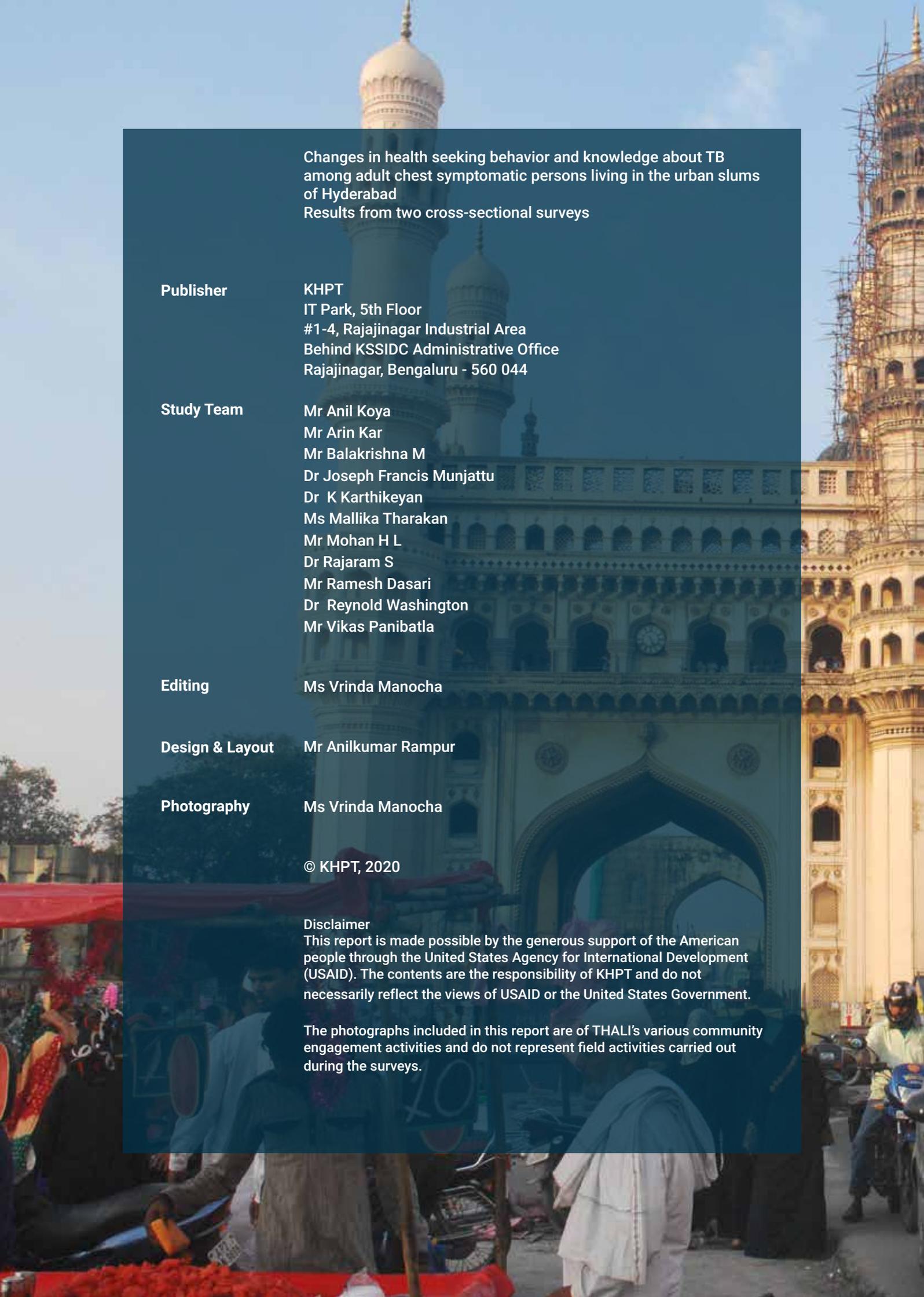




Changes in health seeking behavior and knowledge about TB among adult chest symptomatic persons living in the urban slums of Hyderabad

Results from two cross-sectional surveys



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The photographs included in this report are of THALI's various community engagement activities and do not represent field activities carried out during the surveys.



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ACRONYMS

AWW	Anganwadi Worker
ATT	Anti-Tuberculosis Treatment
BL	Base-line
BPL	Below Poverty Line
CBO	Community Based organization
CBNAAT	Cartridge Based Nucleic Acid Amplification Test
CC	Community Coordinator
CHW	Community Health Worker
CMIS	Computerized Management Information System
CS	Chest Symptomatic (person with symptoms of pulmonary TB)
DMC	Designated Microscopy Centre
DOT	Directly Observed Treatment
DBT	Direct Benefit Transfer
FLW	Front-line Workers / Field Level Workers
EL	End-line
Goi	Government of India
HIV	Human Immunodeficiency Virus
IERB	Internal Ethics Review Board
IEC	Information Education and Communication
IPC	Inter-personal Communication
ICT	Information Communication Technology
JD	Joint Director
KHPT	Karnataka Health Promotion Trust
MDR	Multi-drug Resistant (TB)

NGO	Non-government Organization
NSP	New Smear Positive
NTEP	National Tuberculosis Elimination Program
ORW	Outreach Workers
PCS	Prevention, Care and Support card
PRAD	Patient Referral and Diagnosis
PPS	Probability Proportion to Size
PSG	Patient Support Group
PSU	Primary Sampling Unit
RNTCP	Revised National Tuberculosis Control Program
SSM	Sputum Smear Microscopy
STCI	Standards for TB Care in India
TB	Tuberculosis
TBAI	TB Alert India
THALI	Tuberculosis Health Action Learning Initiative
TU	Tuberculosis Unit
USAID	United States Agency for International Development

FOREWORD


GOVERNMENT OF TELANGANA
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01-09-2020

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.


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The baseline and end-line study on “Knowledge and Health Seeking Behaviour for TB among Adults Living in 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 officer 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 behavior 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.

- 1. Appropriate health-seeking behavior 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 behavior 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.

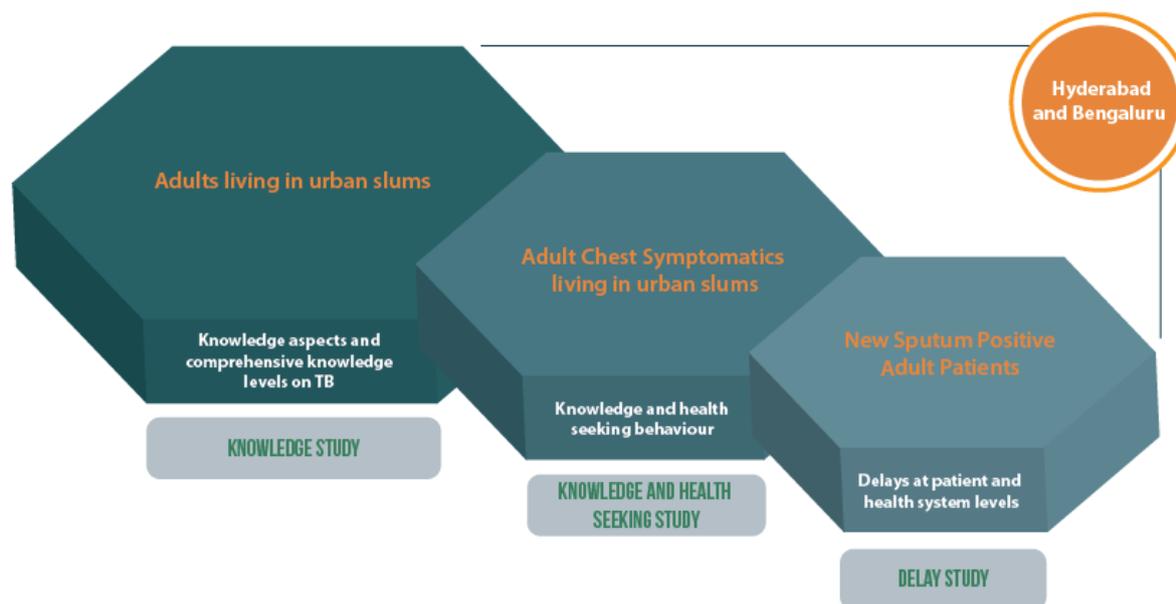
During the September 2016-June 2019 period, in Hyderabad CHWs referred 17,936 symptomatic persons for diagnostic tests, and out of this, 13,952 persons underwent tests. Among the tested persons, 2997 persons were found to have TB and 2993 persons were started on TB treatment.

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 NSP TB patients accessing anti-tubercular treatment (ATT) in these two cities, as given in the diagram. 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 behaviors, as well as changes over time. This report pertains to the study conducted among chest symptomatic persons living in the urban slums in the Hyderabad district.

Objective of the study

The aim of the study was to assess the health seeking behaviours among the TB symptomatic persons living in the urban slums in relation to two key behaviours: a) seeking treatment from a healthcare provider in the two weeks after the onset of the cough and b) respondents themselves requesting a sputum test. We examined the changes in health seeking behaviours between baseline and end-line surveys in the urban slum areas. 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 the key outcome variables as discussed above. We also studied the level of key knowledge aspects of TB and the changes identified in this knowledge aspects between baseline and end-line.

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 the 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 the data. In the first stage we selected a total 60 urban slums for both baseline and end-line surveys. We used Probability Proportion 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 the adult CS persons within each of the selected slum areas. We conducted a household listing operation, which included screening of household members who had had a cough of more than two weeks' duration in the six months prior to the survey or were at the time having a persistent cough, in each of the selected urban slum areas to provide the necessary frame for selecting the adult CS persons that were to be interviewed for the study. 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, were carried out only in the two selected segments in the large slum areas.

The target sample size was 480 adult CS persons with an average of 8 adult CS 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 CS persons seeking care from a qualified healthcare provider 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 identified CS adult individual per household was selected for the interview. If in any urban slum area, the identified number of adult CS persons were less or equal to 8, then all of them were interviewed. If the number of selected CS adult persons were less than 8 in any selected urban slum area, then an additional CS person was recruited from another urban slum area where we had identified more than 8 CS persons. In slum areas with more than 8 CS adult persons, we categorized the CS persons by gender and systematically selected the required number of CS persons. The field team interviewed the selected CS 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 persistent cough for more than two weeks, selection of segments and CS persons, and obtaining consent (and handling non-consent). We trained all the 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 mobile application data base to record the response of the respondents. Before collecting the information, all the respondents provided informed written consent.

We designed the semi-structured questionnaire to collect information on background characteristics, health seeking behaviors after the start of the symptoms and the knowledge aspects regarding the 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 collection between October 2019 and January 2020. In the end-line survey, since we did not achieve the required sample size of CS persons from the 60 selected urban slum areas, we selected 7 more additional urban slums in order to achieve the target sample size.

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

Sample coverage

We identified 564 and 495 adult CS persons in the baseline and end-line surveys through household listing and screening activities (See [Table 1](#)). We selected 480 and 476 adult CS persons for interview in the baseline and end-line surveys. Out of the CS persons selected, the interview was completed for about 89% (427) and 86% (411) in the baseline and end-line surveys. Six percent and 8% of the selected CS persons refused to participate in the interview in the baseline and end-line surveys.

Table 1: Sample coverage details of adult CS persons in the baseline and end-line surveys, Hyderabad

Status of survey	Baseline		End-line	
	Number of cases	Percent	Number of cases	Percent
Chest symptomatics identified	564		495	
Selected for interview	480	100.0	476	100.0
Completed	427	89.0	411	86.3
Refused	29	6.0	40	8.4
Not available	24	5.0	25	5.3

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. The results are provided in [Table 2](#). We did not notice much change in the distribution of sex and age of the respondents between baseline and end-line surveys. However, we noticed a number of other changes between baseline and end-line survey respondents. There was a difference in the marital status distribution, particularly among males and in various characteristics such as education, caste/tribe, personal monthly income and household monthly income. There was an increase in the reported personal monthly income and household monthly income between baseline and end-line surveys. For instance, the household average monthly income in the baseline was ₹12362 and it increased to ₹20839 in the end-line survey.

