Tuberculosis retreatment outcomes and associated factors: a mixed-methods study from Puducherry, India

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Setting: Four Tuberculosis (TB) Units in the Union Territory of Puducherry in India.

Objectives: To identify factors associated with unfavourable outcomes among retreatment TB cases in Puducherry.

Design: The study had a mixed-methods design in which routinely reported TB data from retreatment TB cases registered during 2014 and 2015 were used for the quantitative part; the qualitative phase comprised interviews and focus group discussions with health care providers.

Results: Among the 392 retreatment cases, 297 (75.8%) had favourable outcomes. Outcome for previous treatment such as loss to follow-up (LTFU) (adjusted relative risk [aRR] 1.6, 95%CI 1.1–2.4, $P = 0.001$), treatment failure (aRR 1.7, 95%CI 1.04–2.8, $P = 0.03$) and pre-treatment weight <40 kg (aRR 1.8, 95%CI 1.3–2.5, $P = 0.001$) had increased risk for unfavourable outcomes. Health care providers reported that alcoholism, lack of family support, job-related issues and lack of access to trained staff for injections were some of the reasons for unfavourable outcomes. Providing incentives, nutritional supplements and early retrieval of the LTFU cases were some of the suggestions to reduce unfavourable outcomes.

Conclusion: Outcome of previous treatment and low pre-treatment weight of the patient affected retreatment outcomes. Health professionals and workers highlighted social and health system-related factors. Commitment at all levels on the part of health care providers and addressing their concerns can improve retreatment outcomes.

In 2015, there were an estimated 10.4 million new tuberculosis (TB) cases worldwide.¹ India has the highest burden of TB and multidrug-resistant TB (MDR-TB), with a 2015 estimate of more than 2.2 million TB cases and 71 000 cases of MDR-TB (defined as TB resistant to at least isoniazid and rifampicin).² The objective of India's national strategic plan (NSP) articulated in the twelfth 5-year plan is to achieve 90% treatment success rate among new cases and 85% success rate among previously treated cases, defined as persons being treated for TB for a second time after having previously received anti-tuberculosis drugs for ≥ 1 month.²

Treatment success rates among new TB cases are satisfactory at the national level, although many districts report poorer rates; however, loss to follow-up (LTFU) and death rates among previously treated cases

are unacceptably high in India.³ Subnational drug resistance surveys reported MDR-TB incidence rates among previously treated cases of 12–17%.² Improving the outcomes of previously treated cases is essential to achieve the desired objective of 85% treatment success among previously treated cases. In 2015, the Union Territory of Puducherry reported a treatment success rate of 76% for previously treated cases, and of 92% among new cases.

A few studies have been conducted in other parts of the country, such as West Bengal and Mangalore, and outside the country, such as Uganda, to identify factors associated with unfavourable outcomes among previously treated cases using secondary data analysis.^{4–6} The present study conducted in Puducherry used both routinely collected surveillance data and interviews and focus group discussions (FGDs) with health care providers (HCPs) to identify factors associated with unfavourable outcomes among previously treated cases. We also report the solutions suggested by health care workers to reduce unfavourable outcomes.

STUDY POPULATION, DESIGN AND METHODS

Study settings

Puducherry is a Union territory (population: 1 248 000; area: <490 km²) with four districts—Puducherry, Karaikal, Mahe and Yanam—covered by seven TB units (TUs) and 27 designated microscopy centres (DMCs), including primary health centres (PHCs) and nine medical colleges. Puducherry District has four TUs and 24 DMCs. Most DMC teams comprise a medical officer (MO), a staff nurse, an auxiliary nurse midwife (ANM) or TB health visitor (TBHV) and a laboratory technician, who are supervised by a senior treatment supervisor (STS) and a senior treatment laboratory supervisor (STLS). ANMs are field workers available at all PHCs, while TBHVs are field workers who are primarily responsible for the implementation of the TB control programme in two or more PHCs. Patients are diagnosed based on the Revised National Tuberculosis Control Programme (RNTCP) guidelines;² sputum microscopy is the preferred method of diagnosis and patients are referred to the nearest PHC for DOTS treatment. TBHVs and ANMs monitor the course of treatment; home visits and telephone calls are made to ensure treatment adherence and motivate non-complying patients and refer them to the PHC. In case of chronic or repeated default by the patient, the

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STS and MOs in charge of the PHC intervene by visiting the patient, and counselling is provided. Patients who are unable to cope with the treatment are referred for admission to the Government Chest Hospital in Puducherry.

