

**Summer Training at
Innovators in Health, Bihar
(April 3 to June 2, 2017)**

**Novel Approach - 99 DOTS & The perception of T.B patients and DOTS
Providers (ASHA & Panchayat Coordinator) towards 99 Dots**

**By
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**Under the guidance of
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**MBA Hospital & Health Management
2016-2018**


Institute of Health Management Research
The IIHMR University, Jaipur
2017

CERTIFICATE

This is to certify that **Dr. Shiv Kant** has undergone summer training in **INNOVATORS IN HEALTH(BIHAR)** from **3rd April to 2nd June, 2017**.

The candidate himself completed the project assign to him during summer training. His approach to the project was sincere and proactive. This summer training is in partial fulfillment of the course requirement recommended for the award of MBA in Hospital and Health Management.

I wish him success in all his future endeavors.



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31 May 2017

To whom it may concern,

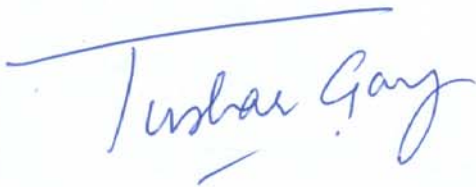
It is to certify that Shiv Kant, a first year student in the MBA (Hospital and Health Management) program at the Institute of Health Management Research, Jaipur completed his summer internship with Innovators in Health. He worked in Dalsinghsarai, a block in the Samastipur district of Bihar, for 2 months from 3 April 2017 to 31 May 2017.

He showed keen interest in the Aahan TB program and the Maternal and Neonatal Health program of the organisation and its present scale-up. The organisation recognises his contribution in the recruitment process of the field team, archiving of the patient records, training of the field team, and setting up of operations in the initial scale-up phase.

His conduct was good and he made efforts to learn from the experiences of the team. He was enthusiastic to learn about the local culture, community, and program interventions.

We wish him every success in life..

For Innovators in Health (India),



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I would like to express my gratitude to all members of IIH India and ASHA workers for cooperating and coordinating during our field work.

Finally I would like to thank our esteemed faculty members, Dr. Arindam Das, Dr. Nutan P. Jain, Dr. Tanjul Saxena for their constant guidance and suggestions.

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Abbreviations

AF	ASHA Facilitator
ANM	Auxiliary Nurse Midwives
ASHA	Accredited Social Health Activist
CTD	Central TB Division
DOTS	Directly Observed Therapy Short course
HBC	Home Based Care
MCH	Maternal and Child Health
MDR	Multidrug Resistant
MMR	Maternal Mortality Ratio
NTP	National Tuberculosis Programme
PHS	Public Health System
PRI	Panchayati Raj Institutions
RCH	Reproductive and Child Health
RHP	Rural Health Practitioners
RNTCP	Revised National Tuberculosis Control Programme
SBA	Skilled Birth Attendants

INTRODUCTION

Bihar is India's one among the poorest states (per-capita annual income of 13,663 compared with India's 37, 4903) with an estimate of 104 million people, most of them in villages. The state adds about 200,000 new cases of TB every year, while the NTP manages about 78,000, both new and relapse cases.. The rest seek private care, with a large fraction stopping treatment due to the cost of drugs, and starting again when the disease reoccurs – the pattern that eventually leads to resistance. Even cases managed by the NTP report a cure rate of only 80%.

The challenge for Bihar is to double the access to the NTP from under 78,000 to 200,000 while simultaneously improving cure rates from 80% to better than 95%.

Structure of the national TB program

The TB delivery chain has three components: finding patients with symptoms of TB (case-finding), determining if the suspected case has the disease (diagnosis), and delivering 6-8 months of treatment. While the RNTCP (NTP in short) nominally owns the entire chain, it relies significantly on the state public health system (PHS) to execute delivery. The NTP directly executes only diagnosis through Designated Microscopy Centers (DMCs) in public hospitals. It relies on government physicians in the outpatient department (OPD) to find suspected cases, and on ANMs (Auxiliary Nurse Midwife) and ASHA (community health workers) – both PHS personnel – to deliver drugs. The RNTCP's role in these delegated functions is training, supervision and monitoring.

Barriers to finding cases

Case-finding in the NTP breaks down if patients do not come to government OPDs, or come too late, when they've already infected others.

In our experience in Bihar, rural patients invariably approach neighborhood unlicensed medical practitioners (sometimes called "rural health practitioners," (RHPs) or "quacks") when they begin coughing. When a RHP is unable to cure them, patients approach private physicians, where they are eventually forced to stop treatment because of costs. The government OPD is usually a means of last resort.

Barriers to diagnosis

TB remains a difficult disease to diagnose because there is no cheap, effective and quick lab test. The widely used, and more than a century old, "sputum smear" test detects only about 30-50% of all cases.

In the absence of a good test, the majority of patients are diagnosed clinically by successively eliminating other respiratory diseases. This requires multiple consultations over weeks leading to

patients dropping out. Cases are missed, and a narrative of failure with the NTP is reinforced within the community. Making matters worse, patients do not experience such delays in the private sector, where home-brewed protocols offer quick but often inaccurate diagnosis.

Barriers to treatment

Ensuring regular drug delivery to TB patients over 6-8 months fails because of a lack of grassroots agents who are trained, incentivized and adequately monitored. Patients face several barriers to adhering to treatment, even when medicine is made available free of cost. Some must deal with side-effects like upset stomach, nausea, etc.; others stop treatment when their symptoms disappear (as early as 4 weeks); yet others may migrate for work.

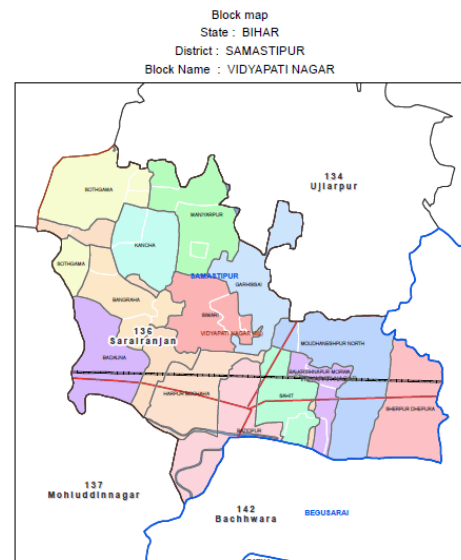
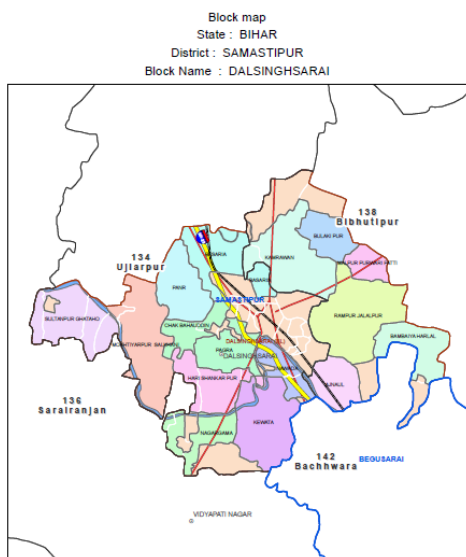
In view of these challenges, the RNTCP follows the Directly Observed Therapy (DOT) protocol where a “DOT provider” supervises ingestion of medication, and provides counselling to ensure adherence. In the rural setting, ASHA workers are responsible for administering DOT. However, ASHA who have administered DOT have often never received the ₹250 payment for drug delivery. Further, their grasp of TB knowledge is poor, most likely due to the vast amount of information on multiple diseases they are expected to digest during their training. Finally, the RNTCP assigns one Senior Treatment Supervisor for a population of 500,000, which makes mentoring and monitoring hundreds of DOT providers impossible.

