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Quality of tuberculosis care in India: a systematic review

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SUMMARY

BACKGROUND: While Indian studies have assessed care providers' knowledge and practices, there is no systematic review on the quality of tuberculosis (TB) care.

METHODS: We searched multiple sources to identify studies (2000–2014) on providers' knowledge and practices. We used the International Standards for TB Care to benchmark quality of care.

RESULTS: Of the 47 studies included, 35 were questionnaire surveys and 12 used chart abstraction. None assessed actual practice using standardised patients. Heterogeneity in the findings precluded meta-analysis. Of 22 studies evaluating provider knowledge about using sputum smears for diagnosis, 10 found that less than half of providers had correct knowledge; 3 of 4 studies assessing self-reported practices by providers found that less than a quarter reported ordering smears for patients with chest symptoms. In 11 of 14 studies that assessed treatment, less than one third of providers knew the standard regimen for drug-susceptible TB. Adherence to standards in practice was generally lower than correct knowledge of those standards. Eleven studies with both public and private providers found higher levels of appropriate knowledge/practice in the public sector.

CONCLUSIONS: Available evidence suggests suboptimal quality of TB care, particularly in the private sector. Improvement of quality of care should be a priority for India.

KEY WORDS: TB; India; quality of care; International Standards for TB Care

WITH AN ESTIMATED ANNUAL incidence of 2.0–2.3 million tuberculosis (TB) cases and about 150 000–350 000 deaths per year, India has the highest TB burden in the world.[1] TB control depends on early diagnosis of pulmonary TB cases and their treatment with a full course of anti-tuberculosis drugs.[2] For early diagnosis of TB, all persons with cough of $\geqslant$2 weeks should be referred for TB evaluation.[3] Correct treatment requires the use of standardised drug regimens recommended by the World Health Organization (WHO),[2] the International Standards for TB Care (ISTC) and the Standards for TB Care in India (STCI).[2–4]

A recent systematic review showed that in India there is a delay of nearly 2 months in making a diagnosis of TB; patients are seen by on average three different providers before a diagnosis is made.[5] Drug prescription analyses have shown that irrational and inappropriate anti-tuberculosis drug regimens are widely used.[6] These studies suggest that the quality of TB care in India is a matter of concern.[7]

The Indian health care delivery landscape is complex and fragmented, with many types of care providers in the public and private sectors.[8] Studies suggest that 80% of the first-contact health care and nearly 50% of TB care occurs in the private sector.[9] The private sector is also very fragmented, with both unqualified (i.e., no formal medical degree) and qualified providers (a formal degree in either allopathic medicine or in alternative traditions such as Ayurveda, Unani, Siddha and Homeopathy [AYUSH]).[10,11] A recent study of 100 villages in rural Madhya Pradesh found that, among primary care providers identifying themselves as 'doctors', 65%

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reported having no formal medical training, while 25% had AYUSH degrees, and only 10% reported having an MBBS (Bachelor of Medicine, Bachelor of Surgery, i.e., formal allopathic medicine) degree. The quality of medical care was highly variable, and was found to be deficient on many levels.[12,13]

While several studies in India have investigated different aspects of health care providers' knowledge and practices related to TB diagnosis and treatment, this literature has not been systematically reviewed or benchmarked against international standards.

METHODS

Objectives

We systematically reviewed studies that provided information on both public and private sector health care providers' knowledge and practices related to TB diagnosis and treatment compared with the second edition (2009 version) of the ISTC.[14] The ISTC was used as the benchmark for three reasons: 1) the standards that make up the ISTC were developed by a team of international experts from the public and private sectors, and are recognised as defining a widely accepted level of care to which all providers should adhere; 2) the current national guidelines of India's Revised National Tuberculosis Control Programme (RNTCP) and the recent Standards for TB Care in India (STCI)[4] are largely concordant with the second edition of the ISTC (Table 1); and 3) adherence to most of the 21 standards mentioned in the ISTC can be measured using quality indicators. Although a third edition of the ISTC has recently been published,[3] we used the second edition, as the third edition emphasises the use of new diagnostic modalities such as Xpert® MTB/RIF (Cepheid, Sunnyvale, CA, USA), which have not been available in India until recently.

Search strategy

A medical librarian searched PubMed, Embase and the Web of Science for studies published between January 2000 and Sept 2014, without any language restrictions, using search terms for 'tuberculosis', 'knowledge', 'practice', 'health care providers' and 'India' (see Appendix).* In addition, we carried out electronic searches of several Indian journals to increase the yield of relevant studies, especially from non-indexed journals, including the Journal of the Indian Medical Association, the Indian Journal of Tuberculosis, the Indian Journal of Community Medicine, the Indian Journal of Public Health, the Indian Journal of Medical Research, Lung India, the Indian Journal of Chest Diseases and Allied Sciences and the National Medical Journal of India. Additional studies were identified by searching the reference lists of the primary studies. Official reports, such as the RNTCP's annual status reports or the WHO Joint Monitoring Mission Reports, are not included in the review, as they do not provide quantitative information on the knowledge, attitudes and practices of health care providers.

Types of study design, inclusion and exclusion criteria

All study designs (cross-sectional, descriptive studies, case control studies, cohort studies and interventional studies) that used any method to assess knowledge, attitudes or practices, such as questionnaire surveys, prescription audits, vignette-based questionnaires, clinical observation, chart abstraction or 'mystery client'/standardised patients were included. Purely qualitative studies, case reports and studies of very low quality (explained below) were excluded.

Quality assessment

We assessed the quality of each study based on three criteria: methodology, sampling strategy and survey response rate (Tables 2 and 3). These criteria were adapted from the literature on various approaches to assessing the quality of medical care.[13,15,16] In addition, we assessed the provider mix in each study, as studies that narrowly focus on one subset of providers (e.g., only allopathic doctors) may inadequately reflect the complexity of India's health system. Studies that had a participation/response rate of $<50\%$ or that included <20 providers were considered to be of very low quality and were excluded from the analysis.

Study selection

Citations identified by the search were independently assessed by two review authors (SS and RS) for their eligibility. Disagreements between the two reviewers were resolved by discussion or by consulting a third reviewer (PS).

Data extraction and analysis

Three reviewers (SS, RS and PS) independently extracted the data from each included study into a structured data extraction form. Disagreements were resolved through discussion and/or by consulting a fourth reviewer (MP). Data extracted from each of the studies included study characteristics (design, location, urban/rural setting, sample size) and type of health care providers included. For data on ISTC standards, we first extracted information on the specific ISTC standard(s) addressed in each study, and then the quantitative data (proportions and 95% confidence intervals [CIs]) on the knowledge or practice pertaining to each of the standards reported in each study. In studies where 95%CIs were not reported, we calculated these from the data provided in the manuscript.

Studies were broadly classified into those that measured knowledge and those that measured practice based on the methodology employed. Studies

* The appendix is available in the online version of this article, at http://www.ingentaconnect.com/content/iuatld/ijtld/2015/00000019/00000006/art00003

