





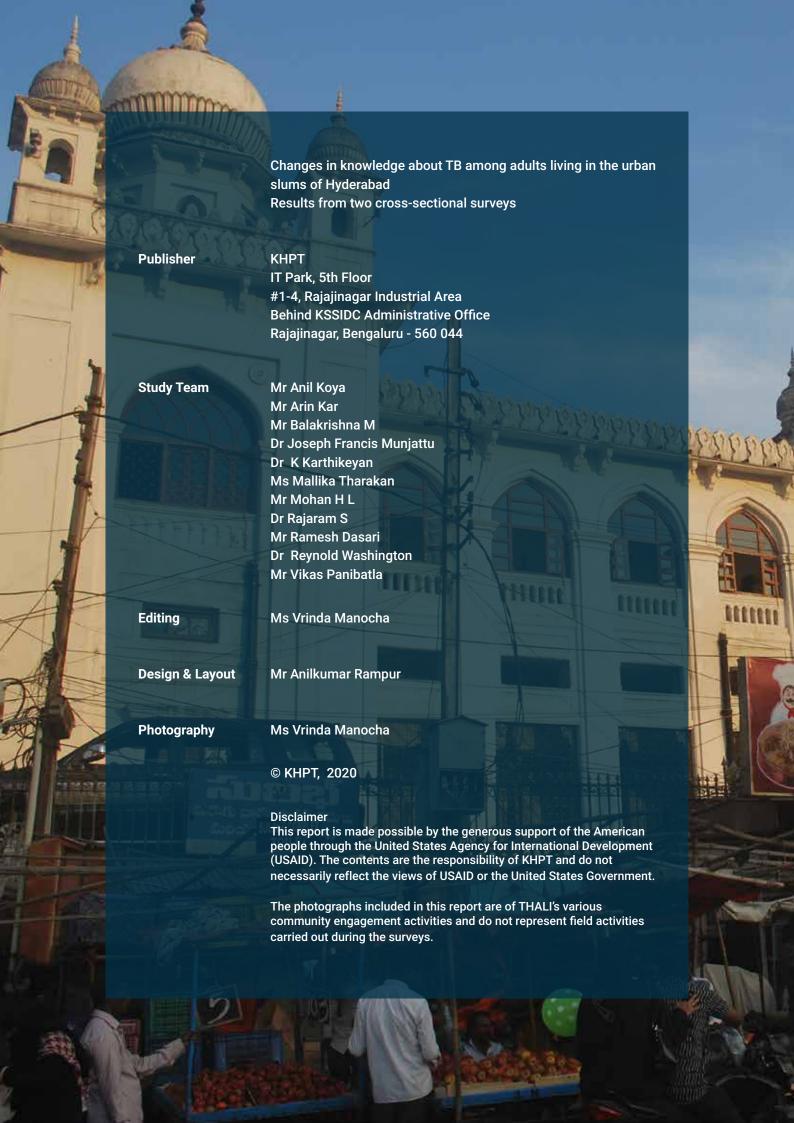
Changes in knowledge about TB among adults living in the urban slums of Hyderabad

Results from two cross-sectional surveys











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Figure 1: Percentage of adults with comprehensive knowledge and its components

Figure 2: Percentage of adults who had comprehensive knowledge on TB according to exposure to specific community activity

ACRONYMS

AIDS Acquired Immune Deficiency Syndrome

ATT Anti Tuberculosis Treatment

BPL Below Poverty Line

CHW Community Health Worker

CC **Community Coordinator**

CMIS Computerized Management Information System

Cartridge Based Nucleic Acid Amplification Test CBNAAT

DBT Direct Benefit Transfer

DMC Designated Microscopy Centre

DOTS Directly Observed Treatment Short Course

DTC **District Tuberculosis Centre**

ESI Employees' State Insurance

HIV **Human Immunodeficiency Virus**

IEC Institutional Ethics Committee/Information Education and Communication

KHPT Karnataka Health Promotion Trust

NSP New Smear Positive

NTEP National TB Elimination Programme

PCS Prevention, Care and Support

PRAD Patient Referral and Diagnosis

PSG Patient Support Group

POMM Practitioner of Modern Medicine

RNTCP Revised National Tuberculosis Control Program

TB **Tuberculosis**

THALI Tuberculosis Health Action Learning Initiative

TU **Tuberculosis Unit**

USAID United States Agency for International Development



Office of the Toint Director (TB), Telangana DM&HS Campus, Sultan Bazar, Hyderabad - 095

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The Honourable Prime Minister announced the commitment to End TB by 2025, five years ahead of the Sustainable Development Goals deadline. The Government of India has scaled up TB diagnostic and treatment services in the public health system, and strengthened partnerships with the private sector, resulting in the notification of more than 2.4 million TB patients in the year 2019.

Individuals with symptoms of TB need to seek appropriate facility-based healthcare services at the right time. An individual's knowledge, attitudes and perceptions about TB influence his/her health-seeking behaviour. These factors influence his/her understanding of the diagnosis, and readiness to start and adhere to treatment. Thus, it is important to understand the levels of knowledge and health seeking behaviour for TB among the general population, as well as among persons who have recently had or currently have symptoms suggestive of TB, especially among vulnerable populations such as the urban poor.

As a part of the Tuberculosis Health Action Learning Initiative (THALI) initiative (2016-2020), funded by the United States Agency for International Development (USAID), the Karnataka Health Promotion Trust (KHPT) conducted baseline and end-line studies among adults living in selected slum areas of Bengaluru and Hyderabad to assess the levels of TB knowledge and health seeking behaviour and their changes over the project period. The study also examines the effect of the exposure to THALI's community engagement activities on knowledge and health seeking behaviour among adults living in the urban slum areas.

Field investigators were trained, recruited and supervised by KHPT to gather data from consenting adults residing in the urban slum areas of Bengaluru and Hyderabad cities. The sample of 480 individuals, one from each of the 480 households, was selected from 60 slum areas identified through probability proportionate to estimated population size. In addition, adults from the same geography who reported having a persistent cough during the past six months were interviewed for their knowledge and health seeking behaviour in relation to symptoms suggestive of TB. Regulatory and ethics approval were provided by the State TB Offices and the Institutional Ethics Committee of St John's Medical College and Hospital, Bengaluru, respectively.

This report is prepared by the KHPT, Bengaluru and TB Alert India, Hyderabad. The findings from the study will help program managers plan focused communication activities and develop specific messages for people who are most vulnerable to TB. This will aid in TB prevention and control activities among the urban poor in Hyderabad, Bengaluru and across other cities in India.

Dr A Rajesham
Joint Director (TO), TSNTON
Medical Science Services

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The baseline and end-line study on "Knowledge about TB among adults living in the urban slums of Hyderabad" was successfully completed due to the efforts and involvement of numerous organizations and individuals at different stages of the survey. To the extent possible, we would like to thank everyone who was involved in the successful completion of the study.

First of all, we are grateful to USAID India for funding this study as a part of the evaluation of the Tuberculosis Health Action Learning Initiative (THALI). THALI aims to establish a holistic approach to TB control in select Indian cities through the implementation of TB prevention activities and patient-centric models of care and support. We gratefully acknowledge the continuous guidance and support from the various staff of KHPT in Bengaluru throughout the study process and preparation of the report. Our heartfelt thanks goes out to the Institutional Ethics Committee of St. John's Medical College and Hospital, Bengaluru, for approving the study. We are grateful to the State TB Officer and Joint Director (JD), Telangana, District TB Officers of Hyderabad, and other state and district NTEP staff for extending their support. Special thanks go out to the local officials in the sample areas for facilitating data collection. We would also like to acknowledge the efforts of the local leaders of the selected areas, without whose support we would not have been able to complete the survey.

We thank the THALI project outreach workers for their hard work in conducting the initial mapping of slum areas. This mapping helped us to create the sampling frame for the study. Thanks are also due to the program field staff for establishing the link between local NTEP staff and the study team. We acknowledge the hard work put in by the study coordinator for the baseline survey. The end-line survey was carried out by Karvy Insights and we appreciate the efforts of the field staff of the organisation who were involved in the study. We also acknowledge with gratitude the hard work put in by the field supervisors and field interviewers in collecting the baseline and end-line survey data.

Finally, we acknowledge the participation of all the respondents of the study, the women and men of Hyderabad, who gave their time and responded to the lengthy questionnaires with tremendous patience and without any expectation from the study team.

01

INTRODUCTION



Background

The KHPT-led Tuberculosis Health Action Learning Initiative (THALI) is a four-year (2016-2020) patient-centred, family-focused TB prevention and care initiative supporting vulnerable people in gaining access to quality TB care services from healthcare providers of the patient's choice. The project is implemented in Karnataka by KHPT and in Telangana and Andhra Pradesh by TB Alert India (TBAI). In the first two years of implementation, KHPT and TBAI worked in collaboration with the National Tuberculosis Elimination Program (NTEP) and focused on behaviour change among two target groups: (1) people living in urban slums, and (2) private healthcare providers in Bengaluru and Hyderabad cities.

The project underwent a strategic shift in the third and fourth years. Under the refined strategy, THALI worked with and through, (1) communities, especially key populations affected by TB, and (2) state and local governments and program managers of RNTCP. The direct engagement with private sector healthcare providers was gradually discontinued in August 2017. Besides Bengaluru and Hyderabad cities, in the third and fourth years, the project expanded to cover additional geographies and population. The project coverage increased from about 3 million in two cities to a total population of 31 million people in 13 districts of Karnataka, 9 million people in 5 districts of Telangana and 14 million people in 3 districts of Andhra Pradesh.

Implementation approach contents

THALI's implementation approach is based on 5 principles in order to prevent and control TB in the project geographies.