ABOUT THE ORGANIZATION

Innovators in Health have run a TB control program called Aahan in the Dalsinghsarai block since June 2010. The objective is to improve outcomes by strengthening the execution of the National TB program (RNTCP) and the local public health system (PHS). The program covers all 17 panchayats of the Dalsinghsarai block (pop. 208,000), and 14 panchayats in the adjacent Vidyapati nagar block (catchment estimated at 140,000 pop.) Aahan's interventions include community-led active case finding, de-specializing management of complex diagnostic protocols by strengthening grassroots ASHA workers, engaging private medical care when public care is deficient, and doing all this by empowering grassroots staff and ASHA, and strengthening the PHS.

Dalsinghsarai block (pop. 208,000),

Vidyapati nagar block (pop 140,000 .)



Organization Management:

The Aahan team is comprised of trustees, project managers, field staff, and ASHA facilitators.

a) Trustees: Both trustees are actively engaged in Aahan's operations. Manish Bhardwaj has overall responsibility for the programme. Manish Kumar doubles as a project manager overseeing community engagement, project implementation, communication with partners and general administration and finance.

b) Advisor: Prof. Rajeshwar Mishra advises the program with an emphasis on community engagement, strengthening staff and ASHA, and streamlining processes.

c) Project Managers: Pitamber Soren and Tushar Garg manage projects. Both of them were resides in Dalsingh Sarai and focuses on day-to-day operations.

d) Field staff: Aahan has 20 full-time field staff. There is one staff each for EMR operation, lab sample coordination, hospital coordination and office assistance.

e) ASHA Facilitators: The programme has 18 ASHA Facilitators in Dalsingh Sarai on monthly honorarium and they work part-time for the program. The programme also engages with the 7 ASHA Facilitators of Vidyapatinagar block on case basis honorarium.

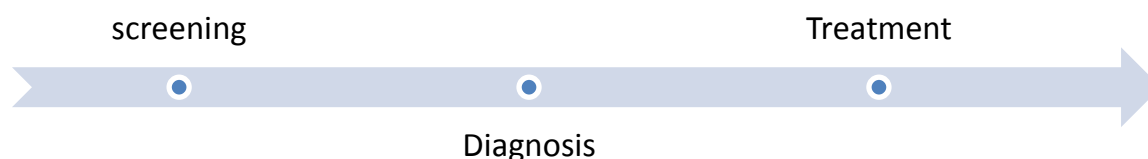
Reporting structure and mechanisms of interaction:

AFs report to the panchayat coordinators who report to project managers and they report to the trustees. All staff, and AFs prepare weekly plans. The project managers and staff meet every week, and panchayat coordinators meet AFs weekly as well. All staff, managers, and trustees have another weekly meeting. These meetings discuss progress versus plans, and exchange ideas. Minutes are recorded in the Trustee meetings.

Organization operating procedure:

☐ Community-initiated referrals: Aahan received names of suspected TB cases from ASHA, rural medical practitioners (RMPs), Panchayati Raj Institutions (PRIs), and other community members.

☐ Access to TB treatment:



☐ Community support for poor malnourished patients: The program appeals directly to the community for such nutrition. The community decides which patient needs support, and the nature of the support. So far more than 100 such patients, most of them extremely poor, have benefitted from this initiative and have successfully completed their treatment. The organization also made significant progress in mobilizing 15 local milk cooperatives to institutionally support this initiative.



Picture shows Community discussing nutrition for poor TB Patients

□ Improving ASHA's mobility: Limited mobility is perhaps the most significant barrier to an empowered ASHA cadre. As a result of the program's intensive interventions, five ASHA facilitators (AFs) now ride the bicycle to work. This seemingly minor achievement cannot be overstated. Before this effort, it was unthinkable that married women would ride bicycles in this deeply conservative rural community. The program changed its strategy this term by actively engaging the community to encourage these ASHA.



Pictures shows mobility training session

□ ASHA training: Till May 2017 more than 60 workshops were conducted for ASHA in 25 panchayats with a total attendance of 272 approx.



Picture shows ASHA training workshops

□ Tracking adherence through mobile phones (99DOTS): IIH continued the trial of the 99DOTS drug delivery solution in Dalsingh Sarai and Vidyapatinagar blocks. This user-friendly mobile-based solution from Microsoft Research tracks drug adherence. By the end of this term 90 patients were enrolled in 99DOTS and 30 completed their regimen. Partly as a result of this trial, the Central TB Division (CTD) has adopted this solution at the national level. This World TB Day, the Govt. of India announced that 99DOTS will be used to monitor the daily regimen of TB-HIV patients at 30 high densities ART centers across India.

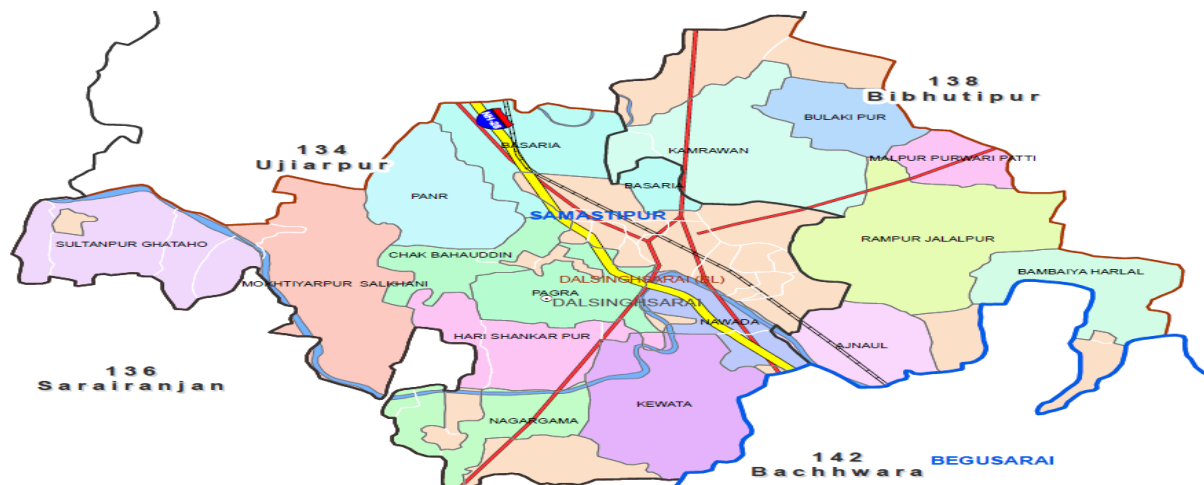
□ Engaging with milk cooperatives: The programme began mobilizing 15 village milk cooperatives from five panchayat in the Dalsingh Sarai block with the goal of them providing daily nutritional support to poor and malnourished TB patients in their catchment. The cooperatives responded positively, and gradually the individual donor base is being replaced by an institutional one.

□ Controlling the spread of TB in children: We started providing prophylactic Isoniazid tablets to all children in close contact with TB patients.

MATERNAL AND CHILD HEALTH PROGRAM



IIH launched a program in May 2015 to expand the delivery platform to include maternal and newborn health (MNH) to a catchment of more than 200,000 rural residents of the Dalsinghsarai block in the Samastipur district in Bihar.



The approach, as before, is to ensure access to PHS facilities, and fill gaps by strengthening the PHS where possible, and supplementing with private care when it is not. The main intervention themes include empowering pregnant women and their families, building the community's capacity including a local cadre of skilled birth attendants (SBAs), delivering ante-natal and post-natal care, and ensuring safe deliveries in partnership with public and private facilities.

IIH functions (MNH Program):

Pregnancy Registration

Monthly household surveys and tracking of eligible couples helps in it. The routine monthly survey combs the entire population for new pregnancies. This eligible- couple based survey helps to identify most of the pregnancies while also minimizing effort of the ASHA.