Table 1 A comparison of the ISTC (second edition) with India's RNTCP guidelines

ISTC		RNTCP guidelines
Standard 1	Unexplained productive cough of >2–3 weeks should be evaluated for TB	An individual with cough of >2 weeks should be considered a TB suspect
Standard 2	TB suspects should have at least two sputum samples submitted for microscopic examination	TB suspects should have two sputum samples submitted for microscopic examination
Standard 3	EPTB suspects should have a specimen obtained from the suspected site of involvement for microscopy, culture and histopathological examination	EPTB should be diagnosed based on positive tissue culture from an extra-pulmonary site, positive histological findings, consistent radiological findings or strong clinical evidence
Standard 4	CXR findings suggestive of TB merit sputum examination	CXR alone is unreliable for diagnosing TB (implies that sputum examination should be performed for suggestive CXR findings)
Standard 5	Criteria for smear-negative diagnosis: two negative sputum smears, CXR findings consistent with TB and lack of response to broad-spectrum antibiotics; use of fluoroquinolones for empiric treatment should be avoided	Criteria for smear-negative diagnosis: four negative sputum samples, failure of cough to improve on broad-spectrum antibiotics and CXR findings suggestive of TB; fluoroquinolones, rifampicin and streptomycin should never be used for empiric treatment
Standard 6	Describes the work-up and criteria for diagnosis of intra-thoracic TB in children, including sputum or gastric washing evaluation, radiography, history of recent contact with an active TB case, use of TST or IGRA, and obtaining tissue or fluid for evaluation in cases of suspected EPTB	Similar work-up recommended to diagnose TB in children, including sputum examination, CXR, history of contact with an active TB case in the last 2 years and use of TST
Standard 7	Providers should assess treatment adherence and address poor adherence when it occurs	A DOT provider should help the patient take medication, thereby ensuring adherence
Standard 8	Defines recommended first-line treatment, 2HRZE + 4HR, with dosing conforming to international recommendations; FDCs preferred	Same recommended first-line regimen and dosing standards, although intermittent (every other day or thrice weekly) treatment is preferred; multi-blister combi-packs containing all the drugs are provided by the government
Standard 9	Patient-centred approach recommended, which may include training of a treatment supporter, DOT and incentives to improve adherence	All standard treatment regimens in RNTCP areas are supposed to be provided by DOT
Standard 10	To monitor response to treatment, two sputum smears should be repeated after completion of the initial 2-month phase of treatment	To monitor response to treatment in smear-positive TB cases, two sputum smears should be repeated at 2 and 4 months and at treatment completion
Standard 11*	DST should be performed for all previously treated patients, patients who remain sputum smear-positive after 3 months of treatment and patients who default, fail or relapse on a course of treatment	DST should be performed for individuals who are close contacts of known MDR-TB patients with a positive sputum smear, those who remain sputum smear-positive after 5 months of treatment and those who default, fail or relapse on a course of treatment with a positive sputum smear (i.e., sputum smear-positive Category II patients)
Standard 12*	Patients with suspected or confirmed MDR-TB should be treated initially with a specialised regimen with at least four drugs to which the organism is presumed or known to be susceptible	Patients with suspected MDR-TB should be treated with a standardised regimen of 6 drugs
Standard 13	Written records of anti-tuberculosis treatment should be maintained for all patients	Treatment cards for all patients on treatment should be maintained at RNTCP DOTS centres
Standard 14	HIV testing is recommended universally for all TB patients in high HIV prevalence settings	Routine HIV testing of all newly diagnosed TB patients with unknown HIV status is recommended
Standard 15	Anti-tuberculosis treatment should not be delayed in HIV patients; all patients with HIV co-infection should be evaluated for initiation of ART if appropriate; cotrimoxazole prophlyaxis recommended	All HIV co-infected TB patients are considered seriously ill and should be started on anti-tuberculosis treatment expeditiously; these patients should be referred to National AIDS Control Programme centres to be considered for initiation on ART and administration of cotrimoxazole prophylaxis
Standard 16*	HIV-infected patients without evidence of active TB should be treated for presumed latent tuberculous infection	No similar recommendation has been made by the RNTCP
Standard 17	Comorbid conditions that may affect anti-tuberculosis treatment outcomes should be assessed and addressed, such as DM, smoking and substance use	Routine screening for DM should be performed for all TB patients with unknown DM status; relevant comorbid conditions such as smoking and pregnancy should be recorded on the treatment card
Standard 18	Close contacts of active TB patients should be evaluated, especially children aged <5 years, HIV-infected contacts, persons with symptoms suggestive of TB and contacts of patients with MDR-TB	All household contacts of individuals with smear-positive TB should be screened for TB symptoms; those with cough should undergo sputum examination
Standard 19	Household contacts aged <5 years or who are HIV-infected without active TB should receive INH chemoprophylaxis	Household contacts <6 years of age who are asymptomatic should receive INH chemoprophylaxis
Standard 20	Health care facilities that take care of TB patients should have an infection control plan	RNTCP guidelines for infection control in hospital settings recommend administrative controls, environmental controls and personal protective measures
Standard 21	All TB cases must be reported to local public health authorities	All TB cases, including those detected in the private sector, should be mandatorily notified to designated nodal officers in the districts

* Standards for which the RNTCP guidelines differ from the ISTC.
ISTC = International Standards for Tuberculosis Care; RNTCP = Revised National Tuberculosis Control Programme; TB = tuberculosis; EPTB = extra-pulmonary TB; CXR = chest X-ray; TST = tuberculin skin test; IGRA = interferon-gamma release assay; DOT = directly observed treatment; H, INH = isoniazid; R = rifampicin; Z = pyrazinamide; E = ethambutol; FDC = fixed-dose combination; DST = drug susceptibility testing; MDR-TB = multidrug-resistant TB; HIV = human immunodeficiency virus; DM = diabetes mellitus; ART = antiretroviral therapy.

Table 2 Quality level and limitations of various study methods that may be used to assess quality of care in developing country settings

Study methodology or design	Quality level: measurement of knowledge	Quality level: measurement of practice	Major limitation of study method
Standardised patient studies*	High	Very high	Gold standard method, but highly resource-intensive
Clinical observation studies of providers with case and patient-mix adjustments†	High	Medium	Hawthorne effect‡
Clinical observation studies of providers without case and patient-mix adjustments	Medium	Low	Hawthorne effect
Chart abstraction or prescription audits with case and patient-mix adjustments	Medium	Medium	May be very limited by incomplete, poor quality or absent documentation
Chart abstraction or prescription audits without case and patient-mix adjustments	Low	Low	May be very limited by incomplete, poor quality or absent documentation
Surveys of providers using vignettes or mock prescription writing to assess knowledge, attitudes and behaviours	Very high	Low	Hawthorne effect
Surveys providers using basic questions or self-report to assess knowledge, attitudes, and behaviours	Medium	Low	Hawthorne effect
Surveys of patients to assess provider practices	Uncertain due to lack of validation	Uncertain due to lack of validation	Recall limitations on the part of patients

* Also known as 'mystery clients', these are normal (non-diseased) individuals from the local community who are trained to visit health care providers, present with supposed TB symptoms and seek medical advice and care, without the providers being aware that they are actors.
† Different clinical presentations and characteristics (e.g., sputum-positive, sputum-negative, different age and sex groups, etc.).
‡ Also known as the 'observer effect', which refers to changes in people's behaviour when they know that they are being observed.
TB = tuberculosis.

that had administered questionnaires and vignettes were considered to measure knowledge, while studies that used patient interviews, chart abstraction, clinical observation or standardised patients were considered to measure practice.

We tabulated the main characteristics of the included studies. Forest plots were generated for each ISTC standard for which data were available from at least five studies. A forest plot graphically displays the relative magnitude of the parameter of interest from multiple studies. Each dot represents the proportion of providers adhering to a guideline from a particular study (ranging between 0 and 1), and the lines around each dot represent the CI. Considerable heterogeneity in study methodologies precluded meta-analysis. Instead, we narratively synthesised key findings, highlighting general trends in the findings and critical deficiencies in the current literature and the methodologies used.

Table 3 Criteria for assessing the quality of studies

Variables evaluated for quality assessment	Quality level
Sampling strategy	
Random or comprehensive sampling	Very high
Use of a list frame validated in the field, with subsequent population-weighting of results	Very high
Validated list frame and population-weighting not used	Medium to low
Convenience sampling	Medium to low
Survey response rate, %	
91–100	Very high
76–90	High
51–75	Medium
0–50	Low
Studies with a response rate of <90%, in which statistical adjustments such as inverse probability weights are not used and upper and lower bound estimates are not provided for final figures	Quality level drops one notch
Provider mix	
Includes a mix of allopathic, AYUSH and non-qualified providers in both the private and government sectors	High
Includes some subset of the above	Medium

AYUSH = Ayurveda, Unani, Siddha and Homeopathy.

RESULTS

As shown in Figure 1, the literature search from all sources yielded 929 citations. Of these, 47 articles were included in the analysis. Three studies were excluded on the basis of very low quality. A list of excluded studies can be obtained from the authors.

Characteristics and quality of included studies

Table 4 shows the characteristics of the 47 studies included.[17–62] Fieldwork for all but two studies[27,56] was conducted within the 2 years prior to their actual publication. Studies were conducted in 13 of the 37 states in India. Urban locations were more heavily represented, with 25 studies conducted exclusively in urban areas, 19 studies in both urban and rural areas, and three studies exclusively in rural areas; for one study this information was not available. Most studies that evaluated care in both urban and rural sites did not disaggregate data by location, precluding the assessment of urban vs. rural differences in quality of care.

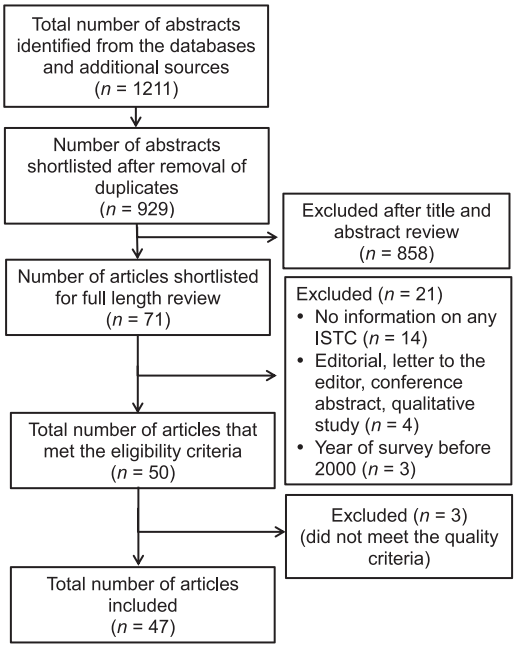

Figure 1 Flow diagram indicating the process of selecting the studies for a systematic review on tuberculosis management in India. ISTC = International Standards of Tuberculosis Care.