The present study was carried out using a mixed-methods design based on routinely collected surveillance data and interviews and FGDs with HCPs.

Data sources, participants and variables

Quantitative

Data from previously treated TB patients registered for treatment during the period from 1 January 2014 to 31 December 2015 were extracted from TB registers of all four TUs in Puducherry District and included in the study. Cases were categorised as having an unfavourable (death, treatment failure and loss to follow-up [LTFU]) or favourable treatment outcome (cure, treatment complete) according to India's RNTCP guidelines (Table 1).⁷ We also collected data on sex, age, place of residence, type of case (pulmonary, extra-pulmonary), weight at the time of diagnosis and human immunodeficiency virus (HIV) status.

Qualitative method

To further explore the factors influencing treatment outcomes, a qualitative study was conducted among a convenience sample of HCPs from the DMCs of different hierarchical levels directly involved in the treatment of TB patients. A total of 10 key informant interviews were conducted among chest physicians, MOs, senior treatment supervisors and TBHVs. Two FGDs (comprising six participants each) were conducted among the ANMS. After obtaining written informed consent, interviews and FGDs were conducted in the local language by the study principal investigator with the support of co-investigators trained in qualitative

research. During the interviews and FGDs, participants were asked for their perceptions about factors related to unfavourable outcomes. They were also asked to provide suggestions for improving treatment outcomes. An interview guide with open-ended questions was used during interviews and FGDs. Wherever required, probing was done to identify the perceived factors. Notes were taken during the interviews and FGDs.

Ethics approval

The study was initiated after obtaining the permission of the State TB Control Officer (STO), Government of Puducherry, State Task Force Operational Research Committee, RNTCP, Puducherry; the Institutional Ethics Committee of the Pondicherry Institute of Medical Sciences, Puducherry, India; and the Ethics Advisory Group of the International Union Against Tuberculosis and Lung Disease, Paris, France. Written informed consent was obtained for the interviews and FGDs from study participants. Data confidentiality was maintained by keeping data collection forms in a lockable cabinet; the electronic data file was kept in a password-protected computer accessible only to the investigators.

Data analysis

Quantitative

Data were entered in EpiData v 3.1 software (EpiData Association, Odense, Denmark), and analysed using EpiData Analysis software v 2.2.2.183 (EpiData Association). Treatment outcomes, categorised as favourable or unfavourable were expressed as numbers and percentages. Association was tested using multivariate modelling; adjusted relative risk (aRR) was calculated using Stata software v 15 (StataCorp, College Station, TX, USA) to identify the factors associated with unfavourable outcomes; significance was set at the 95% confidence level.

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TABLE 1 Operational definitions

New case: patient who has never had treatment for TB or has taken anti-tuberculosis drugs for <1 month

Previously treated: patients who have received ≥ 1 month of anti-tuberculosis drugs in the past. They are further classified by the outcome of their most recent course of treatment, as follows:

Relapse: patients who have previously been treated for TB, were declared cured or treatment completed at the end of their most recent course of treatment, and are now diagnosed with a recurrent episode of TB (either a true relapse or a new episode of TB caused by reinfection)

Treatment after failure: patients who have previously been treated for TB and whose treatment failed at the end of their most recent course of treatment

Treatment after LTFU: patients who have previously been treated for TB and were declared LTFU at the end of their most recent course of treatment (previously known as treatment after default patients)

Other: previously treated patients who have previously been treated for TB but whose outcome after their most recent course of treatment is unknown or undocumented