- Appropriate health-seeking behaviour of people with TB symptoms: People recognize early symptoms and signs of TB, know where to seek care, and demand microbiological testing for TB diagnosis and quality services;
- 2. Evidence-based diagnosis: All persons with symptoms of TB are prescribed the best available and affordable microbiological tests to establish definitive diagnosis. These tests are done at certified, quality-assured laboratories;
- **3. Standard, evidence-based treatment:** Standard anti-TB regimens are used to treat new TB patients presumed to be drug sensitive. Previously-treated TB patients and those exposed to drug-resistant TB are initiated on tailored treatment regimens, after drug sensitivity testing;
- **4. TB notification:** All TB patients diagnosed and initiated on treatment by clinical providers, and all patients tested microbiologically positive for TB at laboratories, are notified to public health authorities;
- **5. Treatment follow through:** All TB patients initiated on TB treatment are counselled, monitored and supported for treatment adherence, completion and prevention of spread of the disease.

The above mentioned 5 principles are envisaged to promote demand creation, service delivery and public health support systems, and are aligned well with global and national strategies for TB elimination.

Community engagement

The THALI project's field level activities mainly included engagement with the communities living in the slum areas of the cities of Bengaluru and Hyderabad. A cadre of Community Health Workers (CHWs) supervised by Community Coordinators (CCs) carried out these activities through consistent and systematic outreach. This team of dedicated frontline workers began community engagement activities in September 2016 in the areas under the Hyderabad District Tuberculosis Office, and ceased activities in September 2019. Community engagement was initiated through the slum entry program by conducting a slum mapping activity in all the slums of Hyderabad city. According to the final mapping data, we identified 942 slums in Hyderabad, covering 2,93,980 households, a population of 1.45 million population and 19 Tuberculosis Units (TUs).

The CHWs subsequently conducted Information Education and Communication (IEC) campaigns on TB in the community through in-person contacts, small group meetings, large group meetings and school education programs, and were involved in active case finding campaigns conducted by the government. Each CHW covered about 5-25 slum areas with a population ranging from 20000-32000 on an average. They were later aligned to geographies covered by the Designated Microscopy Centre (DMC). About 8-10 CHWs were supervised by a CC.

In addition, using a 'screening pathway', CHWs actively identified individuals with symptoms suggestive of TB after these IEC activities, and referred them for sputum testing to the DMC, a government facility which conducts sputum microscopy, and for CBNAAT testing (Cartridge Based Nucleic Acid Amplification Test). Any person having a persistent cough for more than 14 days and/ or having night sweats, sudden weight loss, blood in sputum, reduced appetite, persistent chest pain and enlarged lumps in the lymph nodes was identified as a TB symptomatic. The process of referral included filling up a form in triplicate and handing over two sputum cups with clear instructions of how and when to collect the sputum. If the individual could not go themselves to the DMC to hand over the samples for testing, the CHW would transport the sample for testing on behalf of the referred person. When a sample tested positive for TB, the CHW would accompany him/her to the public health facility for further counselling and treatment initiation. Following initiation of the TB treatment, the CHW followed up with the individual twice a month during the intensive phase and once a month during the continuation phase of treatment. During the follow-up visits, the CHWs provided family level counselling, adherence monitoring and support, nutritional advice, moral support, and support to obtain social entitlements, including the Government's direct benefit transfer (DBT) scheme providing each patient ₹500 per month. Information on DBT was collected after the introduction of the Nikshay Poshan Yojana scheme by the Government of India in the year 2018. In addition, all TB patients were motivated to attend patient support group (PSG) meetings from 2018. Patients' weights were monitored on a regular basis. They were referred for follow-up tests, counselled on behaviour change when relevant, and referred for adverse drug reactions or side-effects management. All inputs, including weight measurements, follow-up test results and treatment adherence were documented by the CHW with the supportive supervision of the CC, using a Patient Referral and Diagnosis (PRAD) form for referral, and a Prevention, Care and Support card (PCS) for treatment adherence support. The outcome of the TB treatment was recorded and validated by medical teams. Both forms, once filled, were verified for completeness by the CC, before entry into a computerized management information system (CMIS) on a regular basis.

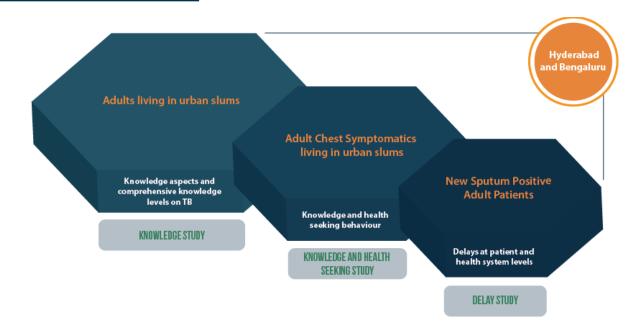
During the September 2016-June 2019 period, the CHWs referred 17,936 symptomatic persons for diagnostic tests, and out of this, 13,952 persons underwent tests. Among the tested persons, 2997 persons were found to have TB and 2993 persons were started on TB treatment.

02

STUDY DESIGN



Project Evaluation



The overall project evaluation design included surveys among three target groups, namely adults living in slum areas of Hyderabad and Bengaluru cities, chest symptomatics in the urban slums and adult new sputum positive (NSP) TB patients accessing anti-tuberculosis treatment (ATT) in these two cities. The evaluation was implemented through baseline and end-line surveys conducted amongst the target groups mentioned above. The survey among the adults living in the slum areas included knowledge aspects regarding TB; we assessed the changes over time. The study amongst the chest symptomatics examined knowledge and health seeking behaviours, as well as changes over time. The study amongst the adult NSP TB patients examined the various delays related to initiating the ATT, and assessed and compared the changes over time. This report pertains to the study conducted among adults living in the urban slums in the Hyderabad district.

Objective of the study

The aim of the study was to assess the knowledge about TB among adults living in urban slum areas. We also studied the level of key knowledge aspects of TB and the changes identified in these key knowledge aspects of TB between baseline and end-line surveys. In addition, we also studied the extent to which the respondents were exposed to the THALI program and the effect of the program exposure on their comprehensive knowledge of TB.

Study design

The study was conducted in selected slum areas in Hyderabad district. The sample frame consisted of the slum mapping data collected through the CHWs. The initial and final updated slum mapping data was used for the baseline and end-line surveys, respectively. For the baseline sample survey, the sample frame consisted of 916 urban slum areas in Hyderabad district. Similarly, for the end-line survey, the sample frame consisted of 942 urban slum areas in Hyderabad district. In both baseline and end-line surveys we included all urban slum areas with more than 40 households. We adopted a two-stage sampling technique to collect data. In the first stage, we selected a total of 60 urban slums for both baseline and end-line surveys. We used the Probability Proportional to Size (PPS) method to select the required number of urban slum areas. We arranged urban slum areas according to the household size in ascending order and systematically selected the required number of slum areas. In the second stage, we conducted a systematic random selection of required number of households for interviewing adult persons within each of the selected slum areas. We conducted a household listing operation, which also included screening of household members for identifying persons who had a persistent cough of more than two weeks duration in the six months prior to the survey or were having persistent cough at the time of the survey, in each of the selected urban slum areas. Large slum areas with 300-350 or more households were segmented, according to natural boundaries, into three or more segments (depending on the size of the slums) of approximately equal size (approximately about 125 households). From all the segments in each of the large slums, two segments were selected using systematic random sampling. House listing, as well as screening, was carried out only in the two selected segments in the large slum areas.

The target sample size was 480 adult persons, with an average of 8 adult persons per slum area, based on an estimated sample size of 455. The sample size was calculated for a detection of a change of 10 percentage points in the knowledge aspects of TB over the project period, from an assumed value of 50% with 95% confidence and 80% power, with a design effect of 1.5. Only one adult individual per selected household was interviewed. The field team interviewed the selected adults in the local language or any language that was spoken by the respondent.

Data collection

We trained field staff for five days. This included field practice sessions. The mandatory pre-fieldwork training session for the field staff included the procedures followed with respect to identifying the slum areas, segmentation procedures, screening of persons who had a persistent cough for more than two weeks, selection of segments and selection of households, and obtaining consent (and handling non-consent). We trained all field staff to inform all the eligible respondents that their participation in the study was voluntary, to adhere to the study protocol and to ensure that the interviews were conducted in private places where the study participant felt comfortable. We gave them clear instructions not to reveal the identity of the respondents to any third party. We trained them to maintain complete confidentiality of the recorded transcript and not to show the questionnaire to any other person. For the baseline, the recorded transcript was directly entered into the computer. Trained field investigators administered a semi-structured questionnaire to participants in the local language. For the end-line survey, we used a mobile application to record the responses of the respondents. All the respondents provided informed written consent before the information was collected.

We designed a semi-structured questionnaire to collect information on background characteristics and the knowledge aspects regarding TB. In addition, in the end-line survey we also asked questions to understand the exposure to the THALI program. We collected the baseline data between December 2016 and April 2017, and the end-line data between October 2019 and January 2020. In the end-line, in 27 slum areas, we selected 10 households for the knowledge survey. This is because, in the initial stage of the survey, the response rate was very low, and in order to compensate for the high non-response, the number of sampled households was increased in the end-line survey.

KHPT's dedicated team of field investigators collected the baseline data. However, Karvy Insights, a private organization with experience in large data collection, collected the end-line data. KHPT's research and technical teams trained staff for both the baseline and end-line surveys. The analysis of the data was carried out using Stata, version 14.0

Sample coverage

We selected 480 and 534 households for the interviewing of adult persons in the baseline and end-line surveys. Out of the households selected, interviews were completed for about 91% (437) and 80% (428) of respondents in the baseline and end-line surveys. Refusals for interviews were higher in the end-line (14%) as compared to the baseline (6%). Also, either no adult member was at home, or the household was locked for 3% and 6% of the households in the baseline and end-line surveys, respectively.