There was no significant increase in early registration. A sustained effort will be needed so that women can relate early registration to the benefits it has on their and the foetus' health.

Communication through Mahila Mandal helped in building trust with the women. Clear ideas in these meetings which women can easily relate to alongside the improved service delivery could have been a possible reason for increase in first-trimester registrations.

ANC

ANC check-ups for migrating women are a challenge. More than 10% women are migrated during their pregnancies. Most of them prefer to deliver at their maternal place. Although it may increase social support for these women, they often miss their last antenatal check-up as well. Similarly, there is a risk that the program will miss many women who arrive only for their delivery in the intervention wards. Even if they contact the program and get their last check-up, only the delivery and HBC can be facilitated. There will always be some of these women whose access to care is poorer than the rest and the risk of complications higher. Community referrals will help the program enroll them as soon as they arrive. While, for those leaving, birth planning may play an important role.



Supporting ANMs to provide complete ANC package was effective. The program discovered that many ANMs were motivated to provide complete ANCs, but lacked supplies like urine-test kits, and training. The trained field team initially conducted these test and then transitioned it to ANMs. Many ANMs also volunteered to purchase supplies from the health sub- centre fund. However, the program erred by not bringing the health officials on board first. The program hopes to correct this in the next period. Foetal heart rate and abdominal palpations are not being performed. The program needs to address issues of equipment and ANM training to fill this gap. A complete ANC check-up includes measurement of blood pressure, pulse, weight, hemoglobin, and urine protein and sugar.



ANC checkups by ANM

Institutional Delivery

All institutional deliveries are attended by SBAs. The 81% baseline number belies the fact that prior to the program only 53% of all deliveries had a SBA present. Now 100% of institutional deliveries have a SBA present (program personnel ensure that an ANM personally delivers babies).



Institutional delivery in presence of SBA

Birth planning can influence the place of delivery. Birth planning with the families prepares them for delivery. It initiates familial discussions of emergency finances and choices of place of delivery. In this process, the field team also becomes aware of the family's preference. With a family keen on a home delivery or similar history, they are able to counsel them and prioritize such pregnancies.

Families use the dedicated 24x7 response system. The program has a round the clock response system to answer calls of beneficiaries. The families also have contact number of vehicles who can drop the woman to the hospital if an ambulance is not available. Most of the calls they received are either at the onset of labour or another emergency. Often, the field team coordinates between the family and the ASHA. Time is critical in situations like these and this emergency service contributed in averting home deliveries.

Community Engagement

Mahila Mandal

The objectives of Mahila Mandal are to understand the problems faced by women during pregnancy, to collectivize the women and create a safe space for sharing, and to reduce existing harmful practices. Mahila Mandal is organized each month in every ward by the program coordinator and ASHA. Overall, in 40 such meetings since May 2016, the participation has averaged 19. Topics like 3 delays, danger signs, the importance of antenatal check-ups, healthy food habits, safe delivery, and postpartum care were discussed through different mediums.



Picture showing mahila mandal

Behavioral change is slow and incremental. Repeated discussions on the importance of early registration, four ANC check-ups, and IFA supplementation influenced some women. The field team feels that it is easier to reach the community through these meetings. Ambika, an ASHA coordinator, in a team meeting said, “Earlier, it was difficult to convince the women to come for the ANC check-up. Even after calling them personally, some would not turn up. Now, it has become easier to convince them since they also hear the discussions in the Mahila Mandal on the importance of these check-ups. Some of them even ask the date for the next checkup.”

Contextualising content is necessary for Mahila Mandals. The program discovered myths and harmful practices while interacting with the women. These have a direct effect on care of mother and newborn. For example, a. There is a belief that increased caloric intake in pregnancy will make a larger foetus harder to deliver. b. The ritual that newborns can be breastfed only after a priest performs prayers. This period may vary from few hours to even a day. c. Newborns are often bathed in cold water on their first day for “cleansing”. This practice has both religious and cultural root

Research Project

“A NOVEL APPROACH - 99 DOTS

&

The perception of T.B patients and DOTS Providers (ASHA & Panchayat Coordinator) towards 99 Dots”



SUMMARY

India conspicuously presents itself among the 22 high burden countries, as per WHO's Global Tuberculosis Report 2015. The estimated incidence in India for all forms of TB is at 22 lakhs; HIV associated TB at 1.1 lakhs and Multidrug resistant (MDR) TB cases being 71000 cases. Bihar adds about 2, 00,000 new cases of TB every year, which has been a factor for drain of wealth because of the loss of livelihood and other severe consequences the disease brings.

DOTS and intermittent therapy for tuberculosis patients were implemented through Revised National Tuberculosis Control Programme (RNTCP). Since the treatment is for longer duration, drop-outs among many patients have been observed because of the unpleasant side effects. Nonetheless a majority of poor who seek private care abandons the treatment because of cost burden. Irregularity treatment leads to emergence of bacteria that are resistant to the first-line drugs, causing multiple-drug resistance TB, or MDR-TB. The relapse rate of which is almost 10%. Thus a low-cost approach for monitoring and improving TB medication adherence, called "99DOTS", was deployed at a public-sector program in Samastipur district, Bihar, India.

Each anti-TB blister pack is wrapped in a custom envelope (pictured), which includes a hidden phone number that is visible only when a dose is dispensed. After taking the medication, patients make a free call to hidden phone number, yielding high confidence that the dose was "in hand" and has been taken. Initially, patients undergo normal DOTS supervision and providers assist in making the call. Over time, adherent patients can take custody of their drugs and make calls with lesser supervision, while still permitting remote monitoring of each dose. In addition to compiling a real-time dosing history for each patient, 99DOTS enables a wide range of reminders, alerts and follow-ups. The outcome of this study regarding behavior of T.B patient and ASHA, will play an important role in making this program 99DOTS more efficient and effective.

Research Study

Introduction

Tuberculosis (TB) is an infectious, airborne disease caused by Mycobacterium Tuberculosis which typically attacks the lungs and is often fatal if untreated. The disease is cured by following a regimen of 4 antibiotics for 6-8 months. A cure was found six decades ago but delivery has continued to be a challenge, with unprecedented consequences: about 2 billion people have been exposed to the disease and carry a latent form of it. It is estimated that every untreated case of TB infects, on average, 10-15 additional people. Every year 9.4 million people develop active disease and about 1.3 million die of it.

India figures conspicuously among the 22 high burden countries, as per WHO's Global Tuberculosis Report 2015. The estimated incidence in India for all forms of TB is at 22 lakhs; HIV associated TB at 1.1 lakhs and Multidrug resistant (MDR) TB cases being 71000 cases. The matter of our utmost concern is dual infection of HIV-TB and MDR-TB.