Cured: pulmonary TB patients with bacteriologically confirmed TB at the beginning of treatment who are smear- or culture-negative in the last month of treatment and on at least one previous occasion

Treatment completed: TB patients who have completed treatment without evidence of failure BUT with no record to show that sputum smear or culture results in the last month of treatment and on at least one previous occasion were negative, either because tests were not performed or because results are unavailable

Treatment success: sum of cured and treatment completed outcomes

Treatment failed: TB patients whose sputum smear or culture is positive at month 5 or later during treatment

Died: TB patients who die for any reason before starting or during the course of treatment

LTFU: TB patients who did not start treatment or whose treatment was interrupted for ≥ 2 consecutive months

Favourable outcomes: treatment outcomes of cured and treatment completed patients

Unfavourable outcome: Treatment outcomes of previously treated patients such as death, failure and LTFU

TB = tuberculosis; LTFU = loss to follow-up.

TABLE 2 Treatment outcomes based on type of previously treated cases registered in 2014–2015 in Puducherry, India ($n = 392$)

Type of retreatment case	Outcomes					
	Treatment success <i>n</i> (row %)	Death <i>n</i> (row %)	LTFU <i>n</i> (row %)	Failure <i>n</i> (row %)	Transfer out <i>n</i> (row %)	Total <i>n</i> (row %)
Relapse	178 (77.7)	24 (10.5)	13 (5.7)	14 (6.1)	0	229 (100)
Treatment after LTFU	42 (62.7)	3 (4.5)	15 (22.4)	6 (9)	1 (1.5)	67 (100)
Treatment after failure	23 (62.2)	3 (8.1)	4 (10.8)	7 (18.9)	0	37 (100)
Others	54 (91.5)	5 (8.5)	0	0	0	59 (100)
Total*	297 (75.8)	35 (8.9)	32 (8.2)	27 (6.3)	1 (1.5)	392 (100)

*Column percentages

LTFU = loss to follow-up.

Qualitative

The principal investigator (VA) and KS took notes of the interviews and FGDs, and later transcribed them in the local language and translated them into English after reviewing for accuracy. Each interview took about 45 min; the FGDs took 90 min. The summary of the interviews and FGDs were sent to the participants to check for accuracy. The qualitative data, in-depth interviews of respondents and FGDs of providers were transcribed within 48 h by the principal investigator and back-translated into the local language so as not to change the meaning of the opinions expressed. Transcripts were read several times and the contents analysed using the open coding technique to discover conceptual patterns or themes in text before developing a coding system. All transcripts were then coded by VA and KS using code book definitions. Themes repeated in the text were used as codes to organise the text into categories. Data were coded based on the themes and subthemes identified and inductive analysis was done for emerging themes and patterns. Data were double-coded by separate coders to check for congruencies in the themes. Any discrepancies were solved by consensus. Data were analysed using manual descriptive content analysis.⁸ Subthemes were categorised based on reasons for unfavourable outcomes and suggestions to improve outcomes as perceived by HCPs. This included the perceptions of chest physicians/MOs and field workers, and the shared perceptions of both.

RESULTS

In 2014 and 2015, 392 previously treated TB patients were registered under RNTCP in all four TUs of Puducherry District. Of these, 75.8% had favourable outcomes: 236 (60.2%) were declared cured and 61 (15.6%) as treatment completed. Among the patients with unfavourable outcomes, 35 (8.9%) had died, 32 (8.2%) were LTFU, 27 (6.3%) failed treatment. One patient was transferred out.

The median age of the previously treated patients was 44 years; most ($n = 319$, 81.3%) were male. More than half of the patients were urban residents ($n = 227$, 57.9%); the majority had relapsed ($n = 229$, 58.4%) or had been LTFU ($n = 67$, 17.1%) during previous treatment.

Among the types of previously treated cases, treatment after failure (62.2%) and treatment after LTFU (62.7%) had lower treatment success rates. The 'Other' category, which included cases whose first treatment results were either not known or not documented, had the best treatment success rates (91.5%). Patients who had previously been LTFU had a higher proportion of LTFU on retreatment (22.4%) (Table 2).