Table 1: Sample coverage details of selected households in the baseline and end-line surveys, Hyderabad

Status of the survey	Base	line	End-line		
	Number of cases	Percent	Number of cases	Percent	
Selected for interview	480	100.0	534	100.0	
Completed	437	91.1	428	80.1	
Refused	27	5.6	72	13.5	
Not available	16	3.3	34	6.4	

03

PROFILE OF THE SURVEY RESPONDENTS



Profile of the survey respondents

In both baseline and end-line surveys, we asked respondents to provide details of certain background characteristics. These results are provided in Table 2. We did not notice much change in the distribution of many of the characteristics of the respondents between the baseline and end-line surveys. We noticed an increase in the proportions of those aged above 40 years, between baseline and end-line surveys. The other difference observed was for persons who were not employed (53% vs. 45%), persons who were neither Scheduled Caste nor Scheduled Tribe (75% vs. 57%), persons whose personal monthly income was of ₹5000 and above (38% vs. 55%), and whose household monthly income was of ₹15000 and above (34% vs. 45%). We noticed a greater increase in the reported personal monthly income rather than the household monthly income between baseline and end-line surveys, and this increase was noticed among females rather than males. The average personal monthly income in the baseline was ₹4371 and it increased to ₹7121 in the end-line survey.

Table 2: Percentage distribution of adults according to selected background characteristics in the baseline and end-line surveys, Hyderabad

Characteristic	Male		Fen	Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line	
Sex							
Male					37.8	40.1	
Female					62.2	59.9	
Age							
< 40	63.8	55.9	74.8	60.2	70.7	58.4	
40-59	29.1	31.8	20.1	31.9	23.5	31.9	
60+	7.1	12.3	5.1	7.9	5.8	9.7	
Mean age	37.0	39.3	33.2	38.0	34.6	38.5	
Marital status							
Currently married	75.9	80.6	78.5	82.2	77.5	81.5	
Marriage dissolved	3.4	2.4	15.1	13.5	10.7	9.1	
Never married	20.6	16.0	6.4	4.3	11.8	9.0	
Literacy and education							
Illiterate	20.3	19.6	25.1	31.0	23.3	26.4	
Literate, 1-7 years of schooling	23.2	20.5	24.6	21.3	24.1	21.0	
8+ years schooling completed	56.5	59.8	50.3	47.7	52.6	52.6	
Occupation							
Business	22.5	18.8	4.2	6.2	11.1	11.2	
Salaried job	16.8	19.5	0.5	6.1	6.7	11.5	

Other job	50.3	49.6	17.1	21.2	29.7	32.6
Not working	10.4	12.1	78.2	66.4	44.4	44.7
Religion						
Hinduism	68.9	65.6	61.2	63.9	64.1	64.6
Islam	26.8	34.2	36.8	35.2	33.0	34.8
Other	4.3	0.2	2.0	0.9	2.9	0.6
Caste/Tribe						
Scheduled Caste	19.6	18.0	20.4	27.6	20.1	23.7
Scheduled Tribe	7.7	16.2	3.1	21.1	4.8	19.1
Others	72.8	65.8	76.5	51.3	75.2	57.1
Personal monthly income (in ₹)					
No income	10.4	16.3	75.8	48.8	51.0	35.8
<5000	6.2	9.8	13.8	5.6	10.9	7.3
5000+	83.4	68.4	10.2	45.4	37.9	54.6
Not mentioned	0.0	5.5	0.3	0.2	0.2	2.3
Mean income	9745.6	9325.3	1093.0	5725.4	4371.2	7121.1
Household monthly income	e (in ₹)					
< 5000	2.9	2.4	4.6	3.7	3.9	3.2
5000-14999	56.5	42.8	59.7	53.9	58.5	49.5
15000+	38.4	50.5	30.8	41.8	33.7	45.3
Not mentioned	2.2	4.3	4.9	0.6	3.8	2.1
Mean household income	14243.7	14983.8	12653.9	14418.8	13265.6	14640.2
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	165	172	272	256	437	428

Household amenities

We collected information on the amenities available in the households. The results are presented in Table 3. We noticed a change in the distribution between baseline and end-line surveys for a few of the items. The distribution of the type of house based on the observation of materials used for wall, floor and roof indicated that there was a reduction in the proportion of pucca houses between baseline and end-line surveys. The proportion of houses with windows and houses with ventilation increased between baseline and end-line surveys. There was a slight reduction in the proportion of households having television between baseline (92%) and end-line surveys (85%).

Table 3: Percentage distribution of adults according to selected household amenities in the baseline and end-line surveys, Hyderabad

Characteristic	Baseline	End-line
Type of house		
Kaccha	1.2	9.4
Semi-pucca	18.8	40.5
Pucca	79.9	50.0
Number of rooms		
1	24.8	16.5
2	40.8	33.7
3	22.2	30.2
4+	12.1	19.6
Number of rooms used for sleeping		
1	59.9	61.1
2	33.5	31.5
3	4.4	5.1
4+	2.2	2.3
Have BPL card		
Yes	79.3	76.4
No	20.7	20.9
House has window that can be opene	d	
Yes	68.1	81.3
No	31.9	18.7
Has ventilation facility		
Yes	24.2	68.8
No	75.8	31.2
Ownership of present house		
Own house	56.1	55.5
Not own house	43.9	44.5
Own a radio		
Yes	5.0	8.9
No	95.0	91.1

Own a telephone		
Yes	0.8	4.7
No	99.2	95.3
Own a mobile		
Yes	97.5	95.6
No	2.5	4.4
Own a television		
Yes	91.7	84.7
No	8.3	15.3
Total	100	100.0
Number of cases	437	428

Source of information on health

We enquired about the source of obtaining health-related information from the respondents. We noticed an increase in the proportion of respondents reporting that they generally get health-related information from the government health workers between baseline (27%) and end-line (38%) surveys. The top reported source of information on health in the baseline was television/radio (75%), followed by friends/relatives (64%), newspapers and magazines (27%) and government health workers (27%). In the end-line, the topmost sources slightly changed, with television/radio (67%) holding the topmost position, followed by newspapers and magazines (46%), government health workers (38%), and friends/relatives (23%). It is important to note that in the end-line, close to one-fifth of the respondents reported NGO outreach workers and community meetings as the source of information on health.

Table 4: Percentage distribution by sex of adults, according to the source of health-related information in the baseline and end-line surveys, Hyderabad

Source of information	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Newspapers and magazines	33.5	56.5	23.1	38.5	27.1	45.7
Television/Radio	78.8	63.5	72.5	69.6	74.8	67.1
Brochures, posters, other printed material	1.9	18.0	1.3	15.6	1.5	16.6
Health workers	26.6	39.2	26.8	36.4	26.7	37.5
NGO outreach workers	1.0	24.5	1.2	15.6	1.1	19.1
Community meetings	3.9	19.7	4.0	15.4	3.9	17.1
Video show in the community	0.0	9.6	0.8	11.6	0.5	10.8
Telephone helpline	0.3	3.1	0.7	1.6	0.5	2.2

Number of cases	165	172	272	256	437	428
Total percent	100.0	100.0	100.0	100.0	100.0	100.0
Other	9.4	8.2	10.0	1.4	9.7	4.1
Friends/relatives	57.1	22.6	68.5	22.7	64.2	22.7
Web-based information	8.7	0.5	7.4	2.8	7.9	1.9

Type of health facility accessed

In both baseline and end-line surveys, we enquired about the type of health facility where household members of the respondents usually went for treatment. There was a slight change in the type of health facility that was usually accessed by the members of the respondents' households (see Table 5). For example, 28% of the respondents in the baseline said that the members of the household usually went to a public health facility for treatment. This was increased to 64% in the end-line survey. Consequently, the proportion of household members usually accessing a private facility reduced from 64% to 33% between the baseline and end-line surveys.

Table 5: Percentage distribution by sex of adults, according to the type of health facility usually accessed by their household members in the baseline and end-line surveys, Hyderabad

Type of health facility	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Government/Municipal Hospital	20.2	39.8	22.7	39.7	21.7	39.7
Government dispensary	5.4	14.5	4.5	11.8	4.8	12.9
Urban Health Centre/Urban Health Post/Urban Family Welfare Centre	0.0	2.4	1.1	5.3	0.7	4.2
Other public sector health facility	1.2	5.4	1.1	9.2	1.1	7.7
Private hospital	24.4	27.7	21.6	24.8	22.7	25.9
Private doctor/Clinic	42.9	9.0	40.9	6.5	41.6	7.5
Unqualified doctor	5.4	0.0	7.4	0.4	6.6	0.2
Pharmacy/Drug store	0.0	0.6	0.4	0.4	0.2	0.5
Total percent	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	165	172	272	256	437	428

Reasons for usually not going to a public health facility

We asked all the respondents who reported that their household members usually do not access public health facilities for the reasons why. In the end-line survey, the most frequently reported reasons were the long distance to the facility (43%), longer waiting times (33%), inconvenient facility timings (27%), and poor quality of care (17%) (see Table 6). We noticed the same kind of response in the baseline as well, with the top response being a long distance to the facility (43%), followed by long waiting times (42%), poor quality of care (37%) and inconvenient facility timings (37%).