Of the 47 studies, 46 were cross-sectional and one[40] was an interventional study that provided information on changes in the knowledge of the health care providers pre- and post-intervention. In this review, we have used only the pre-intervention (baseline) information from this study.

Thirty-five studies used questionnaires to collect data, while three audited medical records or reviewed prescriptions. The remaining nine studies used multiple methods (a combination of questionnaire, vignette, chart abstraction and/or focus group discussions) to collect data. Twenty-eight studies collected data by interviewing health care providers, 13 by interviewing patients on the care that they had received, three by reviewing patients' medical records or prescriptions, and three by a combination of provider interview and a review of medical records or prescriptions.

Of the 47 studies, three did not report on whether they evaluated public or private care providers. Many studies ($n = 21$) only included providers in the private sector, while a smaller number ($n = 12$) only included public sector providers. A notable subset ($n = 11$) studied providers in the same general location in both the public and private sectors, using the same questionnaires for the two groups. As such, this subset of studies provides direct comparisons of the quality of care delivered by the public and private sectors.

As regards the quality of the studies based on our pre-determined rating system (Tables 2 and 3), none of the studies used methodologies that were considered of sufficiently high quality for measuring the actual practices or behaviours of providers. Five studies were considered sufficiently high in quality for measuring provider knowledge for some ISTC standards, as they used hypothetical case scenarios (similar to vignettes) as part of their questionnaires. Twenty-six studies used high-quality sampling strategies (i.e., either random or comprehensive sampling), and the survey response rate was high or very high in 23 studies.

Data on ISTC standards

Only one study explicitly used the ISTC as a benchmark for quality.[17] For all other studies, we extracted the data and matched them to the relevant ISTC standards. There were eight ISTC standards for which five or more studies provided data: Standard 1 (6 studies), Standard 2 (26 studies), Standard 5 (7 studies), Standard 8 (17 studies), Standard 9 (16 studies), Standard 10 (9 studies), Standard 13 (5 studies) and Standard 18 (6 studies). Results pertaining to the key standards, i.e., sputum examination for diagnosis (Standard 2), initiation of the recommended drug regimen among new TB cases (Standard 8), and patient support to ensure adherence (Standard 9), each with 10 or more studies, are presented here. The results pertaining to the remaining standards (1, 5, 10, 13, 18) are given in the Appendix.

Standard 2: Awareness/use of sputum smear for persons with presumptive pulmonary tuberculosis

Of the 26 studies that provided information on Standard 2 (Figure 2), 21 assessed awareness or knowledge and five assessed practices. There was considerable heterogeneity in the proportion of providers who were aware that patients with suspected pulmonary TB should undergo sputum examination, ranging from as low as 17%[29] to as high as 94%.[44] Five studies that provided information on practices (mostly by interviewing patients regarding provider practices) reported that, of persons with cough of 2–3 weeks' duration, only 11%[34] to 59%[36] were advised to undergo sputum examination.

Standard 8: Awareness/use of correct treatment regimen for new tuberculosis case

Of the 17 studies that provided information on Standard 8, 14 assessed knowledge and 3 assessed practices (Figure 3). For this standard, we counted any drug regimen as meeting this standard as long as it contained the correct drugs and duration of treatment (e.g., 2 months of isoniazid [INH], rifampicin [RMP], pyrazinamide and ethambutol, followed by 4 months of INH and RMP), irrespective of whether the regimen was daily or intermittent. Almost all studies reported that less than 50% of health care providers had knowledge about the correct anti-tuberculosis treatment regimen for patients with newly diagnosed pulmonary TB, or on either the correct combination of drugs or the duration of anti-tuberculosis treatment.

Studies reporting on practice had heterogeneous findings, possibly explained by the settings in which these studies were conducted. Two studies assessed

Table 4 Characteristics of studies included in the systematic review on management of TB in India

Citation, year, reference	Location	Urban, rural, both or unknown	Provider mix*
Achanta, 2013[17]	Visakhapatnam, Andhra Pradesh	Both	Private; allopathic, AYUSH; specialists, generalists
Anandi, 2002[18]	Naraingarh, Haryana	Rural	Private; AYUSH, non-qualified; generalists
Agarwal, 2009[19]	Khajuraho, Madhya Pradesh	NR	Sector NR; allopathic; specialists
Atre, 2007[20]	Mumbai and Pune, Maharashtra	Both	Public; allopathic; training NR
Banu Rekha, 2009[21]	Chennai and Vellore, Tamil Nadu	Both	Public; allopathic; generalists, paramedical staff
Banu Rekha, 2013[22]	Chennai and Vellore, Tamil Nadu	Both	Public; allopathic; generalists, paramedical staff
Baveja, 2012[23]	Navi Mumbai, Maharashtra	Urban	Private; allopathic; medical students
Bharaswadkar, 2014[24]	Pune, Maharastra	Urban	Private; allopathic and AYUSH; Generalists
Bishnu, 2011[25]	Paraganas District, West Bengal	Both	Private; allopathic; generalists
Chadha, 2014[26]	Mysore, Shivamoga and Chikmagalur, Karnataka	Both	Public; allopathic
Chander, 2013[27]	Rampur, Himachal Pradesh	Both	Public; allopathic; training NR
Das Gupta, 2008[28]	Kolkata, West Bengal	Urban	Private; allopathic; training NR
Datta, 2010[29]	Hooghly District, West Bengal	Urban	Private; allopathic; specialists, generalists
De Costa, 2008[30]	Ujjain District, Madhya Pradesh	Both	Private; allopathic, AYUSH, non-qualified; generalists, paramedical staff
Dhingra, 2002[31]	Delhi, Union Territory	Urban	Public, private; tradition NR; generalists
Fochsen, 2006[32]	Ujjain District, Madhya Pradesh	Rural	Public, private; tradition NR; training NR
Garg, 2013[33]	Delhi, Union Territory	Urban	Private; allopathic; generalists
George, 2013[34]	Multiple districts in Uttar Pradesh and Karnataka	Urban	Public, private; allopathic, AYUSH, non-qualified; training NR‡
Greaves, 2007[35]	Thiruvananthapuram, Kerala	Both	Private; allopathic; specialists, generalists
Jaggarajamma, 2009[36]	Chennai, Tiruvallur, and Kancheepuram, Tamil Nadu	Both	Private; tradition NR; training NR
Kutare, 2012[37]	Bangalore, Karnataka	Urban	Sector NR; allopathic; generalists
Khadse, 2011[38]	Nagpur, Maharashtra	Urban	Private; allopathic, AYUSH, non-qualified; specialists, generalists
Kondapaka, 2012[39]	Hyderabad, Andhra Pradesh	Urban	Public; allopathic; specialists
Krishnan, 2009[40]	Chennai, Tamil Nadu	Urban	Private; allopathic; specialists, generalists
Maseeh, 2004[41]	Ludhiana, Punjab	Urban	Private; allopathic; training NR
Mishra, 2013[42]	Nagpur, Maharashtra	Urban	Public, private; allopathic; specialists, generalists
Nagaraja, 2012[43]	Mysore, Karnataka	Both	Public, private; tradition NR; specialists, generalists
Pattanshetty, 2010[44]	Udupi District, Karnataka	Both	Public, private; allopathic; specialists, generalists
Pothukuchi, 2011[45]	Krishna, Andhra Pradesh	Both	Public
Rajeswari, 2002[46]	Chennai and Tiruvallur, Tamil Nadu	Urban	Private; allopathic; paramedical staff
Rajpal, 2007[47]	Delhi, Union Territory	Urban	Public, private; allopathic; generalists
Roy, 2005[48]	Khardah, West Bengal	Urban	Private; allopathic; training NR
Balamurugan, 2013[49]	Salem, Tamil Nadu	Urban	Private; allopathic; generalists
Sarkar, 2011[50]	Jalpaiguri District, West Bengal	Rural	Public; allopathic; training NR
Shivaramakrishna, 2014[51]	Krishnagiri and Tiruvalur, Tamil Nadu	Both	Public; allopathic; generalists, paramedical staff
Srivastava, 2011[52]	Gwalior, Madhya Pradesh	Both	Public, private; allopathic; training NR
Suganthi, 2008[53]	Bangalore, Karnataka	Urban	Public, private; tradition NR; training NR
Suryakantha, 2006[54]	Davangere, Karnataka	Urban	Private; allopathic; generalists
Thakur, 2006[55]	Chandigarh, Punjab	Urban	Private; allopathic; training NR
Thomas, 2006[56]	Tiruvallur District, Tamil Nadu	Both	Public; allopathic; training NR
Thomas, 2009[57]	Mysore, Karnataka; Tiruchirappalli, Tamil Nadu	Both	Public; allopathic; training NR
Udwadia, 2010[6]	Mumbai, Maharashtra	Urban	Private; allopathic, AYUSH; specialists, generalists
Vandan, 2009[58]	Lucknow, Uttar Pradesh	Urban	Public, private; allopathic; generalists
Vijay, 2009[59]	Mysore, Karnataka; Tiruchirappalli, Tamil Nadu	Both	Public; allopathic; training NR
Vyas, 2003[60]	Ahmedabad, Gujarat	Urban	Public, private; allopathic; training NR
Yadav, 2006[61]	Jamnagar, Gujarat	Urban	Sector NR; tradition NR; generalists
Yadav, 2012[62]	Meerut, Uttar Pradesh	Urban	Private; allopathic; specialists, generalists