Relapses were the most common type of previously treated case, and had the highest death rate ($n = 24$, 10.5%); the seven

(18.9%) patients who had previously failed treatment had a failure outcome once again. One case in the treatment after LTFU category was transferred out.

Among the demographic and clinical characteristics of previously treated cases, after adjusting for confounders by multivariate modelling, treatment after LTFU cases (aRR 1.6, 95%CI 1.1–2.4, $P < 0.01$), treatment after failure cases (aRR 1.7, 95%CI 1.04–2.8, $P = 0.03$) and patients with a pre-treatment weight of <40 kg (aRR 1.8, 95%CI 1.3–2.5, $P = 0.001$) were found to be significantly associated with unfavourable outcomes (Table 3).

Findings from the qualitative study

The qualitative interviews and FGDs conducted among the HCPs on the possible reasons for unfavourable outcomes among previously treated patients consisted of subthemes such as reasons for and suggestions to improve the reasons for poor outcomes, some specific to their level, some common to both (Figure).

Addiction to alcohol was the most commonly perceived reason for unfavourable outcomes, as stated by all participants.

Addiction to alcohol is the most common reason for irregular treatment and poor outcome.

Alcoholic patients were irregular in their treatment despite repeated counselling and motivation by field staff. Some also lacked support from their own family, which worsened the situation. Elderly people without any family support and individuals who lacked social support were irregular in their treatment.

Some migrant workers and patients who could not get time off from work were unable to take their treatment regularly. Both the managerial staff and field-level workers emphasised the fact that many patients who had a sense of wellbeing after the intensive phase were non-adherent during the continuation phase. Some misinterpreted the sense of wellbeing as cure. They were quoted as telling the workers:

I am feeling better now, I don't want medicines anymore.

As retreatment involved streptomycin injections during the intensive phase, lack of access to trained staff in getting injections was another reason for irregular treatment. In some cases, patients were made to wait a long time to get the injections.

'Defaulters tend to default again': this statement was made by a senior chest physician working for RNTCP during the interview. He said that patients who were put on treatment after being LTFU frequently discontinued it again during retreatment, and 'habitual LTFU' is a potential risk factor for unfavourable outcomes.

Another specialist observed that patients who were initiated on treatment after failing the first treatment regimen did not respond well to retreatment. He added that multiple reasons could be at-

TABLE 3 Sociodemographic and clinical characteristics associated with treatment outcomes of previously treated cases registered in 2014–2015 in Puducherry, India ($n = 392$)

Characteristics	Favourable outcomes* <i>n</i> (row %)	Unfavourable outcomes† <i>n</i> (row %)	RR	aRR	<i>P</i> value‡
Age, years					
<15	6 (100)	0	1.0	—	
15–29	43 (87.8)	6 (12.2)	1.8 (0.4–6.6)	—	
30–44	105 (72.9)	39 (27.1)	2.3 (0.6–8.5)	—	
45–59	102 (72.3)	39 (27.7)	1.5 (0.4–6.5)	—	
≥60	41 (78.8)	11 (21.2)	1.6 (0.2–14.2)	—	
Sex					
Male	235 (73.7)	84 (26.3)	1.7 (0.9–3.1)	1.5 (0.8–2.5)	0.17
Female	62 (84.9)	11 (15.1)	1.0	1.0	
Place of residence					
Urban	170 (74.9)	57 (25.1)	1.0	—	
Rural	105 (78.9)	28 (21.1)	0.8 (0.6–1.3)	—	
Peri-urban	22 (68.8)	10 (31.2)	1.2 (0.7–2.2)	—	
Previous treatment outcome					
Failure	23 (62.2)	14 (37.8)	1.7 (1.1–2.4)	1.7 (1.04–2.8)§	0.03§
Other	54 (91.5)	5 (8.5)	0.4 (0.1–0.9)	0.7 (0.3–1.8)	0.4
Relapse	178 (77.7)	51 (22.3)	1.0	1.0	
LTFU	42 (62.7)	15 (37.3)	1.7 (1.1–2.5)	1.6 (1.1–2.4)§	0.01§
HIV status					
Positive	3 (75)	1 (25)	0.9 (0.2–5.3)		
Negative	294 (75.8)	94 (24.2)	1.0		
Pre-treatment weight, kg ($n = 387$)¶					
<40	97 (65.5)	51 (34.5)	1.9 (1.3–2.6)	1.8 (1.3–2.5)§	0.001§
≥40	195 (81.6)	44 (18.4)	1.0		
Site of TB					
Pulmonary	269 (74.1)	94 (25.9)	1.0		
Extra-pulmonary	28 (96.6)	1 (3.4)	0.1 (0.02–0.9)	0.3 (0.03–2.3)	0.22