Table 6: Percentage distribution by sex of adults, according to the reasons for not getting treatment from a government health facility in the baseline and end-line surveys, Hyderabad

Reasons	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Facility is far away	42.3	44.4	42.6	41.9	42.5	43.0
Facility timing not convenient	39.8	22.2	35.8	30.2	37.4	26.8
Health personnel often absent	12.2	4.8	9.5	8.1	10.5	6.7
Waiting time too long	42.3	34.9	41.1	31.4	41.5	32.9
Poor quality of care	33.3	19.0	38.9	15.1	36.7	16.8
No reason	2.4	9.5	2.1	9.3	2.2	9.4
Other	4.9	0.0	7.4	0.0	6.4	0.0
Total percent	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	123	64	204	82	327	146

Availability of health insurance

We asked all the respondents about the details of their health insurance scheme cover for themselves or the other members of the family. We noticed that health insurance coverage increased between baseline and endline surveys (see Table 7). For instance, in the baseline, only 68% of the adults reported that they had a health insurance scheme. This increased to 81% in the end-line. The increase cut across sex and was mostly due to the increased coverage of the state Arogyasri health insurance scheme. More respondents reported that they had more than one insurance scheme during the end-line (increased to 31% from 3% in the baseline).

Table 7: Percentage distribution by sex of adults having different types of health scheme/insurance coverage in the baseline and end-line surveys, Hyderabad

Name of health scheme/ insurance	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Employees' State Insurance Scheme	7.2	3.4	3.9	5.2	5.1	4.5
Central Governmentt Health Scheme	0.0	0.9	0.7	1.4	0.4	1.2
State Health Insurance Scheme	69.9	76.9	58.1	78.4	62.6	77.8
Rashtriya Swasthya Bima Yojana	2.0	29.4	0.9	23.3	1.3	25.8

Number of cases	165	172	272	256	437	428
Total percent	100.0	100.0	100.0	100.0	100.0	100.0
Have more than one insurance scheme	4.4	31.2	2.5	31.2	3.2	31.2
No health insurance	22.6	17.4	37.3	20.6	31.8	19.3
Medical reimbursement from employer	1.2	1.4	0.8	0.0	0.9	0.5
Other health insurance through employer	2.4	0.4	0.8	1.2	1.4	0.9

Personal habits

We asked all respondents about their personal habits such as consumption of tobacco and alcohol. Male respondents reported these habits more frequently. We noticed a reduction in these habits (see Table 8) between baseline and end-line surveys, particularly in regard to drinking alcohol. In the baseline, 70% of the males reported that they had never smoked, this increased to about 77% in the end-line. Similarly, we noticed a reduction in drinking habits among males, particularly among males who reported that they consumed alcohol about once in a week.

Table 8: Percentage distribution by sex of adults, according to personal habits such as smoking cigarettes and drinking alcohol in the baseline and end-line surveys, Hyderabad

Personal habits	Male		Fen	Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line	
Smoke cigarettes/bidis							
Current smoker	25.0	16.6	0.0	1.5	9.5	7.5	
Past smoker	5.3	6.4	0.2	1.7	2.1	3.6	
Never smoked	69.7	77.0	99.8	96.8	88.4	88.9	
Drink alcohol							
Almost every day	8.6	8.0	0.0	1.4	3.2	4.0	
About once a week	23.6	19.6	0.4	1.5	9.1	8.7	
Less than once a week	17.3	3.6	1.1	1.4	7.2	2.3	
Never	50.5	68.9	98.6	95.7	80.4	85.0	
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	
Number of cases	165	172	272	256	437	428	

04

KNOWLEDGE ABOUT KEY ASPECTS OF TB



Knowledge about key aspects of TB

We asked all the adults various questions to assess their knowledge about TB, such as what are the symptoms of lung TB? How does it spread from one person to another? How can one prevent TB? What are the methods of confirmation of TB? What is the duration of treatment? We first enquired about what the probable disease condition could be if a person was suffering from a persistent cough for two weeks or more. The results are presented in Table 9. We identified a reduction in the proportion of respondents who reported that the disease condition could be TB between baseline (43%) and end-line surveys (27%). In addition, in the end-line survey, other frequently-reported disease conditions were seasonal cold (52%), viral fever (40%) and throat infection (32%). About 60% and 20% of the respondents in the baseline survey reported seasonal cold and throat infection, respectively. In both baseline and end-line surveys, more males than females suspected TB as the disease condition if a person had a persistent cough for two weeks.

Table 9: Percentage distribution of adults by sex, according to the reported disease condition if a person has a persistent cough for two weeks or more in the baseline and end-line surveys, Hyderabad

Disease condition	Male		Fem	Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line	
Throat infection	21.9	33.6	18.6	30.3	19.9	31.6	
Seasonal cold	58.7	48.3	60.3	55.0	59.7	52.3	
Viral fever	13.7	35.4	19.6	42.4	17.3	39.6	
Tuberculosis	45.2	29.3	41.2	24.8	42.7	26.6	
Chest congestion	3.8	4.3	4.6	5.2	4.3	4.9	
Asthma/COPD	1.3	7.2	5.2	4.3	3.7	5.5	
Others	3.3	1.2	3.5	2.7	3.4	2.1	
Don't know/Can't say	1.7	1.2	0.9	2.1	1.2	1.7	
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	
Number of cases	165	172	272	256	437	428	

We also examined the proportion of adults who knew or had heard about TB according to various background characteristics, and the results are presented in Table 10. Overall, we noticed that the proportion of respondents who knew or had heard of TB significantly increased from 84% in the baseline to 91% in the end-line survey. The increase in knowledge of TB over the period was significant for females, persons aged between 40-59 years, currently married people, illiterate persons, persons who are engaged in business, persons who are not working (below 10% level), Hindus, persons from Scheduled Castes/Tribes, persons whose monthly income is less than ₹5000, and those whose monthly income is less than ₹15000. We noticed that the inequity in knowledge levels reduced between various socio-economic and demographic groups, as almost all groups have values close to 90%.

Table 10: Percentage distribution of adults who knew or had heard about TB, according to selected characteristics in the baseline and end-line surveys, Hyderabad

Characteristic	Bas	Baseline		d-line	p-value
	Percent	Number of cases	Percent	Number of cases	
Sex of the respondent					
Male	88.0	165	92.8	172	0.138
Female	82.0	272	89.5	256	0.015
Age (in years)					
< 40	86.3	309	90.8	250	0.101
40-59	77.4	103	92.2	137	0.002
60+	86.8	25	86.4	41	0.965
Marital status					
Currently married	85.8	339	91.6	349	0.018
Widowed/Divorced/Separated	77.4	47	89.1	39	0.164
Never married	80.4	51	90.0	39	0.22
Literacy and education					
Illiterate	66.7	102	84.6	113	0.003
Literate, 1-7 years of schooling	86.1	105	88.3	90	0.642
8+ years of schooling	91.2	230	95.0	225	0.119
Occupation					
Business	78.1	49	97.3	48	0.015
Salaried job	100.0	29	95.7	49	NE
Other job	84.1	130	88.0	140	0.363
Not working	83.7	229	90.1	191	0.058
Religion					
Hinduism	81.2	280	90.1	277	0.003
Islam	92.1	144	92.2	149	0.996
Other	61	13	87.7	3	0.448
Caste/Tribe					
Scheduled Caste/Tribe	80.9	109	92.0	184	0.006
Others	85.4	328	90.0	244	0.104

Monthly income (in ₹)					
< 5000	82.0	272	91.1	194	0.007
5000+	88.0	165	90.6	234	0.391
Household monthly income (in ₹)					
< 15000	83.0	290	89.3	234	0.043
15000+	86.7	147	92.7	194	0.069
Total	84.3	437	90.8	428	0.004

All adults who reportedly knew or had heard about TB were asked about their source of information on TB. In the end-line survey, the top three sources of information were television or radio (57%), word of mouth from friends or relatives (44%) and TB among friends or relatives (27%). In the end-line, comparatively more males than females reported these as their source of information on TB. However, in the baseline survey, the most frequently reported sources of information on TB were word of mouth from friends or relatives (62%), television or radio (42%) and TB among friends or relatives (33%). A comparatively higher proportion of respondents in the end-line (34%) reported either Anganwadi worker or DOTS provider/government health workers as the source of information when compared to the baseline survey (12%), but this proportion still remains small.

Table 11: Percentage distribution by sex of adults persons, according to the source of information on TB (among those who knew or had heard about TB) in the baseline and end-line surveys, Hyderabad

Source of information on TB	Ma	ale	Fen	Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line	
Television/ Radio	42.9	64.4	40.8	52.5	41.6	57.4	
Newspaper/ Magazine	12.8	30.6	7.9	22.0	9.9	25.5	
Posters/ Banners/ Hoardings/ Campaigns	2.6	9.6	1.2	5.2	1.7	7.0	
Word of mouth from friends / relatives	62.0	48.1	62.5	40.4	62.3	43.6	
TB among friends/relatives	33.2	30.0	33.1	24.8	33.1	26.9	
DOTS provider/Health worker	9.2	10.6	10.4	8.5	9.9	9.3	
Anganwadi worker	0.7	25.2	2.7	24.8	1.9	25.0	
Community Meetings	2.5	17.0	1.8	14.0	2.1	15.2	
Workplace	14.9	6.9	4.5	4.9	8.6	5.7	
Schools/ Teachers	3.0	2.7	7.7	2.7	5.8	2.7	
Religious leaders	0.3	0.0	0.0	0.0	0.1	0.0	
Political leaders	0.6	0.0	0.0	0.0	0.2	0.0	
Respondent had TB	2.1	0.6	1.9	0.4	2.0	0.5	
Others	9.2	2.4	8.2	2.3	8.6	2.4	
Number of cases	145	159	223	230	368	389	

We asked the respondents about the most common symptoms of lung TB. We found that there was an increase in the proportion of adults who reported that cough was the most common symptom of the lung TB between the baseline (58%) and end-line (82%) surveys (see Table 12). Consequently, the proportion of respondents who could not say the symptoms reduced between baseline and end-line surveys. The reporting of cough as the most common symptom was slightly higher among males (86%) than females (79%) in the end-line survey.

