with light microscope) and Directly Observed Treatment Short course (DOTS) treatment that is currently being run in two district health centers and five health networks.

Despite the importance of the TB control program and the target of elimination, only a few studies have been carried out regarding the evaluation of tuberculosis control and problems of its implementation in Iran. In the current study, we planned to ask experts' and managers' opinion affiliated to Iran University of Medical Sciences about the TB control program in Iran.

Methods

Research team and reflexivity

Four researchers (H.S, S.B, P.P, and R.Z) had experience in TB program in different levels of health system. Two researchers (G.S and G.M) were experts in qualitative research method. H.S and S.B conducted the interviews and FGDs were coordinated by H.S, S.B, P.P, and G.M.

Study design

A qualitative method was used to get deep information from participants about the opinions regarding national TB control program. Since our study was based on the logic framework (Input, Process, Output, Outcome), thematic analysis was used to analyze the data.

Participant selection

Purposive sampling with maximum variation was selected. In the study, 28 participants who worked in the TB program, including physicians, health care providers, managers, and experts, were recruited from the Deputy of Health at Iran University of Medical Sciences. They had worked at various levels of TB program. The approach of interviews in FGD was face-to-face. The main inclusion criteria was having experience in TB program for a minimum of six months. Nobody was dropped out of the study. Sampling process continued until data saturation.

Setting

A total of seven individual interviews were conducted in participants' workplace after setting an appointment with them and three focus groups were held at the Deputy of Health. Demographic data of 28 participants are provided in Table 1.

Data collection tools

In-depth, semi-structured individual and group interviews were conducted. The interview guide questions were developed based on literature review. Pilot interviews were conducted with three TB professionals, and the deficiencies of interview guide were resolved in the research team.

The duration of the interviews varied from 25 to 65 min and the focus groups discussion took between 90 to 120 min. After conducting each of the interviews, the recorded audio files were transcribed verbatim, and then an initial analysis of their content was performed to provide a guide for continuing the data collection and analysis process.

Data analysis
The process of data analysis was done during the data collection and the thematic analysis was used to analyze the data as a qualitative descriptive method. Then, the analysis in the study focused on what the participants stated about the challenges of TB control program in Iran. Three researchers (H.S, S.B, and R.Z) performed the process of data coding. Main themes were based on the logical framework and sub-themes were derived from the data as shown in Figure 1.

Trustworthiness
Two researchers and qualitative study experts verified the credibility of the data by controlling the research process. Interview texts with the initial codes extracted were sent to the participants so as to comment on their authenticity and to enhance the transferability of the extracted data. We interviewed all levels of staff involved in the tuberculosis control program (Managers, physicians, and administrative and executive staffs), ensuring the conformability of the data.

Ethical Consideration
Prior to the interviews, the participants were informed about the aims of the study and their right to withdraw from the study at any time. Also, ethical approval for this protocol was granted by IUMS research Ethics Committee.