*Includes treatment outcomes of those patients who were declared cured and treatment completed.

†Includes deaths, LTFU and treatment failures.

‡ $P < 0.05$ was considered statistically significant.

§Statistically significant.

¶Data on 5 individuals were not available, hence $n = 387$.

RR = relative risk; aRR = adjusted RR; LTFU = loss to follow-up; HIV = human immunodeficiency virus; TB = tuberculosis.

tributed to this, including inherent biological response of the patient to anti-tuberculosis treatment, or attitude towards treatment.

Field workers felt that those patients who could not afford good nutrition, and therefore lacked a healthy diet, found it difficult to cope with treatment. Furthermore, as there was a lack of awareness among patients and their family members about TB, its treatment and complications, patients failed to comply with medications and follow-up. This added to frustrations due to the prolonged treatment and high pill load, another factor perceived by interviewees. There was a mixed response regarding comorbidities leading to unfavourable treatment outcomes.

Both STS and ANMs invariably felt that ANMs had an increased workload in the PHC due to their involvement in other national programmes, which prevented them from monitoring these patients effectively. One of the ANMs expressed her frustration:

Now you can see, we need to work for pulse polio immunisation, we feel overburdened with too many tasks.

At one of the sites, the ANM had difficulty in dispensing TB medicines, as other PHC staff were unwilling to take the additional responsibility in their absence. Moreover, when ANMs had

to go to the field service areas for other work, patients were asked to collect the medicines at specified times of the day.

Most of the participants felt that providing incentives to patients either during treatment or after successful completion of treatment could have a positive impact on treatment outcomes. They felt that nutritional supplements to deprived patients would improve treatment adherence and response, which may be given as a supplement or bought with the help of the monetary incentives given to them. Specialists and STS both felt that the early identification of patients who tend to be irregular on treatment at field level is essential to reduce the number of unfavourable outcomes. They all recommended that admission of habitual LTFU patients to the Government Chest Hospital would be an effective way of dealing with such patients.

To address the issue of alcoholism, the main reason for unfavourable outcomes, many participants said provision of de-addiction centres and unconditional admission of patients to these centres is an important requirement. They also were of the opinion that motivation at all levels through individual and family counselling and by sharing peer experience could be fruitful.

MOs and chest physicians also suggested that addressing and treating side effects at field level, research to reduce the number

FIGURE Reasons for unfavourable outcomes among previously treated patients and suggestions to improve retreatment outcomes. LTFU = loss to follow-up; ANM = auxiliary nurse midwife; PHC = primary health centre; TB = tuberculosis.

of drugs and vocational rehabilitation of patients would be equally important; STS/ANMs felt that recruiting more dedicated staff for RNTCP, such as TBHV, increasing their fees (as they are contractual staff at present), awareness programmes for patients and the public, empathy towards the patient and mechanisms to provide DOTS in the absence of ANMS, are some of the changes at the health system level that could improve treatment outcomes.

DISCUSSION

We aimed to investigate the proportion of each retreatment outcome and factors associated with unfavourable outcomes and the likely reasons and suggestions from the HCP's perspective. This gave us an insight into possible reasons based on experiences at the managerial and grass roots/field level.