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

Characteristic	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Sex						
Male					46.3	46.4
Female					53.7	53.6
Age						
< 40	41.6	36.8	49.8	48.7	46.0	43.2
40-59	33.6	41.2	31.7	29.7	32.6	35.0
60+	24.8	22.0	18.5	21.6	21.4	21.8
Mean age	44.0	45.5	41.5	42.4	42.7	43.9
Marital status						
Currently married	69.6	83.9	63.6	67.4	66.4	75.0
Marriage dissolved	8.9	4.0	27.2	23.6	18.7	14.5
Never married	21.6	12.1	9.2	9.0	14.9	10.5
Literacy and education						
Illiterate	34.3	41.7	46.3	51.5	40.8	47.0
Literate, 1-7 years of schooling	33.1	16.4	27.3	15.4	30.0	15.8
8+ years schooling completed	32.5	41.9	26.3	33.1	29.2	37.2
Occupation						
Business	14.6	10.5	4.4	2.8	9.1	6.4
Salaried job	16.0	23.6	7.4	2.4	11.4	12.2
Other job	54.1	50.2	23.7	21.8	37.8	35.0
Not working	15.3	15.6	64.5	73.0	41.7	46.3

Religion						
Hinduism	60.2	64.0	65.0	74.0	62.8	69.3
Islam	35.3	30.1	30.3	20.8	32.6	25.2
Other	4.5	5.9	4.7	5.2	4.6	5.5
Caste/Tribe						
Scheduled Caste	24.0	20.6	26.3	21.9	25.3	21.3
Scheduled Tribe	3.8	20.2	4.5	19.1	4.2	19.6
Others	72.2	59.1	69.2	59.0	70.5	59.0
Personal monthly income (in ₹)						
No income	14.1	27.0	59.4	73.6	38.4	52.0
<5000	12.2	8.1	19.4	6.7	16.1	7.4
5000-14999	63.4	62.1	20.2	18.0	40.2	38.4
15000+	9.1	0.0	0.8	0.0	4.6	0.0
Not mentioned	1.2	2.7	0.3	1.8	0.7	2.2
Mean income	7248.4	8330.5	1992.7	2380.8	4413.6	5125.5
Household monthly income (in ₹)						
< 5000	5.8	4.7	9.8	1.9	8.0	3.2
5000-14999	54.5	35.1	62.2	43.5	58.6	39.6
15000+	37.8	52.6	21.7	48.8	29.2	50.6
Not mentioned	1.9	7.5	6.2	5.8	4.2	6.6
Mean household income	12797.5	21915.1	11969.6	19925.5	12362.3	20839.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	198	191	229	220	427	411

Household amenities

We collected information on the amenities available within households. The results are presented in [Table 3](#). We noticed a slight difference in the distribution of some of the amenities available in the household between baseline and end-line surveys. A higher proportion of respondents in the end-line as compared to baseline were found to live in houses with four or more rooms (11% vs. 20%), houses with one room for sleeping (58% vs. 66%), houses having windows that can be opened (61% vs. 73%), and houses having ventilation facility (20% vs. 63%). However, a slightly smaller proportion of respondents in the end-line reported possession of a BPL card (76%) as compared to the baseline (84%). The ownership of both televisions and mobile phones was high in both baseline and end-line surveys.

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

Characteristic	Baseline	End-line
Type of house		
Kachha	1.1	9.0
Semi-pucca	22.2	42.3
Pucca	76.7	48.7
Number of rooms		
1	26.7	15.4
2	41.9	40.2
3	20.5	24.6
4+	10.9	19.7
Number of rooms used for sleeping		
1	57.5	65.9
2	36.3	24.7
3	5.2	7.6
4+	1.0	1.7
Has BPL card		
Yes	83.6	76.1
No	16.4	19.7
House has window that can be opened		
Yes	60.6	72.9
No	39.4	27.1
Has ventilation facility		
Yes	19.7	62.7
No	80.3	37.3
Ownership of present house		
Own house	51.3	58.7
Not own house	48.7	41.3
Own a radio		
Yes	3.0	9.6
No	97.0	90.4

Own a telephone		
Yes	1.0	0.9
No	99.0	99.1
Own a mobile		
Yes	96.5	97.5
No	3.5	2.5
Own a television		
Yes	87.1	89.6
No	12.9	10.4
Total	100	100.0
Number of cases	427	411

Source of information on health

We enquired about the respondents' source of health-related information. We noticed an increase in the proportion of respondents reporting that they generally get health-related information from the government health workers between the baseline (23%) and end-line (30%) surveys, particularly among males (25% vs. 34%). The topmost reported source of information on health in the baseline was television/radio (69%), followed by friends/relatives (67%), and newspapers and magazines (25%). In the end-line, television/radio (73%) retained the top spot. However, newspaper and magazines (40%) and government health workers (30%) climbed upwards and friends/relatives as sources of information declined substantially. Similarly, more respondents in the end-line reported community meetings (15%) as the source of information on health as compared to the baseline (6%). NGO outreach workers as a source of information were reported more by the respondents in the end-line (11%) than the baseline (less than 1%).

Table 4: Percentage distribution of adult CS persons by sex, 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	29.1	42.8	21.7	38.2	25.1	40.3
Radio/TV	71.1	74.0	67.6	71.2	69.2	72.5
Billboards	0.5	8.5	0.4	4.2	0.4	6.2
Brochures, posters, other printed material	2.1	17.5	0.6	8.1	1.3	12.5
Health workers	25.4	34.5	21.2	26.7	23.2	30.4
NGO outreach workers	0.0	14.8	0.6	7.9	0.3	11.1
Community meetings	7.5	17.3	5.3	13.7	6.3	15.4

Video show in the community	0.0	10.4	0.3	9.2	0.2	9.8
Telephone helpline	0.0	2.1	0.7	1.9	0.4	2.0
Web-based information	5.7	3.6	2.9	2.5	4.2	3.0
Friends/relatives	66.8	27.5	67.3	23.0	67.0	25.1
Hospital	0.4	1.2	0.8	0.4	0.6	0.8
Other	8.9	0.0	5.6	3.1	7.1	1.7
Number of cases	198	191	229	220	427	411

Type of health facility accessed

In both baseline and end-line surveys, we enquired about the type of health facility where the household members of the respondent usually go for treatment. We observed a change in the type of health facilities that were usually accessed by the members of the respondents' households (see Table 5). For example, 30% of the respondents in the baseline said that the members of the household usually go to a public health facility for treatment. This increased to 76% in the end-line survey. Consequently, the household members usually accessing a private facility reduced between baseline (63%) and end-line (22%) surveys.

Table 5: Percentage distribution of adult CS persons by sex, according to type of health facility from where their household members mainly get treatment 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	26.8	49.2	22.8	46.4	24.6	47.7
Government dispensary	1.1	16.8	4.6	15.9	3.0	16.3
Urban Health Centre/ Urban Health Post/Urban Family Welfare Centre	0.0	3.7	0.8	4.1	0.5	3.9
Other public sector health Facility	1.6	7.3	1.7	8.6	1.6	8.0
NGO/Trust Hospital/Clinic	1.6	0.0	0.8	0.0	1.2	0.0
Private hospital	17.9	13.1	24.9	19.1	21.8	16.3
Private doctor/Clinic	44.2	7.3	38.4	4.1	41.0	5.6
Unqualified doctor	5.8	0.5	4.2	0.5	4.9	0.5
Pharmacy/Drugstore	0.5	0.5	1.7	0.0	1.2	0.2
Home treatment	0.0	1.0	0.0	0.9	0.0	1.0
Other	0.5	0.5	0.0	0.5	0.2	0.4
Total percent	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	198	191	229	220	427	411

Reasons for usually not going to a public health facility

We asked respondents who said that their household members usually do not access public health facilities for their reasons. The most-frequently reported reasons in both baseline and end-line surveys were that the long distance to the facility (45% in both), long waiting times (41% and 26%), inconvenient facility timings (37% and 25%) and poor quality of care (27% and 21%) (see Table 6). However, in the end-line, a higher proportion of respondent did not provide any reason (14%) for not going to a public health facility as compared to the baseline (5%).

Table 6: Percentage distribution of adult CS persons by sex, according to the reasons for not getting treatment from a public 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	48.5	45.5	42.8	45.5	45.3	45.5
Facility timing not convenient	43.3	29.5	32.5	21.8	37.3	25.3
Health personnel often absent	3.0	15.9	9.0	7.3	6.3	11.1
Waiting time too long	38.1	29.5	43.4	23.6	41.0	26.3
Poor quality of care	28.4	27.3	26.5	16.4	27.3	21.2
No reason	4.5	15.9	6	12.7	5.3	14.1
Other	9.7	2.3	8.4	1.8	9.0	2.0
Number of cases	134	54	166	62	300	116

Availability of health insurance

We asked all the adult CS persons about the details of the health insurance schemes held by the respondent or by members of the family. We noticed a small increase in the coverage of health insurance schemes between the baseline and end-line surveys (see Table 7). For instance, in the baseline, 23% of the adult CS persons were not covered by any health insurance scheme and this reduced to 17% in the end-line. We noted a similar reduction among both males and females. The proportion of respondents holding more than one insurance scheme also increased during this period. In the baseline, 2% of the respondents reported that they were holding more than one insurance scheme and this increased to 30% in the end-line survey. In both baseline and end-line surveys, a majority (70% and 77%) of the respondents were covered through the state health insurance scheme, namely Aarogyasri.

Table 7: Percentage distribution by sex of adult CS persons having different types of health scheme insurance 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	3.5	5.7	3.8	3.8	3.7	4.7
Central Government Health Scheme	0.4	1.9	0.6	3.3	0.5	2.6
State Health Insurance Scheme	75.1	79.3	65.9	75.3	70.2	77.2
Rashtriya Swasthya Bima Yojana	2.0	27.6	0.8	20.5	1.4	23.8
Other health insurance through employer	0.6	1.7	3.6	1.3	2.2	1.4
Medical reimbursement from employer	0.6	0.8	1.5	0.4	1.1	0.6
Other privately purchased commercial health insurance	0.5	0.9	0.4	3.2	0.5	2.1
No health scheme/ insurance coverage	20.3	17.8	25.2	15.7	23.0	16.7
Community Health Insurance Program	0.0	1.3	0.0	1.2	0.0	1.3
Have more than one insurance scheme	2.5	32.5	1.9	27.7	2.2	29.9
Total percent	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	198	191	229	220	427	411

Personal habits

We enquired from all the respondents about their personal habits such as consumption of tobacco and alcohol. We noticed a slight reduction among males in these habits, particularly with regard to smoking of cigarettes or bidis (see Table 8). In the baseline, about 55% of the males reported that they had never smoked and in the end-line, about 63% of them said that they never smoked. The proportion of males who reported to have ever consumed alcohol reduced from 54% in the baseline to 49% in the end-line.

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

Personal habits	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Smoke cigarettes/bidis						
Current smoker	30.6	26.1	0.3	0.3	14.3	12.3
Past smoker	14.1	10.7	0.7	0.6	6.9	5.2
Never smoked	55.3	63.2	99.0	99.1	78.7	82.5
Drink alcohol						
Almost every day	14.9	19.6	1.1	0.5	7.5	9.4
About once a week	24.6	16.0	3.6	0.3	13.3	7.6
Less than once a week	14.8	13.3	2.3	0.8	8.0	6.6
Never	45.8	51.0	93.0	98.3	71.1	76.4
Total percent	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	198	191	229	220	427	411

04

KNOWLEDGE ABOUT KEY ASPECTS OF TB



Knowledge about key aspects of TB

We asked all the adult CS persons about various knowledge aspects regarding TB. This included, symptoms of lung TB, modes of transmission of TB, prevention methods for TB, confirmatory tests for TB, and the duration of treatment. In order to understand whether the respondent suspects TB as the probable disease condition when a person suffers from persistent cough for two weeks or more, we posed this question. The results are presented in Table 9. An almost equal proportion of respondents in both baseline and end-line reported that the disease condition could be TB if a person has persistent cough for two or more weeks. A majority of the respondents in both the baseline and end-line reported seasonal cold as the disease condition. In addition, a higher proportion of respondents in the end-line survey reported other disease conditions such as throat infection (27% vs. 38%) and viral fever (18% vs. 33%) as compared to the baseline. Almost everyone responded to this question in both the baseline and end-line, persons responding that they didn't know was a negligible proportion.

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

Disease condition	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Throat infection	22.7	40.5	29.7	35.3	26.5	37.7
Seasonal cold	57.9	57.9	67.3	62.7	63.0	60.5
Viral fever	16.6	35.1	20.0	31.6	18.4	33.2
Tuberculosis	33.5	34.3	38.3	34.2	36.1	34.3
Chest Congestion	3.9	7.8	3.8	5.0	3.8	6.3
Asthma/COPD	4.4	2.5	6.2	1.0	5.4	1.7
Others	3.6	2.5	2.6	4.0	3.1	3.3
Don't know/Can't say	3.0	1.0	0.3	3.0	1.5	2.1
Number of cases	198	191	229	220	427	411

We also examined the proportion of adult CS persons who knew or had heard about TB according to various background characteristics. The results are presented in Table 10. For most of the background characteristics examined, we noticed a significant increase in proportion of respondents who knew or had heard of TB between baseline and end-line surveys. Overall, the proportion of respondents who knew or had heard of TB increased from 76% in the baseline to 87% in the end-line survey. The increment between baseline and end-line was statistically significant for females, respondents aged below 60 years, respondents who were currently married, persons who were either illiterate or had 1-7 years of schooling, respondents who belonged to the Hindu religion, respondents who belonged to either a Scheduled Caste or Scheduled Tribe, respondents who were engaged in employment other than salaried jobs in private and government and also those who were not working. We also noticed a significant improvement among respondents irrespective of their monthly income and household monthly income. It is also important to note that the gap in the knowledge levels between various groups of the respondents reduced over the time period.

Table 10: Percentage distribution of adult CS persons who knew or had heard about 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	77.8	198	85.1	191	0.067
Female	74.3	229	88.7	220	<0.001
Age					
< 40	79.2	196	88.4	177	0.017
40-59	72.9	139	87.1	144	0.003
60+	73.5	92	84.1	90	0.083
Marital status					
Currently married	75.2	283	88.1	308	<0.001
Marriage dissolved	76.8	80	85.7	60	0.194
Never married	78.0	64	81.1	43	0.704
Literacy and education					
Illiterate	65.7	174	85.4	193	<0.001
Literate, 1-7 years of schooling	80.2	128	93.0	65	0.026
8+ years of schooling completed	85.8	125	86.6	153	0.854
Occupation					
Business	79.5	39	79.6	26	0.989
Salaried job	80.7	49	87.7	51	0.339
Other job	71.7	161	84.6	147	0.007
Not working	77.7	178	89.8	187	0.002
Religion					
Hinduism	68.3	268	89.8	285	<0.001
Islam	89.2	139	82.7	103	0.149
Others	86.3	20	71.8	23	0.260
Caste/Tribe					
Scheduled Caste/Tribe	70.1	126	90.6	168	<0.001
Others	78.4	301	84.5	243	0.069

Monthly income (in ₹)					
< 5000	75.6	235	86.8	253	0.002
5000+	76.3	191	87.3	158	0.009
Household monthly income (in ₹)					
< 15000	75.7	303	84.8	203	0.014
15000+	76.5	124	89.2	208	0.002
Total	75.9	427	87.0	411	<0.001

We asked all the CS persons who reportedly knew or had heard about TB about their source of information. In the end-line survey, the topmost reported sources of information on tuberculosis were television or radio (59%), word of mouth from friends or relatives (43%), newspaper/magazines (29%) and TB among friends or relatives (26%). In the end-line, comparatively more males than females reported the above mentioned sources 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 (52%), TB among friends or relatives (41%) and television or radio (32%). In the baseline, more females mentioned these sources than males. A comparatively higher proportion of respondents in the end-line (25%) reported Anganwadi workers as the source of information when compared to the baseline survey (less than 1%). Surprisingly, reporting of DOTS provider or government health worker as the source of information on TB reduced from 13% in baseline to 8% in end-line and this was mainly due to the reduction among females from 12% in the baseline to 3% in the end-line.