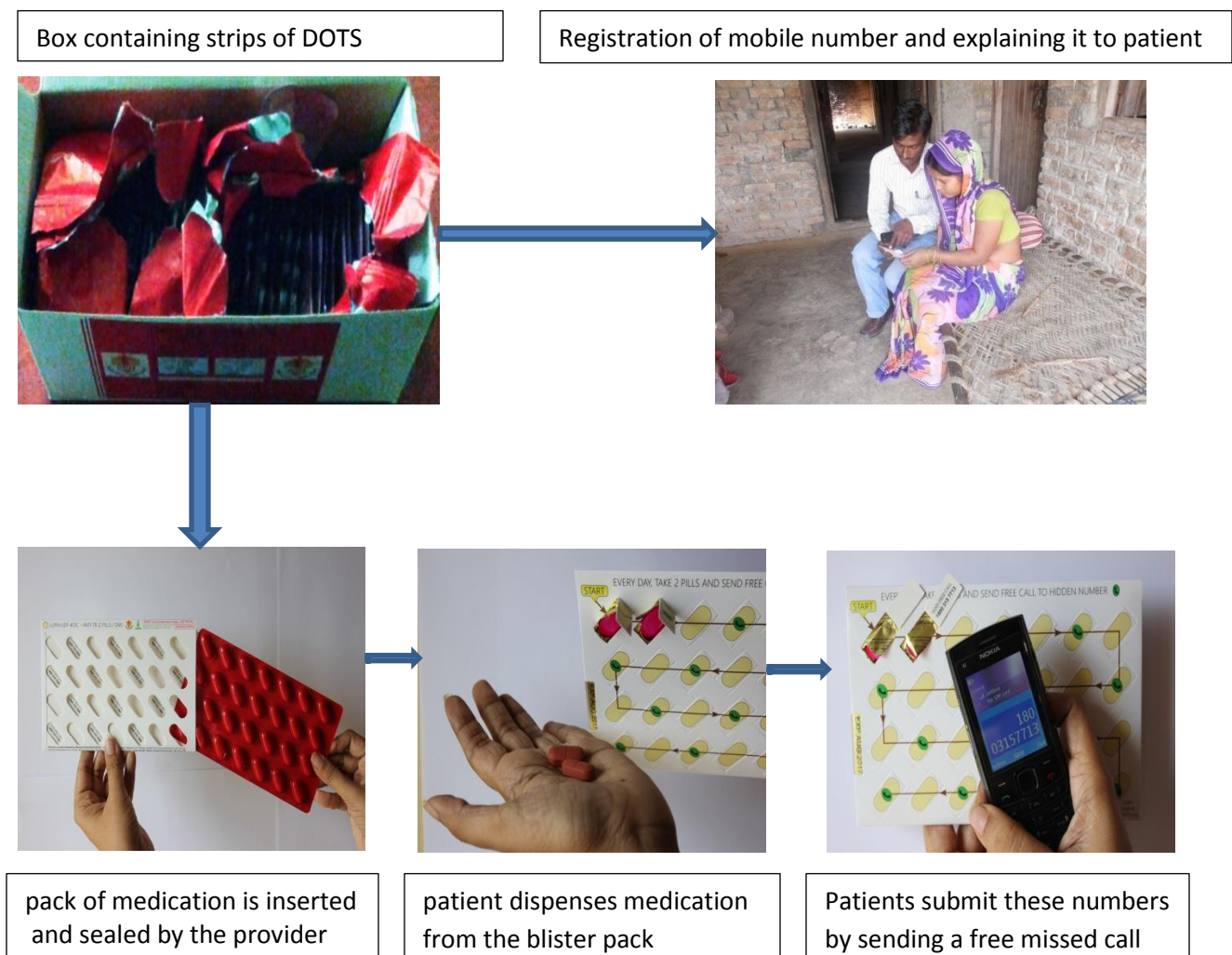
99 DOTS: Program has initiated use of various ICT (Information Communication Technology) enabled treatment adherence mechanism including 99DOTS which is based on missed call, mobile based Active compliance including Video DOT, and smart pill box. 99DOTS is a cheaper

approach for improving the compliance of anti-tuberculosis treatment. There are hidden phone numbers in each anti-TB blister pack which is revealed only after the drug doses are dispensed i.e. when the patient takes the medication. Patient makes a free call to that hidden phone number, thus ensuring the on time intake of TB medication. Though, this program is not implemented to a wider area. There could be some gaps in this program in relation to the perception of the T.B patient and the DOTS provider. The purpose of this study is to find out the gaps in the program and make it more successful.

Objectives of 99 DOTS

- To ensure the DOTS treatment completely (100 %) of the T.B patient during their complete treatment phase.
- Real time monitoring of the T.B patient by DOTS provider.
- To save both time and money of DOTS provider in monitoring the T.B patient

99 DOTS procedure Flow Chart



99DOTS DASHBOARD

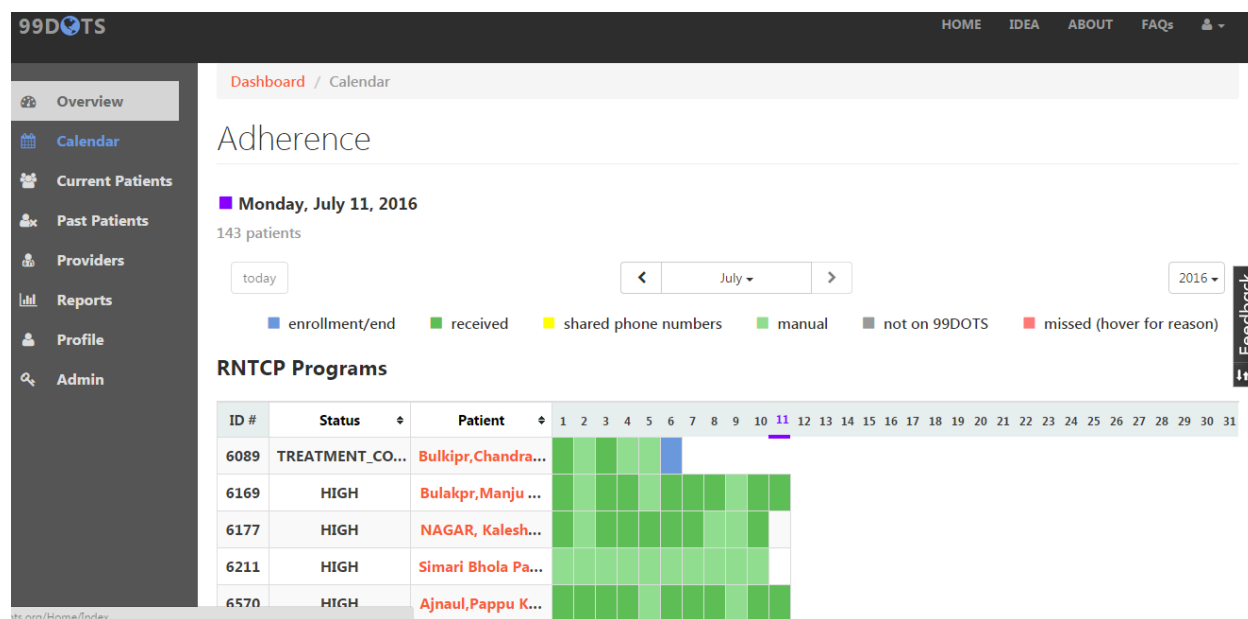


Figure: Dashboard of 99 DOTS

Research Aim

The proposed study aims at:

“To find out the various gaps in the program, according to the perception of T.B patient and DOTS provider”

In doing so, the proposed study aims to investigate the experiences of T.B patients and DOTS providers which include ASHA and panchayat coordinator during the complete treatment phase. The program can be modified accordingly and implemented to a wider area in an effective manner.

Literature Review

Mobile phones can cover all these areas and be a boom in bringing compliance and thus TB cure for patients. Andrew et al. in his study on Using Mobile Phones to Monitor Adherence to Tuberculosis Medications found that Over 90% of all doses were reported correctly using 99DOTS

99DOTS is an innovative mechanism to track adherence of TB/HIV coinfecting patients using mobile based technology.

Kokohima, December 12: The Revised National TB Control Programme (RNTBCP) Nagaland has become one of the states in India to launch the 99 DOTS (Daily Anti TB Treatment) for TB and HIV co-infected patients and IPT (Isoniazid Preventive Therapy) for PLHIV on December 9 at NHAK Conference hall.

Research Question

This study will seek to answer this central research question:

“To find out the difficulties and problems faced by T.B. patients and DOTS provider during the use of 99 DOTS.”

In addition the following guiding questions have been formulated in order to guide the data collection process.

- (a) What are the factors (motivating or demotivating) that influence the patient to make the call?
- (b) Does 99DOTS reduce the work load of ASHA and panchayat coordinator in monitoring the T.B patient during their treatment phase?