A quarter of the patients had unfavourable outcomes, with deaths and LTFU being the most common. Previous treatment outcomes such as failure and LTFU, and a pre-treatment weight of <40 kg, were associated significantly with unsuccessful outcomes. This study investigated the managerial and field-level perspectives: the managerial level sheds greater light on decision and policy making, while field-level perspectives highlight programme implementation and patient-associated factors.

A prospective study carried out in West Bengal over a period of 4 years, where retreatment cohort characteristics were identified from records and the cohort followed for treatment outcomes, reported similar outcomes, with a treatment success rate of 70.2%, while treatment failure was the most common unfavourable outcome (as compared to deaths and LTFU in our study).⁵ However, a record-based study of 90 randomly selected TUs conducted in 2006 reported a treatment success rate of 68.6%, a failure rate of

6.8%, a LTFU of 14.3% and a death rate of 6.8%, which is similar to our results.⁹

Based on the HCP perspective, alcoholism, problems with working while on treatment, lack of family support and lack of access to trained staff for injections may have led to unsuccessful outcomes. An alcohol ban was suggested by health workers; in the setting where this study was conducted this does not seem feasible. However, interventions such as health education on the negative effects of alcohol abuse during anti-tuberculosis treatment could be tried. The social component, i.e., patient support during treatment, needs to be strengthened to encourage treatment adherence.

'Habitual LTFU' emerged as one of the reasons according to managerial staff. This was also corroborated by the quantitative results of the study. Similar findings have been recorded in a study carried out in Gujarat, India, on LTFU among patients on MDR-TB treatment.¹⁰ Previous treatment failures and comorbidities, themes that emerged in our qualitative study, were associated with unfavourable treatment outcomes. This suggests that patient-driven health issues and a lack of continuity in self-care are responsible for treatment failures and LTFU, and that there may be a possible genetic role in treatment response.¹¹

Reasons given by field-level workers were closer to home—inadequate nutrition and stigma associated with TB—leading to non-adherence that led to poor outcomes. These reasons, as perceived through the lens of HCPs, highlight their sensitivity towards the problems faced by patients on treatment. Non-adherence is a major issue, and has been associated with poor TB treatment outcomes. Non-adherence can be averted to a great extent by commitment by HCPs at all levels, proper patient follow-up and counselling. However, the increased workload for field workers, and the resultant lack of time for close monitoring of patients on treatment is a major issue. It has been shown that incentivising patients as well as HCPs motivates patients to complete treatment and DOTS providers to improve follow-up.¹² This emerged as one of the suggestions in the qualitative phase of the study.

Admission of habitual LTFU patients highlights the adage that 'history repeats itself', suggesting that it may be necessary to go back to sanatorium days of admission and care for TB patients. In addition, prompt identification is essential to get non-adherent patients back into the system. Improper nutrition and fear of losing jobs are factors deterring adherence, as is highlighted in this study. Multihealth system collaboration for providing nutrition to patients through the Integrated Child Development Scheme or the public distribution system and vocational rehabilitation can help patients.

A qualitative study conducted in Uzbekistan in 2006 among HCPs and patients highlight the reasons for LTFU found that the lack of communication between patients and health care staff, lack of proper information on TB and its treatment, poor hospital conditions leading to problems in hospitalisation, and financial reasons were associated with LTFU.¹³ In our study, other reasons,

such as lack of awareness and work demands were also highlighted. However, our study findings indicate that addiction to alcohol is the main reason, probably due to the easy availability and low cost of alcohol in Puducherry.

The study gives the reasons for unsuccessful treatment outcomes from the HCP perspective. A limitation of this study is the lack of the patients' perspective. Getting the patients' perspective and triangulation of the reasons and suggestions to improve treatment outcomes is a way forward. As we have many patients who switch their treatment from the public to the private sector, getting the perspectives of the private stakeholders is also essential. Although few qualitative studies have been conducted in this field, this is the first of its kind in Puducherry, and may help reduce unsuccessful outcomes by changes in policy and practice. We have reported our quantitative and qualitative findings in accordance with, respectively, the STROBE¹⁴ and the COREQ⁸ guidelines. However, the way forward would be to have disaggregated data on qualitative outcomes according to the various unsuccessful outcomes to have an idea of individual outcome reasons and probable suggestions to reduce unsuccessful outcomes.