* For each study, the following aspects of the provider mix are described: sector (public and/or private); medical tradition (allopathic, AYUSH and/or non-qualified); and training (specialists, generalists, paramedical staff and/or medical students).
† The number of providers interviewed, the number of patients interviewed or the number of patient charts/prescriptions audited.
‡ A specific indicator for a study meets 'high' or 'very high' quality; otherwise, it can be assumed to 'medium', 'low', or 'uncertain' quality for that indicator. The following study characteristics were evaluated using quality criteria: provider mix, methodology, sampling strategy and survey non-response rate (see Tables 1 and 2).
TB = tuberculosis; AYUSH = Ayurvedic, Unani, Siddha and homeopathy; ISTC = International Standards of Tuberculosis Care 2009; NR = not reported.

Table 4 (continued)

Methodology	Sampling strategy	Sample size†	Survey non-response rate %	ISTC standards evaluated
Questionnaire; vignettes‡	Random‡	201 providers	32	1–13
Questionnaire	Random‡	74 providers	5‡	2, 7, 8, 9
Questionnaire; vignettes‡	Convenience	52 providers	46	8
Questionnaire	Comprehensive‡	889 patients	NR	11
Chart abstraction; questionnaire; focus group discussions	Comprehensive‡	253 charts/patients; 40 providers	32	18, 19
Chart abstraction; questionnaire; focus group discussions	Comprehensive‡	87 charts/household contacts	4	18,19
Questionnaire	Convenience	200 providers	NR	2, 8, 9
Questionnaire; vignettes‡	Random‡	249 providers	7	2, 3, 8, 11
Chart abstraction; questionnaire	Comprehensive‡	1633 charts; 169 patients; 24 providers	NR for charts; 17% for patients‡	14
Questionnaire	Convenience	256 smear-negative TB suspects and 19 providers	NR	4, 5
Questionnaire, chart abstraction	Random‡	61 patients/charts/providers	13‡	3
Questionnaire	NR	233 providers	NR	1, 2, 9, 18
Questionnaire	Random‡	260 providers	NR	2, 4, 9, 10, 18
Questionnaire	Random‡	143 providers	1‡	2, 9, 13
Questionnaire	Comprehensive‡	269 patients	0‡	2
Questionnaire	Random‡	445 patients	NR	2
Questionnaire	Random‡	101 providers	NR	2, 9, 13
Questionnaire	Random‡	1500 patients	NR	2
Questionnaire	Random, convenience	45 providers	4‡	2, 9, 13
Questionnaire	Convenience	104 patients	0‡	2
Questionnaire	Convenience	207 providers	20‡	1, 2, 5, 8, 12
Questionnaire	Convenience	103 providers	2‡	1, 2, 5, 8, 9, 10
Chart abstraction; prescription audit	Random‡	1132 patients	7‡	8, 12
Questionnaire	Random‡	200 providers	NR	2, 4, 9, 10
Chart abstraction	Convenience	118 charts/patients;	0‡	8
Prescription audit	Convenience	210 prescriptions/patients	NR	8
Questionnaire	NR	311 providers	22‡	9
Questionnaire	Random‡	116 providers	7‡	2, 6
Questionnaire	Random	172 household contacts	3	18, 19
Questionnaire	Random‡	150 providers (pharmacists)	NR	9
Questionnaire	Convenience	287 providers	8‡	2, 8, 9
Questionnaire	Convenience	55 providers	32	2, 8, 10
Questionnaire	NR	150 providers	NR	2, 8, 12
Questionnaire	NR	4875 patients	7‡	5
Questionnaire	Random	271 household contacts	20	18,19
Questionnaire	Convenience	200 providers	NR	1, 2, 10, 13
Questionnaire	Random‡	61 patients	25	2
Questionnaire	Comprehensive‡	124 providers	NR	1, 2
Questionnaires, vignettes‡	Random‡	114 providers	NR	2, 8, 9, 21
Questionnaire	Comprehensive‡	423 patients	NR	5
Questionnaire	Random‡	495 patients	17‡	14, 15
Questionnaire, vignettes‡	Convenience	106 providers	5‡	8, 12
Questionnaire	Comprehensive‡	141 providers	17‡	1, 2, 5, 9, 10
Chart abstraction; questionnaire	Comprehensive‡	4701 patients/charts	0‡	14, 15
Questionnaire	Random‡	225 providers	26	2, 9
Questionnaire	Random‡	42 providers	NR	2, 10
Questionnaire	NR	154 providers	9‡	8, 10

practices among in-patients in tertiary care hospital settings and found very high rates of adherence to guidelines.[39,41] In contrast, one study assessed the correctness of both the combination of drugs and the dosages in the out-patient setting and found that in most cases neither the dosages nor the drug combinations were in line with ISTC recommendations.[42]

Standard 9: Awareness/use of a supervised (including directly observed therapy) approach for the treatment of tuberculosis

Of the 16 studies that provided information on Standard 9, 10 reported on whether health care providers used directly observed therapy (DOT) or a supervised approach for adherence monitoring, and

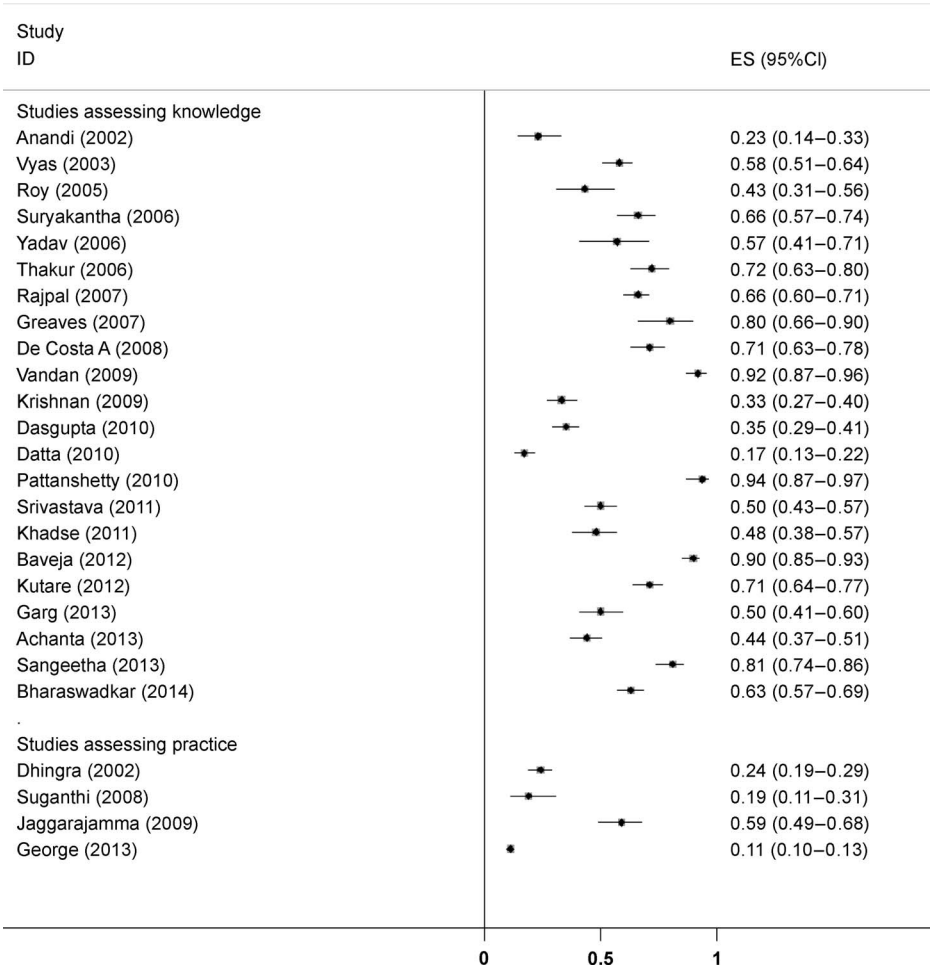

Figure 2 Forest plot of studies on ISTC Standard 2 (awareness/use of sputum smear for persons with presumptive pulmonary TB). ES = effect size (proportion meeting standard); CI = confidence interval; ISTC = International Standards of Tuberculosis Care; TB = tuberculosis.