Results
In the present study, we tried to assess the opinions of TB experts and managers about national TB control program and the process of implementation in the framework of four themes (input, process, outputs, and results) and 15 subthemes shown in Figure1.
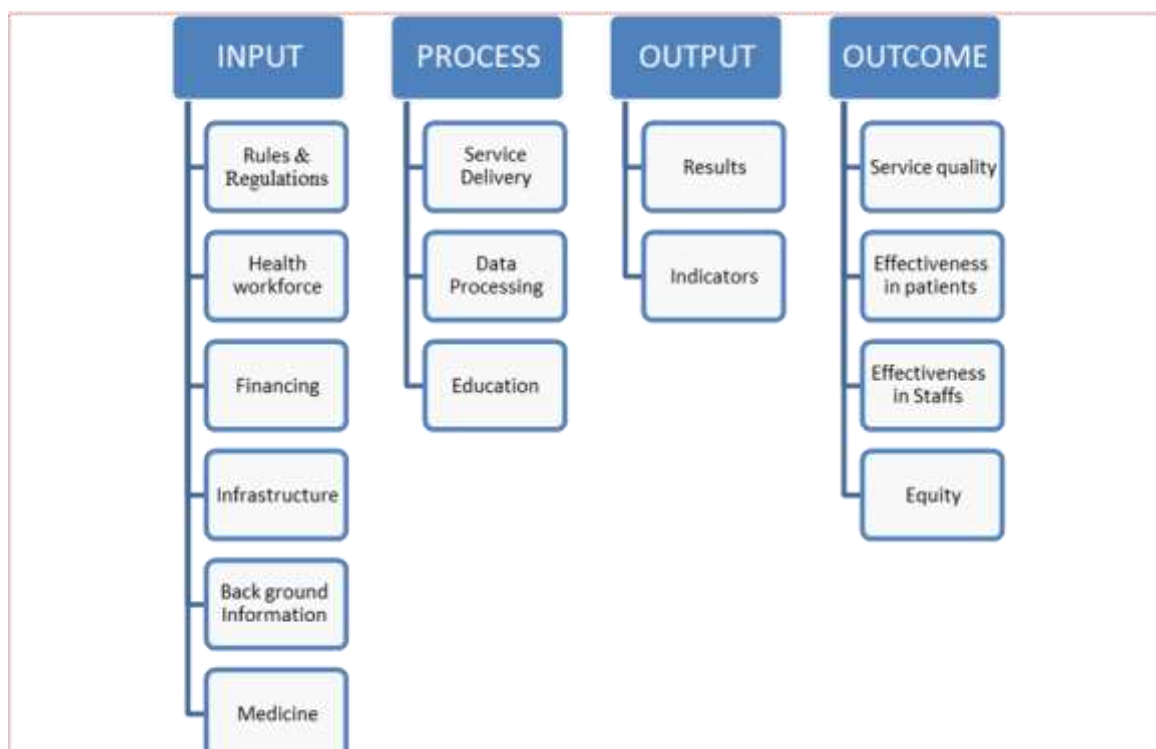

Figure1. Conceptual framework of the study

Input

Input was evaluated in the following categories and suggested comments for improving input are in Table 2.

a. Rules and Regulations

Less intersectional collaboration, an inappropriate relationship with the private sector, and dependency of the program on the health sector were structural problems which are effective on the TB control program. One of the comments was: "Why TB program is not a university program? Why is it just Health Affair's program? This proves that TB is not a top priority in the country." (p 15)

Other issues mentioned included lack of attention to screening and follow-up in health reform, less attention to underlying issues of tuberculosis, not regarded as a priority at the macro level, and lack of special programs for the marginalized population add to the complexity of the problem.

b. Health Workforces

Health Workforce was discussed in two parts: health staffs and volunteers. Although committed staffs and improving Health Workforce in health reform were raised as positive points in the TB program, participants believed that there were problems such as deficit of experienced human resources, changing staffs, low awareness and inappropriate training of personnel, lack of financial incentive for employees in this sector, and disproportion between the workload and equipment, space, and staffs, especially in the labs.

Comments about delivering all services by one staff were different and some believed that delivery of all services by a health care provider will be preferred because of comprehensiveness. This opinion increased as the participants' administrative hierarchy increased. However, most participants emphasized that the current personnel training situation is not suitable.

"In the developed world, they work with fewer personnel because of system efficiency. We must use the proper selection of employees, appropriate training, and development of appropriate job description".

Most of the participants believed that the methods of employing and training and tasks assigned to volunteers are not appropriate currently. Items such as volunteers' lack of motivation and proper training as well as lack of Afghan volunteers compounded the problems. Lack of feedback to volunteers was also mentioned as a reason. One of the recommendations in the selection of volunteers was: "We should find the relationship (key informants)." (p1)

c. Financing

Participants believed that the low cost of implementation and partially suitable resources of the TB control program were positive points. Improving resource in Health Reform (10) implemented in Iran's health system since 2015 has eliminated part of the problem but there are some shortages and problems in the efficient use of existing resources; for example, budget allocation to control TB without consulting with the tuberculosis experts added the problems. One of the participants stated: "We waste financial resources and technology." (p15)

d. Infrastructures

Infrastructure was discussed in two parts: equipment and building. Participants believed that now equipment is appropriate but we need to use new. Buying inappropriate equipment without consulting with experts and the shortage of cars to transport sputum samples were raised as problems. Also, the poor quality of the purchased equipment was discussed, like the following sentence: "Fan's sound is like the helicopter and actually it doesn't work." (p1)

According to Health Reform, a new reconstruction has been carried out in some health centers but fewer health centers in some districts which provide TB control services, inappropriate participation of private in the program, and improper ventilation of physician room were raised by the participants.