Table 12: Percentage distribution of adults by sex, according to reporting of most common symptom of lung TB in the baseline and end-line surveys, Hyderabad

Most common symptom of lung TB	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Cough	58.9	85.5	57.1	79.2	57.7	81.7
Fever	2.9	3.4	0.9	4.7	1.7	4.2
Night sweats	0.0	0.5	0.3	0.8	0.2	0.7
Weight loss	9.6	0.0	11.1	1.1	10.5	0.6
Weakness	12.5	0.9	6.4	0.7	8.7	8.0
Chest pain	0.0	0.6	0.6	1.1	0.3	0.9
Others	4.2	2.0	5.7	2.1	5.1	2.0
Don't know/Can't say	12.1	7.2	18.0	10.5	15.7	9.2
Number of cases	165	172	272	256	437	428

We asked adults about the mode of transmission of TB. We noticed a 10 percentage point increase in the response that TB is transmitted through the air when a person with TB coughs or sneezes, between baseline and end-line surveys (see Table 13). Consequently, the proportion of respondents who could not correctly respond on the mode of transmission of TB reduced between the baseline and end-line survey. We also noticed that there was a reduction in the proportion of adults giving incorrect responses between baseline and end-line surveys. Similarly, in both baseline and end-line surveys, more males (75% and 85%) than females (69% and 78%) reported that TB spreads through the air when a person with TB coughs/sneezes.

Table 13: Percentage distribution of adults by sex, according to reporting of modes of transmission of TB in the baseline and end-line surveys, Hyderabad

Mode of TB transmission	Male		Fen	nale	Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Through the air when a person with TB coughs/ sneezes	75.2	85.0	68.6	77.8	71.1	80.7
Sharing utensils	34.8	12.4	39.9	16.8	38.0	15.0
Touching a person with TB	12.0	11.0	8.2	9.6	9.6	10.1
Food	24.2	6.0	27.7	8.4	26.4	7.5
Sexual contact	5.1	3.8	4.6	3.6	4.8	3.7
Mosquito bites	5.0	0.6	0.8	1.5	2.4	1.1
Stepping on sputum	12.3	5.0	5.8	2.8	8.2	3.7
Other	1.7	0.0	2.1	0.0	1.9	0.0
Don't know/Can't say	18.2	14.5	24.3	19.2	22.0	17.3
Total percent	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	165	172	272	256	437	428

We asked adults about the different ways to prevent the spread of TB within the family or community. These results are presented in Table 14. We did not notice any change, between the baseline and end-line surveys, in the proportion of respondents reporting that covering the mouth and nose while coughing was the way to prevent the spread of TB. However, there was an increase in the proportion of males who mentioned this knowledge aspect between the baseline and end-line surveys, and a reduction among females. We also noticed a reduction in the proportion of respondents who did not know or could not state the ways to prevent the spread of TB.

Table 14: Percentage distribution by sex of adults who reported different ways to prevent the spread of TB within family or community in the baseline and end-line surveys, Hyderabad

Ways to prevent spread of TB	Male		Fem	Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line	
Covering mouth and nose while coughing	69.5	74.9	71.5	67.8	70.7	70.7	
Wearing a mask	56.2	57.4	50.8	51.3	52.9	53.8	
Good ventilation	4.0	21.8	4.7	26.7	4.4	24.8	
Prompt diagnosis and treatment	20.1	21.4	19.1	21.9	19.5	21.7	
Vulnerable persons like children to take medicines to prevent TB	2.8	8.8	3.5	10.5	3.3	9.8	
Good nutrition	19.1	16.1	22.1	13.9	21.0	14.7	
Other	20.1	0.0	19.2	0.5	19.5	0.3	
Don't know/cannot say	17.1	10.6	21.8	15.1	20.0	13.3	
Number of cases	165	172	272	256	437	428	

We asked respondents about the confirmatory test for TB. The results are provided in Table 15. We noticed a significant increase in the proportion of respondents who said that the sputum test is the confirmatory test for TB between baseline (62%) and end-line surveys (75%). The proportion of respondents who mentioned chest X-Rays also increased between baseline (60%) and end-line (67%) surveys. However, although there was a reduction in the proportion of respondents who said that a blood test is the confirmatory test, nearly two-fifths of the respondents considered blood tests as the confirmatory test. We did not notice much difference in the responses between sexes.

Table 15: Percentage distribution of adults by sex who reported specific confirmatory tests for TB in the baseline and end-line surveys, Hyderabad

Test reported	Male		Fem	Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line	
X-Ray of the chest	63.4	72.4	58.5	63.3	60.3	67.0	
Sputum test	68.9	77.5	58.3	74.0	62.3	75.4	
Blood test	77.7	38.8	73.1	41.5	74.9	40.4	
Mantoux tuberculin/skin test	16.7	21.4	21.4	12.7	19.6	16.2	
Tissue biopsy	12.7	12.8	13.4	6.4	13.1	9.0	
Other test	24.6	0.0	20.5	0.0	22.0	0.0	
Number of cases	165	172	272	256	437	428	

We asked respondents whether they knew where adults could be tested for TB. The results are provided in Table 16. In both baseline and end-line surveys, a majority of the respondents mentioned a public health facility as the place where adults could be tested for TB. There was an increase in the proportion of respondents who said that the government TB hospital (51% vs. 69%) was the place where the TB test could be done. In both baseline and end-line surveys, we observed more males than females reporting that the government TB hospital was the place for TB testing. It is important to note that nearly half of the respondents in the baseline survey reported a private health facility as the place for TB testing, but this proportion was reduced to 11% in the endline survey. We did not observe much difference in the proportion of respondents who did not know or couldn't say about the testing centres between baseline and end-line surveys.

Table 16: Percentage distribution of adults by sex, according to the place where adults can be tested for TB, in the baseline and end-line surveys, Hyderabad

Place for TB testing	Male		Fem	Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line	
Municipal Corporation Hospital	49.0	17.0	53.9	16.3	52.1	16.6	
Government TB Hospital	60.3	73.7	45.0	65.8	50.8	69.0	
Medical college	0.0	2.9	0.4	1.1	0.3	1.8	
Other government hospital	16.5	9.3	22.4	11.3	20.2	10.5	
Designated Microscopy Centre	2.1	10.6	1.1	7.3	1.5	8.6	
Private hospital	54.9	6.4	43.3	7.3	47.7	7.0	
Private clinic	4.6	4.7	4.0	2.8	4.2	3.6	
AYUSH hospital/clinic	0.0	0.0	0.5	0.3	0.3	0.2	
Any private lab	11.6	3.5	16.8	1.2	14.9	2.1	
Others	0.0	7.2	0.5	10.5	0.3	9.2	
Don't know/Can't say	13.5	11.0	20.5	16.7	17.8	14.4	
Number of cases	165	172	272	256	437	428	

We asked respondents where treatment for TB was available. The results are shown in Table 17. In both baseline and end-line surveys, most of the respondents mentioned the municipal hospital as the place where the treatment for TB was available, however no change was noticed in the response. Similarly, respondents who said that they did not know or could not say also remained the same. We did not notice much difference in the responses by sex, except regarding private facilities.

Table 17: Percentage distribution by sex of adults according to responses about places where treatment for TB is available in the baseline and end-line surveys, Hyderabad

Place of treatment available	Ma	Male		Female		Total	
	Baseline	Baseline End-line		End-line	Baseline	End-line	
Municipal Hospital	72.0	39.8	69.0	36.0	70.2	37.5	
Government dispensary	8.7	38.1	7.2	33.9	7.7	35.6	
Urban Health Centre/Urban Health Post/Urban Family Welfare Centre	2.0	2.0	1.8	6.9	1.9	4.9	
Government TB Hospital	28.5	0.0	19.6	0.0	23.0	0.0	

1.8	12.9	1.4	10.5	1.6	11.5
16.5	2.2	10.6	2.7	12.8	2.5
12.0	16.5	17.1	22.1	15.2	19.9
51.0	9.9	43.1	6.6	46.0	8.0
1.0	0.5	1.1	1.7	1.1	1.2
0.5	0.0	0.4	0.7	0.5	0.4
13.3	11.7	21.0	16.4	18.0	14.6
165	172	272	256	437	428
	16.5 12.0 51.0 1.0 0.5 13.3	16.52.212.016.551.09.91.00.50.50.013.311.7	16.52.210.612.016.517.151.09.943.11.00.51.10.50.00.413.311.721.0	16.5 2.2 10.6 2.7 12.0 16.5 17.1 22.1 51.0 9.9 43.1 6.6 1.0 0.5 1.1 1.7 0.5 0.0 0.4 0.7 13.3 11.7 21.0 16.4	16.5 2.2 10.6 2.7 12.8 12.0 16.5 17.1 22.1 15.2 51.0 9.9 43.1 6.6 46.0 1.0 0.5 1.1 1.7 1.1 0.5 0.0 0.4 0.7 0.5 13.3 11.7 21.0 16.4 18.0

Finally, we asked respondents about the cost and duration of treatment for TB. The results indicated that there was a slight increase, between the baseline and end-line, in the proportion of respondents saying that no cost needed to be incurred for TB treatment (see Table 18). For instance, in the baseline, 52% of the respondents said no cost would be incurred for TB treatment, and this increased to 70% in the end-line survey. In both baseline and end-line surveys, more males than females said that TB treatment is available for free. However, nearly 30% of the adults were not aware about the cost of the TB treatment.

We did not notice much change in the proportion of respondents who reported six months as the duration for TB treatment between baseline and end-line surveys. However, two-fifths of adults did not know or could not say what was the duration of treatment in the end-line survey, and this was more frequent among females than males. The results indicate that the knowledge on duration of treatment did not improve as much as other knowledge aspects discussed previously.

