

Knowledge and perceptions of national and provincial tuberculosis control programme managers in Pakistan about the WHO Stop TB strategy: a qualitative study

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Abstract

Objective: To understand how national and provincial tuberculosis programme managers in Pakistan perceive and engage with the Stop TB strategy, its strengths, weaknesses and their experience in its implementation. National and provincial tuberculosis programme managers play an important role in effective implementation of the Stop TB strategy.

Design: A qualitative interview study was conducted with 10 national and provincial tuberculosis programme managers to understand how they perceive and engage with the Stop TB strategy, its strengths, weaknesses and their experience in its implementation. Managers were selected purposively; 10 managers were interviewed (six national staff and four from provincial level).

Participants: National and provincial tuberculosis programme managers in Pakistan. Managers were selected purposively; 10 managers were interviewed (six national staff and four from provincial level).

Setting: National and provincial tuberculosis programmes in Pakistan

Main outcome measures: 1. Knowledge and perceptions of national and provincial tuberculosis programme managers about the Stop TB strategy 2. Progress in implementing the strategy in Pakistan 3. Significant success factors 4. Significant implementation challenges 5. Lessons learnt to scale up successful implementation.

Results: The managers reported that most progress had been made in extending DOTS, health systems strengthening, public-private mixed interventions, MDR-TB care and TB/HIV care. The four factors that contributed significantly to progress were the availability of DOTS services, the public-private partnership approach, comprehensive guidance for TB control and government and donor commitment to TB control.

Conclusion: This study identified three main challenges as perceived by national and provincial tuberculosis programme managers in terms of implementing the Stop TB strategy: 1. Inadequate political commitment, 2. Issue pertaining to prioritisation of certain components in the TB strategy over others due to external influences and 3. Limitations in the overall health system. To improve the

tuberculosis control programme in the country political commitment needs to be enhanced and public-private partnerships increased. This can be done through government prioritisation of TB control at both national and provincial levels; donor-funded components should not receive undue attention; and partnerships with the private health sector, health institutions not yet covered by DOTS services, non-governmental organisations and patient coalitions should be increased.

Keywords

tuberculosis, Stop TB strategy, health system, managers, perception

Introduction

Tuberculosis (TB) is a major public health and development challenge in Pakistan.¹ In 2010, WHO² ranked Pakistan among the five countries with the largest number of TB cases; every year, more than 460,000 new cases and 60,000 TB-related deaths occur in the country.³ After WHO declared the disease a global emergency in the 1990s, the Government of Pakistan prioritised TB control,^{3,4} and, since 2000, TB control services have expanded significantly in the country.^{5–7} The World Health Organization formulated a new Stop TB strategy with the objective to meet challenges countries face in their fight against TB and to reduce the global burden of TB by 2015. The strategy included six components: (1) pursue high-quality Directly Observed Therapy Short Course (DOTS) expansion and enhancement; (2) address TB-HIV, MDR-TB and the needs of poor and vulnerable populations; (3) contribute to health system strengthening based on primary healthcare; (4) engage all care providers; (5) empower people with TB, and communities through partnership and (6) enable and promote research.^{8,9}

Pakistan's NTP is among the pioneers of advocacy, communication and social mobilization (ACSM) in

the region as it started rolling out its ACSM campaigns as early as 2005; however, several gaps in implementation of the Stop TB strategy still exist which has impeded universal coverage of TB services.^{7,10}

Available literature highlights that TB managers have an important role in effective implementation of the Stop TB strategy.^{8,11,12} As such, and given their critical responsibility at the forefront of tackling this issue, TB managers have an important role in the effective implementation of the Stop TB strategy^{8,11,12}; positive or negative perceptions of managers can affect the success or failure of a programme.¹³ The perceptions of managers are therefore important for understanding implementation of organisational strategies.¹⁴ The aim of this study was to understand how national and provincial TB control programme managers in Pakistan perceive and engage with the Stop TB strategy, its strengths, weaknesses and their experience in its implementation. The findings are expected to help national health authorities to identify gaps and recommend means for better implementation of the strategy.