Table 11: Percentage distribution of adult CS persons by sex 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	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Television/ Radio	29.7	62.6	33.4	55.1	31.6	58.5
Newspaper/ Magazine	10.7	32.9	7.3	24.9	8.9	28.5
Posters/ Banners/ Hoardings/ Campaigns	8.1	13.2	3.5	1.9	5.7	7.0
Word of mouth from friends / Relatives	45.0	51.2	58.5	35.8	52.1	42.8
TB among friends/relatives	34.3	30.1	46.9	22.4	40.9	25.9
DOTS Provider/Health Worker	13.6	13.3	11.5	3.4	12.5	7.9
Anganwadi Worker	0.4	29.1	0.5	21.5	0.5	24.9
Community Meetings	4.2	16.4	4.9	10.1	4.6	13.0
Workplace	11.3	3.5	5.8	2.1	8.5	2.8
Schools/ Teachers	4.0	2.2	5.8	2.7	4.9	2.5
Religious leaders	0.4	0.0	0.5	0.0	0.5	0.0

Political leaders	0.0	0.0	0.4	0.4	0.2	0.2
Telephone Helpline	0.0	0.0	0.9	0.0	0.5	0.0
Respondent Had TB	10.4	7.7	3.6	2.0	6.8	4.6
Others	9.2	4.5	3.4	4.4	6.2	4.5
Number of cases	154	162	170	196	324	358

We asked adult CS persons about the most common symptoms of lung TB. We found that there was an increase in the proportion of CS persons reporting that cough was the most common symptom of the lung TB between baseline (55%) and end-line (72%) surveys (see Table 12). The reporting of cough as the symptom was slightly higher among females (75%) than males (68%) in the end-line survey. Consequently, the CS persons who did not know the symptoms of lung TB reduced from 24% in baseline to 13% in the end-line.

Table 12: Percentage distribution of CS persons by sex, according to responses on the 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	57.5	68.3	53.6	74.5	55.4	71.6
Fever	1.9	8.4	2.8	7.5	2.4	7.9
Weight loss	8.1	0.0	6.2	0.0	7.1	0.0
Weakness	7.4	0.0	7.8	0.5	7.6	0.3
Chest pain	1.2	3.5	0.3	0.0	0.7	1.6
Night Sweats	0.0	3.2	0.0	3.3	0.0	3.3
Others	1.7	1.7	3.7	2.9	2.7	2.3
Don't know/Can't say	22.2	14.9	25.7	11.3	24.1	13.0
Number of cases	198	191	229	220	427	411

We asked adult CS persons about the modes of transmission of TB. We noticed an increase in the response that TB is transmitted through the air when a person with TB coughs or sneezes, between the baseline (61%) and end-line surveys (75%) (see Table 13). We also noticed a reduction in responses such as spread through food (24% vs. 9%) and sharing utensils (29% vs. 19%) between baseline and end-line surveys.

Table 13: Percentage distribution of adult CS persons by sex, according to mode of transmission of TB in the baseline and end-line surveys, Hyderabad

Mode of TB transmission	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Through the air when a person with TB coughs/sneezes	62.8	74.3	59.4	74.3	61.0	74.3
Sharing utensils	27.9	20.2	30.5	17.3	29.3	18.6
Touching a person with TB	12.4	18.7	12.6	15.4	12.5	16.9
Food	22.0	11.7	25.8	7.1	24.1	9.2
Sexual contact	5.4	2.4	3.2	4.1	4.2	3.3
Mosquito bites	2.5	4.6	2.7	1.0	2.6	2.7
Stepping on sputum	6.1	5.7	6.1	4.2	6.1	4.9
Other	5.4	0.0	3.2	0.0	4.2	0.0
Don't know/Can't say	26.1	21.2	32.2	20.7	29.4	20.9
Number of cases	198	191	229	220	427	411

We asked adult CS persons about the different ways to prevent the spread of TB within family or community. The results are presented in Table 14. We noticed a slight increase in the proportion of CS persons who reported covering mouth and nose while coughing as the way to prevent the spread of TB between baseline (60%) and end-line (64%) surveys, and the increment was identified only among males (57% and 68%). Responses on other prevention methods such as wearing a mask, good ventilation and prompt diagnosis and treatment also increased between the baseline and end-line surveys. The proportion of respondents who could not provide a response reduced slightly between baseline (28%) and end-line (24%) surveys.

Table 14: Percentage distribution of adult CS persons by sex 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		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Covering mouth and nose while coughing	57.4	68.3	62.5	60.4	60.1	64.1
Wearing mask	48.6	54.5	42.5	45.1	45.3	49.5
Good ventilation	4.7	31.2	3.5	22.3	4.1	26.4
Prompt diagnosis and treatment	17.3	20.2	12.2	20.2	14.6	20.2
Vulnerable persons like children to take medicines to prevent TB	2.0	10.5	3.9	6.4	3.0	8.3
Good nutrition	15.5	18.8	11.6	11.8	13.4	15.0
Other	16.1	0.0	16.6	0.0	16.3	0.0
Don't know/can't say	26.4	21.8	28.6	25.3	27.6	23.7
Number of cases	198	191	229	220	427	411

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 sputum test is the confirmatory test for TB from 62% in the baseline to 73% in the end-line surveys. This is an increment of 11 percentage points. Although there was a reduction seen in the proportion of respondents who considered a blood test as the confirmatory test for the diagnosis of TB between baseline and end-line surveys, nearly half of the respondents in the end-line survey considered it so. In the end-line, a slightly higher proportion of females (75%) than males (70%) reported sputum test as the confirmatory test for TB.

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

Test reported	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
X-Ray of the chest	59.5	61.9	55.3	57.3	57.3	59.4
Sputum test	61.1	69.5	62.1	75.2	61.6	72.5
Blood test	68.9	54.9	68.8	46.6	68.9	50.4
Mantoux tuberculin/skin test	22.5	13.9	16.7	8.8	19.4	11.2
Tissue biopsy	14.1	4.6	10.2	4.5	12	4.6
Other test	11.2	0.0	17.5	0.0	14.6	0.0
Number of cases	198	191	229	220	427	411

We asked respondents about places 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. Mainly, there was an increase in the proportion of respondents who mentioned the government TB hospital (48% vs. 63%) as the place for TB testing. In the end-line, comparatively more females (66%) than males (60%) reported the government TB hospital as the place where adults could be tested for TB. However, about a quarter of the respondents did not know about the availability of TB testing centres, and this remained the same in both baseline and end-line surveys.

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

Place of TB testing	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Municipal Corporation Hospital	50.4	28.6	43.7	20.2	46.8	24.1
Government TB Hospital	50.1	59.9	45.2	65.6	47.5	63.0
Other government hospital	15.1	8.3	15.3	9.3	15.2	8.8
Designated Microscopy Centre	0.3	5.9	0.0	2.0	0.1	3.8
Private hospital	39.8	9.3	40.4	5.8	40.1	7.4
Private clinic	1.3	4.6	0.6	2.1	1.0	3.3
AYUSH hospital/ Clinic	1.0	0.0	0.8	0.4	0.9	0.2

Any private lab	9.8	1.4	8.1	4.0	8.9	2.8
Others	0.0	0.0	0.3	0.0	0.2	0.0
Medical College	0.0	7.8	0.0	2.4	0.0	4.9
Don't Know/Can't say	23.8	26.9	28.3	22.1	26.2	24.4
Number of cases	198	191	229	220	427	411

We enquired about knowledge on the place where TB treatment is available. The results are shown in [Table 17](#). In both baseline and end-line surveys, most of the respondents mentioned the public health facility as the place where treatment for TB was available. We noticed that the proportion of respondents who reported a private health facility as the place for TB treatment reduced substantially between baseline and end-line surveys. Similarly, the proportion of respondents who did not know where one could get TB treatment reduced from 26% in the baseline to 20% in the end-line.

Table 17: Percentage distribution of adult CS persons by sex, according to the place where treatment for TB is available in the baseline and end-line surveys, Hyderabad

Place of treatment	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Municipal Hospital	65.2	47.9	59.6	38.2	62.2	42.7
Government Dispensary	8.7	43.6	7.7	39.2	8.2	41.2
Urban Health Centre/ /Urban Health Post/Urban Family Welfare Centre	0.8	10.0	0.8	3.8	0.8	6.7
Government TB hospital	17.3	0.0	20.5	0.0	19.0	0.0
Anganwadi/ASHA/ANM	0.0	1.5	0.9	8.5	0.5	5.3
DOT Centre	8.0	9.0	3.7	4.4	5.7	6.5
Government Mobile Clinic	0.4	0.8	0.0	0.0	0.2	0.4
ESI Hospital	15.5	2.0	9.2	5.9	12.1	4.1
Other public sector health facility	9.1	6.4	10.4	11.6	9.8	9.2
NGO or Trust Hospital/Clinic	0.0	1.7	0.0	0.9	0.0	1.2
Private Hospital	34.0	8.9	31.9	6.4	32.8	7.6
Private Doctor/Clinic	2.0	3.9	0.7	2.3	1.3	3.0
Vaidya/Hakkim/Homeopathy	1.0	0.0	0.0	0.3	0.4	0.2
Unqualified doctor	0.4	0.0	0.3	0.0	0.4	0.0
Don't know/Can't say	25.1	19.8	27.2	20.3	26.2	20.1
Number of cases	198	191	229	220	427	411

We also asked about cost and duration of treatment. We noticed an increase in the proportion of respondents who said that no cost should be incurred for TB treatment (see Table 18). For instance, in the baseline, 45% of the respondents said that no cost needed to be incurred for TB treatment, and this increased to 61% in the end-line survey.

A slightly higher percentage of the respondents in the end-line (30%) as compared to baseline (27%) reported six months as the duration of TB treatment. However, more than half of the CS persons did not know the duration of the treatment in the end-line survey. The results indicate that the knowledge about cost and duration of treatment did not improve as much as other knowledge aspects discussed previously.

Table 18: Percentage distribution of adult CS persons by sex, according to 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	49.4	61.3	41.2	61.4	45.0	61.4
1 – 9999	3.4	3.8	3.1	1.3	3.2	2.5
Don't know/Can't say	40.4	34.8	49.5	37.3	45.3	36.2
Duration of treatment						
<6 months	19.9	12.5	16.9	11.4	18.3	11.9
6 months	28.0	29.1	25.5	29.6	26.6	29.6
6+ months	11.4	2.2	13.0	1.9	12.2	2.0
Don't know/Can't say	40.6	56.2	44.7	57.2	42.8	56.8
Number of cases	198	191	229	220	427	411

We asked respondents their opinion on two statements, “TB is fully curable” and “All TB patients need admission in hospitals for treatment”. The response was recorded on a Likert scale with five options. About 62% of respondents in the baseline and 71% in the end-line either strongly agreed or agreed to the statement that “TB is fully curable”, an increase of 9 percentage points. On the other hand, the proportion of CS persons who could not answer this question remained the same between baseline and the end-line surveys. Regarding the statement “All TB patients need admission in hospitals for treatment”, 46% in the baseline and 60% in the end-line either strongly agreed or agreed to this. Female respondents contributed more to this increase than males.

Table 19: Percentage distribution of adult CS persons by sex, according to their opinion on whether TB is fully curable and if 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	34.3	41.3	33.5	40.8	33.9	41.0
Agree	31.7	29.7	25.2	30.6	28.2	30.1
Neither agree nor disagree	5.8	2.3	8.6	2.7	7.3	2.5

Disagree	3.2	1.3	2.7	1.7	2.9	1.5
Strongly disagree	1.3	0.0	2.6	1.3	2.0	0.7
Don't know/Can't say	23.7	25.4	27.3	22.9	25.6	24.1
All TB patients need admission in hospital for treatment						
Strongly agree	27.1	32.8	21.8	28.4	24.2	30.5
Agree	22.6	26.3	21.7	33.2	22.1	30.0
Neither agree nor disagree	13.5	6.7	10.2	4.4	11.7	5.5
Disagree	10.3	8.6	14.5	14.1	12.6	11.6
Strongly disagree	3.0	0.8	2.2	1.2	2.5	1.0
Don't know/Can't say	23.6	24.7	29.6	18.7	26.8	21.5
Number of cases	198	191	229	220	427	411

We tried to understand respondents' tendencies towards disclosure of TB status to other people and the results are provided in Table 20. We do not present the other responses which were mentioned by less than 5% of the respondents. In the baseline, according to the responses, the topmost categories of people to whom one's TB status should be disclosed were spouse (80%), parents (77%), doctor (70%) and children (43%). More females than males mentioned spouse (86% vs. 73%) and parents (80% vs. 73%) as the persons to whom one should disclose one's TB status. However, in the end-line, the most frequently reported responses were doctor (78%), spouse (60%), parents (42%) and children (38%). We noticed that there was a decline in the tendency towards disclosing TB status to other people between baseline and end-line surveys, except in case of the doctor. In the end-line surveys, slightly more males reported doctor, spouse, parents and children as the persons to whom a TB patient should disclose their TB status.