Table 18: Percentage distribution by sex of respondents, according to the cost and duration of treatment for TB in the baseline and end-line surveys, Hyderabad

Item	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Cost of treatment (in ₹)						
No cost	57.9	75.5	47.5	66.7	51.5	70.3
1 - 9999	5.1	0.5	5.2	0.4	5.2	0.4
10000+	9	0	5.5	0	6.8	0
Don't know/Can't say	28.0	24.0	41.8	32.9	36.5	29.4
Duration of treatment						
<6 months	24.2	18.8	18.2	15.3	20.5	16.7
6 months	29.8	40.2	31.9	33.5	31.1	36.2
6+ months	19.0	7.9	12.4	4.4	14.9	5.8
Don't know/Can't say	27.0	33.1	37.5	46.8	33.5	41.3
Number of cases	165	172	272	256	437	428

We read out two statements; "TB is fully curable" and "All TB patients need admission in hospitals for treatment" to the respondents, and recorded their response on a five score Likert scale. We noticed an increase from 68% to 83% in the proportion of respondents who either strongly agreed or agreed to the statement that "TB is fully curable" between baseline and end-line surveys. We did not notice any difference by sex of the person in the combined percentage of respondents who strongly agreed or agreed to the statement "TB is fully curable". However, the proportion of adults who could not answer this statement slightly reduced from 19% in the baseline to 13% in the end-line. Regarding the statement "All TB patients need admission in hospitals for treatment", 46% in the baseline and 70% in the end-line either strongly agreed or agreed. The proportion of respondents who could not answer this statement remained the same between baseline and end-line surveys.

Table 19: Percentage distribution of adults by sex, according to their opinion on whether TB is fully curable and whether all TB patients need admission in hospital for treatment in the baseline and end-line surveys, Hyderabad

Statement	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
TB is fully curable						
Strongly agree	34.1	54.0	36.7	44.2	35.7	48.1
Agree	35.9	30.1	29.3	37.8	31.8	34.7
Neither agree nor disagree	9.6	0.5	8.9	0.4	9.2	0.4
Disagree	4.2	2.6	2.7	2.5	3.3	2.5
Strongly disagree	1.7	0.9	1.3	1.7	1.4	1.4
Don't know/Can't say	14.4	11.9	21.1	13.4	18.6	12.8
All TB patients need admission in hospital for treatment						
Strongly agree	25.4	47.7	23.1	35.1	24.0	40.1
Agree	25.2	25.8	20.3	32.6	22.1	29.8
Neither agree nor disagree	17.3	3.3	10.5	2.7	13.1	2.9
Disagree	14.0	6.6	21.4	10.1	18.6	8.7
Strongly disagree	3.5	1.3	4.3	1.3	4.0	1.3
Don't know/Can't say	14.6	15.3	20.4	18.2	18.2	17.1
Number of cases	165	172	272	256	437	428

We asked the respondents questions to understand their willingness about disclosure of one's TB status to other people. The results are provided in Table 20. We do not present the other responses, which were given by less than 5% of the respondents. We observed a change in the most frequent response between baseline and end-line surveys. In the baseline, the most frequently-reported responses were spouse (82%), parents (81%), doctor (68%) and children (38%). However, in the end-line, the most frequently-reported responses were doctor (77%), spouse (72%), parents (40%) and children (28%) as the person to whom a TB patient should disclose his/ her status. The results indicate that the percentage of respondents who consider disclosure to other people declined between baseline and end-line surveys, except for disclosure to a doctor. In the end-line survey, more males than females suggested that a TB patient should disclose their TB status to other people.

Table 20: Percentage distribution of adults by sex, according to the person to whom a TB patient should disclose that he/she has TB (among those who knew or had heard about TB) in the baseline and end-line surveys, Hyderabad

Person to whom TB status should be disclosed	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Doctor	67.3	80.0	67.7	74.2	67.6	76.6
Spouse	78.2	73.5	84.6	71.4	82.1	72.3
Children	30.1	36.2	43.0	22.1	37.9	27.9
Parents	74.3	45.4	85.7	35.8	81.2	39.7
Siblings	26.9	20.1	28.6	18.2	27.9	19.0
Other relatives	6.5	1.3	8.5	1.9	7.7	1.7
Friends	25.9	7.5	15.3	2.1	19.5	4.3
Nobody	2.0	0.7	5.2	0.0	3.9	0.3
Don't know/Can't say	2.8	3.0	0.1	3.0	1.2	3.0
Number of cases	145	159	223	230	368	389

We asked respondents who agreed that a TB patient should disclose his or her status for the reasons why. In the end-line, the top responses were preventing the spread of the disease (53%), quick treatment without delay (49%) and family support (47%) as the reasons for disclosure. In the end-line, comparatively more males than females reported the reasons of preventing the spread of the disease (57% vs. 49%) and quick treatment without delay (56% vs. 44%) as the reasons for disclosure. However, in the baseline, the most frequent responses were quick treatment (81%), family support (74%), and treatment support (59%) as the reasons for disclosure. The results also indicated that a comparatively lower percentage of respondents in the end-line survey provided various reasons for disclosure as compared to baseline survey, except for preventing spread of the disease.

Table 21: Percentage distribution of adults by sex, according to reasons for disclosing one's TB status (among those who said that a person should disclose one's TB status) in the baseline and end-line surveys, Hyderabad

Reason for disclosure	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Quick treatment	85.9	55.7	78.5	44.2	81.4	48.9
Prevent spread	17.5	57.2	12.7	49.2	14.6	52.5
Emotional support	26.7	22.4	34.7	13.3	31.5	17.1
Family support	70.4	44.8	76.8	48.8	74.3	47.2
Treatment support	47.7	26.3	66.4	27.7	59.0	27.1
Financial support	29.3	14.4	19.5	10.9	23.4	12.3
Other	1.8	0.0	3.4	0.0	2.8	0.0
Number of cases	145	153	223	223	368	376

We also enquired from respondents about the person to whom one should not disclose one's TB status. The results are presented in Table 22. We noticed a shift in the frequency of reporting. For example, in the baseline, the most frequent response was that one's TB status should not be disclosed to neighbours (69%), and in the end-line, the most frequent response was that one's TB status should not be disclosed to other relatives (58%). In the baseline, other frequent answers were other relatives (57%), and friends (30%). In the end-line, other frequently reported answers were friends (45%) and co-workers (26%). In the end-line, more males than females reported that one's TB status should not be disclosed to friends (57% vs. 36%) and to co-workers (32% vs. 22%). On the other hand, in the end-line more females (27%) than males (19%) reported that TB status should not be disclosed to neighbours.

Table 22: Percentage distribution of adults by sex, according to reasons for non-disclosure of one's TB status (among those who reported that one should not disclose one's TB status) in the baseline and end-line surveys, Hyderabad

Person to whom TB status should not be disclosed	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Children	10.2	9.5	8.1	8.7	8.9	9.0
Siblings	1.8	6.4	3.0	6.3	2.5	6.4
Aunt/ uncle	2.5	23.6	1.7	19.8	2.0	21.4
Other relatives	53.3	58.1	58.8	57.4	56.6	57.7
Friends	28.3	56.7	31.2	36.4	30.0	44.7
School mates	1.6	34.0	2.0	19.0	1.8	25.1
Co-workers	17.6	31.7	8.1	21.9	11.8	25.9
Boss	8.3	22.3	5.4	18.2	6.6	19.9
Neighbours	69.3	19.1	69.1	26.7	69.2	23.6
Don't know/Can't say	12.0	8.6	13.5	11.4	12.9	10.2
Number of cases	145	159	223	230	368	389

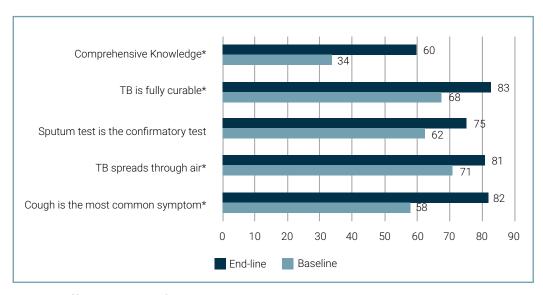
The reasons for non-disclosure were also examined and the results are shown in the Table 23. In the end-line survey, the frequently reported reasons for non-disclosure of TB status were that the patient's family name will be spoiled (62%), people in the community will avoid the TB patient (59%), and that the community will try to drive the patient out (29%). In the end-line survey, more females than males reported that the patient's family name will be spoiled as the reason for non-disclosure. However, in the baseline, that people in the community will avoid the TB patient (81%), the patient's family name will be spoiled (51%) and that the community will try to drive the patient out (25%) were the top three reported reasons for non-disclosure.

Table 23: Percentage distribution of adults by sex, according to reasons for non-disclosure that a person has TB (among those who reported that one should not disclose one's TB status) in the baseline and end-line surveys, Hyderabad

Reason for non-disclosure	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Our family name will be spoiled	50.9	56.3	50.8	66.1	50.8	62
People in the community will avoid him/her	76.6	66.7	83	53.3	80.5	58.9
People in the community will try to drive him/her out	25.5	33.3	24.9	26.1	25.2	29.1
Loss of job	12.4	27.3	6.4	23	8.8	24.8
Other	8.1	0	3.1	0.7	5.1	0.4
Number of cases	128	146	193	203	321	349

We devised a composite index based on four key knowledge aspects of TB to indicate comprehensive knowledge of TB among adults. The components of comprehensive knowledge included the facts that 1) TB spreads through air when a person with TB coughs or sneezes, 2) cough is the most common symptom of lung TB, 3) sputum test is the confirmatory test for TB and 4) that TB is fully curable. Figure 2 provides the distribution of the respondents according to comprehensive knowledge and its component indicators in the baseline and end-line. Among the component indicators, the change between baseline and end-line was highest for the respondents reporting that cough is the most common symptom of lung TB (24 percentage points), followed by the facts that TB is fully curable (15 percentage points), sputum test is the confirmatory test (13 percentage points) and TB spreads through air (10 percentage points). Consequently, the respondents' comprehensive knowledge increased from 34% in baseline to 60% in the end-line survey, showing an increment of 26 percentage points.