Methods

We conducted in-depth interviews and used an interpretative approach to determine the research participants' perspectives¹⁵ and obtain insight into the experience 'from the point of view of those who live it'.¹⁶

Sampling and recruitment

The sample consisted of national and provincial TB managers, who are responsible for implementing the Stop TB strategy. The national managers are responsible for developing a policy framework, technical guidance, supervision, coordination and advocacy and are based in Islamabad. As provincial managers frequently visit the national office for meetings, the study was conducted there. The managers were selected purposively on the basis of at least five years' experience as decision-makers with direct responsibility for implementing the Stop TB strategy and an active role in policy development at national or provincial level.¹⁷ Purposive sampling was used to select managers who could provide in-depth and rich information¹⁷ and the researcher sampled on the principle of data saturation and interviewed 10 managers (six national staff and four from provincial level).

Participants were recruited by telephone and in person. Suitable participants were chosen from a list of national and provincial staff on the national TB control programme website.¹⁸ The organisational hierarchy of the TB control programme¹⁹ was used to identify decision-making position holders, out of whom 10 were selected based on their role, i.e. responsibility for

implementation of Stop TB strategy at national and provincial levels, and availability for interviews. The researcher approached potential participants, explained the purpose and protocol of the study and gave his contact details. A suitable, mutually convenient time and venue were agreed for interview with those who agreed to participate. Before the interview, each participant was given an information sheet and a consent form.

Inclusion, exclusion criteria

Care was taken to ensure that participants selected fulfilled the following criteria:

- participant was working in a decision-making position at national or provincial level of TB control programme
- s/he was working at the position for the past two years, at least
- was fluent in interview language ('Urdu') and had good understanding (reading, writing) of English language
- was available for interview.

Participants were not recruited for interviews if s/he:

- was not working in a decision-making position at national or provincial TB control programme
- was working, however, for less than two years duration and was not expected to have good understanding of subject due to limited experience
- was not fluent in interview language ('Urdu') or had limited reading or writing abilities in English language.

Data collection

As the research topic was directly related to the work of the managers, we considered that they would prefer to discuss aspects of their work in the privacy of an in-depth interview.^{20,21} All except two interviews were conducted in separate rooms at the office of the national TB control programme, while two were conducted at the houses of participants, at their request. The interviews lasted 45–60 min, and all were tape-recorded, with the permission of the participants. The interviews followed a topic guide with open-ended questions, prepared from a review of the literature, as explained in the next section. The topic guide was pretested with a non-participating manager.

The researcher took notes of observations on the interview environment, venue, 'comfort level' and any other factor that influenced the interview. The

interviews were conducted and audio-recorded in Urdu, transcribed and then translated into English by the researcher. To ensure the validity and reliability of the study, the researcher used triangulation to understand the issues.²¹

Instrument

An interview guide with open-ended questions was developed based on review of available literature. The guide included areas for investigation on knowledge and perceptions about the WHO Stop TB strategy, implementation in Pakistan, successes and challenges being faced in light of Pakistan experience, potential strengths and weaknesses of the strategy and recommendations for improvement in the strategy and its implementation. The draft guide developed by the researcher was improved in light of the pilot testing in the field with participants. The question guide was based on questions given in Box 1.

Pilot testing

The interview topic guide was pretested with one non-participant manager to identify any issues or problems in question guide. The pretest did not identify any problems with the question guide and was used as it is in the actual interviews. The pretesting exercise, however, provided a good learning opportunity to get comfortable with the interview process and rehearse recording.

Data analysis

Interviews were conducted in Urdu language. Tape recording of these interviews was used for translation

and transcription in English language. The researcher being fluent in both Urdu and English language did the interview, translation and transcription comfortably himself. Data analysis was carried out using thematic content analysis given their usefulness in categorising data under themes and answering key questions.¹⁵ Transcripts developed in MS Word were read carefully by the researcher to identify main themes and subthemes based on a coding scheme and relevant to areas (knowledge and perceptions about the Stop TB strategy, progress in implementing the strategy in Pakistan, critical success factors, significant implementation challenges and lessons learnt to scale up successful implementation). These themes were then compared, contrasted and discussed to reveal possible interrelatedness. Comparison and contrast criteria included national or provincial background and male or female managers. The following themes emerged in the analysis:

- (I) Knowledge and perceptions about the Stop TB strategy
- (II) Progress in implementing the strategy in Pakistan
- (III) Significant success factors
- (IV) Significant implementation challenges
- (V) Lessons learnt to scale up successful implementation.

Ethical approval

Ethical approval was secured from the University of Liverpool Research Ethics Committee and a local research organisation that conducts research on TB in collaboration with the national TB control

Box 1. Interview topic guide.