Table 1. Demographic characteristics of the study participants

Characteristics		Number
Gender	Male	12
	Female	16
Education	Bachelor	10
	Master	1
	MD	13
	PhD	4
Work level	Manager	4
	Experts	24

Table 2. Some comments by participants on the input

Comments on the input
Intersectional collaboration at the national level
Assignment of follow-up actions to health care providers at the health post
Memorandum of understanding with the private sector in diagnostic procedures
Set TB as one of the priorities at the macro level
Use incentives to keep staffs
Decrease changing in staffs
Increase system efficiency with proper training of staff
Feedback to volunteers
Change in current training
Change in process of choosing volunteers
Specific cars for transporting sputum samples in every health network
Psychological counseling for patients
Coordination with Social Welfare or Relief Committee
Self-care education to people
Drug delivery at an appropriate time (notice expiration date)
Proper use of the TB information system for delivering TB drugs to health centers appropriately

Table 3. Some comments by participants about the process

Comments on the Process
Good cooperation between departments in implementing programs such as silicosis and tuberculosis programs
Re-engineering the whole process
Revised program and continuous improvement processes
Cooperation with Welfare and Education ministries
Improving TB surveillance system and sampling of elderly care centers or clinics for AIDS
Sensitization executive managers at all levels
Upgrading paper Recording and reporting system to an electronic system without paper
Increasing the quality of sampling
Weighting to activities according to difficulty and time required in the SIB system
Update training and education methods (for example use of social networks and video games)
TB must be part of Country and health system priorities
Integrating TB training in codified and non-codified courses
The use of mass media and education at the macro level
Campaign
Providing Calendar training programs for health workers

Table 4. Some comments by participants on the output and outcome

Comments on the output
Increasing case finding in Health Centers
Increasing trained staffs in the new health centers and posts
Education, campaign, visiting high-risk areas
To introduce internal and external stakeholders with benefits of the program to increase participation
Contributions with specialists and private sector

Comments on the outcome
Need to change the program implementation and review processes
Providing training and opportunity for experts
Training of Commitment to staffs
Targeted levels of education
Improved patient education, for example by sending educational messages
Finding Reasons for noncompliance
Changing of case-finding methods
Increasing intersectional and sectional cooperation

e. Background information on the TB control program

Full implementation of the TB program and complete indicators and certain cure for tuberculosis was positive points raised by the participants. The need for collective work, lack of awareness about the disease, long treatment duration of tuberculosis, lack of attention to the underlying issues, and stigma about TB disease had been raised as problems affecting on the TB control program. Also, due to the social component of TB disease and the correlation with poverty, some patients have financial, psychological, and family problems including the need to help with housing and feeding. Lack of awareness about self-care and social stigma associated with TB also add to the patients' problems, although some patients have good and adequate health literacy, and even in high-risk groups, good cooperation was observed after training.

f. Medicine

Providing free drugs and health care under the direct supervision was positive points of the program but problems such as drug delivery at an inappropriate time and delivery of TB drugs with close to expiration dates to the Department of Health were also raised.

Process

The process was evaluated in the following categories:

a. Service delivery

Items like treatment and follow-up care in health centers and good cooperation with the Headquarters Centers for Disease and Control were mentioned as the positive points. Problem in case identification, lack of active surveillance, the weakening in follow-up of the treated patients, poorly defined processes, establishing priorities before re-engineering, parallel work in different units, for example inappropriate and ineffective communication between tuberculosis programs and programs of occupational medicine, design flow regardless of its performance indicators, absence of an appropriate checklist and feedback for the program implementation and poor coordination between health and treatment sectors were discussed as problems. Other issues were compromising the quality of work and staffs dissatisfaction due to the increasing workload and deficiency of lab staffs. Items such as inappropriate process of sending samples and patient's information aggravate these issues.