Table 20: Percentage distribution of adult CS persons by sex, according to the persons 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	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Doctor	77.9	80.3	63.4	75.5	70.3	77.7
Spouse	73.4	64.4	85.9	57.3	80.0	60.5
Children	41.2	40.8	44.4	36.5	42.9	38.4
Parents	73.0	43.7	80.2	41.3	76.7	42.4
Siblings	24.7	27.9	25.8	24.5	25.3	26.0
Other relatives	12.2	9.9	10.3	6.8	11.2	8.1
Friends	23.4	3.4	12.6	4.3	17.8	3.9
Don't know/Can't say	0.0	3.7	0.0	7.6	0	5.8
Number of cases	154	162	170	196	324	358

We asked respondents who agreed that a TB patient should disclose his or her status about reasons for disclosure and we noticed a change in the response between baseline and end-line surveys (see Table 21). In the end-line, the top responses were family support (50%), prevent spread (50%), quick treatment (49%) and treatment support (29%) as the reasons for disclosure. In the end-line, more males than females reported treatment support, quick treatment and treatment support as the reasons for disclosure. However, in the baseline, the topmost responses were quick treatment (74%), family support (70%), treatment support (56%) and emotional support (36%) as the reasons for disclosure. It was important to note that a higher percentage in the end-line (50%) reported prevent the spread of TB as the reason for disclosure than in the baseline survey (15%).

Table 21: Percentage distribution of adult CS persons by sex, according to reasons for disclosing one's TB status (among those who said that a person should disclose their 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	76.7	58.5	70.9	41.1	73.6	49.0
Prevent spread	13.8	52.4	16.4	48.5	15.2	50.2
Emotional support	33.2	33.5	38.7	24.9	36.1	28.8
Family support	63.2	49.7	75.6	50.8	69.7	50.3
Treatment support	57.5	35.3	55.0	24.6	56.2	29.4
Financial support	19.0	16.3	20.2	6.5	19.6	11.1
Other	3.9	0.0	1.2	0.0	2.5	0.0
Don't Know Can't say	0.0	7.1	0.0	4.9	0.0	5.9
Number of cases	154	162	170	196	324	358

We also enquired about persons to whom one's TB status should not be disclosed and the results are presented in Table 22. In the baseline the topmost responses were neighbors (71%), other relatives (51%) and friends (29%). However, in the end-line, the topmost responses changed to other relatives (52%), friends (38%), aunt/uncle (29%) and neighbors (22%). In the end-line survey, the non-disclosure to these persons was reported more by males than females. There was a huge decline of close to 50 percentage points in the proportion of respondents considering that TB status should not be revealed to neighbours between baseline and end-line surveys.

Table 22: Percentage distribution of adult CS persons by sex according to whom they thought a TB patient should not disclose their TB status (among those who knew about TB) in the baseline and end-lines surveys, Hyderabad

Person to whom TB status should not be disclosed	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Children	6.3	3.9	4.4	8.0	5.3	6.1
Siblings	2.2	6.3	3.2	4.2	2.7	5.2
Aunt/ uncle	0.6	32	2.1	25.6	1.4	28.5
Other relatives	45.1	51.7	57.1	52.4	51.4	52.1
Friends	30.8	36.5	27.7	38.4	29.2	37.6

Schoolmates	1.7	14	0	18.9	0.8	16.7
Co-workers	12.5	15.8	7.5	17.8	9.9	16.9
Boss	4.0	13.7	2.7	16.3	3.3	15.2
Neighbours	64.3	19.3	76.1	24.7	70.5	22.2
Don't Know/Can't Say	13.7	13	7.2	15.9	10.3	14.6
Number of cases	154	162	170	196	324	358

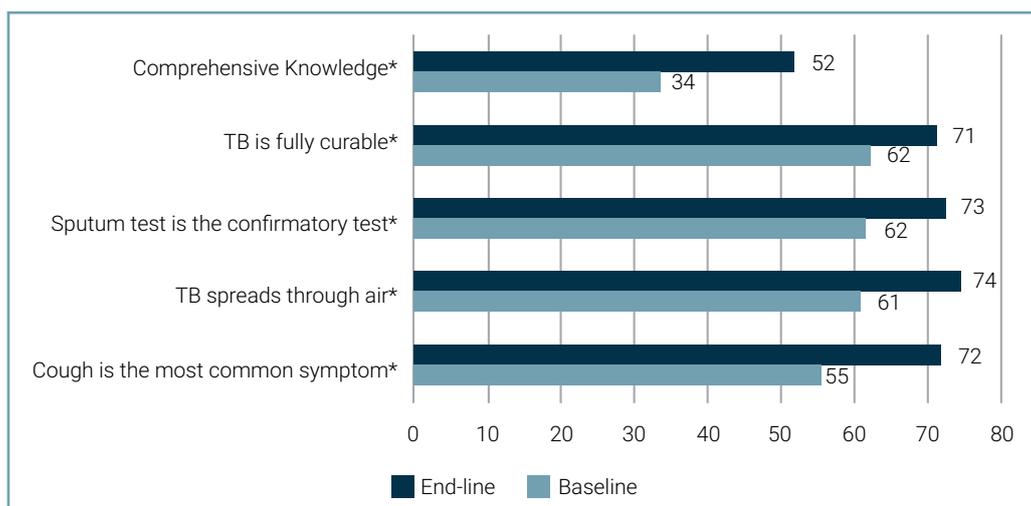
The reasons for non-disclosure were also examined and the results are shown in [Table 23](#). In the end-line survey, the frequently reported reasons for non-disclosure of one's TB status were that the patient's family name will be spoiled (72%), people in the community will avoid the TB patient (46%) and the community will try to drive the patient out (28%). However, in the baseline, the main responses were that people in the community will avoid the TB patient (79%), the patient's family name will be spoiled (47%), and the community will try to drive the patient out (37%). In fact, since neighbours form a part of the immediate community, the results indicate that stigma has reduced in the immediate neighbourhood.

Table 23: Percentage distribution of adult CS persons by sex, according to reasons for non-disclosure of a person's TB status (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	42.5	68.1	50.8	75.6	47.0	72.2
People in the community will avoid him/her	76.3	46.0	82.0	46.0	79.4	46.0
People in the community will try to drive him/her out	37.8	30.3	36.5	25.4	37.1	27.6
Loss of job	5.7	29.2	4.4	21.5	5.0	25.0
Other	6.8	1.4	5.2	0.6	5.9	1.0
Don't know/Can't say	1.2	9.0	0.5	4.3	0.8	6.5
Number of cases	133	141	158	164	291	305

We estimated a composite index based on four key knowledge aspects of TB to indicate comprehensive knowledge of TB among the CS persons. The components of the 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 1](#) 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 cough is the most common symptom of lung TB (17 percentage points), followed by the facts that TB spreads through air (13 percentage points), sputum test is the confirmatory test (11 percentage points) and TB is curable (9 percentage points). Consequently, the comprehensive knowledge increased from 34% in the baseline to 52% in the end-line survey, showing an increment of 18 percentage points, which is a higher change than that seen among individual knowledge components.

Figure 1: Percentage of CS persons with comprehensive knowledge and its components Hyderabad



Note: *difference is significant at below 5% level

We also examined the changes in the comprehensive knowledge between baseline and end-line surveys among the CS persons according to different characteristics. Overall, we noticed a significant increase in the comprehensive knowledge between baseline and end-line surveys (see Table 24). The increase was consistent across most of the socio-economic and demographic characteristics. However, a few categories such as persons whose marriage was dissolved or who were never married, who are engaged in business or salaried jobs and those who belong to minority religious groups (other than Hindus and Muslims), did not show significant increase. The increase we noticed between baseline and end-line surveys was comparatively higher for females, persons aged 60 and above, persons who were currently married, persons who were illiterate and had completed less than middle school, persons who were not working, persons belongs to the Hindu religion, persons who belonged to neither Scheduled Caste nor Scheduled Tribe and whose personal monthly income was less than ₹5000, when compared to their counterparts. In the end-line survey, we noticed that comprehensive knowledge was comparatively higher among females (55%), currently married persons (54%), person who completed 1-7 years of schooling (60%), persons who were not working (58%), Muslims (55%), persons who belonged to neither Scheduled Caste nor Scheduled Tribe (53%), those whose personal monthly income was less than ₹5000 and whose household monthly income was ₹15000 and above, as compared to their counterparts.

Table 24: Percentage distribution of adult CS persons 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	34.0	198	48.2	191	0.005
Female	33.1	229	54.7	220	<0.001
Age					
< 40	38.8	196	56.4	178	0.001
40-59	29.8	139	48.7	144	0.001
60+	27.9	92	47.3	90	0.008

Marital status					
Currently married	32.0	283	53.7	308	<0.001
Marriage dissolved	34.4	80	42.6	60	0.324
Never married	39.3	64	49.8	43	0.284
Literacy and education					
Illiterate	25.8	174	44.9	193	<0.001
Literate, 1-7 years of schooling	33.3	128	53.0	65	0.009
8+ years of schooling	44.4	125	59.7	153	0.011
Occupation					
Business	35.9	39	52.2	26	0.194
Salaried job	44.9	49	44.7	51	0.982
Other job	28.6	161	45.7	147	0.002
Not working	34.3	178	58.2	187	<0.001
Religion					
Hinduism	31.4	268	51.6	285	<0.001
Islam	38.6	139	55.1	103	0.011
Other	26.7	20	37.6	23	0.454
Caste/Tribe					
Scheduled Caste/Tribe	33.7	126	49.8	168	0.006
Others	33.4	301	53.0	243	<0.001
Personal monthly income (in ₹)					
< 5000	31.5	236	52.5	253	0.001
5000+	36.0	191	50.5	158	0.007
Household monthly income (in ₹)					
< 15000	31.7	303	48.9	203	<0.001
15000+	38.0	124	54.4	208	0.004
Total	33.5	427	51.7	411	<0.001

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

05

HEALTH SEEKING BEHAVIOUR



Health seeking behaviour

We asked respondents about all that they did during the first two weeks and after two weeks of cough. The results are presented in Table 25. We noticed that there was a reduction in respondents consulting a healthcare provider within first two weeks of cough and there was an increase in respondents consulting a healthcare provider after two weeks of cough between baseline and end-line surveys. The proportion of respondents who tried home remedies increased between baseline and end-line surveys within first two weeks of cough and after two weeks of cough. It was noteworthy that the proportion of persons who did nothing after the first two weeks of cough reduced between the baseline (19%) and end-line (7%) surveys.

Table 25: Percentage distribution of adult CS persons by sex, according to what they did during the first two weeks and after two weeks of cough in the baseline and end-line surveys, Hyderabad

What all the respondent did	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Within first two weeks of cough						
Consulted a healthcare provider	67.4	55.0	74.6	65.1	71.3	60.4
Home remedies	18.9	39.4	26.2	41.3	22.9	40.4
Self-medication	37.3	27.2	29.6	28.9	33.2	28.1
Did nothing	4.9	8.0	2.5	2.4	3.6	5.0
After two weeks of cough						
Consulted a healthcare provider	55.7	60.9	58.4	67.6	57.2	64.5
Home remedies	9.7	25.1	14.5	31.5	12.3	28.5
Self-medication	28.9	29.7	26.9	36.1	27.8	33.1
Did nothing	18.6	10.0	19.4	5.0	19.0	7.3
Other	2.0	0.0	1.5	0.0	1.7	0.0
Number of cases	198	191	229	220	427	411

We also enquired about the frequency of visits to the healthcare provider within the first two weeks of the cough and also after two weeks of cough. We noticed that the proportion of respondents who consulted the healthcare provider three or more times increased between baseline and end-line surveys both within first two weeks of cough and after two weeks of cough. For instance, the proportion of CS persons who visited a healthcare provider three or more times in the baseline was 13%, and this increased to 23% in the end-line survey. The proportion of persons who did not visit a healthcare provider within the first two weeks of cough increased from 29% in baseline to 40% in the end-line. However, 36% of respondents in the end-line had not visited a healthcare provider even after two weeks of cough. More males than females did not visit a healthcare provider after two weeks of cough in both baseline and end-line surveys.

Table 26: Percentage distribution of adult CS persons by sex, according to number of visits to the healthcare provider during the first two weeks and after two weeks of cough in the baseline and end-line surveys, Hyderabad

Number of visits	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Within first two weeks of cough						
No visit to healthcare provider	32.6	45.0	25.4	34.9	28.7	39.6
1	34.7	16.7	30.6	23.1	32.5	20.1
2	17.6	22.7	29.8	23.2	24.2	22.9
3+	15.2	15.6	14.3	18.9	14.7	17.4
After two weeks of cough						
No visit to healthcare provider	44.3	39.1	41.6	32.4	42.8	35.5
1	23.0	12.1	23.2	13.3	23.1	12.7
2	22.0	24.1	20.3	32.5	21.1	28.6
3+	10.7	24.7	14.9	21.9	13.0	23.2
Number of cases	198	191	229	220	427	411

We also examined specifically whether the respondents visited healthcare providers, in the first two weeks of cough and after two weeks of cough, and the results are presented in [Table 27](#). The results revealed that the proportion of respondents who did not visit any healthcare provider after the start of the cough was slightly reduced from 20% in the baseline to 16% in the end-line. We noticed an increase in the proportion of respondents who visited the healthcare provider only after two weeks of cough between baseline (9%) and end-line (24%) surveys. As a result, we noticed a reduction in the CS persons visiting the healthcare provider only in the first week (23% vs. 19%).