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Contexte : Quatre unités tuberculose (TB) dans le territoire de Puducherry en Inde.

Objectif : Identifier les facteurs associés à des résultats défavorables parmi les cas de retraitement de TB à Puducherry.

Schéma : Schéma à méthodes mixtes dans lequel les données TB recueillies en routine relatives aux cas de retraitement de TB enregistrés en 2014 et 2015 ont été utilisés de manière quantitative. L'aspect qualitatif a été basé sur des entretiens et des discussions en groupe focal avec les prestataires de soins de santé.

Résultats : Parmi les 392 cas de retraitement, 297 (75,8%) ont eu un résultat défavorable. Les résultats du traitement précédent comme les pertes de vue (LTFU) (risque relative ajusté [RRa] 1,6 ; IC95% 1,1–2,4 ; $P = 0,001$), un échec du traitement (RRa 1,7 ; IC95% 1,04–2,8 ; $P = 0,03$) et un poids avant traitement <40 kg

(RRa 1,8 ; IC95% 1,3–2,5 ; $P = 0,001$) ont majoré le risque de nouveau résultat défavorable. Les prestataires de soins de santé ont rapporté que l'alcoolisme, l'absence de soutien familial, des problèmes professionnels et l'absence d'accès à du personnel formé pour les injections ont été parmi les causes de résultats défavorables. On a suggéré de réduire ces problèmes, notamment en fournissant des incitations et des suppléments nutritionnels et en recherchant rapidement les LTFU.

Conclusion : Les résultats du traitement précédent et un faible poids avant le traitement ont affecté les résultats du retraitement. Le personnel de santé a attribué ce fait à des facteurs sociaux et liés au système de santé. L'engagement à tous les niveaux des prestataires de soins de santé et le fait de répondre à leurs préoccupations peuvent améliorer les résultats du retraitement.

Marco de Referencia: Cuatro unidades de tuberculosis (TB) en Puducherry, que es un Territorio de la Unión en la India.

Objetivos: Reconocer los factores que se asocian con los desenlaces desfavorables en los casos de retratamiento de la TB en Puducherry.

Método: Fue este un estudio con diseño de método mixtos; en el análisis cuantitativo se utilizaron los datos corrientes de notificación de los casos de retratamiento de la TB registrados en el 2014 y el 2015 y en la fase cualitativa se realizaron entrevistas y sesiones en grupos de opinión con los proveedores de atención de salud.

Resultados: De los 392 casos en retratamiento, 297 (75,8%) alcanzaron desenlaces favorables. Se observó que el riesgo aumentado de desenlaces desfavorables se asociaba con el desenlace del tratamiento anterior como la pérdida durante el seguimiento (LTFU) (riesgo relativo ajustado [RRa] 1,6; 95%CI 1,1–2,4; $P = 0,001$), el fracaso terapéutico (RRa 1,7; 95%CI 1,04–2,8; $P = 0,03$) y con un

peso <40 kg antes de iniciar el tratamiento (RRa 1,8; 95%CI 1,3–2,5; $P = 0,001$). Los profesionales de salud refirieron el alcoholismo, la falta de apoyo familiar, los problemas relacionados con el trabajo y la falta de acceso a personal capacitado para las inyecciones como algunas de las razones de los desenlaces desfavorables y sugirieron la provisión de incentivos, los suplementos nutricionales y la recuperación rápida de los casos LTFU como estrategias para corregirlos.

Conclusión: El desenlace de un tratamiento anterior y el bajo peso del paciente antes de iniciar el tratamiento afectan el desenlace de los casos de retratamiento de la TB. Los profesionales y los trabajadores de salud atribuyeron estos resultados a factores sociales y factores relacionados con el sistema de salud. La participación de los proveedores de atención de salud a todos los niveles y la respuesta a sus inquietudes contribuirán a mejorar los desenlaces del retratamiento de la TB.