Research Article

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Understanding the Difference in Diagnosis, Treatment Pattern and Outcomes of Tuberculosis Between Private Practitioners and Dots Providers

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Abstract

Tuberculosis (TB) is a communicable disease and one of the foremost reasons of poor health, due to microorganism - Mycobacterium tuberculosis that most usually have an effect on the lungs or even different frame elements as properly. Throughout the year 2020, statistics had been reported from 198 nations and territories that accounted for greater than 99% of the world's population and predicted number of TB cases. Globally, an estimated 10.0 million (range, 8.9–11.0 million) humans were diagnosed with TB in 2019, and this number has been declining very slowly in recent years.

The study was conducted by rolling out a survey between doctors who treat tuberculosis at DOTS center and at theier private practice, primary objective of the study was to understand how the treatment patters varies between these two group of doctors. As DOTS has proven to be an effective therapy, is treatment patter and the outcomes as per the private practitioners equally effective or no.

Data observed should that there is no major difference in the management of disease if done by DOTS practitioners or by provate practitioners, only what varied was management of patients on the government portal

More spread of awareness will help in controlling and managing the disease better across the region and across the country.

Keywords: *TB Awareness, Tuberculosis, DOTS, TB in Maharashtra*

Abbreviations

CB-NAAT Test	Cartridge based nucleic acid amplification test
DOTS	Directly Observered Treatment Shortcourses
GoI	Government of India
MDR-TB	Multidrug-resistant Tuberculosis

preXDR-TB	Pre-extensively drug-resistant tuberculosis
PTLD	Post-TB Lung Disease
RRTB	Rifampicin-resistant Tuberculosis
TB	Tuberculosis
WHO	World Health Organization
XDRTB	Extensively drug-resistant TB
DMC	Designated Microscopy Center
DOTS	Directly Observed Treatment Short-course
GOI	Government of India
RNTCP	The Revised National Tuberculosis Control Program
TB	Tuberculosis
WHO	World Health Organization

Introduction

Tuberculosis (TB) is a communicable disease and one of the foremost reasons of poor health, due to microorganism - Mycobacterium tuberculosis that most usually have an effect on the lungs or even different frame elements as properly. Tuberculosis can be cured and prevented. Mycobacterium tuberculosis is transmitted in airborne particles referred to as droplet nuclei. When patients with lung (pulmonary) TB, cough, sneeze or spit, they release the TB germs into the surrounding air [WHO News room 2020]

Drug-resistant tuberculosis (TB) is a primary health risk worldwide, for the ongoing TB epidemic and growing morbidity and mortality of TB worldwide. Incomplete and inadequate treatment regimens can result in antimicrobial resistance. Earlier detection calls for access to care and quicker diagnostic tools, which can be constrained in multiple areas. Once multidrug-resistant TB (MDR-TB) therapy is commenced, adherence and tolerability can be a challenge. Recent evidence shows that MDR-TB is an essential contributing factor to Post-TB Lung Disease (PTLD), that's accountable for incapacity and distress often requiring rehabilitation. Half of lifetime disability-adjusted life-years (Days) resulting from incident TB is due to PTLD. Concerns exist around the gradual deterioration of the MDR-TB

epidemic given the viral strain of COVID-19 brought on to TB services, ensuing a drop in TB case notifications, accelerated TB related deaths, and a decline in slowing TB incidence (WHO Global tuberculosis record 2021). For this reason, the WHO is revising the goals on TB prevalence and mortality (WHO Global tuberculosis record 2021). Drug-resistant TB may be categorized further, depending on sensitivity to antimicrobial. TB can be rifampicin-resistant (RRTB), MDR-TB which means resistance to each isoniazid and rifampicin (WHO 2021). MDR-TB may also add on further resistance to any fluoroquinolone, classified as pre-extensively drug-resistant tuberculosis (preXDR-TB) (WHO 2021). Finally, extensively drug-resistant TB (XDRTB) is the most severe and difficult to manage and is resistant to rifampicin, plus any fluoroquinolone and one priority-A drug as well (bedaquiline or linezolid). These exceptionally resistant infections are very difficult to eliminate and outcome is worse for the infected [S. Tiberi 2022 & Akkerman OW 2020]