Table 27: Percentage distribution of CS persons by sex who specifically visited a healthcare provider in the first two weeks or after two weeks of cough in the baseline and end-line surveys, Hyderabad

Visited healthcare provider	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Not visited any healthcare provider at all	22.5	19.8	17.5	12.9	19.8	16.1
Visited only in the first two weeks	21.8	19.4	24.1	19.4	23.0	19.4
Visited only after two weeks	10.1	25.3	7.8	21.9	8.9	23.5
Visited in the first two weeks and after two weeks	45.6	35.6	50.6	45.7	48.3	41.0
Number of cases	198	191	229	220	427	411

We asked all the CS persons who visited a health facility for treatment about the type of health facility visited and the results are presented in [Table 28](#). We noticed a slight decline in the proportion of CS persons consulting a private health facility between baseline and end-line survey for both consultations visit within first two weeks of cough and after two weeks of cough. On the other hand, we noticed an increase in the proportion of respondents visiting a public health facility between baseline and end-line surveys during the first two weeks of cough as well as after two weeks of cough. The proportion of respondents consulting a private health facility remains high in both baseline and end-line surveys for the consultations within the first two weeks of cough as compared to

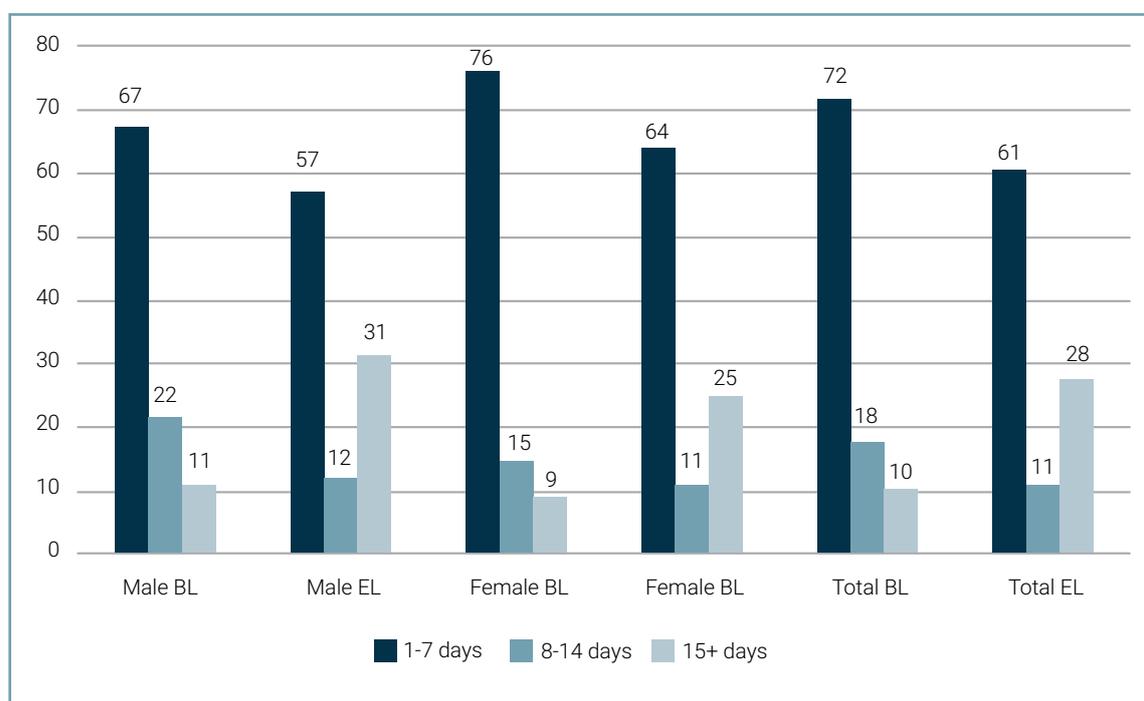
after two weeks of cough. Slightly more females than males consulted a private health facility in both baseline and end-line surveys during within the first two weeks of cough and also after two weeks of cough. On the other hand, more males than females consulted a public health facility in both baseline and end-line surveys within the first two weeks of cough and also after two weeks of cough.

Table 28: Percentage distribution of adult CS persons by sex according to the type of healthcare facility visited within the first two weeks and after two weeks of cough (among those who visited a healthcare provider), in the baseline and end-line surveys, Hyderabad

Type of healthcare provider visited	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Within first two weeks of cough						
Government /Municipal Hospital	27.1	53.5	24.5	40.0	25.6	45.7
Government Dispensary	4.3	2.5	5.3	2.6	4.9	2.5
Urban Health Centre/Urban Health Post/Urban Family Welfare Centre	0.0	1.9	1.6	1.8	0.9	1.9
Other public sector health facility	1.1	9.5	0.8	11.5	1.0	10.7
NGO or trust hospital/clinic	2.3	0.0	1.3	0.0	1.7	0.0
Private hospital	25.2	33.2	30.1	36.8	28.0	35.3
Private doctor/clinic	45.4	21.9	44.3	31.3	44.8	27.3
Vaidya/hakim/homeopath	0.9	0.0	1.6	0.0	1.3	0.0
Unqualified doctor	10.9	12.3	12.1	2.5	11.6	6.6
Pharmacy/drugstore	8.5	3.6	7.5	8.2	7.9	6.3
Other	1.5	0.0	0.0	0.0	0.7	0.0
Number of cases	133	105	171	143	304	248
After two weeks of cough						
Government /Municipal Hospital	53.5	53.0	36.2	35.6	44.0	43.2
Government Dispensary	4.7	14.7	3.5	3.8	4.1	8.6
Urban Health Centre/Urban Health Post/Urban Family Welfare Centre	0.0	6.4	1.0	3.3	0.6	4.7
Other public sector health facility	6.1	14.0	2.3	16.3	4.0	15.3
NGO or trust hospital/clinic	2.7	0.0	1.6	0.0	2.1	0.0
Private hospital	26.8	25.8	39.0	26.5	33.5	26.2
Private doctor/clinic	27.5	21.0	33.1	29.8	30.6	26.0
Vaidya/hakim/homeopath	0.0	0.0	0.3	0.0	0.2	0.0
Unqualified doctor	9.3	3.9	12.1	6.3	10.8	5.2
Pharmacy/drugstore	4.2	1.1	1.3	0.0	2.6	0.5
Other	3.1	0.0	2.2	0.0	2.6	0.0
Number of cases	110	116	134	149	244	265

We asked respondents for the number of days after cough when they first visited the healthcare provider. **Figure 2** provides the distribution of the respondents according to the number of days after the initiation of cough as a symptom that they first visited the healthcare provider. We noticed that there was a change in the proportion of persons consulting a health facility within the first seven days of cough and after 14 days of cough between baseline and end-line surveys, irrespective of the sex of the respondent. The proportion of respondents who first visited the healthcare provider within first 7 days of cough reduced from 72% in the baseline to 61% in the end-line. Subsequently, we noticed an increase in the proportion of respondents first visiting the health facility after 14 days of cough between baseline (10%) and end-line (28%). This increase was mainly due to an increase in the proportion of respondents who visited the healthcare provider only after two weeks of cough. Although there was an increase in the proportion of respondents first visiting the healthcare provider after two weeks of cough, the average delay in consulting a healthcare provider remained almost the same between baseline (7 days) and end-line surveys (8 days).

Figure 2: Percentage of CS persons according to the number of days after cough that they visited a healthcare provider Hyderabad



We also asked the respondents to recall the recommendations by the healthcare provider during their visits within the first two weeks of cough and after two weeks of cough. Referrals for diagnostic tests increased from 54% in the baseline to 62% in the end-line after two weeks of cough and the increment was mainly observed among females (see **Table 29**). Prescriptions for medicine were reported by most of the respondents in both baseline and end-line surveys during within the first weeks of cough and also after two weeks of cough. Prescription for medicines reduced between baseline and end-line for those presenting within the first two weeks of cough and remained the same after two weeks of cough. We noticed an increase in the proportion of respondents who reported that the healthcare provider recommended diagnostic tests between baseline and end-line surveys, both within first two weeks of cough and also after two weeks of cough. Although there was a reduction in the respondents saying that the healthcare provider had given them injections between baseline and end-line surveys within the first two weeks of cough, in the end-line we noticed an increase in the provision of injections after two weeks of cough. The increment in the respondents who said that the healthcare provider recommended a diagnostic test within the first two weeks between the baseline and end-line survey was comparatively higher for females than males.

Table 29: Percentage distribution of adult CS persons by sex, according to type of recommendations made by the healthcare provider within the first two weeks and after two weeks of cough (among those who visited a healthcare provider), in the baseline and end-line surveys, Hyderabad

Actions by the healthcare provider	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Within first two weeks of cough						
Referred for a diagnostic test	25.4	39.1	11.9	35.1	17.8	36.8
Drug/medicine prescribed	94.3	85.1	96.6	84.2	95.6	84.5
Referred to another service provider	2.4	9.2	2.3	3.3	2.3	5.8
Hospitalization	1.2	9.4	0.5	3.5	0.8	6.0
Gave nebulization	0.8	14.3	0.8	2.5	0.8	7.5
Gave injection	38.0	21.0	38.8	23.2	38.5	22.2
Referred to DOTS Centre	0.0	8.2	0.0	6.1	0.0	7.0
Other	2.1	1.5	0.0	1.9	0.9	1.7
Number of cases	133	105	171	143	304	248
After two weeks of cough						
Referred for a diagnostic test	49.6	62.9	47.3	59.2	48.3	60.8
Drug/medicine prescribed	87.0	83.7	84.4	85.2	85.6	84.6
Referred to another service provider	2.6	1.4	1.1	7.1	1.8	4.6
Hospitalization	0.8	7.4	0.0	9.1	0.4	8.3
Gave nebulization	3.4	14.4	0.6	7.3	1.9	10.4
Gave injection	1.6	20.7	2.1	22.8	1.9	21.9
Referred to DOTS Centre	0.0	6.1	0.0	2.2	0.0	3.9
Other	0.0	2.1	0.0	1.2	0.0	1.6
Number of cases	110	116	134	149	244	265

We asked respondents who visited a healthcare provider about the types of test that had been prescribed. Overall, we noticed an increase in recommendations for sputum tests and chest X-Rays within two weeks of cough and after two weeks of cough between baseline and end-line surveys (see Table 30). The increment noticed was higher for sputum tests than chest X-Rays both within two weeks of cough and after two weeks of cough, and the increment was slightly higher for females than males. However, more males than females reported that the healthcare provider recommended a sputum test and chest X-Ray between baseline and end-line surveys both within two weeks of cough and after two weeks of cough.

Table 30: Percentage distribution of adult CS persons by sex, according to type of test prescribed within the first two weeks and after two weeks of cough (among those who visited a healthcare provider) in the baseline and end-line surveys, Hyderabad

Type of test prescribed	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Within first two weeks of cough						
Chest X-Ray	16.7	16.4	7.2	13.8	11.4	14.9
Sputum test	12.4	27.5	6.1	20.9	8.8	23.7
Blood test	20.3	25.0	10.3	27.9	14.7	26.7
Other	8.6	2.4	1.9	0.5	4.8	1.3
Number of cases	133	105	171	143	304	248
After two weeks of cough						
Chest X-Ray	27.5	29.4	28.7	44.8	28.2	38.1
Sputum test	32.4	49.7	22.6	46.9	27.0	48.1
Blood test	45.6	27.1	37.7	37.9	41.2	33.2
Other	13.9	1.1	12.4	2.6	13.1	1.9
Number of cases	110	116	134	149	244	265

The specific diagnostic test recommended according the type health facility visited were also examined and the results are presented in Table 31. We noticed an increase in the recommendations for sputum test and chest X-Ray after two weeks of cough between baseline and end-line surveys irrespective of type of health facility visited. The noted increment between baseline and end-line surveys in the recommendation for sputum test as well as chest X-Ray was higher among respondents who visited only a private healthcare provider. For instance, for respondents who visited only a public health facility the recommendations for sputum test increased from 36% in the baseline to 52% in the end-line, while it increased from 15% in the baseline to 42% for those who visited only a private health facility.

Table 31: Percentage distribution of adult CS persons according to type of test prescribed after two weeks of cough by type of health facility visited (among those who visited a healthcare provider) in the baseline and end-line surveys, Hyderabad

Characteristic	Type of test prescribed						Number of cases
	Chest X-ray	Sputum test	Blood test	Only chest X-ray	Only sputum test	Both chest X-ray and sputum test	
Baseline							
Type of health facility visited							
Public facility only	27.1	36.3	48.3	7.6	16.8	19.5	82
Private facility only	21.6	15.2	31.3	11.5	5.1	10.1	106
Both private and public	58.1	50.7	66.5	15.8	8.4	42.3	40

End-line

Type of health facility visited							
Public facility only	32.9	52.4	35.9	6.4	25.9	26.5	137
Private facility only	36.2	42.4	28.1	6.5	12.7	29.6	100
Both private and public	67.0	53.7	41.7	16.4	3.1	50.6	24

We also enquired from respondents about support received during the consultation visits. Although there was no change in the proportion of respondents saying that someone always accompanied them during their visit to the healthcare provider, we noticed a small increase in the proportion of male respondents mentioning this support between the baseline (44%) and end-line survey (50%). However, the proportion of respondents who said that no one accompanied them during their visit to the healthcare provider slightly declined from 28% in the baseline to 24% in the end-line survey.