Figure 1: Percentage of adults with comprehensive knowledge and its components



Note:- *difference is significant at below 5% level

We also examined the changes in comprehensive knowledge between baseline and end-line surveys among the respondents, according to different characteristics. We noticed a statistically significant increase in comprehensive knowledge between baseline and end-line from 34% to 60% (see Table 24). We noticed that the increase in comprehensive knowledge was statistically significant and cut across all socio-economic and demographic characteristics. Although we noticed a significant increase in comprehensive knowledge for some groups, including persons aged 60 and above, who those were never married, and persons who belong to religions other than Hinduism and Islam, the increase was not significant. Among the groups for which we identified a statistically significant increment in comprehensive knowledge between baseline and end-line surveys, the increase was found to be more than 20 percentage points.

Table 24: Percentage distribution of adults who had comprehensive knowledge on TB, according to selected characteristics in the baseline and end-line surveys, Hyderabad

Characteristic	Baseline		End-line		p-value
	Percent	Number of cases	Percent	Number of cases	
Sex of the respondent					
Male	35.9	165	63.5	172	<0.001
Female	32.1	272	57.1	256	<0.001
Age (in years)					
< 40	31.7	309	60.4	250	<0.001
40-59	39.6	103	64.8	137	<0.001
60+	31.5	25	37.9	41	0.595
Marital status					
Currently married	31.2	339	60.3	349	<0.001
Widowed/Divorced/Separated	33.7	47	62.5	39	0.009
Never married	48.6	51	50.9	40	0.828
Literacy and education					
Illiterate	27.4	102	46.2	113	0.005
Literate, 1-7 years of schooling	29.7	105	59.1	90	<0.001
8+ years of schooling	38.0	230	66.6	225	<0.001
Occupation					
Business	34.7	49	61.9	48	0.008
Salaried job	30.6	29	81.4	49	<0.001
Other job	32.8	130	57.4	140	<0.001
Not working	34.0	229	55.1	191	<0.001
Religion					
Hinduism	34.5	280	59.6	277	<0.001
Islam	32.0	144	59.9	149	<0.001
Other	29.0	13	55.5	3	0.426

Caste/Tribe					
Scheduled Caste or Scheduled Tribe	30.9	109	54.7	184	<0.001
Others	34.4	328	63.3	244	<0.001
Personal monthly income (in ₹)					
< 5000	32.5	271	57.6	194	<0.001
5000+	35.1	166	61.3	234	<0.001
Household monthly income (in ₹)					
< 15000	31.9	290	59.0	234	<0.001
15000+	36.8	147	60.4	194	<0.001
Total	33.5	437	59.6	428	<0.001

Note: Comprehensive knowledge includes respondents who reported that cough is the most common symptom of lung TB, TB spreads through air, sputum test is the confirmatory test for TB, and TB is curable.

Exposure to THALI program

We enquired from the adult persons about their exposure to various THALI activities conducted as a part of community engagement. These activities include exposure to various IEC materials as well as communication activities to impart information on key aspects of TB prevention, control and treatment carried out at the community level. During the end-line survey, all the respondents were shown selected IEC materials which were used extensively by the CHW or displayed in public places, and they were asked whether they had seen those materials. Table 25 provides the distribution of the respondents who had seen specific IEC materials. We noticed that about 82% of the respondents had seen at least one of the IEC materials. However, when we examined the specific type of IEC material seen by the respondent, it was observed that the most frequently reported IEC material was the cough hygiene leaflet or poster (74%), followed by the community handout leaflet (47%), school brochure (29%), and auto driver poster (34%), Comparatively more males were reported to have seen more of these IEC materials than females.

Table 25: Percentage distribution by sex of adults who had seen various IEC materials in the end-line survey, Hyderabad

Type of IEC material	Male	Female	Total
Cough hygiene leaflet/poster	79.4	70.0	73.8
Community handout leaflet	47.2	46.3	46.7
School brochure	31.3	28.1	29.4
Construction worker poster	25.5	22.6	23.8
Auto driver poster	28.3	28.6	28.5
Pourakarmika poster	27.6	17.4	21.5
Young girl poster	32.2	19.6	24.6
Exposure to any of the above IEC materials	86.1	79.7	82.3
Number of cases	172	256	428

We asked adults who had seen the IEC materials about the place where they had seen those materials or the person they had seen them with. We noticed that about 70% of the respondents mentioned that the public hospital was the place where they had seen the IEC material (see Table 26). Anganwadi centre (57%) and THALI CHWs (34%) were the other most frequently reported responses. Around 10% of the respondents reported that they could not recall where they had seen the IEC materials. More females (74%) than males (64%) reported that they had seen the IEC materials in the public hospital.

Table 26: Percentage distribution of adults according the place where they have seen the IEC materials (among persons who had seen the IEC materials), Hyderabad

Place where/person with whom the IEC material was seen	Male	Female	Total
TB Alert/THALI CHW	38.3	30.6	33.8
Public hospital	63.8	73.7	69.5
Anganwadi Centre	58.6	56.4	57.3
Petty shop/tea shop	1.9	1.9	1.9
SHG	22.2	5.0	12.2
Slum association	1.4	2.4	1.9
Youth group	2.6	4.7	3.8
Labour unions	2.5	1.8	2.1
Faith-based organisation	1.2	1.5	1.4
Community Based Organisations	4.2	7.5	6.1
During public campaigns	2.8	3.4	3.1
Others (specify)	1.6	1.9	1.8
Don't know	13.5	7.7	10.2
Number of cases	148	204	352

We enquired about what message they perceived after seeing the IEC materials. About 70% of the respondents who had seen the IEC materials mentioned that they learnt that covering one's mouth while coughing was a way to prevent the spread of TB (see Table 27). Other frequently-reported information received from the IEC materials was 'TB patients should eat nutritious food' (41%), 'Test sputum for TB' (31%) and the common symptoms of TB (28%). More females than males reported that 'covering one's mouth while coughing was a way to prevent the spread of TB' (73% vs. 66%) as the information received from the IEC materials. However, more males than females reported 'Test sputum for TB' (36% vs. 27%) and understanding about common symptoms of TB (33% vs. 25%) as the information that they had learned from the IEC materials. Also, 20% of the respondents reported that 'TB can be completely cured', and more males (29%) than females (14%), mentioned this as the information received through the IEC materials. About 12% of the respondents were not able to state what information they had received from the IEC materials.

Table 27 Percentage distribution of adults according to the information received from the IEC materials (among the persons who had seen the IEC materials), Hyderabad

Information received from IEC materials	Male	Female	Total
Covering ones mouth while coughing prevents the spread of TB	66.3	73.2	70.3
Eat nutritious food	40.9	40.3	40.6
Common symptoms of TB	32.7	25.0	28.2
Test sputum for TB	36.2	26.9	30.8
TB can be completely cured	28.8	13.9	20.2
Adherence to TB medication is important	18.0	19.8	19.0
Consequences of not treating TB	6.5	7.2	6.9
Risk of alcohol consumption and TB	9.7	5.2	7.1
Risk of tobacco consumption and TB	11.3	4.9	7.6
Stop alcohol consumption during treatment	6.4	3.4	4.7
Complete the full course of treatment	13.5	5.8	9.0
Test for TB, if one has persistent cough for more than 2 weeks	16.4	8.4	11.7
Don't know/Can't say	13.7	11.0	12.1
Number of cases	148	204	352

In addition to these IEC materials, the CHWs had also conducted other community engagement activities such as in-person contact meetings, sensitization meetings for key opinion leaders, and TB meetings including small or large group meetings to impart knowledge on key aspects of TB. We collected information about the exposure to these activities from all the respondents, and the results are provided in Table 28. We have specifically analysed the exposure of the respondents to in-person contacts, participation in sensitization meetings and participation in small or large group meetings. Overall, 75% of the respondents were contacted through in-person meetings, a little more than one-third had attended the small or large group meetings on TB, and only 20% of the respondents had attended the sensitization meetings. Comparatively more males than females were exposed to community engagement activities.

Table 28: Percentage distribution of adults by sex who were exposed to various community engagement activities in the end -line survey, Hyderabad

Exposed to	Male	Female	Total
In-person contact			
Yes	83.2	68.6	74.5
No	16.8	31.4	25.5
Sensitization meeting			
Yes	24.1	17.2	20.0
No	75.9	82.8	80.0
Small or large group meeting on TB			
Yes	48.4	32.5	38.9
No	51.6	67.5	61.1
Number of cases	172	256	428

05

PROGRAM IMPLICATIONS AND RECOMMENDATIONS



Effect of THALI program exposure on knowledge of TB

We noticed an increase in the knowledge aspects of TB among adults living in the urban slum areas of Hyderabad. However, we were not able to attribute with any certainty that the change in these aspects was due to the introduction of the program. In reality, the causal effect of any intervention program for individual "i" is the comparison of individual "i's" outcome if he/she is exposed to the intervention (i.e. the potential outcome in the presence of intervention), and individual "i's" outcome if individual "i" is not exposed to the intervention (the potential outcome in the absence of intervention). The major problem of causal inference of the intervention program that, for each individual, we can observe only one of these potential outcomes, because each unit (each individual at a particular point in time) will receive either treatment or control, not both. However, due to availability of advanced statistical techniques, one will be able to identify the effect of the program using non-experimental data. Matching methods are techniques that attempt to replicate, as closely as possible, the ideal of randomized experiments when using observational data (non-experimental data) and provide a way to estimate the causal effect of the intervention program. The goal of matching is, for every exposed unit, to find one (or more) non-exposed unit(s) with similar observable characteristics against whom the effect of the intervention can be assessed. By matching exposed units to similar non-exposed units, matching enables a comparison of outcomes among exposed and non-exposed units to estimate the effect of the intervention reducing bias due to confounding. We used the Euclidean distance metric to match the exposed and nonexposed individuals through nearest neighborhood matching and used the characteristics such as sex of the person, age of the person and religion of the respondent to match each observation. Since the sample may not be sufficient to identify the impact of the program using the Hyderabad data alone, we pooled the data of Hyderabad with a similar study conducted in Bengaluru. We used characteristics such as age, sex, name of the city, occupation, education, religion, marital status, caste/tribe, and household income of the respondent as the covariates in the model.