1. Are you aware of WHO STOP TB strategy? (follow up with: What are the strategy components; what is the importance of strategy in TB control; and what is the linkage between strategy and DOTS approach?)
2. What do you think about the STOP TB strategy and how it is being implemented in Pakistan? (Follow up with: What are the successes and what are the challenges?)
3. What are the strategic gaps in TB control in Pakistan? How you think STOP TB strategy could help in addressing these gaps (follow up with: details of gaps and what could be the recommendations to address these gaps)
4. In your view, what are the strengths of this strategy? (probing on reasons and rationale behind strengths with examples)
5. What are the weaknesses of STOP TB strategy? (Probing on reasons and rationale behind weaknesses with examples). Follow up on some of the weaknesses with – what could be done to improve identified weaknesses?
6. Is there anything else you would like to say about the strategy?

Table 1. Main themes.

No.	Theme
1	Knowledge and perceptions about the Stop TB strategy
2	Progress in implementing the strategy in Pakistan
3	Significant success factors
4	Significant implementation challenges
5	Lessons learnt to scale up successful implementation

programme in Pakistan (Bridge Consultants Foundation).

Results

The results summarise the findings from in-depth interviews with TB managers. A coding system has been used for confidentiality purposes in which ‘M’ stands for ‘Male’, ‘F’ for ‘Female’, ‘N’ for ‘National’ and ‘P’ for ‘Provincial’ followed by number of interviewee (e.g. MN1 means male, national number 1).

As per Table 1 we identified five main themes from the data: 1 – knowledge and perceptions about the Stop TB strategy, 2 – progress in implementing the strategy in Pakistan, 3 – significant factors for success, 4 – significant challenges to implementation and 5 – lessons learnt to scale up successful implementation.

Knowledge and perceptions about the Stop TB strategy

The national and provincial managers all understood that the Stop TB strategy provides direction and guidelines for controlling TB. Although they understood the strategy components, they differed in recalling the number and sequence of components. Components that were mentioned repeatedly were DOTS; multi-drug-resistant (MDR)-TB and TB and HIV co-infections; public–private mixed interventions; advocacy, communication and social mobilisation or empowering patients and communities; and research and health system strengthening. Eight managers cited DOTS as the first, core component of the strategy and viewed the strategy as enhancing DOTS. One manager said: ‘The core is DOTS, and the Stop TB strategy is to bring cases from different angles and to implement DOTS on these cases [FN1]’. They agreed that the strategy has an important role in

planning and implementing TB interventions. Half said that it provides ‘strategic direction’ and involves ‘all stakeholders’, and two (one national, one provincial) said that the strategy is important because it includes interventions for both the public and the private health sector, whereas DOTS is for the public sector only.

Progress in implementing the strategy in Pakistan

The managers agreed that Pakistan had made progress in implementing the Stop TB strategy. Eight considered that, although progress had been made in all components, it had been greater in extending DOTS, health systems strengthening, public–private mixed interventions, MDR-TB care and TB/HIV care as described below:

Extension of DOTS. The managers noted that 100% DOTS services coverage had been achieved in public sector health facilities in 2005–2006, resulting in the detection and treatment of more TB patients. Two managers (one national, one provincial) commented that extension of DOTS had been achieved despite weaknesses in the public health sector. One manager said: ‘What we have achieved in DOTS, the targets achieved, is visible progress [MN3]’.

Health systems strengthening. Health systems strengthening was cited as a key area of progress. Most of the managers mentioned contributions to health systems strengthening, including training of healthcare providers, infrastructure improvement and multisectoral collaboration. One provincial manager said:

‘TB control [programme] is a pathfinder in health systems strengthening, it has helped other programmes also. If you put TB control in order in a [health] facility, you create demand, and it is a real benefit, because, if TB services are there, then people come and ask for other [health] services also [MP2].’

Public–private partnerships. The managers agreed that appreciable progress had been made in public–private partnerships, involving private health providers, para-State organisations, major hospitals and non-governmental organisations. One manager said: ‘We have developed collaboration with partner organizations. If you see 270,000 TB patients [in the country], [of these] around 47,000 patients are coming from the PPM [public–private mixed interventions] contribution [FN2]’.

MDR-TB care. The managers cited MDR-TB as another area of continuous progress since it started in 2008. Care is provided in both the public and the private health sectors, and a social support package was introduced for patients, which helped to increase treatment compliance. One manager said: ‘We started in 2008. We developed the guidelines, through the GLC [Green Light Committee], we got the approval, and WHO helped in needs assessment. Because of that, the way we are going is excellent [MN1]’.