There are 5 key components of a entire assessment process of TB. These are: (I) clinical records and case history; (II) physical examination; (III) Testing for M. Tuberculosis contamination; (IV) Thoracic radiography, and (V) bacteriological examination of biological specimen [7]. The general analysis commences with clinical history, to analyze the suspected patient's symptoms. In the case of Pulmonary TB, this typically happen as mixture of one or more of the subsequent signs; coughs (frequently lasting longer than three weeks without or with sputum production), coughing up blood, thoracic pain, lack of appetite, sudden weight loss, nighttime sweats, fever and fatigue [CDC. Chapter 4 2006 & Campbell IA 2006] In the case of extra-pulmonary TB (i.e., TB growing outside the lungs), presenting symptoms will frequently be dictated by the organ/body part affected, despite the fact that, a few symptoms along with lack of appetite, night time sweat and fever can be extra general [Lee JY 2015]. For TB meningitis for instance, patients may also present with headache or confusion [CDC Chapter 4 2006], while patients experiencing TB of the spinal column may get extreme back ache [Cormican L 2006 & Rasouli MR 2012]. Other problems investigated within the scope of preliminary evaluation of a patient encompass demographic factors, previous exposure to TB together with treatment adherence and any underlying ailment. This is then accompanied by physical examination which evaluates the character's general situation and informs diagnostic strategies. Nonetheless, the bodily exam isn't meant to affirm or rule out TB [Agyeman AA 2017].

Materials and Methods

The study was a survey-based model, where the questionnaire was prepared after a strong literature search and understood the need for an hour based on the available information.

A questionnaire having approx. 25 questions was prepared to understand the treatment pattern, diagnostics methods and outcomes observed between the doctors treating TB patients privately as well as using DOTS. This designed questionnaire was validated considering the feasibility and comfort as well as the completeness status, which was done by rolling-out the questionnaire amongst 10 doctors coming from both specialties.

The questionnaires were rolled out using an online portal as well as some surveys were received physically using hard copies as per the convenience of the participant. Participants were considered from the state of Maharashtra. Double data entry was preferred for the entries which were received using the physical survey forms, to avoid errors, followed by which the data was cleaned and validated. Data cleaning and validation was done for the surveys received via online portal as well. Post which the complete data was merged. Considering the complete data entry, we managed to receive 112 replies of which 55 were DOTS practitioners and 57 were private practitioners, which meets the calculated sample size, which was calculated using statistical methods and was validated with the help of statistician.

Complete pooled data of 112 participants was then taken for analysis, data being dichotomous in nature, basic percentile method was considered for analysis.

Results and Discussion

As the data was collected from 2 set of doctors i.e. DOTS practitioner and private physicians, were we managed to get feedback from 55 and 57 doctors respectively, making a total of 112 participating doctors.

The analysis was done at a primary level by using a percentage method as it was a direct comparison between two groups of qualified doctors.

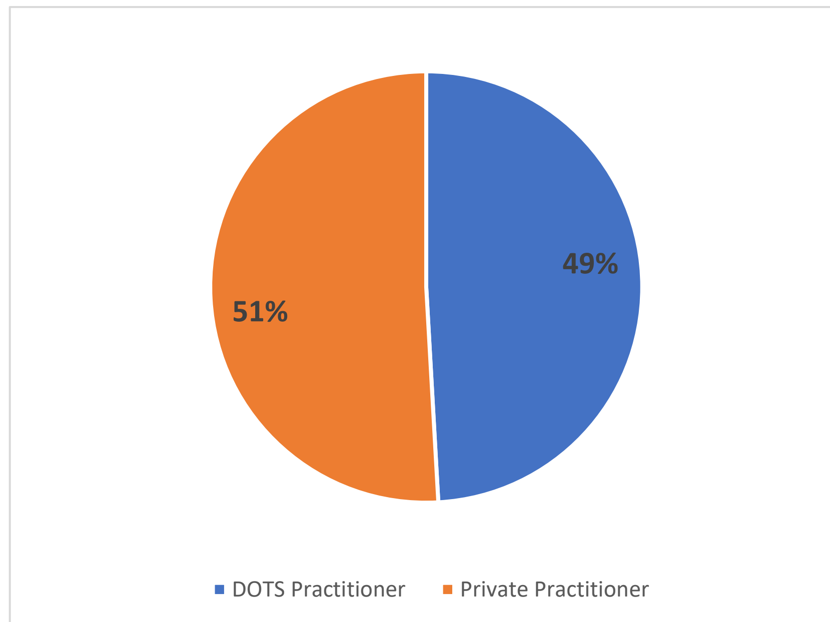

Figure 1: Distribution graph

GoI has launched a portal where all the positive cases of tuberculosis are to be registered, this would help in tracking the disease and managing the same in a better manner. The first question that was asked is are you aware of Nikshay Portal and if yes, do you register your subjects on the same. As per the guidelines it should be aware to all the practicing doctors and every tuberculosis treating doctor should be registering their patients on the portal.