Research Objective

- To assess the experience and perception of T.B patients and DOTS provider (ASHA/Panchayat coordinator)
- To evaluate the efficiency and effectiveness of this 99 DOTS.

Research Design

- Descriptive cross sectional study

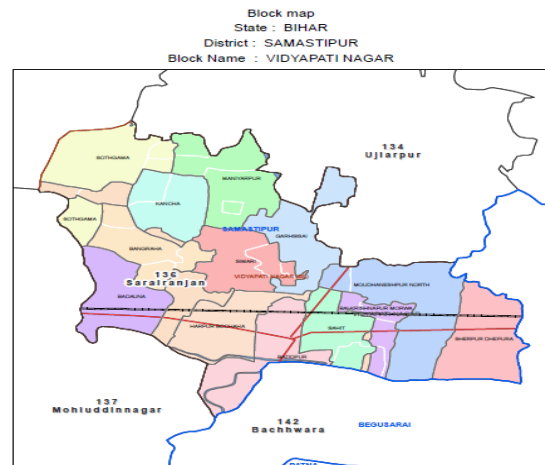
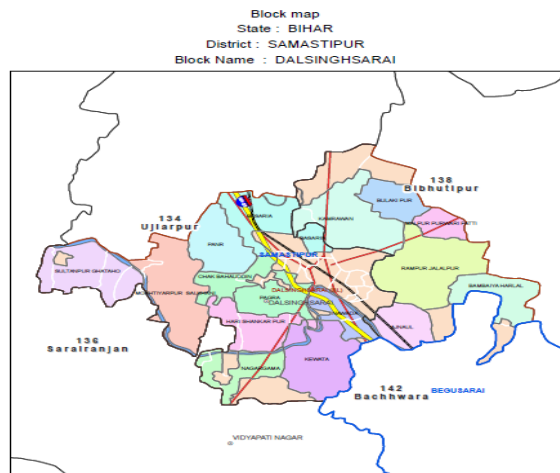
Research Approach

- Mixed approach

Research Area

Two blocks of Samastipur District of Bihar are covered for this research .

Sl.No.	Block	District	Total number of Panchayats	Population covered
1.	Dalsinghsarai	Samastipur	17	2,00,000
2.	Vidyapati Nagar	Samastipur	14	1,40,000



Research Duration

2 months (3 April to 2 June 2017)

Sampling

Sample Type

Non probability convenience Sampling

Sample Size

All the Participants belong to the Dalsingh Sarai and Vidyapati Nagar Block of Samastipur, Bihar.

Participants:-

1. T.B Patients enrolled with 99 DOTS - 30
2. ASHA enrolled with 99 DOTS – 30
3. Panchayat Coordinator of IIH – 20

Methodology

Data Collection

In this initiated study, the primary source of data collection is done through the use of structured in-depth interviews. Supporting data is collected through field observation.

Interviews

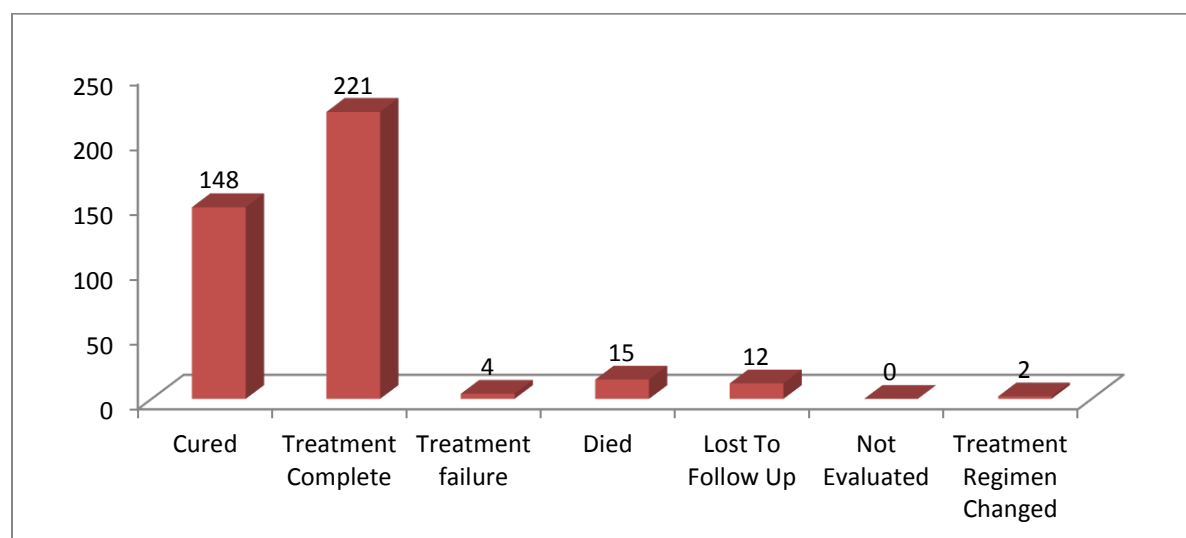
Interviews allow the researcher to access an individual's constructed reality and interpretation of his or her own experience through words .In-depth interviews enable the researcher to seek an understanding of participants' perspectives of their experiences or situations during the use of 99DOTS

Analysis

The table below segregates all the 490 T.B. patients enrolled in 99DOTS by IIH Bihar according to various criteria's.

On Treatment	Off Treatment	Cured	Treatment Complete	Treatment failure	Died	Lost To Follow Up	Not Evaluated	Treatment Regimen Changed
88	402	148	221	4	15	12	0	2

Figure 1: The graph shows the distribution according to the outcome of those off treatment patient (402)”



Findings

According to the patient perception.(n = sample size of T.B patient enrolled with 99 DOTS

1. Knowledge about 99DOTS :On the basis of field observation 90% of patients really knew, how to use 99 dots whereas 10 % still had no idea how to use it or had never use it, because of unavailability of mobile phones. In such cases ASHA did the miss-call instead of the Patient.

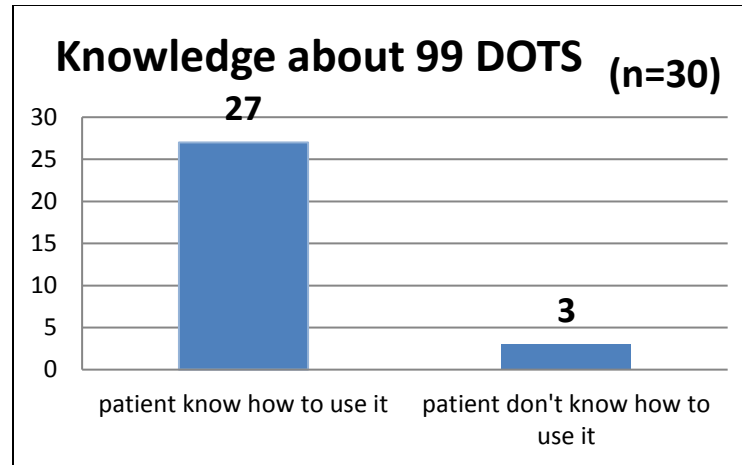


Figure1: distribution of Knowledge about 99 DOTS

2. Frequency of making the missed call

According to the survey, 73 % of patients called daily, 17 % of patient rarely called , whereas 10 % of the patient never called.