Table 32: Percentage distribution of respondents by sex, according to the frequency of someone accompanying them during consultation visits (among respondents who visited a healthcare provider after two weeks of cough) in the baseline and end-line surveys, Hyderabad

Characteristic	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Frequency of someone accompanying the person						
Always	44.4	47.9	55.4	51.5	50.4	49.9
Some times	25.7	25.3	18.9	26.9	22.0	26.2
No one accompanied	29.8	26.8	25.8	21.6	27.6	23.9
Number of cases	110	116	134	149	244	265

We also asked respondents about the medical costs they incurred. We noted a decline in the average cost incurred by the CS persons between baseline and end-line surveys (see Table 33). The mean medical cost was reduced from ₹3498 in the baseline to ₹2050 in the end-line. This was mainly due to the slight increase in the respondents who reported that they had spent less than ₹1000 between baseline (43%) and end-line surveys (48%). Similarly, there was a slight reduction in the proportion of respondents who said that they paid ₹5000 or more between baseline and end-line surveys. However, 8% of respondents in the end-line said that they could not say how much they had paid towards medical cost.

Table 33: Percentage distribution by sex of respondents, according to total cost incurred for the treatment (among who visited a healthcare provide after two weeks of cough) in the baseline and end-line surveys, Hyderabad

Characteristic	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Cost incurred (in ₹)						
No cost	10.8	3.0	14.6	0.6	12.9	1.7
< 1000	41.2	52.0	44.7	45.0	43.1	48.1
1000-4999	31.4	21.8	31.2	33.3	31.3	28.2

5000-9999	7.0	7.2	4.1	11.4	5.4	9.5
10000+	9.6	8.2	5.5	1.1	7.3	4.2
Don't know cannot say	0.0	7.9	0.0	8.7	0.0	8.3
Mean cost incurred	4941.8	2237.1	2311.8	1903.4	3498.3	2050.1
Number of cases	110	116	134	149	244	265

Overall, we noted that the proportion of respondents who sought treatment from a qualified healthcare provider after two weeks of cough significantly increased from 53% in the baseline to 63% in the end-line survey. Although we noticed an increase in the proportion of respondents who sought treatment from a qualified healthcare provider between baseline and end-line surveys, it was found to be statistically significant only for females, persons whose aged below 40, never married persons, persons who have some level of schooling, persons who are not employed, Muslims and other minority religion groups, persons not belonging to either Scheduled Caste or Scheduled Tribe, persons whose monthly income was ₹5000 or more, and persons whose household monthly income was less than ₹15000 as compared to their counterparts.

Table 34: Percentage distribution of adult CS persons who sought treatment from a qualified healthcare provider after two weeks of cough by 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	51.5	198	60.5	191	0.075
Female	54.9	229	66.0	220	0.016
Age					
< 40	53.2	196	70.3	178	0.001
40-59	52.6	139	57.3	144	0.424
60+	54.7	92	59.7	90	0.499
Marital status					
Currently married	53.6	283	61.1	308	0.067
Marriage dissolved	57.6	80	57.1	60	0.951
Never married	46.7	64	89.3	43	<0.001
Literacy and education					
Illiterate	59.1	174	58.7	193	0.947
Literate, 1-7 years of schooling	48.1	128	65.7	65	0.021
8+ years of schooling completed	50.6	125	68.4	153	0.003
Occupation					
Business	61.6	39	75.4	26	0.248
Salaried job	53.5	49	63.2	51	0.327

Other job	49.6	161	56.6	147	0.220
Not working	54.5	178	67.2	187	0.015
Religion					
Hinduism	58.0	268	60.3	285	0.582
Islam	47.2	139	70.4	103	<0.001
Other	32.4	20	70.3	23	0.016
Caste/Tribe					
Scheduled Caste/Tribe	53.4	126	62.7	168	0.110
Others	53.3	301	63.9	243	0.012
Personal monthly income (in ₹)					
< 5000	54.0	236.0	63.9	253.0	0.026
5000+	52.4	191.0	62.6	158.0	0.056
Household monthly income (in ₹)					
< 15000	53.4	303	65.8	203	0.006
15000+	53.0	124	61.1	208	0.148
Total	53.3	427	63.4	411	0.003

Further, we also examined the changes in the proportion of respondents who sought treatment from a qualified healthcare provider after two weeks of cough according to comprehensive knowledge and its components (see Table 35). Although we noticed an increase in the proportion of respondents seeking care from a qualified healthcare provider after two weeks of cough between baseline and end-line, according to comprehensive knowledge and its component indicators, the increment was statistically significant only for those who knew that cough is the common symptom of lung TB. A noticeable point was that a higher proportion of persons who had comprehensive knowledge as well had knowledge on its components were found to have sought treatment from a qualified healthcare provider in both baseline and end-line surveys as compared to persons who did not have such knowledge.

Table 35: Percentage distribution of adult CS persons who sought treatment from a qualified healthcare provider after two weeks of cough by comprehensive knowledge on TB and its components, in the baseline and end-line surveys, Hyderabad

Characteristic	Baseline		End-line		p-value
	Percent	Number of cases	Percent	Number of cases	
Comprehensive knowledge					
No	46.6	284	57.9	199	0.015
Yes	66.6	143	68.6	213	0.697
Cough is the most common symptom of lung TB					
No	48.1	190	57.4	117	0.115
Yes	57.5	237	65.8	294	0.049

TB spreads through air					
No	40.0	166	64.4	106	0.001
Yes	61.8	261	63.1	305	0.750
Sputum is the confirmatory test for TB					
No	47.5	164	59.5	113	0.051
Yes	56.9	263	64.9	298	0.052
TB is fully curable					
No	45.1	162	62.9	118	0.003
Yes	58.3	265	63.6	293	0.201

The proportion of respondents who themselves asked for a sputum test was also examined and the results indicated that there was a highly significant increase in the proportion of respondents requesting a sputum test between baseline (5%) and end-line (12%) surveys. The increase was statistically significant among both males and females, persons aged below 40 and above 60 years, never married persons, persons with some literacy, persons who were not employed and among those whose personal income was less than ₹5000 per month or family income less than ₹15000 per month.

Table 36: Percentage distribution of adult CS persons who asked for sputum test by 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	5.3	198	13.9	191	0.005
Female	3.8	229	11.1	220	0.005
Age					
< 40	2.5	196	9.9	178	0.005
40-59	4.9	139	10.8	144	0.075
60+	8.1	92	20.0	90	0.025
Marital status					
Currently married	2.9	283	11.7	308	<0.001
Marriage dissolved	12.9	80	15.8	60	0.626
Never married	1.3	64	12.8	43	0.044
Literacy and education					
Illiterate	5.4	174	10.6	193	0.072
Literate, 1-7 years of schooling	3.2	128	14.3	65	0.009
8+ years schooling completed	4.5	125	13.9	153	0.013

Occupation					
Business	11.0	39	20.3	26	0.304
Salaried job	6.8	49	12.2	51	0.366
Other job	2.9	161	6.8	147	0.119
Not working	2.5	178	15.8	187	<0.001
Religion					
Hinduism	5.7	268	11.7	285	0.014
Islam	2.9	139	15.6	103	0.001
Other	0.0	20	6.7	23	NE
Caste/Tribe					
Scheduled Caste/Tribe	6.4	126	12.9	168	0.072
Others	3.7	301	12.1	243	<0.001
Personal monthly income (in ₹)					
< 5000	4.5	236	14.0	253	0.001
5000+	4.5	191	9.9	158	0.055
Household monthly income (in ₹)					
< 15000	5.6	303	13.3	203	0.003
15000+	1.9	124	11.5	208	0.006
Total	4.5	427	12.4	411	<0.001

Table 37 provides the distribution of the respondents who asked for a sputum test, according to their comprehensive knowledge and its components. Unlike the results related to having sought treatment from a healthcare provider, we noticed a statistically significant increase in the proportion of respondents who asked for a sputum test between baseline and end-line surveys, according to comprehensive knowledge and its component indicators. We noticed a higher proportion of respondents asked for a sputum test among those who had knowledge on different key aspects of TB in both baseline and end-line surveys.

Table 37: Percentage distribution of adult CS persons who asked for a sputum test by comprehensive knowledge on TB and its components in the baseline and end-line surveys, Hyderabad

Characteristic	Baseline		End-line		p-value
	Percent	Number of cases	Percent	Number of cases	
Comprehensive knowledge					
No	2.7	284	9.2	199	0.003
Yes	8.1	143	15.4	213	0.044
Cough is the most common symptom of lung TB					
No	3.3	190	8.3	117	0.066
Yes	5.5	237	14.1	294	0.002

TB spreads through air					
No	1.9	166	9.4	106	0.010
Yes	6.2	261	13.5	305	0.005
Sputum is the confirmatory test for TB					
No	1.5	164	6.5	113	0.043
Yes	6.4	263	14.7	298	0.002
TB is fully curable					
No	1.7	162	13.4	118	0.001
Yes	6.2	265	12.0	293	0.020

We asked the respondents who did not consult a healthcare provider after two weeks of cough about the reasons for not seeking treatment. We noticed some difference in the reported reasons for not going to a healthcare provider between the baseline and end-line surveys (see Table 38). In the end-line survey, the top three reported reasons were that the respondent felt better before s/he could seek treatment (31%), did not have time (28%) and did not think it was necessary (23%). However, respondents not thinking it was necessary (43%), feeling better before the respondent could seek treatment (35%) and thinking it was not serious (25%) were the top three frequently mentioned reasons in the baseline survey.

Table 38: Percentage distribution of adult CS persons by sex, according to reasons for not seeking treatment from a healthcare provider after 2 weeks of cough in the baseline and end-line surveys, Hyderabad

Reason for not seeking treatment	Male		Female		Total	
	Baseline	End-line	Baseline	End-line	Baseline	End-line
Did not have time	10.7	31.3	3.2	23.9	6.8	27.7
Felt better before I could seek treatment	24.6	29.1	44.4	31.9	34.9	30.5
Treatment is costly	7.9	11.9	6.8	9.5	7.3	10.7
Did not think it was necessary	48.1	19.4	38.8	27.0	43.2	23.1
Did not know where to seek treatment	1.2	3.9	0.0	0.0	0.6	2.0
Healthcare provider is too far	2.9	1.7	3.0	5.2	3.0	3.4
Embarrassed to seek treatment	3.0	2.0	3.3	2.4	3.1	2.2
Thought I knew what the problem was and could treat it myself	9.3	2.3	2.9	0.0	5.9	1.2
Thought it was not serious	20.1	20.3	29.1	7.8	24.8	14.2
Other	10.4	1.0	12.1	2.5	11.3	1.7
Don't know/ Can't Say	0.0	3.8	0.0	5.3	0.0	4.5
Number of cases	88	75	95	71	183	146

We also examined the profile of the respondents who did not seek treatment from a healthcare provider. We noticed a change in the distribution of the respondents who did not seek treatment from the healthcare provider for most of the characteristics (see Table 39). Among the respondents who did not seek treatment from a healthcare provider, we identified that the proportion of currently married people (65% vs. 77%), illiterate persons (30% vs. 56%), Hindus (56% vs. 83%), persons from a Scheduled Caste/Tribe (33% vs. 46%), and persons having a household monthly income of ₹15000 or more (36% vs. 48%) comparatively increased between baseline and end-line surveys.

Table 39: Socio-economic and demographic profile of respondents who did not seek treatment from a healthcare provider after two weeks of cough in the baseline and end-line surveys, Hyderabad

Characteristic	Baseline	End-line
Sex of the respondent		
Male	52.5	56.9
Female	47.5	43.1
Age		
< 40	45.9	29.2
40-59	36.0	44.3
60+	18.1	26.5
Marital status		
Currently married	65.4	77.3
Widowed/Divorced/Separated	13.4	18.1
Never married	21.2	4.6
Literacy and education		
Illiterate	30.2	56.5
Literate, 1-7 years of schooling	36.3	11.4
8+ years of schooling	33.5	32.1
Occupation		
Business	5.4	6.0
Salaried job	10.9	17.8
Other job	45.3	37.0
Not working	38.3	39.1
Religion		
Hinduism	55.9	83.1
Islam	35.9	15.9
Other	8.2	1.0
Caste/Tribe		
Scheduled Caste/Tribe	32.7	45.6
Others	67.3	54.4
Personal monthly income (in ₹)		
< 5000	51.0	54.5
5000+	49.0	45.5
Household monthly income (in ₹)		
< 15000	63.8	52.4
15000+	36.2	47.6
Total percent	100.0	100.0
Number of cases	85	66

06

PROGRAM IMPLICATIONS AND RECOMMENDATIONS



Exposure to THALI program

We asked all the adult CS persons about their exposure to various THALI activities conducted as a part of community engagement. These activities included exposure to various IEC materials as well as communication activities to impart information on prevention, control and treatment. 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 we enquired as to whether the respondents had seen those materials. Table 40 provides the distribution of the respondents who had seen specific IEC materials and we noticed that about 74% of the respondents had seen at least one of the IEC materials. However, when we enquired about the specific IEC material seen by the respondent, we observed that the most frequently reported IEC material was cough hygiene – leaflet or poster (65%), followed by community handout leaflet (49%), auto driver poster (18%), and school leaflet (18%). A slightly larger proportion of females than males reported to have seen the community handout leaflet (54% vs. 42%) and cough hygiene poster (67% vs. 63%). However, a slightly larger proportion of males had seen the auto driver-poster and the school leaflet.