TB/HIV care. Seven managers said that care for TB and HIV co-infection was an implementation priority. They mentioned collaboration with the national AIDS control programme and screening of HIV patients for TB. One manager, however, considered that TB/HIV care was not a priority because the burden of HIV infection in Pakistan is not high. Another said that TB/HIV interventions were not focused and remarked: ‘We have not focused much on those groups where HIV is. We have to go to those areas where there is a possibility of more cases of HIV [FN1]’.

Significant factors for success

The managers cited four factors that contributed significantly to progress in implementing the Stop TB strategy in Pakistan: the availability of DOTS services, the public–private partnership approach, comprehensive guidance for TB control and government and donor commitment to TB control.

Availability of DOTS services. The availability of DOTS services provides a good foundation for initiation and expansion of other components of the strategy. DOTS services were in place well before implementation of other components of the strategy. For example, one manager remarked: ‘We started DOTS implementation in 2001...[and] by 2005 100% DOTS coverage was achieved in the public sector [FN3]’.

Public–private partnership approach. The public–private partnership approach was adopted to engage private health providers and facilities instead of relying solely on the public sector to provide TB diagnosis and treatment services. One manager said: ‘In PPM (public–private mixed interventions)... we have covered half of Pakistan. This...is a major strength [MN2]’.

Comprehensive guidance. Comprehensive guidance is available in the Stop TB strategy for different areas of TB control. Access to this guidance helped in

effective planning of activities, leading to successful implementation of each component. One manager said: ‘Our TB control is all based on the six components [of the Stop TB strategy] [FN2]’.

Government and donor commitment to TB control. Government and donor commitment to TB control played a role in successful implementation. Government commitment was reflected in the creation of the necessary structures in the public sector and provision of funds. The Global Fund also played a role: one of the managers said: ‘What is happening...is that everything is done by the Global Fund [MP4]’. One provincial manager differed, however, saying: ‘It [Global Fund support] is not sustainable,...and the Government should develop a sustainable approach [MP1]’.

All the managers identified several strengths of the Stop TB strategy. Seven of them regarded its comprehensiveness as the major strength. Four considered that a strength of the strategy is that it engages all sectors of TB control. One said: ‘The basic strength of the Stop TB [strategy] is that it gives you a complete package and that every aspect of TB control is addressed in it [MP2]’. Other strengths mentioned included guidance on links between TB and other diseases, such as HIV infection and diabetes; promotion of health systems strengthening; and generation of evidence through research, surveillance, monitoring and evaluation.

Not all the managers were convinced that the strategy is flawless. Four mentioned that the guidance is ‘generic’ and ‘broad’ in certain areas, such as advocacy, communication and social mobilisation, health systems strengthening, involvement of all stakeholders and resource mobilisation. Three managers raised a concern that the strategy lacks guidance on sustainability, two mentioned DOTS as a weak element and one pointed out the generic nature of the strategy: ‘The Stop TB strategy is a very good document providing all the components...but they are rather broad and should be more specific [FN2]’.

Significant challenges to implementation

Three main challenges emerged and are presented as follows:

Inadequate political commitment. Eight managers agreed that, although the government had been supportive of the TB control programme in general, the support had not materialised into more funding. This had resulted in increasing dependence on donor and uncertain sustainability. The managers viewed the current level of national and provincial political

commitment as inadequate, and the Global Fund appeared to be the major source of funding. This dependence is considered a threat because of the conditions attached to the funding and, as one manager said: ‘If, at any time, for of any reason the donor is unable to provide these services, there is no immediate arrangement with the Government to provide the services [MP3]’.

The managers said that more commitment is necessary from the national and provincial governments in order to scale up implementation and ensure the sustainability of TB control. Eight managers considered that the governments should prioritise TB on the public health agenda, develop a more sustainable investment approach and ensure effective use of allocated funds. One manager said: ‘We should increase our counterpart [Government] financing. That will go towards sustainability... and increase our resources, because if people see and the donor sees that the public sector is also contributing, they should be able to contribute [FN1]’.

Prioritisation of certain components. Some managers commented that components of the Stop TB strategy that received donor funding were receiving more attention than others. For example, MDR-TB and public–private mixed interventions had been prioritised in implementation as a result of Global Fund funding. The managers said that partnerships with the private sector should be strengthened and proposed that the mechanism for collaboration be reviewed, with the addition of more incentives for GPs and involvement of patient coalitions.