Suggested comments to improve service delivery are given in Table 3 below.

b. Data processing

Although a comprehensive system of registration of tuberculosis and a complete record of patient information indicators are positive points, the problem in communication and improper use of the

registration for delivering TB drugs to treatment centers were introduced by participants, too. Lack of attention to activities such as follow-up and patient's education on integrated health information system (SIB system) was another point raised by participants.

c. Education

Participants believed that despite efforts in education, the current educational methods and practices need more energy and are not able to meet our needs.

In addition, problems such as inadequate public education about TB, low attention to TB education by all health care sectors, restricting the hours of staffs training, lack of practical public training in health centers, poor information in public and private sectors, inadequate training in pre-service courses, private sector, and the industrial sector, the need for frequent training in professional health experts and physicians who work in central and peripheral levels, as well as including practical training for lab experts were proposed. Also, they mentioned that educational contents on media about TB are very low and the education of TB in the general population requires changing in conventional teaching methods and focusing on new educational technology. Some suggestions are given in Table 3.

Output

In the output, results and indicators were discussed. Participants stated that despite shortage of resources, many works have been done and the trend is improving but expectations have not been met. There are issues such as weak surveillance and lack of contribution to other stakeholders and the fact that the process is not clear for people . The TB control program measures of Iran University of Medical Sciences changed in 2015, as compared to the past, but the goals are not achieved yet, because only part of the measures is related to the health sector and improvement requires participation of other stakeholders (internal and external), too. Suggested comments are in provided in Table 4.

Outcome

The results were evaluated in several categories of consequence, service quality and effectiveness in patients and staffs. There is a growing trend in the TB program outcome, but comprehensive evaluation of the TB control program is not carried out in Tehran. All of the participants believed that considering the current implementation of the program, it is not possible to eliminate tuberculosis and to achieve this purpose, what is needed is changes in the program implementation as well as review processes.

Relative satisfaction of staffs due to increased case finding, and changing TB experts and physician's opinions with training were raised as positive points. On the other hand, lack of proper planning and traditional methods in the training of staffs were mentioned as items that need to be improved.

Participants said that existence of resistant TB cases and inappropriate case finding show that the TB control program in patients is not effective. Items such as low awareness and compliance to treatment among patients, improper tracking of patient's family, and inadequate case finding were mentioned as reasons for this ineffectiveness.

Discussion

Since the systematic evaluation and improvement program leads to upgrading and improving the performance of the TB control program (11) and TB program evaluation needs to involve the various stakeholders (12), in the present study, as a first step, comments of some of the stakeholders are discussed in four main categories: input, process, outcomes, and impacts.

The low cost of implementing program, and partially suitable resources of The TB control program are positive points. Less intersectional collaboration, inappropriate relationship with the private sector and dependency of the program on the health sector, deficiency of awareness about the

disease, long treatment duration of tuberculosis, lack of attention to the underlying issues, and stigma about TB disease were raised as problems affecting the TB control program. The majority of participants believed that the inappropriate use of available resources and priorities more than lack of resources leads to these problems, so for better TB control, it is necessary to revise the use of resources and use the potential of other sectors, including the private sector. In Khanjani et al. study, also, the lack of access to additional diagnostic tests was listed as a resource problem (9).

As well as a previous study (9), the social component of TB disease, correlation with poverty, social stigma, and financial, psychological and family problems including the need for help in housing and feeding, were emphasized. However, in our study, some of the interviewees believed that by raising awareness in some areas, the stigma of TB decreased. A review showed that under observed treatment had significant effects on the improvement of compliance and reduced drug resistance, but despite appropriate treatment, some of the patients did not complete their treatment (13) and more resistant cases of TB occurred in patients with failure in treatment or relapse (14), so it is important to encourage patients to observe proper treatment regimen.

In a study by Khanjani et al., there was a lack of priority of the TB program in the country and non-urgent TB Reporting System was mentioned as the reason. Independence of Health and Treatment Department in the private physician's offices and private laboratories monitoring and lack of feedback were mentioned either (9). In another study, conducted in South East Asian countries, items such as the existence of parallel systems, lack of specific incentives, and lack of participation by private providers were mentioned as negative points of tuberculosis program (15).