Table 40: Percentage distribution of adult CS persons by sex who had seen various IEC materials in the end-line survey, Hyderabad

Type of IEC material	Male	Female	Total
Cough hygiene leaflet/poster	62.7	67.1	65.1
Community handout leaflet	42.4	54.4	48.8
School leaflet	20.1	15.2	17.5
Construction worker poster	12.3	12.4	12.3
Auto driver poster	22.2	15.0	18.3
Pourakarmika poster	12.5	9.4	10.9
Young girl poster	13.1	12.3	12.7
Exposure to any of the above IEC materials	72.3	75.3	73.9
Number of cases	191	220	411

We asked the respondents who had seen the IEC materials the place where or the person with whom they had seen those materials. Most of the respondents mentioned the Anganwadi centre (62%) as the place where they had seen the IEC material. The public hospital (60%), with the TB Alert CHW (29%) and petty shop or tea shop (13%) were the other most frequently reported responses. More females than males reported the public hospital (64% vs. 55%) and with the TB Alert CHW (34% vs. 22%) as where they had seen the IEC materials.

Table 41: Percentage distribution of adult CS persons according to where/the person with whom they had seen the IEC materials (among the persons who had seen the IEC materials) in the end-line survey, Hyderabad

Place where/person with whom the IEC material was seen	Male	Female	Total
TB Alert/THALI CHW	22.3	34.4	28.9
Public hospital	55.0	64.0	59.9
Anganwadi centre	66.7	57.5	61.6
Petty shop/tea shop	13.0	13.8	13.4
SHG	10.3	7.4	8.7
Slum association	1.6	1.2	1.4
Youth group	2.7	1.3	1.9
Labour unions	1.1	0.5	0.8
Community Based Organisations	14.5	3.1	8.3
During public campaigns	2.1	7.1	4.8
Don't know	2.7	6.9	5.0
Number of cases	138	166	304

We asked what information they received after seeing the IEC materials. Nearly three-fourths of the respondents who had seen the IEC materials mentioned that covering one's mouth while coughing as a way to prevent the spread of TB was the information received from the IEC material. Other frequently-reported information received from the IEC materials was that TB patients should eat nutritious food (52%), the common symptoms of TB (32%), that sputum should be tested for TB (28%) and that TB can be fully cured (16%). More males than females reported that TB patients should eat nutritious food (54% vs. 50%), the common symptoms of TB (44% vs. 22%), that sputum should be tested for TB (33% vs. 24%) and that TB can be fully cured (21% vs. 11%) as the information received from the IEC material.

Table 42: Percentage distribution of adult CS persons, according to the information received from the IEC materials (among the persons who had seen the IEC materials), Hyderabad

Information received	Male	Female	Total
Covering one's mouth while coughing prevents the spread of TB	75.1	75.5	75.3
Eat nutritious food	54.2	49.5	51.6
The common symptoms of TB	44.0	21.9	31.9
Test sputum for TB	32.9	23.5	27.7
TB can be completely cured	21.2	10.8	15.6
Adherence to TB medication is important	10.1	7.8	8.8
Consequences of not treating TB	6.4	3.6	4.9
Risk of alcohol consumption and TB	6.0	0.9	3.2
Risk of tobacco consumption and TB	5.0	4.1	4.5
Stop alcohol consumption during treatment	4.8	4.0	4.4
Complete the full course of treatment	6.4	8.2	7.4

Test for TB, if one has persistent cough for more than 2 weeks	9.1	15.4	12.6
Don't know/can't say	5.3	6.7	6.1
Number of cases	138	166	304

In addition to these IEC materials, the CHWs also conducted other community engagement activities such as in-person meetings, sensitization meetings for key opinion leaders, and TB meetings for small or large groups. We collected information about the exposure to these activities from all the respondents. The results are provided in Table 43. We have specifically analyzed the exposure of the respondents to in-person contacts, participation in sensitization meetings and participation in small or large group meetings. Overall, a little above two-thirds of the respondents has been contacted in-person, 18% had attended the small or large group meetings only 5% respondents had attended the sensitization meetings. In general, the target group for sensitization meetings are community leaders. More females (71%) than males (66%) were exposed to in-person contact.

Table 43: Percentage distribution of adult CS persons by sex who participated in the various types of community engagement activities in the end-line survey, Hyderabad

Exposed to	Male	Female	Total
In-person contact			
Yes	66.2	70.8	68.7
No	33.8	29.2	31.3
Sensitization meeting			
Yes	6.0	4.9	5.4
No	94.0	95.1	94.6
Small or large meeting on TB			
Yes	21.4	15.7	18.3
No	78.6	84.3	81.7
Number of cases	191	220	411

Effect of THALI Program Exposure on Knowledge and Health Seeking

We noticed a significant increase in the knowledge aspects as well as health seeking behaviour among the adult CS persons living in the urban slum areas of Hyderabad during the period between baseline and end-line surveys. 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 individual “i” 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 is 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 attempts 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 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 non-exposed 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 size may not be sufficient to identify the impact of the program using the Hyderabad data alone, we pooled the data from Bengaluru that was collected in a similar manner. We used the 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.

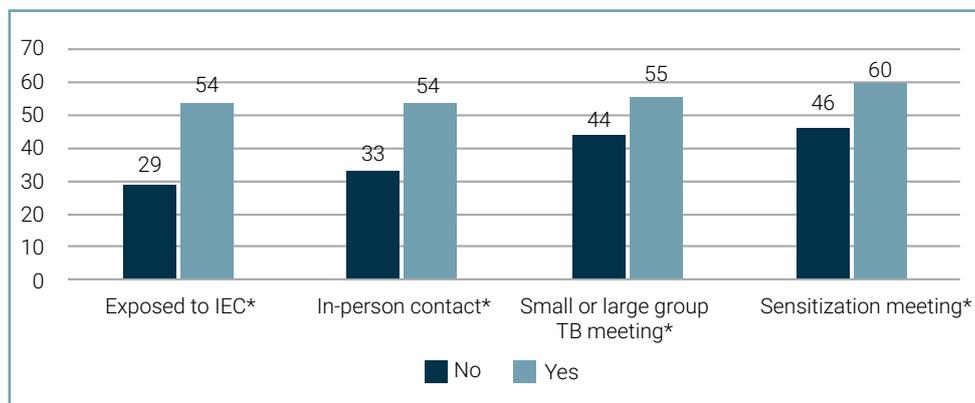
The pooled data contains the information for 869 respondents from Hyderabad and Bengaluru. We first examined the percentage of respondents according to their exposure to various THALI community engagement activities. Specifically, we examined the exposure to any of the IEC materials shown to them, in-person contacts, sensitization meetings and small or large meetings on TB from the pooled data (see Table 44). Overall, according to the pooled data, 73% of the respondents were exposed to any one of IEC materials shown to them, 66% were exposed to in-person contact, 28% had attended a small or large group meetings on TB and 8% had participated in a sensitization meeting. No differentials according to the sex of the respondent were noticed for the various program exposures.

Table 44: Percentage distribution of adult CS persons according to the exposure to THALI community activities in the end-line survey using the pooled data of Hyderabad and Bengaluru

Exposed to	Male	Female	Total
Any IEC materials			
Yes	73.5	72.2	72.8
No	26.5	27.8	27.2
In-person contact			
Yes	63.4	68.1	66.1
No	36.6	31.9	33.9
Sensitization meeting			
Yes	9.3	7.4	8.3
No	90.7	92.6	91.7
Small or large meeting on TB			
Yes	29.9	26.2	27.8
No	70.1	73.8	72.2
Number of cases	379	490	869

We analyzed the difference in the comprehensive knowledge according to respondents' 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, 54% of the respondents who were exposed to the IEC material had comprehensive knowledge as compared to 26% for the non-exposed group. Also, 54% of the respondents who had in-person contact with the CHW had comprehensive knowledge as compared to 33% who did not. Fifty-five percent of respondents who attended small or large group meetings on TB had comprehensive knowledge as compared to 44% for respondents who did not attend. Sixty percent of the respondents who attended the sensitization meetings had comprehensive knowledge as compared to 46% of respondents who did not attend such meetings.

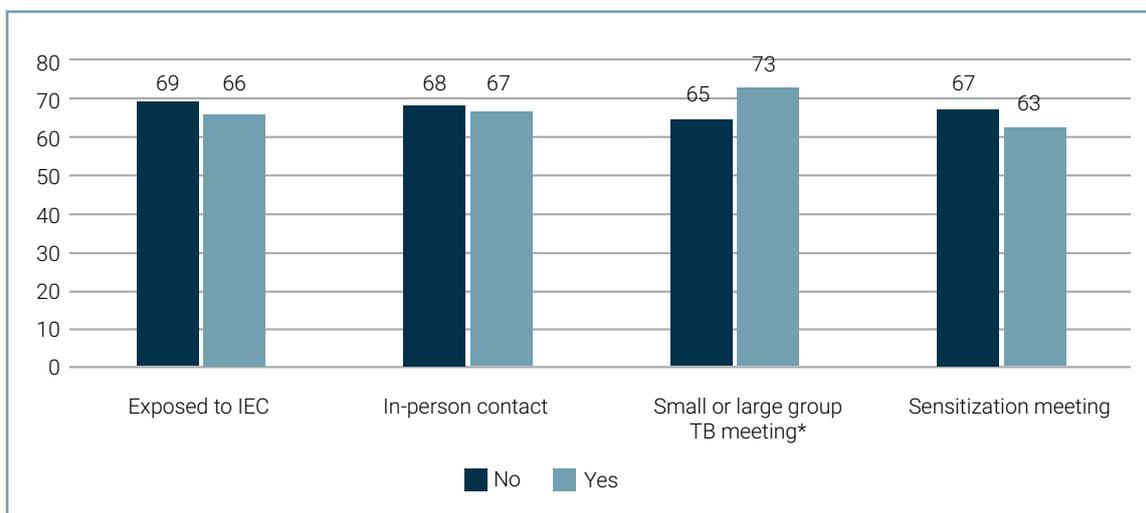
Figure 3: Percentage of CS persons who had comprehensive knowledge on TB, according to exposure to specific community activity using pooled data of Hyderabad and Bengaluru



Note: *difference is significant at below 5% level

The results of the pooled data on the exposure to specific community activities and the percentage of respondents who sought treatment from a healthcare provider after two weeks of cough is shown in Figure 4. Exposure to many of the specific community-level activities did not show much difference in the proportion of respondents seeking treatment from a healthcare provider after two weeks of cough. The proportion who sought treatment from a healthcare provider after two weeks of cough was smaller among respondents who were exposed to the IEC materials, who were exposed to in-person contacts and who were exposed to sensitization meetings, as compared to their counterparts. However, exposure to small or large group meetings on TB was found to have the maximum difference in the proportion of respondents seeking treatment from a healthcare provider after two weeks of cough as compared to the non-exposed group (73% vs. 65%).

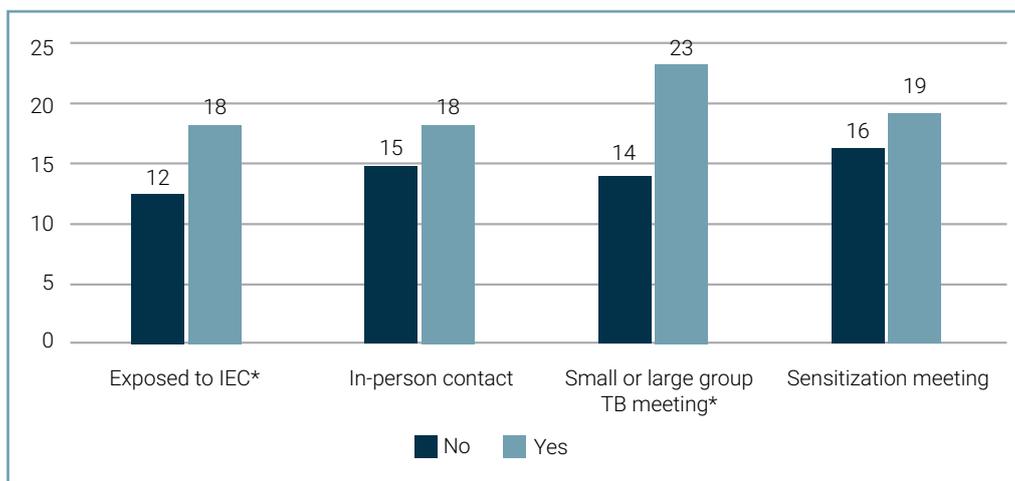
Figure 4: Percentage of CS persons who sought treatment from a healthcare provider after two weeks of cough, according to exposure to specific community activities using pooled data of Hyderabad and Bengaluru



Note: *difference is significant at below 5% level

Figure 5 provides the comparison of the exposure to IEC materials as well as the community activities on requesting for sputum tests. As noticed for other outcome variables examined, for this outcome variable also, we identified the maximum difference in the proportion of respondents requesting a sputum test according to exposure to small or large group meetings on TB. For other exposure groups also, we noticed a higher proportion of respondents requesting a sputum test among exposed persons as compared to non-exposed persons.