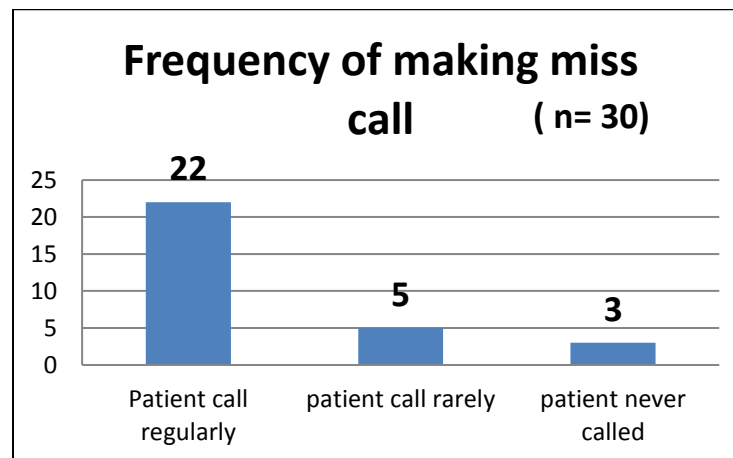


Figure 2: distribution of frequency of calling by patient

3. Following are reasons for which patients were not able to make the miss call

a. phone is not available at that time	27%
b. phone was discharged	3%
c. patient forgot to make the missed call	40%
d. procedure creates a mess for them	7%
e. patient didn't had their own phone	10%

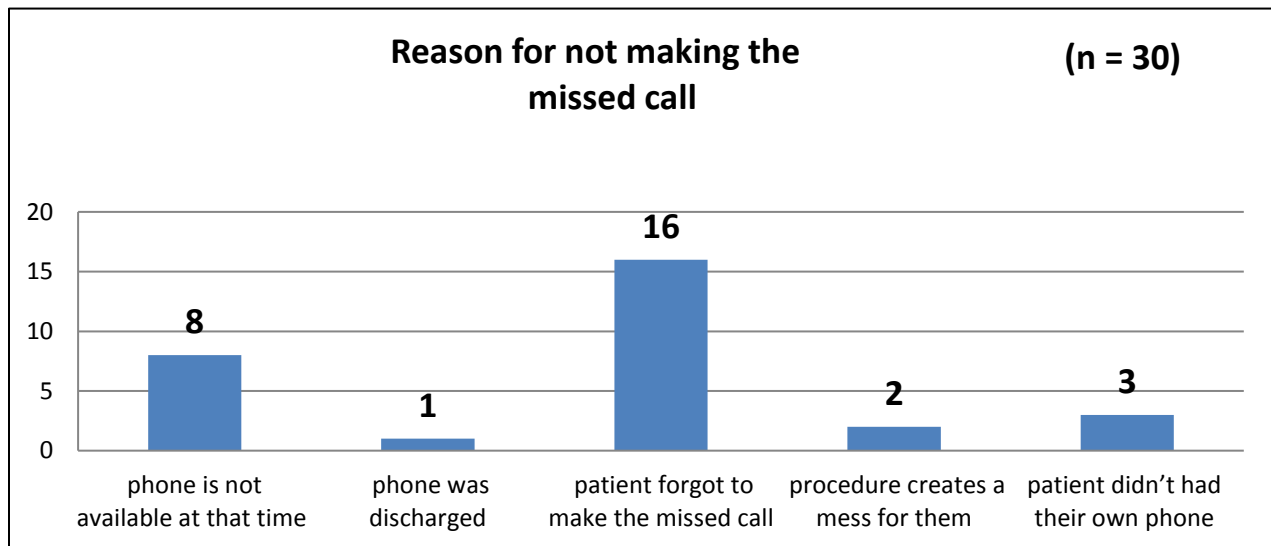


Figure 3: distribution of reasons for which patients were not able to make the miss call

4. Network or Server issue

Almost 30% of patient complained of having network issues, 22% faced severe network issue, 48 % patients didn't have any issues while making the miss call.

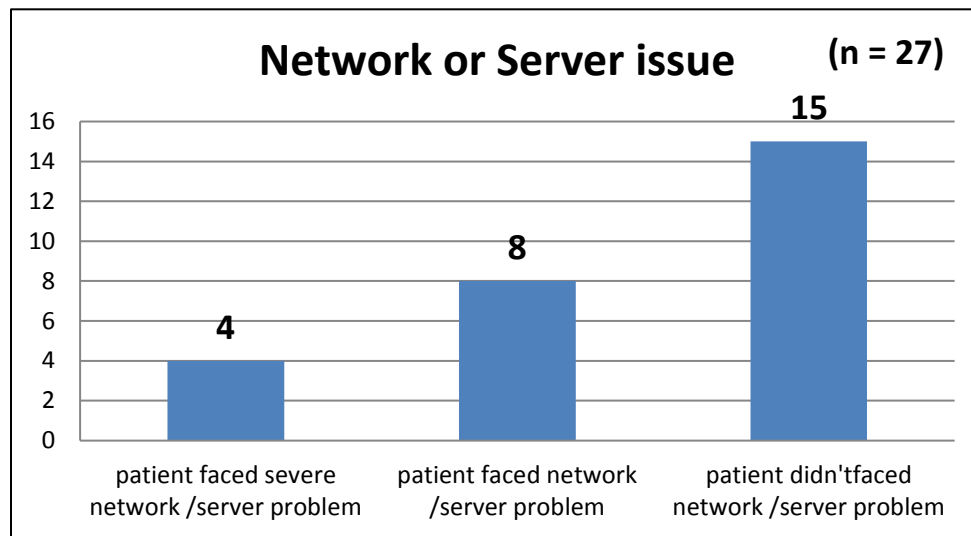


Figure 4: distribution of patient facing network / server issue

5. Reason for making the missed call

The pie chart below shows the reasons for which patients made the miss call, 76 % of them did it because ASHA forced them to whereas only 24% of them considered it as their self-responsibility, and did it willingly .

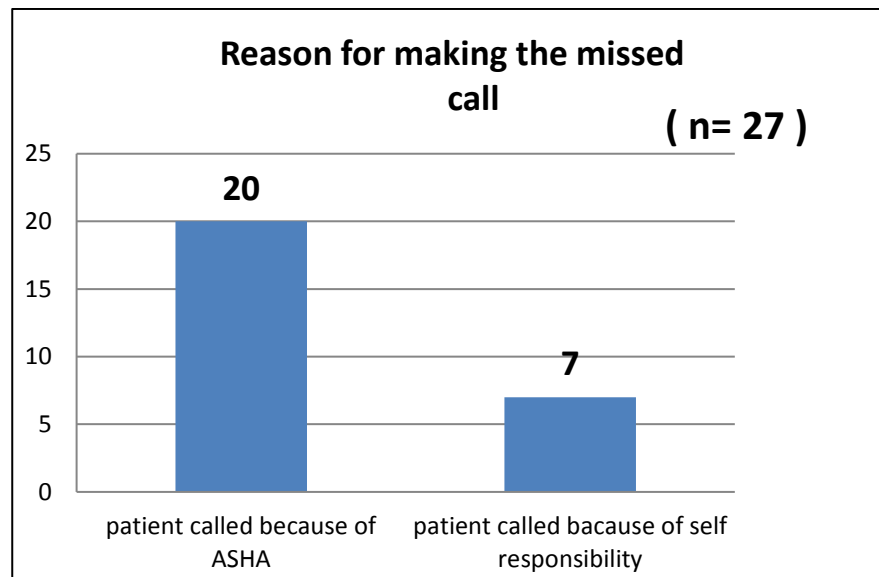


Figure5: distribution of reasons for which patients made the miss call

6. The adherence rate to 99 DOTS:

Almost 93 % made the miss call till the completion of the treatment. Only 7% left the program during the treatment phase.