six reported on whether providers had appropriate knowledge of DOT or a supervised approach (Figure 4). Of studies that assessed practice, 7 of 10 studies reported that less than half of the providers used DOT or a supervised approach. Most of their TB patients received unsupervised treatment. On the other hand, of those studies that assessed knowledge, 4 of 6 studies reported that more than 90% of the providers were aware of DOT or of a supervised treatment approach. Two studies reported that younger doctors or trainees were more likely to believe in the DOT approach.[43,47]

Quality of care in the public vs. the private sector

Eight studies provided direct comparisons of the quality of care delivered by the public vs. the private sector for Standards 2, 8 and 9. In all studies but one,[42] adherence to all ISTC standards was found to be consistently higher in the public sector ($P < 0.05$, Figure 5). Five studies reported that public sector providers were more likely to know that sputum smear examination is the primary test for TB (Standard 2).[32,34,52,53]

Only one study suggested that private providers were marginally more likely than public providers to write an appropriate prescription for drug-susceptible TB (10% vs. 5%);[42] however, prescription errors by private providers, such as too few drugs in the regimen or unnecessary use of fluoroquinolones and aminoglycosides, were more frequent than among public providers. Furthermore, studies reported that public providers were more likely to report the correct combination of drugs for treating drug-susceptible TB,[42,58] to use intermittent treatment as recommended by the RNTCP,[42,52,58,60] and not to use streptomycin as part of the treatment regimen for new TB cases.[42] As regards patient-centred approaches to TB management, including DOT or supervised therapy (Standard 9), two studies reported higher rates of supervision in the public sector.[43,60]

We found six studies that reported on the proportion of providers exposed to formal training on RNTCP guidelines for TB care through workshops organised by the RNTCP. Among private providers, 17–58% reported having attended an educational session on TB care,[17,35,37,52,55,58] while

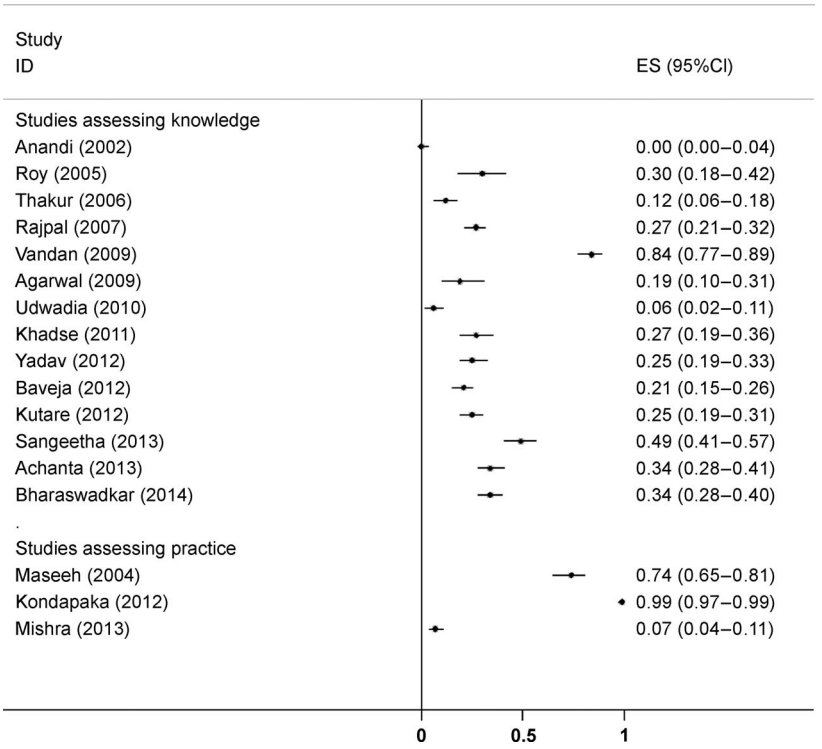

Figure 3 Forest plot of studies in India on ISTC Standard 8 (awareness/use of the correct treatment regimen for a new case of TB). ES = effect size (proportion meeting standard); CI = confidence interval; ISTC = International Standards of Tuberculosis Care; TB = tuberculosis.

73–92% of government providers reported having attended such a training session;[52,58] wherever the levels of training were high, awareness levels and self-reported practices were better. In addition, the only intervention-based study in this review found dramatic improvements in knowledge about multiple ISTC standards among private sector providers 1 year after educational workshops or one-to-one training sessions.[40]

DISCUSSION

To our knowledge, this is the first systematic review to assess health care providers' knowledge and practices using the ISTC as the benchmark. Our systematic review on the quality of TB care in India shows major gaps in provider knowledge and practice when benchmarked against international standards. Only half of the health care providers (from both public and private sectors) were aware of the importance of suspecting TB in persons with cough of >2–3 weeks' duration (Appendix), and two thirds knew about using sputum smear examination for persons with presumed TB. With regard to anti-tuberculosis treatment, only a third of the providers were aware of the correct regimen for patients with initial episodes of pulmonary TB, and a third reported using DOT or a supervised approach for treatment support. This lack of awareness is surprising, and may not only explain the observed diagnostic delays shown in systematic reviews,[5] but may also partly explain the high levels of treatment failure and drug resistance reported in recent studies.[63,64] These data emphasise the need for greater investment in strategies that facilitate effective dissemination and implementation of the ISTC and STCI.

In studies that included both public and private health care providers, adherence to ISTC standards as measured by knowledge levels was found to be higher in the public sector. This is perhaps due to the training and monitoring of public sector providers by the RNTCP and the use of standardised protocols for case finding and treatment. In contrast, little has been done to train the vast number of private sector providers, both qualified and unqualified.

Our review findings also suggest the presence of a 'know–do' gap (the difference between what providers 'know' and what they 'do' in reality). As compared to self-reported or observed practices, knowledge levels on appropriate treatment of TB trended towards higher rates, especially with respect to using sputum smear microscopy and DOT. The use of standardised patient studies coupled with vignettes and chart abstraction is well suited to identifying the 'know–do' gap, but none of the existing studies used this methodology.

Limitations

Despite a thorough literature search, we may have missed some studies from India, especially if they

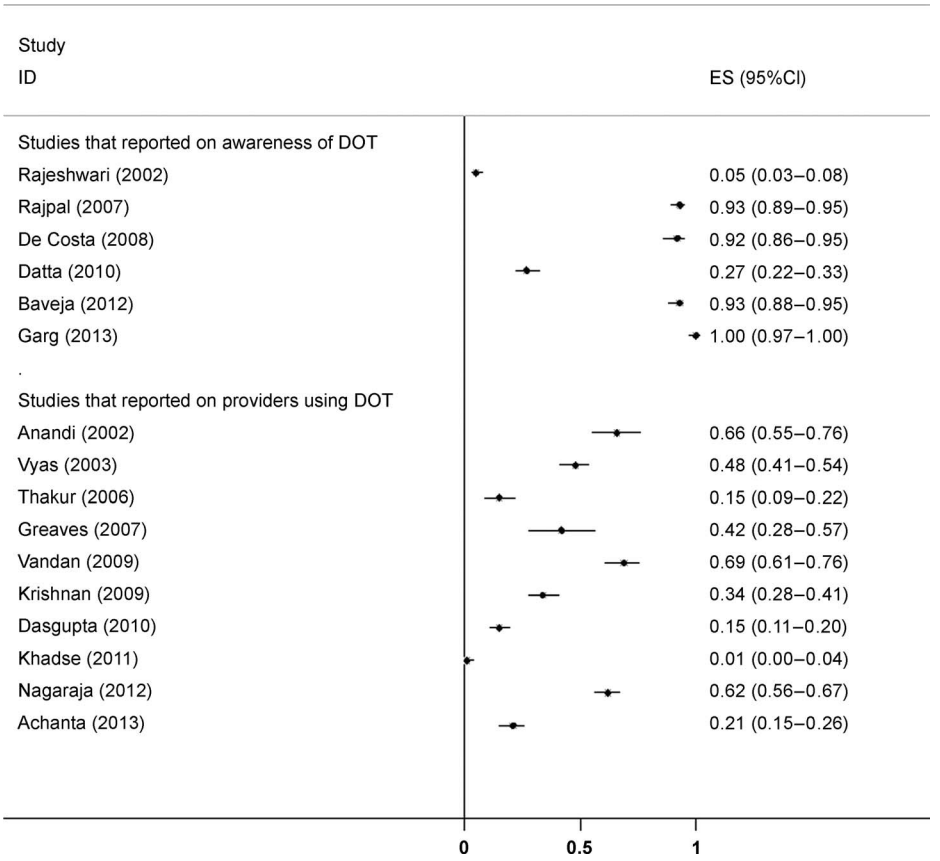

Figure 4 Forest plot of studies in India on ISTC Standard 9 (awareness/use of a supervised approach, including DOT, for the treatment of TB). ES = effect size (proportion meeting standard); CI = confidence interval; ISTC = International Standards of Tuberculosis Care; DOT = directly observed therapy; TB = tuberculosis.

were published in non-indexed journals. We have also not formally explored potential publication bias, as there is no statistical test for the type of data we analysed. Those studies included had their own limitations, and were mostly based on questionnaire surveys of knowledge. The quality of most studies for assessing either knowledge and/or practice was not high, and the study methodologies were diverse. Although more than 50% of TB patients in India seek care from the public sector,[9] more studies focused on private sector providers (32 studies), with fewer studies focusing on public sector providers (23 studies). However, studies that assessed the difference between public and private sectors did not provide information on whether the providers were mutually exclusive. This information is useful, as public providers can work in the private sector during off-hours, nights and weekends. The studies included in the analysis were mostly from urban areas, and did not represent all regions of the country. The urban vs. rural differences in quality of care were thus not addressed. Finally, we were unable to assess whether quality of care was related to patient load or to characteristics of the health facilities, primarily because the studies did not provide any information on these aspects.