The pooled data contains the information for 921 respondents from Bengaluru and Hyderabad. We first examined the percentage of respondents according to their exposure to various THALI community engagement activities. Specifically, we examined the exposure to any of the IEC materials shown to them, in-person contacts, sensitization meetings and small or large group meetings from the pooled data (see Table 29). Overall, according to the pooled data, 77% of the respondents were exposed to any one of the IEC materials shown to them, 66% were exposed to in-person contact, 18% had participated in a sensitization meeting and 39% were attendees at a small or large meeting on TB. According to the pooled data, comparatively more males as compared to females were exposed to the various community-level activities.

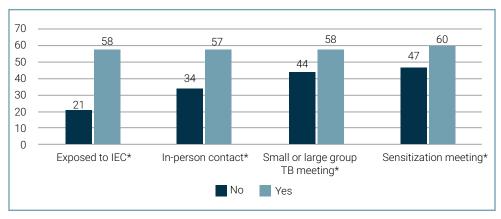
Table 29: Percentage distribution of adults according to the exposure to THALI community activities in the end-line survey using the pooled data from Hyderabad and Bengaluru

Exposed to	Male	Female	Total
Any IEC material			
Yes	82.0	75.0	77.1
No	18.0	25.0	22.9
In-person contact			
Yes	69.6	63.7	65.5
No	30.4	36.3	34.5
Sensitization meeting			
Yes	22.7	16.3	18.2
No	77.3	83.7	81.8

Small or large group meeting on TB			
Yes	45.6	35.6	38.6
No	54.4	64.4	61.4
Number of cases	281	640	921

We analysed the difference in the comprehensive knowledge and the exposure to various community activities based on the pooled data (see Figure 3). The results indicate that the exposed group had a higher comprehensive knowledge than the non-exposed group. For example, 58% of the respondents who were exposed to the IEC materials had comprehensive knowledge as compared to 21% for the non-exposed group. Fifty-seven percent of the respondents who had in-person contact with the CHW had comprehensive knowledge, as compared to 34% for persons not contacted. Fifty-eight percent of respondents who attended small or large meetings on TB had comprehensive knowledge as compared to 44% for respondents who did not attend, and 60% of the respondents who attended the sensitization meetings had comprehensive knowledge as compared to 47% for respondents who did not attend the sensitization meetings.

Figure 2: Percentage of adults who had comprehensive knowledge on TB according to exposure to specific community activity



Note: *difference is significant at 5% level

The results of the analysis of the effect of the specific exposure on the outcome variable, namely comprehensive knowledge on TB, using the pooled data from Bengaluru and Hyderabad are presented in Table 30. The final model included only the variables that had achieved balancing properties based on the kernel density and box plots. All the three specific exposure indicators, including having seen IEC material, in-person contact and participation in small or large group TB meetings had shown a significant effect on the comprehensive knowledge about TB. The results indicated that the exposure to IEC materials should have significantly raised comprehensive knowledge (by 35 percentage points) as compared to the non-exposed groups, and this would have produced the maximum impact. Other exposure indicators such as small or large group meetings should have increased comprehensive knowledge by 12 percentage points, and in-person contact should have increased comprehensive knowledge by 21 percentage points as compared to the non-exposed group.

Table 30: Average effect of exposure of in-person contact, IEC materials and small or large group meetings on comprehensive knowledge, pooled data for Bengaluru and Hyderabad

				[95%	6 CI]
Average exposure effect of	Coefficient	SE	p - value	Lower	Upper
Comprehensive knowledge					
In-person contact	0.21	0.041	<0.001	0.13	0.29
Exposure to IEC materials	0.35	0.043	<0.001	0.26	0.43
Small or large group TB meetings	0.12	0.038	0.001	0.05	0.20

Covariates used: sex, age, education, religion, caste/tribe, marital status, occupation, household monthly income and district name

For exposure to IEC materials education, religion, occupation and marital status and for small or large group meetings, education and caste/tribe are not used as covariates since balancing property was not achieved for these variables.

We used the sex of the respondent, age of the respondent and district name as matching variables.

Limitations of the study

We used retrospective data collection to estimate the changes in the knowledge about TB. Thus, there could be recall bias in providing information on the various key knowledge components enquired about in the survey. There could also be a recall bias regarding their exposure to the THALI program. Since, we had shown the selected IEC materials to the respondent and asked about the exposure, there was less likelihood that this aspect was underestimated. However, information on other aspects of the exposure to the THALI program have to be recalled and those are likely to be underestimated. The matching method used in the report relies on observed characteristics to construct a comparison group, and so it requires the strong assumption of no unobserved differences in the exposed and non-exposed groups that are also associated with the outcomes of interest. We used only three important characteristics to identify the matched comparison group, so we might have left out other potentially important characteristics.

Key changes noticed

The proportion of respondents who had knowledge about TB increased between baseline and end-line surveys. The proportion knowing about the key aspects of TB, such as the fact that TB is fully curable, sputum test is the confirmatory test for TB, TB spreads through air and cough is the most common symptom of TB, also increased during the period between baseline and end-line surveys. Consequently, comprehensive knowledge on TB, which includes all these key knowledge aspects also increased significantly between baseline and end-line surveys. We noticed a significant increase in comprehensive knowledge for almost all the socio-economic and demographic groups examined. Although there was a reduction in the proportion of respondents who reported that one should not disclose one's TB status to one's neighbours, half of them still reported that TB status should not be disclosed to other relatives and friends, particularly among males. Although we noticed an increase in the proportion of persons who said that the TB treatment was available for free, close to one-third of them didn't know that TB treatment was available for free.

Program implications and recommendations

The findings from the study can be used for future implementation of programs related to TB. We identified that a little more than a quarter of the respondents were illiterate. IEC activities for disseminating knowledge and health seeking behaviour for TB should include both visual and verbal media. We noticed that many of the adults who were exposed to the THALI IEC materials were able to mention the information received and only 12% of them could not say what was the message received. Exposure to the IEC materials also improved the comprehensive knowledge on TB and thus the other key aspects of TB. It must be noted that the IEC materials were developed and supplied for the field level at a very late stage of the program's implementation. Due to the parliament elections in Telangana, some of the posters developed and displayed in public places had to be removed as the election code of conduct was in force in the state. Similarly, IEC materials were also supposed to be used by the CHWs whenever they were making in-person contact. The respondents rarely reported that they had seen IEC materials through the CHW. For example, 75% of the respondents were reported to have been exposed to in-person contact, but only 34% of the adults reported that the CHW was the source of information on the IEC materials. In addition to the exposure to the IEC materials, other community activities such as inperson contacts and small or large group meetings on TB were also found to improve the comprehensive knowledge on TB among adults, but the difference between the exposed versus the non-exposed groups was found to be smaller.

Government health facilities were not the first point for health seeking for one-third of the households due to issues of accessibility and quality of care. There is scope to support government health facilities in improving systems and quality standards, thereby improving health seeking at government facilities. Government FLWs do not serve as a prominent source of information on TB. It is essential to strengthen the information source and referral mechanism at the grass root level to make government health facilities more accessible to the urban slum population in Hyderabad.

Conclusions

We noticed that general knowledge about TB was nearing universal, and did not find any differentials according to socio-economic and demographic characteristics. Although we noticed an improvement in the comprehensive knowledge among the adult population living in the slum areas of Hyderabad, this increase was not equitable. There are elements of TB stigma that persist and these appear to be different for men and women. Women tend to be more concerned about family reputation, while men are concerned about community-level discrimination. Women are less likely to want their family members to know about their TB status, but men are more likely to disclose their TB status to their friends. The study highlighted that various community engagement activities were able to diffuse the various knowledge aspects of TB and the effect was greater, particularly in relation to the exposure to IEC materials. Although exposure to IEC materials significantly improved comprehensive knowledge, a small proportion who were exposed to IEC were not able to mention the specific message received through the IEC materials.

06 ANNEXURE

ANNEXURE

Communication materials used to understand respondents' exposure to the THALI program $\,$

Material	Communication Objectives	IEC Material
Cough Hygiene Leaflet/Poster	Maintaining cough hygiene through simple methods is essential to prevent the spread of infection	Cough Etiquette How to prevent germs from spreading through coughing or sneezing? Cover your mouth and nose with cloth or paper Use your upper sleeve or elbow if there is no handkerchief. Do not use your hand If you cough frequently, use a mask Wash hands often. It is good to use soap
Community Handout (4 pages)	Provides basic information on TB, symptoms, testing, treatment and healthy habits	About TB: TB is an infection disease caused by a bacteria. TB spreads have one person to construct retainly through the are white coughing. TB can be cover the right charge of the right charge of the right disease. Common Symptoms of TB Participant cough for more than two needs is the in the root common symptom of TB.
School Brochure (2 pages)	Basic information on TB through a question and answer format	TOTAL CANTENDED TOTAL STATES AND THE



Local language versions of these materials were used during the survey









KHPT IT Park, 5th Floor #1-4, Rajajinagar Industrial Area Behind KSSIDC Administrative Office Rajajinagar, Bengaluru - 560 044

T: +91 80 4040 0200 F: +91 80 4040 0300