Limitations in the overall health system. The interviews revealed several health system-related challenges that are obstructing progress in implementation of the Stop TB strategy in Pakistan. One manager said: ‘What has happened in Pakistan is that we have reached a level at which we can’t achieve more unless our health system is strengthened in general [FN3]’.

Eight managers commented that the private health sector in Pakistan is large, diverse and unregulated, making collaboration difficult. The TB control programme is a public sector entity, and the managers said that collaboration with private sector was also difficult because the programme approached it with a ‘public sector mentality’.

Several managers were apprehensive about decentralisation of national health functions to the provinces by devolution of the Ministry of Health. Greater integration within the overall health system could result in better collaboration with public and

private health service providers. One manager remarked: ‘The TB control programme alone will not be able to deliver for long. We have to bring it into the health system. It has to be embedded in the whole health system [MP4]’.

Lessons learnt to scale up successful implementation

In light of their implementation experience, the managers gave recommendations to improve implementation of the Stop TB strategy and these can be summarised as follows:

Strengthening political commitment. The managers stressed the need for more commitment from the national and provincial governments. They thought this is critical for scale up of strategy implementation and sustainability of TB control. It was the view of the majority of the managers (eight) that governments should prioritise TB as part of the public health agenda, develop a more sustainable investment approach and ensure effective utilisation of the allocated funds. For example one female manager said:

... we need to increase our counter part (government) financing. That will go towards sustainability,... that will increase our resources because if people see and the donor sees that the public sector is also contributing, then they should be able to contribute (FN1).

Broadening partnership. The national and provincial managers emphasised strengthening the current partnership with public and private sectors. The managers proposed revisiting the collaboration mechanism with private sector with inclusion of more incentives and more interest for the GPs. It was proposed that patients should also be engaged in TB control through their coalitions. More integration within overall health system was viewed as effective in creating collaboration with other than health, public and private sector health services providers. Emphasising the need for collaboration, one manager remarked: ‘... TB control programme stand alone will not be able to deliver for long. We have to bring it as a health system. It has to be embedded in the whole health system (MP4)’.

Addressing weaknesses in components. Both national and provincial managers proposed several actions for better execution of specific components of the strategy. Table 2 summarises these suggestions.

Table 2. Component-specific implementation recommendations.

Component	Recommendations
DOTS	Inadequacies of DOTS should be addressed through public, private health sector and community partnership; childhood TB services should be expanded and decentralised; monitoring and evaluation mechanism should be strengthened
TB/HIV	TB/HIV interventions should be focused on concentrated populations (e.g. sex workers, drug users, HIV positives); more research should be conducted to facilitate better networking between two programmes and integration of services
MDR-TB	More funding should be secured; community management approach for patients should be developed
ACSM	ACSM planning and implementation should be more specific with clear targets and adequate funding
Operational research	Research should be prioritised with a clear vision, more funds, better coordination among national TB control programme units and with policy-oriented outcomes

Discussion

The study shows that TB control managers are knowledgeable about the Stop TB strategy and perceive it positively, probably because of good experience in its implementation. Managers viewed the strategy as an enhancement of DOTS, consistent with the widely held understanding in the global TB control community that DOTS and the Stop TB strategy are closely linked.^{22,23}

The national and provincial managers were in agreement that progress has been made in implementing the Stop TB strategy in Pakistan with regard to DOTS, public–private mixed interventions, health systems strengthening and MDR-TB and TB/HIV care. These perceptions are in line with evidence on TB control and programme performance. The managers identified factors that had contributed to progress in implementation of the strategy: the availability of DOTS services, the public–private partnership approach, multifaceted guidance in the strategy and government and donor commitment. The participants nevertheless cited inadequate political commitment and limitations in the overall health system as threats to the sustainability of implementation and stressed the importance of greater government investment to sustain progress.

The managers identified ways in which partnerships with other sectors could be sustained and broadened to implement DOTS, TB/HIV and MDR-TB care, advocacy, communication and social mobilisation and operational research. Cross-cutting areas such as context-based planning and sustained financing could facilitate implementation of these components. The managers also commented that the strategy should be a more specific, ‘living document’.

Other studies have indicated that the Stop TB strategy should be improved on the basis of experience in implementation^{24,25} but did not highlight its

weaknesses. The suggestions provided by the managers for improving the strategy are well timed, as WHO has begun consultations with stakeholders on a post-2015 TB strategy.²⁶ Further research may clarify whether the improvement highlighted by the managers is specific to Pakistan.