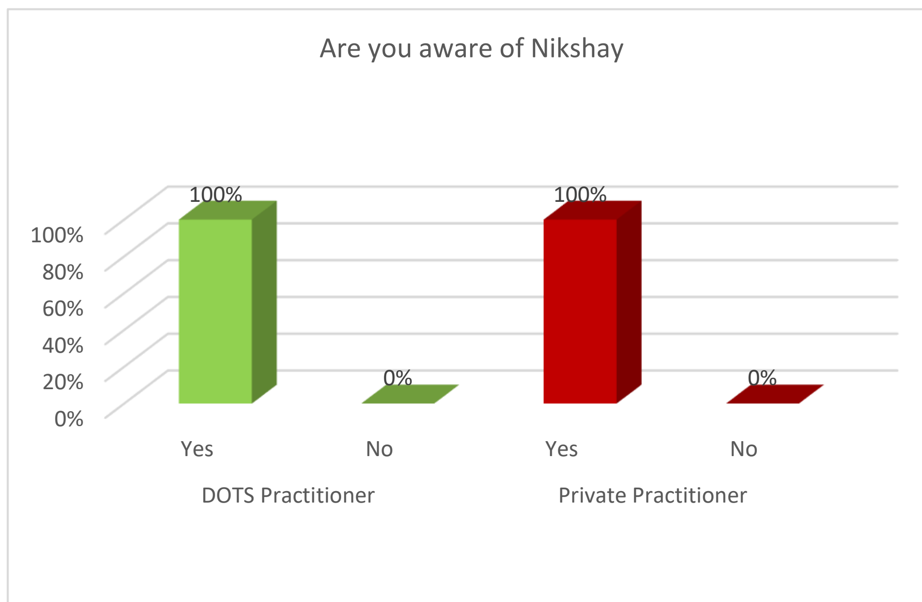

Figure 2: Are you aware of Nikshay?

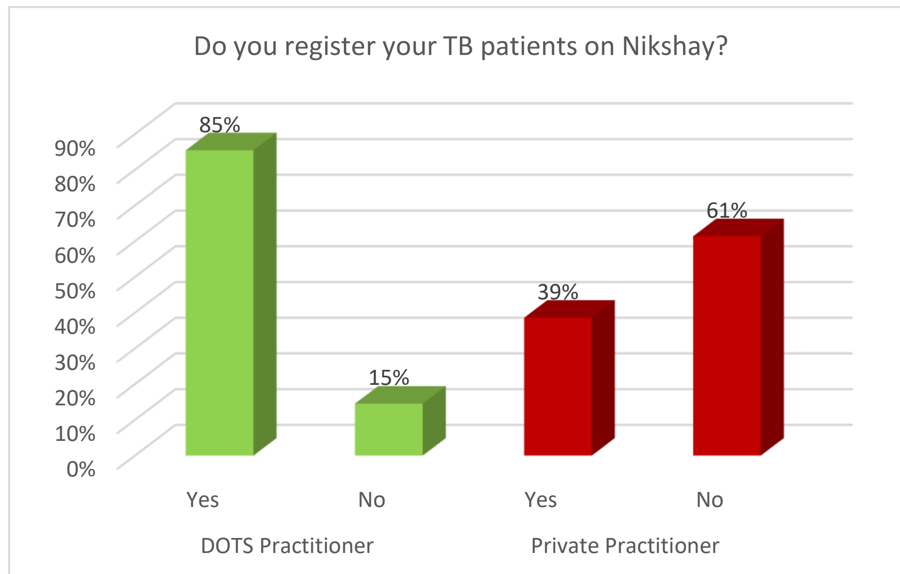

Figure 3: Do you register patients on Nikshay?

It was good to see that Nikshay as a portal is well aware amongst all the participating doctors from both the groups, but it was observed that with DOTS practitioner 85% (47 of 55) do register their patients on the Nikshay portal but 15% (8 of 55) still do not do so.

Scenario was completely opposite in case of private practitioners, only 39% (22 of 57) register their patients on Nikshay while 61% (35 of 57) of doctors still do not register.