Implications for policy and practice

Our findings raise several issues relevant to policy. First, substantial investment is needed in training providers on national and/or international TB guidelines in both the public and the private sector. Second, given the dominance of the private sector, and the lower levels of quality than in the public sector, serious efforts need to be made to engage the private sector in TB control, and to educate and incentivise private health providers to follow national and international standards. This is particularly critical for reducing diagnostic delays, as patients often begin their pathways to care in the private sector.[65]

Third, there is a need to expand the availability of recommended diagnostic and treatment services across the country and create mechanisms for all health care providers, including private sector doctors, to link their patients to these services without any obstacles. It is critical to ensure that all patients have access to affordable, quality care, regardless of where they seek care.[66] Fourth, monitoring health care providers' knowledge and practice should become a part of the routine TB surveillance system so that necessary corrective steps can be undertaken and progress can be tracked.[67] Using implementation

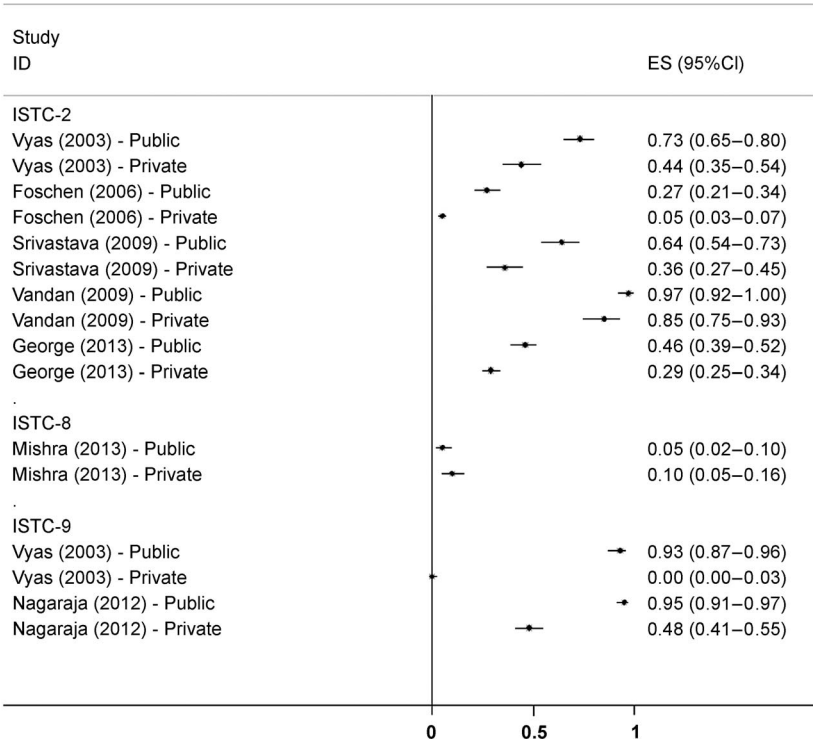

Figure 5 Comparison of public vs. private health care providers' awareness/practice with ISTC Standards 2 (awareness/use of sputum smear for persons with presumptive pulmonary TB), 8 (awareness/use of the correct treatment regimen for a new case of TB) and 9 (awareness/use of a supervised approach, including DOT, for the treatment of TB) in India. ES = effect size (proportion meeting standard); CI = confidence interval; ISTC = International Standards of Tuberculosis Care.

research to systematically understand and identify barriers and enablers of adherence to standards would provide an opportunity for developing targeted interventions and policy shifts that could improve TB care.

Our findings also raise methodological questions about how the quality of TB care should be measured. Available studies provide a reasonable picture of provider knowledge (i.e., what they know) and, to some extent, providers' self-reported behaviour (i.e., what they say they do); however, these studies fail to provide any information about the behaviour of providers in real life (i.e., 'what they actually do'). None of the studies used standardised patients. Standardised patients, also known as 'mystery clients', are normal (non-diseased) persons from the local community who are trained to visit health care providers, present with supposed TB symptoms and seek medical advice and care, without the providers being aware that these people are actors. The standardised patients then undergo debriefing by researchers whereby they narrate the care and advice they received from the health care providers. While standardised patient studies are resource-intensive and harder to implement, such methods have been used to successfully interrogate quality of care for other medical conditions in the Indian context.[13] A pilot study on standardised patients for TB care is underway in India (J Das, personal communication), and may pave the way for evidence-based decisions on this approach.

Future studies should use rigorous, vignette-based questionnaires to assess provider knowledge. Studies suggest that the assessment of both knowledge and behaviour through well-designed vignettes may reflect provider knowledge and behaviour better than chart abstraction.[15,68] Studies assessing knowledge and self-reported behaviour are still helpful in that they provide upper bounds for these various quality indicators; in other words, correct knowledge about TB care is necessary for appropriate provider behaviour, although it is certainly not sufficient to ensure appropriate behaviour. As such, although the rates of adherence to ISTC standards were quite low in this study, we believe that studies of actual provider behaviour using standardised patients could show even lower rates of adherence.

In conclusion, our review suggests poor quality of TB care in India across several international standards, particularly in the private sector. Measurement and improvement of quality of care should thus be a central component of India's new goal of universal access to quality TB care.

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APPENDIX

PubMed search update, 17 September 2014

(((((‘tuberculosis’(mesh)) OR (‘mycobacterium tuberculosis’(mesh)) OR (tuberculosis(tw)) OR (tb(tw))) AND ((‘India’(Mesh)) OR (India*(tiab)) OR (India(ad)))) AND ((((‘Health Knowledge, Attitudes, Practice’(Mesh)) OR (‘Quality of Health Care’(Mesh)) OR (knowledge(tiab)) OR (manage*(tiab)) OR (practic*(tiab)) OR (standard*(tiab)) OR (awareness(tiab)) OR (complian*(tiab)) OR (attitude*(tiab))) AND ((‘health personnel’(mesh)) OR (provider*(tiab)) OR (medical officer*(tiab)) OR (physician*(tiab)) OR (doctor*(tiab)) OR (clinician*(tiab)) OR (private practi*(tiab)) OR (public practi*(tiab)) OR (medical practi*(tiab)) OR (pharmacist*(tiab)) OR (nurse*(tiab)) OR (paramedic*(tiab)) OR ((chemist(tiab) OR chemists(tiab))) OR (AYUSH(tiab)) OR (Ayurved*(tw)) OR (Unani(tiab)) OR (Siddha(tiab)) OR (Homeopath*(tiab)) OR (practitioner*(tiab)) OR (allopath*(tiab)) OR (‘internship and residency’(mesh)) OR (intern(tiab) OR interns(tiab) OR internship*(tiab)) OR (resident(tiab) OR residents(tiab)) OR ((residency(tiab) OR residencies(tiab))) OR (medical student*(tiab)) OR (health personnel(tiab)))) OR (‘Physician’s Practice Patterns’(Mesh)) OR (‘Standard of Care’(mesh)) OR (‘Guideline Adherence’(Mesh)) OR (‘Inappropriate Prescribing’(MESH)) OR ((‘International Standards’(tiab) AND ‘Tuberculosis Care’(tiab))) OR (ISTC(tiab)) OR (treatment practice*(tiab)) OR (diagnostic Practice*(tiab)) OR (Prescription Practice*(tiab) OR prescribing practice*(tiab))) AND ((‘2000/01/01′(PDat) : ‘2014/12/31′(PDat)))) AND ((‘2013/10/11′(Date - Entrez) : ‘3000′(Date - Entrez))))

Web of Science Search Update, 17 September 2014

TS=((tuberculosis OR tb)) AND TS=(India*) AND TS=(((knowledge OR attitude* OR practi* OR quality OR manage* OR complian* OR standard* OR awareness OR attitude*) AND (health personnel OR provider* OR medical officer* OR physician* OR doctor* OR clinician* OR private practi* OR public practi* OR medical practi* OR pharmacist* OR nurse* OR paramedic* OR chemist OR chemists OR AYUSH OR Ayurved* OR Unani OR Siddha OR Homeopath* OR practitioner* OR intern OR interns OR internship* OR resident OR residents OR medical student* OR residency OR residencies)) OR (‘guideline adher*’ OR inappropriate prescri* OR standard of care OR practice pattern* OR international standards for tuberculosis care OR treatment practice* OR ISTC OR diagnostic practice* OR prescription practice* OR prescribing practice*))

Timespan: 2000–2014. Indexes: Science Citation Index Expanded, Social Sciences Citation Index, Arts & Humanities Citation Index, Conference Proceedings Citation Index- Science, Conference Proceedings Citation Index - Social Sciences & Humanities.