Limitations

Given the interpretative nature of the approach in this study, the researcher’s own interpretations play an important role and have implications for the study. The researcher had worked with the TB control programme in the past and was employed with WHO at the time of conducting the study – both positions helped the researcher in successfully accessing potential participants for interviews. However, the researcher had a realisation that his past and present employment might affect the perceptions of the participants that the information being collected could compromise their interests. During the interviews, the researcher did not feel this happening. A possible reason of this could be that the researcher ensured adequate explanation of study objectives and outcomes before the interview and provided the opportunity to participants to ask any questions. The researcher collected, transcribed and analysed the data himself to avoid external influence. The interviews were conducted in Urdu language and were transcribed and analysed in English language. The researcher is fluent in both languages and did not face any problems in conducting, transcribing or analysing the interviews. Knowing the two languages proved to be a strength in the study. It helped avoid any translation (e.g. words used in languages with different meaning) or interpretation issues (reflexivity of interviewer and translator, transcriber) which are a possibility in such studies.

Conclusions

This qualitative study contributes to understanding of implementation of the Stop TB strategy in Pakistan and identifies several factors that helped facilitate it. It provides the basis for further research with managers and implementers to improve TB control services for patients. As Pakistan is one of 22 high-TB-burden countries, the findings of this study may be relevant for other high-burden countries. The study is a timely, relevant addition for the global TB control community, which is holding ‘vigorous’ consultations on the most appropriate post-2015 TB strategy.²⁷

On the basis of these results, the recommendations to the health authorities for improving the TB control programme in Pakistan are to enhance political commitment, increase public–private partnerships and evaluate and improve implementation of specific components. The government should prioritise TB control at both national and provincial levels. As part of devolution of the Ministry of Health, the provincial role in implementation should be strengthened and Global Fund support should be sustained by better implementation of funded components; however, donor-funded components should not receive undue attention. Partnerships with the private health sector, health institutions not yet covered by DOTS services, non-governmental organisations and patient coalitions should be increased. An increase in such partnerships should not, however, result in poorer quality DOTS services in the public sector. Every component of the strategy should be addressed by better planning, resource allocation and execution. DOTS, TB/HIV and MDR-TB care and advocacy, communication and social mobilisation could benefit from operational research, periodic review and evaluation as a cross-cutting component to enhance quality and identify problems.²

This study is exploratory and describes experience in Pakistan only; however, as Pakistan is one of the low- and middle-income countries that account for >90% of the global TB burden, the findings may apply elsewhere. Further qualitative research is required on the perceptions and experiences of Stop TB strategy implementers and of health workers in Pakistan and other high-TB-burden countries. WHO could conduct research on the perspectives of TB managers in other countries, particularly in the 22 high-TB-burden countries.

Public health implications

TB is a major public health challenge in Pakistan which is becoming complex with the emergence of

its drug-resistant forms, i.e. MDR and Extensively Drug Resistant (XDR). The Government of Pakistan is striving to address TB with support of partners like the Global Fund. However, the task is enormous. The Stop TB strategy provides multifaceted guidance for TB control programmes. The findings of this study reflect views of the Stop TB strategy implementers in Pakistan. The study identifies areas of progress in implementation, challenges being faced and possible ways to overcome these challenges. The study results support perceptions of effectiveness of the strategy among its implementers in the context of Pakistan like high-burden country.

The global TB control community are ‘vigorously’ holding consultations to develop ‘the most appropriate post-2015 TB strategy. The study findings are relevant for WHO which is leading the process of these consultations. The study results provide a basis for further research in other high-TB-burden countries to understand implementation of the strategy. The study results could be useful for the TB control programme and the Government of Pakistan to improve services for TB patients.

Declarations

Competing Interests: None declared

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Ethical approval: Ethical approval was secured from the University of Liverpool Research Ethics Committee and a local research organization that conducts research on TB in collaboration with the national TB control programme in Pakistan (Bridge Consultants Foundation).

Guarantor: WK

Contributorship: WK and HS developed the concept for the research and the paper. WK collected the data. WK performed the analysis and HS, EQ and SH provided support and supervision. WK, HS and SH finalised the text.

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Note: At the time of publication, WHO had concluded the process of revisiting Stop TB strategy and a new End TB Strategy was adopted by the World Health Assembly in 2016. For further detail, please refer to <http://www.who.int/tb/strategy/en/>.

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