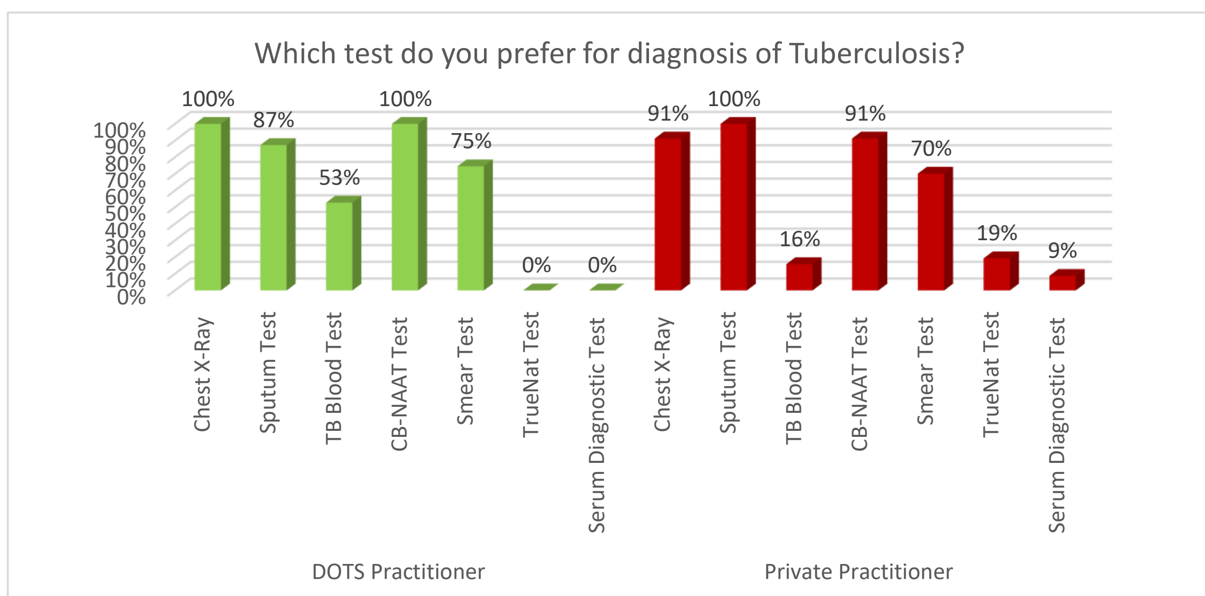

Figure 4: Which test do you prefer for diagnosis of tuberculosis?

The question was put forth to both the group of doctors, where it was observed that 100% of DOTS practitioners prefer to do Chest X-Ray and CB-NAAT Test which in case of private practitioners Sputum test was preferred by 100% of the participating doctors. Sputum test in case of DOTS practitioners was the preference of 87% (48 of 55), Smear test was 75% (41 of 55), TB Blood test was 53% (29 of 55) and True Nat Test and Serum Diagnostic test was not preferred by any of the DOTS practitioners. In case of private practitioners 91% (52 of 57) preferred chest x-ray and CB-NAAT test, 70% (40 of 57) for Smear test, 19% (11 of 57) for True Nat Test, 16% (9 of 57) and 9% (5 of 57) for TB Blood test and Serum diagnostic test respectively.

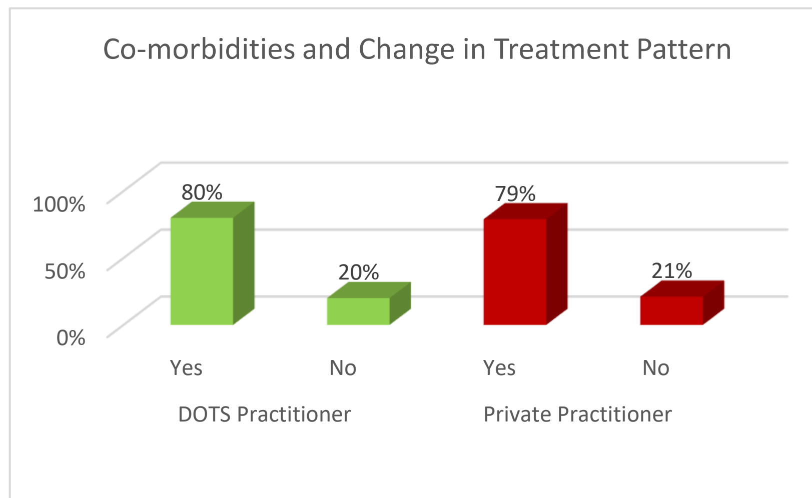

Figure 5: Are there any changes in treatment pattern for TB patients with any other Co - Morbid conditions?