Shadpour believed that overlap functions, lack of intersectional and sectional coordination, and involving staff in administrative tasks instead of monitoring and planning are problems of the health system (16). Lack of coordination was also mentioned by Rashidian as a challenge in health systems (17). Examples on this issue were expressed by the study participants. So, TB program needs to emphasize more at the macro level and future revisions should pay more attention to the cooperation with other relevant agencies such as the Social Welfare and Relief Committee.

In a previous study, items such as the deficiency of experienced staff, high workload and improper payments in this section and staff's fear of TB disease were mentioned and our findings were consistent with these findings (9).

Shadpour believed that the health system cannot attract or maintain the experienced workforce, that we think is correct also about the TB control program (16); thus, maintenance of experienced and trained staff and training of volunteers should be considered in the TB program.

Participants believed that by the current implementation of the program, the goals will not be achieved and we need to review the program and continue improvement processes and use new diagnostic methods to End TB. A study conducted in Alberta showed that overcoming the challenges of eliminating TB requires new models of patient-centered care, especially in areas with a low incidence (18). Another study in Pakistan slums showed that involving the private sector increases smear-positive TB case detection through active surveillance (19). Moreover, another study showed that household active screening in areas with high prevalence of TB and HIV, especially in children under 5 years, has high returns (20).

The existence of surveillance and accurate data sources is essential for planning, implementation, and evaluation of TB program (21); Therefore, existence of a

comprehensive system of registration, indicators, the complete record, and the implementation of treatment and follow-up at health centers were mentioned as the strengths of the TB program in our study. Although, making use of a new electronic tool can make TB registration system more effective, Falzon et al. stated that e-health interventions are used less than what they should; they can be used to improve patient care, monitoring (improving reporting), management, and e-learning programs for patients (5).

A study in Nigeria showed that increasing employees' knowledge about TB improves disease control measures (22). In another study, information about TB and services provided to population was associated with improved detection of TB cases (23) and awareness assessment of residents of an area with high burden of tuberculosis in China showed that most people did not have enough information about tuberculosis (24). Also, other studies have shown that education of patients and their caregivers increase their awareness about the transmission and prevention of the disease and completion of treatment regimen (25, 26), Teaching staff or patients and general population has an important role that was mentioned by participants in our study, too. However, the participants believed that despite efforts in education, the program is not clear for people and they have little information about the TB control program.

Although the relative satisfaction of experts due to increased case finding was mentioned as a positive point, it seems that TB experts are still away from their primary task that is the assessment of situation and indicators, and planning based on priorities. Participants also stated that although existence of drug-resistant TB cases indicate lack of proper efficacy of program in patients, improvements in other indicators cannot be achieved only by efforts of TB experts and physician and quality of the TB control program is dependent on the whole health teamwork.

They also pointed out that items such as lack of coordination within and outside health sector and referring more patients to the private sector, contribute to the problem. A study conducted in Delhi showed that informing employees of private clinics, sensitization, and providing guidelines resulted in significant improvement of reports of tuberculosis in private sector (27). Another study in China showed that educating patients and improving treatment programs of TB can reduce admission fees for TB patients (28). So, more attention should be given to the participation of the private sector through new educational methods and providing guideline.

Unfortunately, we only discussed opinions of health professionals who were involved in the TB control program and limitations of our study include lack of discussions and interviews with patients, physicians, the private sector, and other stakeholders. It is suggested that future studies be performed to evaluate views from private sector, policymakers, and patients about the TB control program.

Also, evaluation of problems, reasons of non-compliance to treatment, quality and completeness of the Electronic Patient Record System and new methods of TB electronic registration (including texting patients or caregivers) should be considered.

As suggested in previous studies and in our study, because of the effects of socio-economic factors on tuberculosis, the TB control requires external cooperation with other sectors outside the health system. This does not mean that the performance of the health system and implementation of the TB control program has been problem-free and cannot be improved. As mentioned above, to achieve the goal of End TB, we will need to review the process and continuous improvement of processes and incorporate with other sectors and apply new diagnostic methods. Therefore, we must use different parts of the external and internal organizational capacities.

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