Database: Embase <1996 to 2014 Week 37>

Search strategy:

1 1 exp tuberculosis/ (89713)
2 mycobacterium tuberculosis/ (36754)
3 tuberculosis.mp. (111962)
4 tb.mp. (32291)
5 or/1–4 (124065)
6 India/ (67522)
7 india*.mp. (144992)
8 india.ad. (332698)
9 or/6–8 (395635)
10 attitude to health/ (64707)
11 exp health care quality/ (1834369)
12 professional knowledge/ (9381)
13 exp professional practice/ (217631)
14 ‘medical record review’/ (57260)
15 case management/ (7514)
16 knowledge.tw. (417133)
17 manage*.tw. (842603)
18 clinical practice/ (167874)
19 practic*.tw. (682501)
20 complian*.tw. (100327)
21 professional standard/ (23125)
22 medical audit/ (32487)
23 awareness.tw. (95142)
24 attitude*.tw. (86772)
25 or/10–24 (3412417)
26 exp health care personnel/ (747146)
27 provider*.tw. (103177)
28 medical officer*.tw. (1746)
29 physician*.tw. (271531)
30 doctor*.tw. (88726)
31 clinician*.tw. (147782)
32 private practi*.tw. (7095)
33 public practi*.tw. (109)
34 medical practi*.tw. (17065)
35 pharmacist*.tw. (35236)
36 nurse*.tw. (155477)
37 paramedic*.tw. (5028)
38 (chemist or chemists).tw. (7484)
39 AYUSH.tw. (40)
40 Ayurveda/ (2881)
41 Ayurved*.mp. (5833)
42 Unani.tw. (470)
43 Siddha.tw. (373)
44 homeopathy/ (6489)
45 homeopath*.tw. (4082)
46 practitioner*.tw. (94129)
47 (intern or interns or internship*).tw. (4846)
48 (resident or residents).tw. (95102)
49 medical student*.tw. (22510)
50 (health* adj2 personnel).tw. (4820)
51 (residency or residencies).tw. (15341)
52 or/26–51 (1304861)
53 25 and 52 (745014)

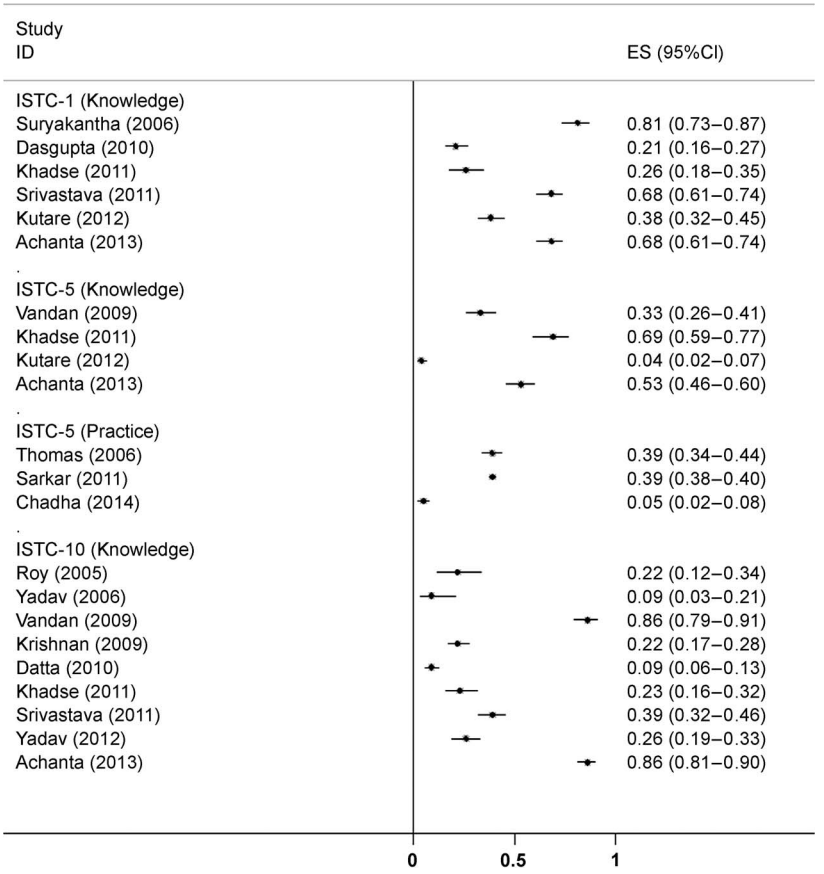

Figure A.1 Forest plot of studies on ISTC Standard 1 in India (awareness/suspicion of TB in persons with cough of 2–3 weeks), ISTC Standard 5 (awareness/use of a combination of chest X-ray and sputum examination for diagnosis of sputum-negative pulmonary TB) and ISTC Standard 10 (awareness/use of sputum microscopy to monitor response to treatment). ES = effect size (proportion meeting standard); CI = confidence interval; ISTC = International Standards of TB care (2nd ed); TB = tuberculosis.

54 inappropriate prescribing/ (1296)
55 exp clinical practice/ (167874)
56 health personnel attitude/ (44353)
57 'international standards for tuberculosis care'.tw. (31)
58 treatment practice*.tw. (1914)
59 ISTC.tw. (50)
60 Diagnostic Practice*.tw. (673)
61 ((Prescription or prescribing) adj practice*).tw. (2915)
62 or/53–61 (858362)
63 5 and 9 and 62 (641)
64 limit 63 to yr='2000–Current' (625)
65 limit 64 to dd=20131011–20140917 (92)

RESULTS OF STUDIES ON ISTC STANDARDS 1, 5, 10, 13 and 18

Standard 1: Awareness/suspicion of tuberculosis in persons with >2 weeks of cough

Six studies provided information on this standard, and all assessed knowledge (Figure A.1). The proportion of health care providers who were aware that tuberculosis (TB) should be suspected in persons with cough of >2–3 weeks ranged from 21%[28] to 81%.[54] One study comparing public vs. private sectors reported that 89% of government providers knew that cough >2–3 weeks warranted sputum examination (Standard 1), as opposed to only 48% of private providers (Figure A.2).[52]

Standard 5: Awareness/use of a combination of sputum smear-negative report and chest X-ray for diagnosis of sputum smear-negative pulmonary tuberculosis

Of the seven studies that provided information on this standard, four reported on awareness and two[51,56] reported on practice (Figure A.1). The correct knowledge for this standard ranged from as low as 4%[37] to as high as 69%.[38] The three studies assessing practice followed patients in government TB registers who had submitted two sputum samples that were both smear-negative. While two studies found that 39% of patients subsequently received a chest radiograph to complete the diagnostic evaluation for smear-negative

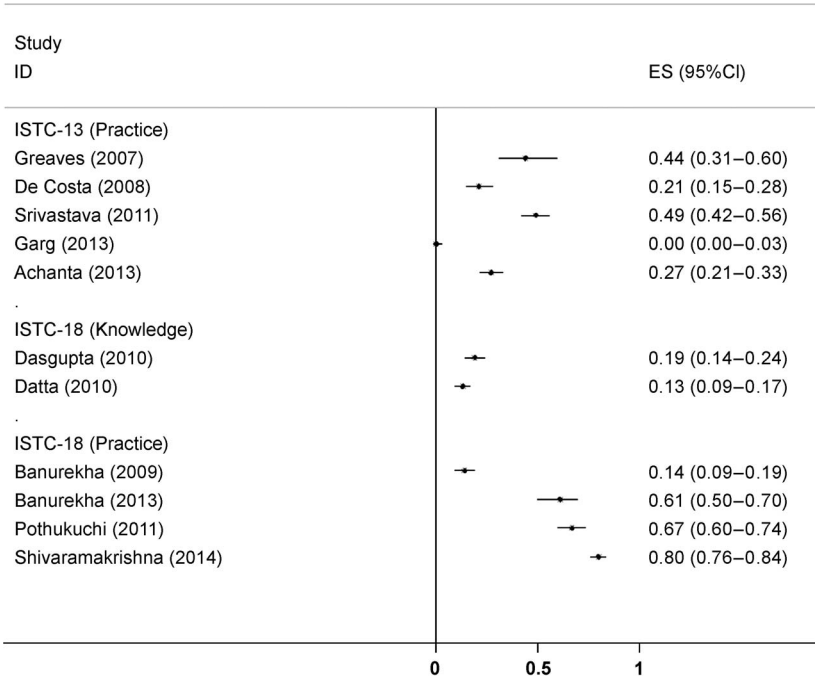

Figure A.2 Forest plot of studies in India on ISTC Standard 13 (maintenance of a written record of TB patients initiated on treatment) and ISTC Standard 18 (screening household contacts for TB). ES = effect size (proportion meeting standard); CI = confidence interval; ISTC = International Standards of TB care (2nd ed); TB = tuberculosis.