Diabetes, Hypertension or some cardiac issues, these are most common in today's day with more than 90% of individuals, one would be having either of it, what in case of these individuals who are suffering with some or the other comorbid condition and now they are diagnosed with tuberculosis, would the treatment vary for these patients with comorbid conditions as compared to the ones without any comorbid conditions? Answer to which was received same from private practitioners as well as from DOTS practitioners i.e. 80% of them agreed to modification of the treatment for the patients with comorbid conditions whereas remaining 20% were still sure and comfortable in continuing just like in regular cases.

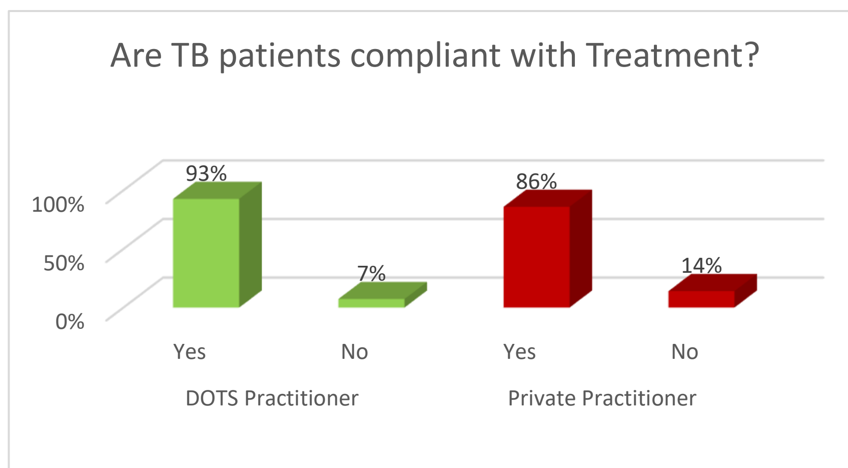

Figure 6: are TB patients compliant with treatment?

Talking about any of the disease and its treatment pattern, good efficacy would only be achieved with the right duration and correct regimen of the treatment/drugs. When asked to the doctors about their patients, it was observed that 93% (51 of 55) DOTS practitioners were sure of their patients being compliant to the given treatment where as in case of private practitioners the score was 86% (49 of 57). It was now necessary to know how is this compliance explained, so the leading question to this was, what was the adherence rate amongst the patients treated under you?

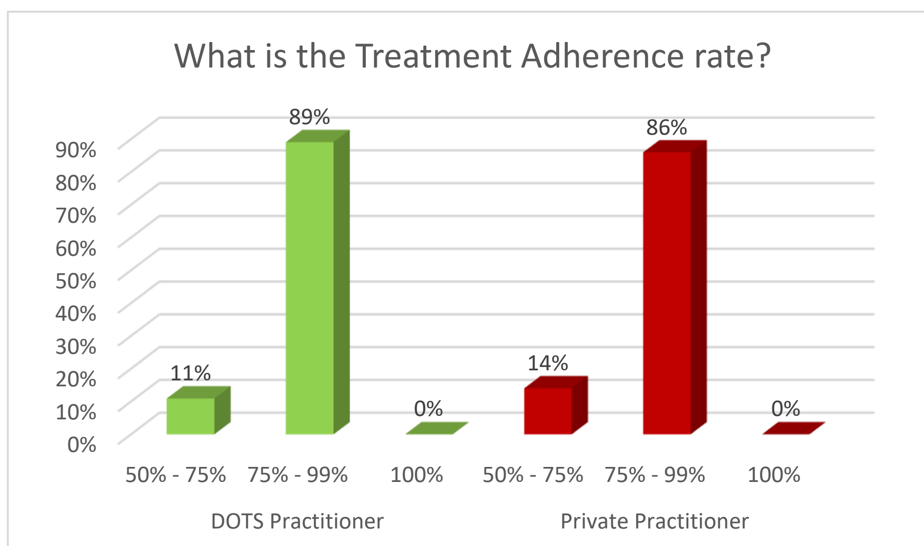

Figure 7: What is the Treatment Adherence rate?