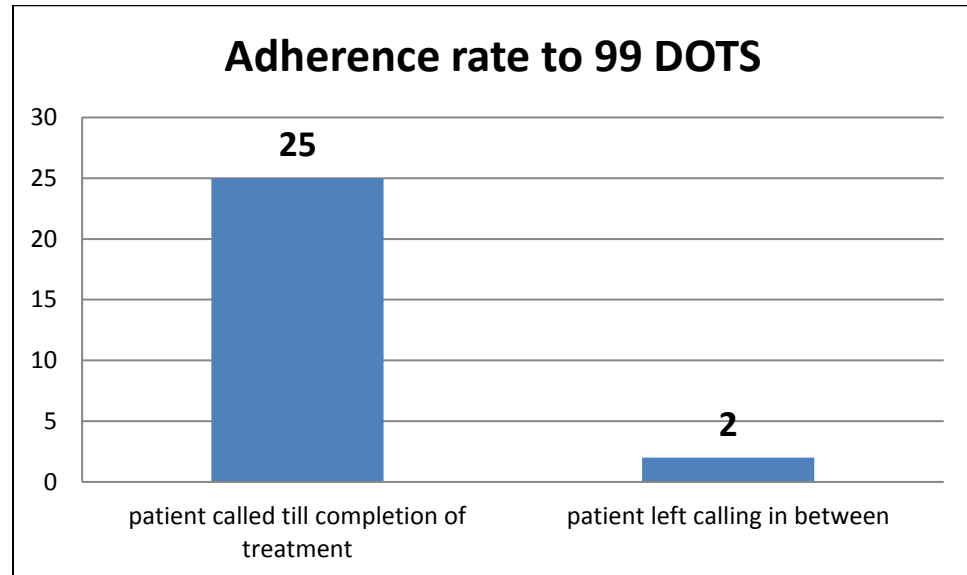


Figure6: distribution of Adherence rate

7. Usefulness of 99DOTS

Around 40 % of patients found the monitoring system of 99DOTS useful while 60% of them found it to be troublesome.

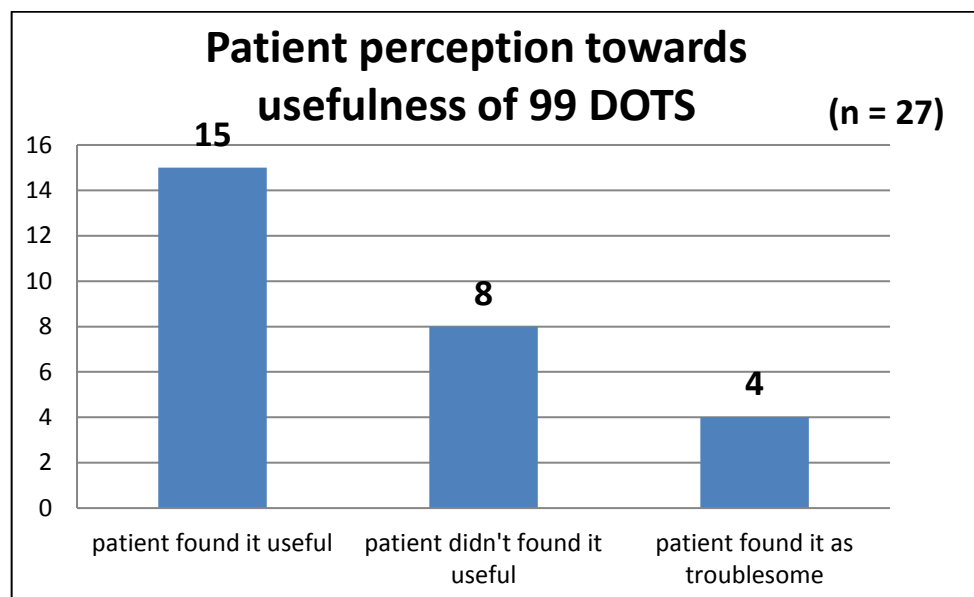


Figure 7: distribution of patient found 99 DOTS as useful or trouble making

8. Reference to other T.B Patient

According to the survey, 16 patients and 33 ASHA/P.C referred 99 DOTS to other T.B patients, 5 patients and 11 ASHA refer it to only educated patients and 9 patients and 6 ASHA didn't refer it to anyone.

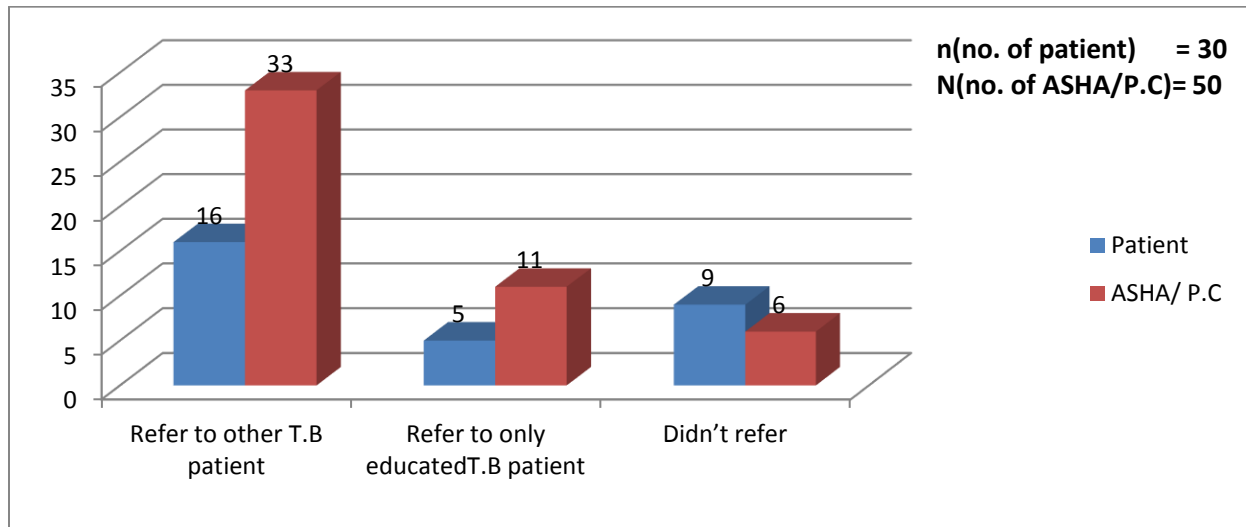


Figure8: Number of T.B patients and DOTS provider gives reference of 99 DOTS to other T.B patients

Perception of ASHA / Panchayat Coordinator.(N = sample size of DOTS Provider enrolled with 99DOTS)

1. Training /Explaining capability of DOTS Provider

Around 90% of ASHA have knowledge about the 99 dots, out of which 76 % gave proper demonstration twice or thrice by dialing the number, and 14 % of ASHA &P.C could only explain it and 10 % didn't have the knowledge about 99DOTS.

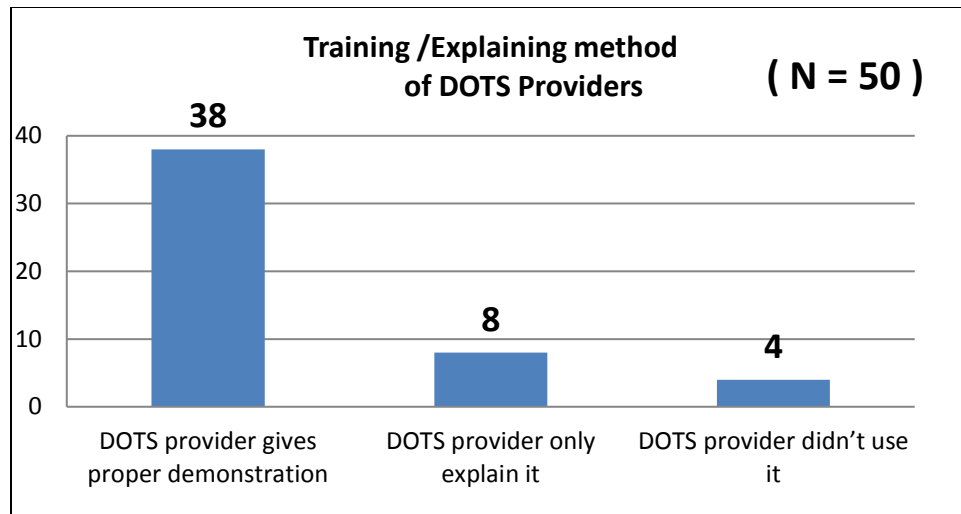


Figure1: distribution of Dots provider giving the demons tration

2. Reduces the T.B patient's home visit of the ASHA:

Almost 81 % of ASHA & P.C does the monitoring by calling the patient with the help of 99DOTS. 13 % of ASHA & P.C still visit patients home for their monitoring during the treatment phase. 6 % of ASHA & P.C used both, depending on the distance to the patient's house.