TB, one study found that this to be only 5%.[16,26,50] One study comparing public vs. private sectors reported that 39% of public providers could correctly cite the appropriate criteria for diagnosis of smear-negative TB (Standard 5) as compared to only 26% of private providers (Figure A.2).[58]

Standard 10: Awareness/use of sputum microscopy to monitor response to treatment

Nine studies reported on this standard, and all assessed provider knowledge (Figure 1). Except for two studies,[17,58] all other studies reported that <40% of the providers were aware that sputum smear micros-

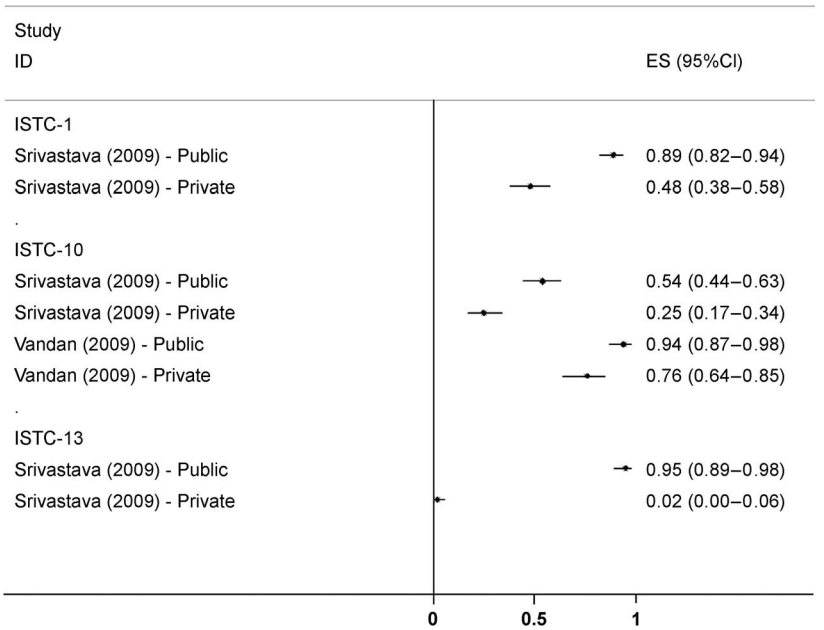

Figure A.3 Comparison of public vs. private health care providers' awareness/practice on ISTC Standards 1, 10 and 13 in India. ES = effect size (proportion meeting standard); CI = confidence interval; ISTC = International Standards of TB care (2nd ed); TB = tuberculosis.

copy is required for monitoring response to treatment for smear-positive patients. The remaining providers used clinical improvement and/or chest radiography to assess response to treatment. Two studies comparing public vs. private sectors showed that public providers were more likely to order follow-up sputum smears as part of treatment monitoring (Figure A.3).[52,58]

Standard 13: Maintain written record of tuberculosis patients initiated on treatment

Five studies assessed whether providers maintained written records of treatment (Figure A.3). All five studies reported low levels of record maintenance. In one study, it was found that none of the health care providers in their study reported having a system to maintain written records.[33] Another study assessed willingness of health care providers to maintain records and found that the majority of private sector providers were not willing to keep records.[30] One study that compared the public and private sectors showed that 95% of public providers reported keeping a written treatment record for patients (Standard 13) as compared to 2% of private providers (Figure A.2).[52]

Standard 18: Screening household contacts for tuberculosis

Of the six studies, two assessed providers' knowledge about screening household contacts, in particular children aged <6 years, and four assessed practice pertaining to screening children. The studies that assessed knowledge were both conducted among providers in the private sector, and showed very low levels (13%[29] and 19%[28]) of screening. The practice of screening children aged <6 years was assessed in four studies, all in TB patients treated in the public sector, and the levels ranged from 14%[21] to 80%.[51]

Drug-resistant tuberculosis

Included studies provided limited information on how Indian providers diagnose and manage drug-resistant TB. ISTC Standard 11 recommends culture and drug susceptibility testing (DST) for individuals with a history of previous anti-tuberculosis treatment, ongoing smear positivity after 3 months of treatment, and treatment failure or relapse. The only study evaluating this standard found that 39% of providers reported performing DST for such cases.[17] Another study of patients registered with the Revised National Tuberculosis Control Programme in Mumbai and rural areas around Pune suggests that many such patients were 'missed' by the system: 11% of patients who had already been placed on first-line anti-tuberculosis treatment actually had a history of previous TB, which should have merited DST during the initial provider assessment.[20]

RESUME

CONTEXTE : Même si les études réalisées en Inde ont évalué les connaissances et les pratiques des prestataires de soins, il n'y a pas eu de revue systématique de la qualité des soins de la tuberculose (TB).

MÉTHODE : Investiguer de nombreuses sources afin d'identifier des études (2000–2014) consacrées aux connaissances et aux pratiques des prestataires de soins. Nous avons utilisé les standards internationaux de référence de qualité des soins de la TB.

RÉSULTATS : Sur les 47 études incluses, 35 étaient des enquêtes par questionnaire et 12 avaient utilisé l'extraction de graphiques. Aucune n'a évalué les pratiques réelles en utilisant des patients standardisés. L'hétérogénéité des résultats n'a pas permis de méta-analyse. Dix des 22 études évaluant les connaissances des prestataires de soins en matière d'utilisation dans frottis de crachats pour le diagnostic ont constaté que moins de la moitié des prestataires avaient des connaissances correctes ; trois études sur quatre évaluant les pratiques rapportées par les prestataires de soins ont constaté que moins d'un quart avaient déclaré ne demander des frottis de crachats que pour les patients symptomatiques. Dans 11/14 études qui ont évalué le traitement, moins d'un tiers des prestataires de soins connaissaient le protocole standard de traitement de la TB pharmaco-sensible. L'adhérence aux standards en pratique a généralement été plus basse que les connaissances correctes de ces standards. Onze études avec des prestataires de soins publics et privés ont découvert des niveaux relativement élevés de connaissances/pratiques dans le secteur public.

CONCLUSIONS : Les preuves disponibles suggèrent que la qualité de prise en charge de la TB reste sous-optimale, particulièrement dans le secteur privé. L'amélioration de la qualité des soins devrait être une priorité en Inde.

RESUMEN

MARCO DE REFERENCIA: Algunos estudios en la India han evaluado los conocimientos y las prácticas de los profesionales de salud, pero no se ha realizado un examen sistemático de la calidad del tratamiento y el manejo de la tuberculosis (TB).

MÉTODOS: Se llevó a cabo una búsqueda en múltiples fuentes con el fin encontrar estudios sobre los conocimientos y las prácticas de los profesionales de salud (2000–2014). Las normas internacionales de tratamiento de la TB se tomaron como referencia sobre la calidad del manejo.

RESULTADOS: Se incluyeron en el estudio 47 estudios, de los cuales 35 consistieron en encuestas y 12 en análisis de historias clínicas. En ningún estudio se usaron métodos normalizados con el fin de evaluar las prácticas reales de los profesionales. La heterogeneidad de los resultados hizo imposible realizar un metanálisis. Diez de los 22 estudios que evaluaron los conocimientos de los profesionales sobre el uso de la baciloscopia del esputo como medio diagnóstico revelaron que los conocimientos eran correctos en menos de la mitad; en tres de los cuatro estudios que examinaron las prácticas autorreferidas por los profesionales se observó que menos de un cuarto de ellos solicitaba baciloscopias a los pacientes con síntomas respiratorios. En 11/14 estudios que evaluaron el tratamiento, menos de un tercio de los profesionales conocía el tratamiento corriente de la TB normosensible. En la práctica, el cumplimiento de la normas fue inferior al conocimiento correcto de las mismas. Once estudios en los cuales participaron profesionales del sector público y el sector privado revelaron un grado relativamente más alto de conocimientos correctos y prácticas adecuadas en el sector público.

CONCLUSIÓN: Los datos existentes indican que la calidad de la atención de la TB es deficiente, sobre todo en el sector privado. El mejoramiento de la calidad de la atención debe constituir una prioridad en la India.