It was good to observe that majority of the patients i.e. 86-89% adhered to the given treatment by 75-99%, none of the doctor was sure of his/her patient adhering to 100%. Poor adherence from 11-14% was observed for 50-75% adherence rate.

Tuberculosis management has been a primary concern as the spread was wide and if the spread is controlled the cases were to come down. This becomes of crucial importance as post which the aim of GoI of eradicating Tuberculosis from the country by 2025 would be success.

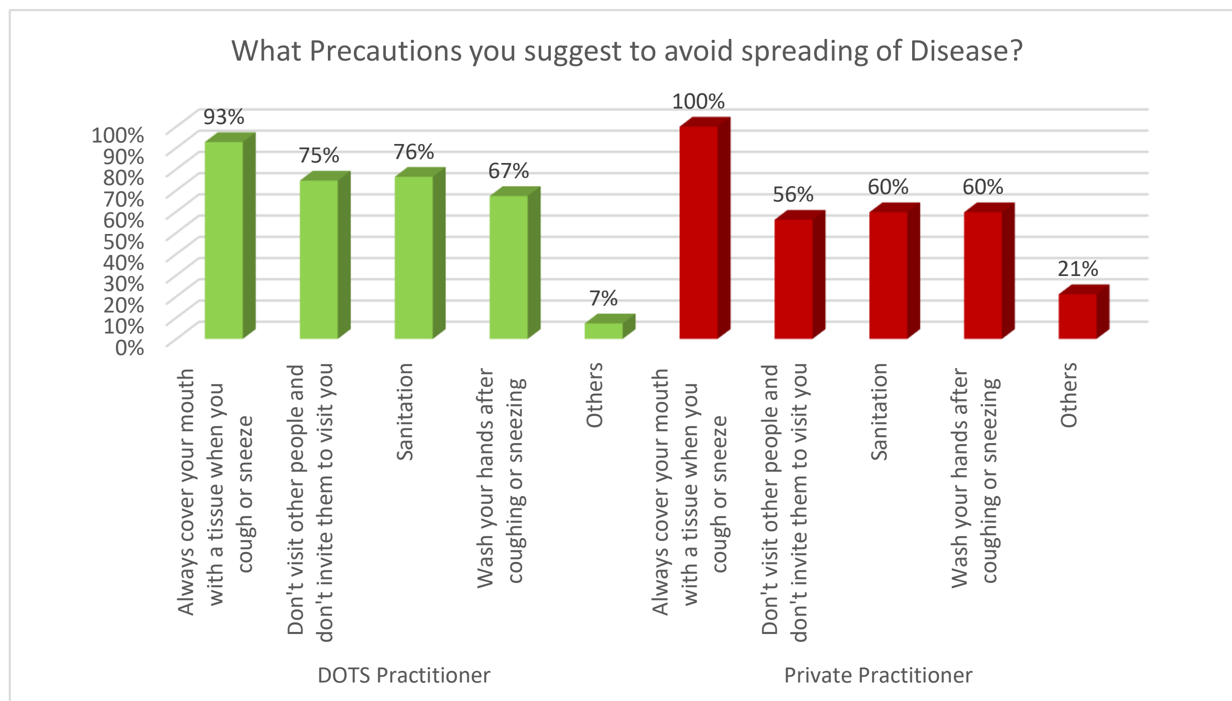

Figure 8: What Precautions you suggest to avoid spreading of Disease?

Participating doctors were asked as to how they guide their patients to avoid the spread of disease. 100% and 93% of private practitioners and DOTS practitioners respectively suggest to cover the moth while your cough or sneeze, avoiding visiting relatives and friends, sanitization, washing hands continued to be equally high i.e. 75% (41 of 55), 76% (42 of 55) and 67% (37 of 55) respectively in case of DOTS practitioners while in case of private practitioners it was 56% (32 of 57), 60% (34 of 57) and 60% (34 of 57) respectively in case of private practitioners. The remaining 7% of DOTS practitioners and 21% of private practioners voted for others where the majority reply was for avoiding spitting.

Conclusion

The observed data was conclusive that there is no major difference between the thought process of DOTS practioners versus private practitioners. Nikshay registration was only point where difference of opinion was observed, we would appreciate if more awareness can be spread across the private practitioners and some activities government to undertake where we can have equal registration from private practitioners as well. These basic parameters would surely help directly or indirectly in achieving the goal set by GoI to Eradicate Tuberculosis by 2025 from the country.

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