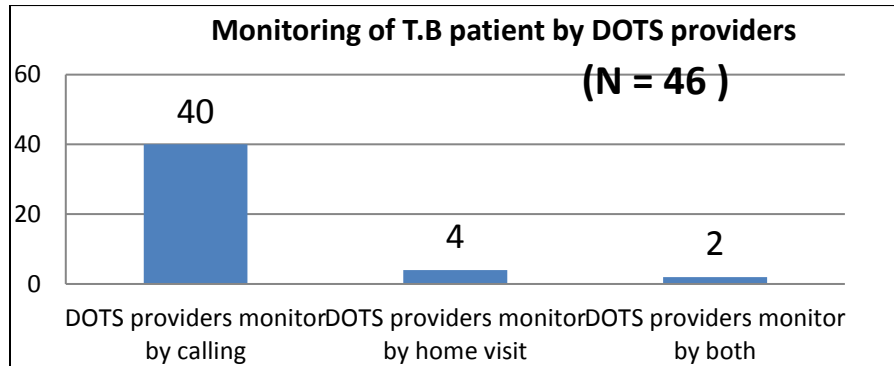


Figure2: distribution of Dots provider monitoring

3. Behavior of patient enrolled with 99 DOTS.

Only 58 % of ASHA and P.C found a positive attitude of the patients towards ASHA and 99DOTS. 33 % of ASHA and P.C didn't found any change in the behavior between patients enrolled in 99 DOTS and patients undergone simple DOTS. 9 % of ASHA & P.C. found a negative attitude.

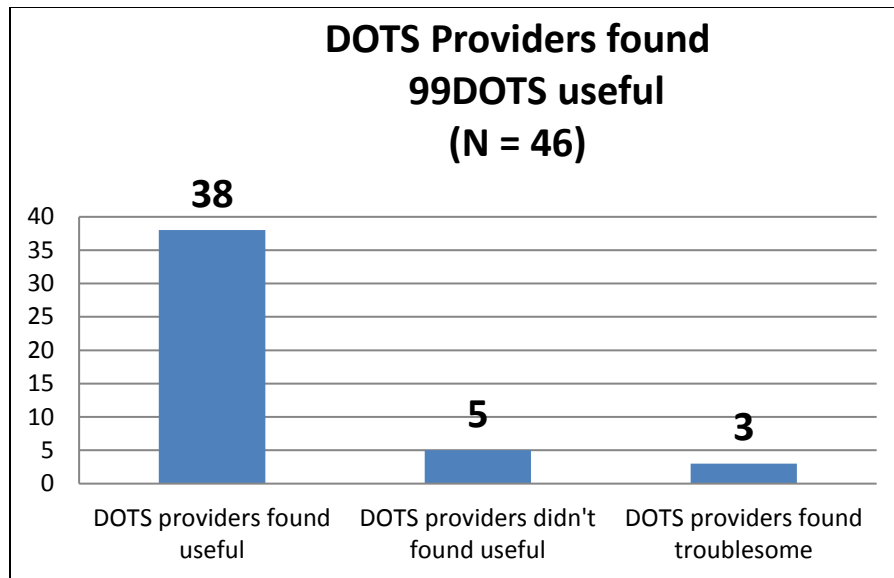


Figure 3 : distribution of ASHA found various attitude of patient

4. DOTS Provider found 99DOTS useful

Around 81 % of ASHA and P.C. found 99 DOTS useful as a monitoring system during the treatment phase, 12% didn't find it of any use, 7 % of ASHA and P.C found it troublesome for them.

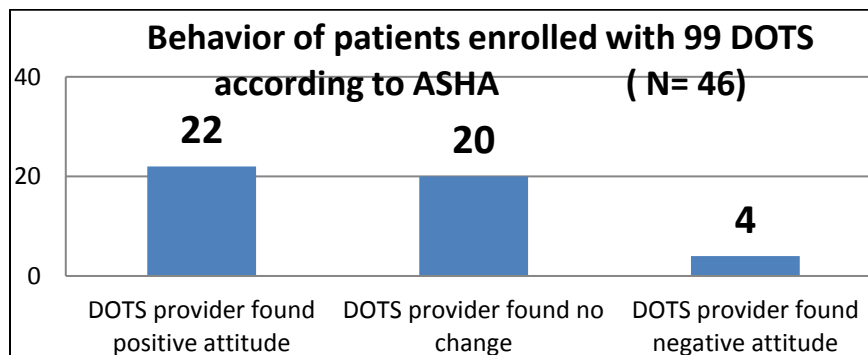


Figure 4: distribution of DOTS provider founding it as useful for them

GAP ANALYSIS

Following were the gaps found in the 99 DOTS system according to the study:

1. Message send by 99 Dots are in English because of this more than 95 % of Patient, ASHA and P.C are not able to read and understand the message properly.
2. Network or Server problem is one of the major issues in this procedure; more than 50 % of patients faced the server problem while making the missed call.
3. The education of the patient is still a major challenge for this procedure, educated patients made the miss call regularly and had positive attitude towards ASHA & P.C, while uneducated patients showed little or no interest in it while having a negative attitude towards this program and ASHA.
4. The “THANK YOU” replies which the patient receives after dialing the number is very short and low pitched because of which patient are not able to listen to it properly and try dialing again and again.
5. The system lacks the monitoring of the ASHA and P.C.
6. Only one no. is registered with 99DOTS, which has emerged out to be one of the major problems as many a times the registered number is not available at home.
7. There is no mechanism or source which would provide direct solutions to problem they face during the treatment.(for e.g. A Call system through which they can share their problems).
8. This system does not have some better options for the patients sharing a common mobile number.

Suggestions

1. Change of SMS Language

The messages sent by 99 DOTS should be in regional language (Hindi, for this geographical area)

2. Monitoring of DOTS provider

There should be proper monitoring system for the ASHA worker and Panchayat Coordinator.

3. Increase in length of Reply from the system

The length of the computerized after dial reply to the patient should be increased (minimum 30 seconds) so that patient gets ensured about completing the call.

4. Reward System

There should be a small reward system to the patients doing miss call on time and on regular basis.

Which If it is given in front of other T.B patients enrolled with 99 DOTS can acts as a motivating factor.

5. Introducing Call System

There should be a proper call system from 99 DOTS office, through which patient can get regular information regarding their diet, problems and follow up checkups etc.(once in a week)

6. Relaxation to registration of 2 numbers (one primary and 2nd optional)

There should be an option of getting Two numbers registered in it (only to those who have 2 mobile phone in their home. So that they can make the miss call from the second number, if they do not have the primary phone with them at that time.

Conclusions:

1. India conspicuously presents itself among the 22 high burden countries. Since the treatment is for longer duration, drop-outs among many patients have been observed because of the unpleasant side effects.

2. 99DOTS, a low-cost approach for monitoring and improving TB medication adherence, 99DOTS represents a promising approach for improving the delivery of tuberculosis medications.

3. According to my project findings, it comprises of few gaps like the language of messages, education status of the patient, patients who didn't have a mobile phone, network or server problem, monitoring of the ASHA.

4. After filling these gaps, this technique can be replicated to a wider area.

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