Figure 5: Percentage of CS persons who themselves requested a sputum test, according to exposure to specific community activity using pooled data of Hyderabad and Bengaluru



Note: *difference is significant at below 5% level

The results of the analysis of the effect of the specific exposure on the outcome variables, such as comprehensive knowledge, seeking treatment from a healthcare provider and requesting a sputum test using the pooled data from Bengaluru and Hyderabad are presented in Table 45. The final model included only the variables that had achieved balancing properties using the kernel density and box plots. Only one of the specific exposures, that is participating in small or large group TB meetings, has shown significant effect on all the three outcomes studied. The results indicate that the exposure to small or large group TB meetings should have increased comprehensive knowledge by 12 percentage points, seeking treatment from healthcare provider by 10 percentage points and requesting a sputum test by 9 percentage points, as compared to the non-exposed groups. However, the exposure to IEC materials should have significantly increased the comprehensive knowledge by 31 percentage points and the request for sputum tests by 7 percentage points as compared to non-exposed groups. We noticed that the in-person contact had an effect only on comprehensive knowledge and should have significantly increased the comprehensive knowledge by 28 percentage points as compared to non-exposed group.

Table 45: Average effect of exposure to in-person contact, IEC materials and small or large group TB meetings on comprehensive knowledge, seeking treatment from healthcare providers and requests for sputum tests, using pooled data of Hyderabad and Bengaluru

Average effect of exposure on	Coefficient	SE	p - value	[95% CI]	
				Lower	Upper
Comprehensive knowledge					
In-person contact	0.26	0.039	<0.001	0.18	0.34
Exposure to IEC materials	0.31	0.043	<0.001	0.22	0.39
Small or large group TB meetings	0.12	0.043	0.004	0.04	0.21
Seeking treatment from healthcare provider					
In-person contact	-0.01	0.038	0.776	-0.09	0.06
Exposure to IEC materials	-0.05	0.041	0.201	-0.13	0.03
Small or large group TB meetings	0.10	0.041	0.015	0.02	0.18

Requests for sputum test					
In-persons contact	0.01	0.032	0.814	-0.06	0.07
Exposure to IEC materials	0.07	0.033	0.026	0.01	0.14
Small or large group TB meetings	0.09	0.035	0.010	0.02	0.16

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

For exposure to in-persons contact, marital status, exposure to IEC materials caste/tribe and for small or large group TB meetings, the name of district was not used as covariate as balancing property was not achieved for these variables.

We used sex of the patient, religion and age of the patient as matching variables.

Limitations of the study

We used retrospective data collection to estimate the changes in the knowledge and health seeking behavior for TB. Owing to this, there could be recall bias in providing information on the type of healthcare provider visited at various stages after the onset of symptoms. However, we asked for details of health seeking behavior among the persons who experienced persistent cough for more than two weeks in the six months prior to the survey, to try to minimize the recall bias, and have a feasible method of achieving sufficient sample size. Also, since around 40 percent of the CS persons were illiterate, there could be inaccuracies in the information on the type of the healthcare provider visited, whether allopathic or qualified in other indigenous streams of medicine. Similarly, there is a chance that the interaction between the healthcare provider and the respondents might have influenced his/her knowledge on TB and health seeking behavior. However, in general, the likelihood of providers providing knowledge on TB to adult CS persons in a busy outpatient setting is very low in India. Consulting a healthcare provider may also depend on the duration of having a cough. We did not collect the information on the duration of having a persistent cough in the study. There could also be recall bias in providing information about the exposure to the THALI program. We had shown the selected IEC materials to the respondent and asked about their exposure in order to reduce the likely underestimating of this aspect. However, the information on what they learned through exposure to the THALI program had to be remembered, and is thus 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

We noted numerous positive changes in the health seeking behavior and knowledge aspects of TB among the adult CS persons living in the urban slums in Hyderabad over the time period. We noted a 10 percentage point increase in the proportion of respondents who reported to have consulted a formal healthcare provider after two weeks of cough, increasing from 53% in the baseline to 63% in the end-line. The proportion of respondents consulting a public health facility after two weeks of cough between baseline and end-line surveys increased and this resulted in the reduction of respondents visiting a private health facility. We also noted an increase in the proportion of respondents who said that they received a recommendation for diagnostic tests between baseline and end-line surveys. This also resulted in the consequent increase in recommendations for an appropriate test for TB, such as the sputum test. The recommendation for sputum tests increased among respondents consulting public as well as private health facilities. We also noticed a slight increase in the number of times the respondent consulted a healthcare provider between baseline and end-line surveys. The proportion of

respondents requesting a sputum test also increased significantly between baseline and end-line surveys. We identified an 8 percentage point increase in the proportion of CS persons requesting a sputum test between baseline and end-line surveys.

The proportion of respondents who had comprehensive knowledge about TB also significantly increased between baseline and end-line surveys. The other key knowledge aspects of TB, including that of TB being fully curable, sputum test as the confirmatory test for TB, TB spreading through air and cough as the most common symptom of TB, also increased during the period between baseline and end-line surveys. The increment in the proportion of respondents having comprehensive knowledge was larger than the increase in the proportion of respondents having the knowledge on the its component indicators. We noted a reduction in the proportion of respondents willing to disclose their TB status to the neighbours between baseline and end-line surveys. The willingness to disclose TB status to various other persons also reduced between baseline and end-line surveys. We noticed an increase in the proportion of persons who knew that TB treatment was available for free, but there was still a high proportion of them who didn't know that (38%).

Program implications and recommendations

The findings from the study can be used for future implementation of TB programs. We found that nearly half of the respondents were illiterate. As such, any IEC activities for disseminating knowledge and health seeking behavior for TB should include both visual and verbal media. We noticed that 74% of the CS persons were exposed to the IEC materials developed by the THALI program, and 6% of them could not recall what information they had received through these IEC materials. Although, exposure to IEC materials improved the knowledge aspects, they did not produce the same level of change in the health seeking behavior, particularly in seeking treatment from a healthcare provider. IEC materials have to be properly designed, supplied, distributed and utilized efficiently. The IEC materials were developed and supplied to the field level at a very late stage of the program implementation. Some of the posters developed and displayed in public places had to be removed due to the enforcement of the code of conduct as a result of the parliamentary elections in Telangana. Similarly, the IEC materials were expected to be used by the CHWs whenever they made in-person contacts. Respondents rarely reported that the CHW had shown them the materials. Although 69% of the respondents reported that they were exposed to in-person contact, only 29% reported the CHW as the source of exposure to IEC materials. The changes in health seeking behavior were not associated with either exposure to IEC material or in-person contact. However, we identified that group approaches adopted in THALI were able to provide the stimuli that influenced people to increase the knowledge and change their health seeking behavior towards TB diagnosis.

Although there was an increase in the proportion of household members of CS persons accessing public health facilities, around 30% of households did not use public health facilities due to issues of accessibility and quality of care. There is scope to support government health facilities in improving systems and quality standards of the services in public health facilities. Government frontline workers do not serve as a prominent source of information on TB, thus 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.

Even though around 64% of the CS persons did visit a formal healthcare provider after two weeks of cough, many of them did not receive recommendations for the appropriate test, that is sputum test. Recommending a sputum test is usually considered a function of the healthcare provider. In the absence of this, the ability of the patient to ask for a sputum test also plays a key role in the process of early detection. We noticed the same level of increment for both CS persons consulting a healthcare provider after two weeks of cough and requesting for sputum test between baseline and end-line surveys. The likelihood of undiagnosed TB will be higher if large numbers of CS persons do not seek care from a healthcare provider. Evidence suggests that the proportion of symptomatic individuals visiting high-quality providers has the greatest attributable effect in the care cascade for TB. Even though many of the CS persons had consulted a qualified provider, many of them were not advised sputum microscopy, particularly among those who had visited a private healthcare provider.

Patient requests for a sputum test may enhance provider's suspicion that their condition is TB, and this could potentially reduce the delay in detection. The recent National Strategic Plan for Tuberculosis Elimination in India prioritizes sustained systematic screening in high-risk populations, including individuals living in urban slums who bear the burden of TB disproportionately. Active case finding is one potential approach for reaching individuals with symptoms of TB who have not presented themselves to a healthcare provider. Unfortunately, active case finding approaches are not widely implemented because of cost concerns and inadequate resources to reach and care for these populations. As such, group approaches to diffuse the key knowledge aspects of TB may be better than individual approaches in generating demand and utilization of services related to TB. In any community, changing the values for health seeking for TB, or the degree of importance of health seeking for TB, takes a long period remove to change.

Conclusions

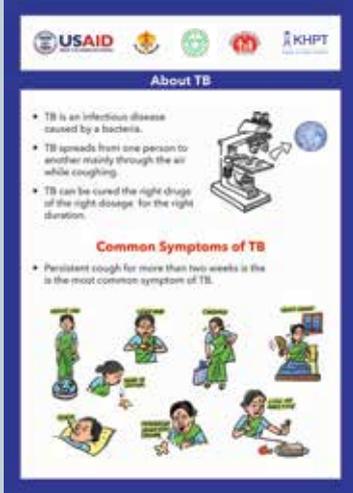
The study identified noteworthy changes that community engagement activity was able to create, viz., the knowledge of TB, seeking treatment from a healthcare provider and requesting for a sputum test. Incidentally, only the group-based engagement approach yielded the expected result of improving health seeking from a healthcare provider and requesting a sputum test. People exposed to IEC materials and information campaigns have increased knowledge, however, increased knowledge does not translate to behaviour change. However, group interactions and group activities tend to have a better influence on changes in health seeking behaviour. Requesting a sputum test appears to be more of a knowledge component than a behaviour-related aspect. If one has knowledge about the test, then may ask the healthcare behaviour for it, provided he or she has the confidence to do so. It is evident from the study that individual confidence can be generated through a group dynamic.

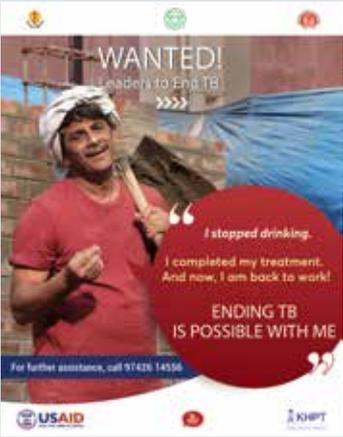
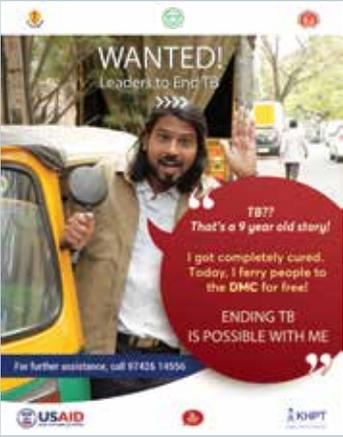
07

ANNEXURE

ANNEXURE

Communication materials used to understand respondents' exposure to the THALI program

Material	Communication Objectives	IEC Material
<p>Cough Hygiene Leaflet/Poster</p>	<p>Maintaining cough hygiene through simple methods is essential to prevent the spread of infection</p>	 <p>Cough Etiquette How to prevent germs from spreading through coughing or sneezing?</p> <ol style="list-style-type: none"> 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
<p>Community Handout (4 pages)</p>	<p>Provides basic information on TB, symptoms, testing, treatment and healthy habits</p>	 <p>About TB</p> <ul style="list-style-type: none"> TB is an infectious disease caused by a bacteria. TB spreads from one person to another mainly through the air while coughing. TB can be cured the right drugs, for the right duration. <p>Common Symptoms of TB</p> <ul style="list-style-type: none"> Persistent cough for more than two weeks is the most common symptom of TB.
<p>School Brochure (2 pages)</p>	<p>Basic information on TB through a question and answer format</p>	 <p>USAID, KHFT logos and text in Hindi.</p>

<p>Construction Worker-poster</p>	<p>Taking individual and collective responsibility for Ending TB</p>	 <p>The poster features a construction worker in a red shirt and white headscarf. The text reads: "WANTED! Leaders to End TB >>>>". A red speech bubble contains the text: "I stopped drinking. I completed my treatment. And now, I am back to work!". Below the speech bubble, it says "ENDING TB IS POSSIBLE WITH ME". At the bottom, there is a USAID logo and a KHP logo, along with the text "For further assistance, call 97425 14556".</p>
<p>Auto Driver-Poster</p>	<p>Taking individual and collective responsibility for Ending TB</p>	 <p>The poster features an auto driver in a white shirt and brown jacket. The text reads: "WANTED! Leaders to End TB >>>>". A red speech bubble contains the text: "TB? That's a 9 year old story! I got completely cured. Today, I ferry people to the DMC for free!". Below the speech bubble, it says "ENDING TB IS POSSIBLE WITH ME". At the bottom, there is a USAID logo and a KHP logo, along with the text "For further assistance, call 97425 14556".</p>
<p>Pourakarmika - Poster</p>	<p>Taking individual and collective responsibility for Ending TB</p>	 <p>The poster features a woman in a brown sari. The text reads: "WANTED! Leaders to End TB >>>>". A red speech bubble contains the text: "I sweep the streets of the city. We can sweep away TB too! Persistent cough for 2 weeks? Go for a Sputum Test!". Below the speech bubble, it says "ENDING TB IS POSSIBLE WITH US". At the bottom, there is a USAID logo and a KHP logo, along with the text "For further assistance, call 97425 14556".</p>
<p>Young Girl- Poster</p>	<p>Taking individual and collective responsibility for Ending TB</p>	 <p>The poster features a young girl in a white shawl. The text reads: "WANTED! Leaders to End TB >>>>". A red speech bubble contains the text: "It was terrible to hear my father coughing all night. I took him to a DMC, where he was tested and treated.". Below the speech bubble, it says "ENDING TB IS POSSIBLE WITH ME". At the bottom, there is a USAID logo and a KHP logo, along with the text "For further assistance, call 97425 14556".</p>

Local language versions of these materials were used during the survey

USAID

Call Center

9573102296

TAT





KHPT

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