Factors associated with poor tuberculosis treatment outcome in the Southern Region of Ethiopia

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SUMMARY

SETTING: Tuberculosis (TB) treatment centres in southern Ethiopia.
OBJECTIVES: To describe the outcomes of patients registered for anti-tuberculosis treatment and to identify factors associated with poor treatment outcome.
DESIGN: Retrospective audit of patients registered from 2002 to 2007. Patients were categorised as having successful (cured or completed treatment) or poor treatment outcome (failed treatment, defaulted or died). Logistic regressions were used to identify risk factors for poor outcome.
RESULTS: A total of 6547 patients (55.6% male, 44.4% female) with a mean age of 27.5 years were registered for treatment; 2873 (43.9%) were smear-positive, 2493 (30.1%) smear-negative and 1157 (17.7%) had extrapulmonary TB. Most (n = 6033, 92%) were new cases; 4900 (74.8%) had a successful and 1095 (16.7%) a

poor treatment outcome. Of those with a poor outcome, 667 (60.9%) patients defaulted, 404 (36.9%) died and 24 (2.2%) failed treatment. Attending the regional capital health centre (aOR 2.09, 95%CI 1.85–2.69), being on retreatment (aOR 2.07, 95%CI 1.47–2.92), having a positive smear at the second month follow-up (aOR 1.68, 95%CI 1.07–2.63), having smear-negative pulmonary TB (aOR 1.62, 95%CI 1.4–1.86), age >55 years (aOR 1.44, 95%CI 1.12–1.86) and being male (aOR 1.24, 95%CI 1.09–1.42) were independent risk factors for poor outcome.
CONCLUSION: Treatment outcome was suboptimal and targeted measures should be considered to reduce the rate of poor treatment outcome among high-risk groups.
KEY WORDS: tuberculosis; treatment outcome; risk factors; Ethiopia

ALTHOUGH the global target of achieving a treatment success rate of 85% for patients receiving tuberculosis (TB) treatment under the DOTS strategy was reached in 2007, the success rate was not homogeneous, and it only reached 76% for patients in Africa.[1]

In industrialised settings, poor outcome is associated with male sex, lack of education, age over 25 years, human immunodeficiency virus (HIV) co-infection, accessibility of health facilities, low socio-economic status and the side effects of anti-tuberculosis treatment.[2–4] Although the risk factors associated with poor outcome are likely to be different in low- and middle-income countries (LMIC), information is sketchy; these seem, however, to include lack of information about the disease, poor communications between health staff and patients, delays in seeking health care and lack of care and support at the clinic.[3,5,6]

Ethiopia ranks seventh among the world's 22 high TB burden countries, and TB is the leading cause of morbidity and hospital deaths.[7] The National TB and Leprosy Control Programme (NTLCP) introduced the DOTS strategy in 1995, and despite reaching full coverage in 2005, treatment success was only 79% in

2006.[1] The Southern Nations, Nationalities and People's Region (SNNPR, Southern Region) is one of the areas where the DOTS programme was initiated and achieved full health-facility coverage by 2004, with an increase in treatment success from 53% to 85% from 1996 to 2004.[8,9]

The present study aims to describe the proportion of patients with treatment success in the region in recent years and to identify risk factors for poor treatment outcome.

MATERIAL AND METHODS

This was a retrospective audit of all patients registered for treatment for TB in seven health centres (Awassa, Leku, Yirgalem, Yirba, Mesenkelo, Bushulo and Tula) and one district hospital (Yirgalem Hospital) in the Southern Region of Ethiopia. The centres were purposely selected, as they were accessible by road and could be reached within a reasonable time by the investigators. The centres use standard NTLCP registers and record the patient case category, disease classification, type and dose of drugs provided, follow-up smears

and treatment outcome according to NTLCP and World Health Organization (WHO) definitions.[7,10]

Patients were categorised as having a successful treatment outcome if cured (i.e., negative smear microscopy at the end of treatment and on at least one previous follow-up test) or if they had completed treatment with resolution of symptoms, or a poor treatment outcome if they had failed treatment (i.e., remaining smear-positive after 5 months of treatment), or had defaulted or died during treatment. Patients who underwent treatment for <4 weeks or were transferred to other districts were excluded as their treatment outcome was unavailable.

Data were analysed using Epi Info 2000 (Centers for Disease Control and Prevention, Atlanta, GA, USA) and described using proportions, 95% confidence intervals (95%CIs) and odds ratios (ORs). $P < 0.05$ was considered statistically significant. Logistic regression was used to identify independent factors associated with a poor treatment outcome. This analysis included stratification by health facility, as patients registered in the Awassa Health Centre (HC), the region's capital, may have had a different socio-economic status, occupation and HIV prevalence from patients treated elsewhere.

Ethical approval was obtained from the Research Ethics Committee of the Liverpool School of Tropical Medicine and the Southern Region's Health Bureau.

RESULTS

Information was obtained for 6547 patients who had registered to initiate treatment between July 2002 and April 2007. Of these, 6033 (92%) were classified as new cases, their mean age was 27.5 years (standard deviation [SD] 14.4), 3611 (55.6%) were male and 2875 (44.4%) female (Table 1). Among patients for whom disease category was documented, 2873 (43.9%) were smear-positive, 2493 (30.1%) had smear-negative pulmonary TB (PTB) and 1157 (17.7%) had extra-pulmonary TB (EPTB). Disease category was not recorded for 24 (0.4%) patients. In all, 4900 patients (74.8%) had a successful treatment outcome, 1095 (16.7%) had poor treatment outcomes, 453 (6.9%) had been transferred to other districts and 99 (1.5%) had discontinued treatment during the first 4 weeks of treatment. Of the patients with poor treatment outcome, 667 (60.9%) had defaulted, 404 (36.9%) had died and 24 (2.2%) had treatment failure. Males were less likely to have a successful treatment outcome (2632 of 3282, 80.2%) than females (2223/ 2660, 83.6%, $P = 0.002$). Patients with successful treatment outcome were younger than patients with poor outcome (mean age 26.9 years [SD 14] vs. 29.3 years [SD 11.5], $P < 0.001$). Poor treatment outcome was associated with being young or old, and ranged from 13.5% for 15–24-year-olds to 26.4% for patients aged >65 years ($P < 0.001$; Table 2).

Table 1 Demographic characteristics, case category and disease classification of patients registered for TB treatment, Southern Ethiopia

Characteristics	n (%)
Age, years	
0–14	851 (13)
15–24	2016 (30.8)
25–34	1870 (28.6)
35–44	897 (13.7)
45–54	485 (7.4)
55–64	214 (3.3)
≥65	153 (2.3)
Not recorded	61 (0.9)
Sex	
Male	3611 (55.2)
Female	2875 (43.9)
Not recorded	61 (0.9)
Residence	
Urban	3978 (60.8)
Rural	2419 (36.9)
Not recorded	150 (2.3)
Patient category	
New	6033 (92.2)
Retreatment	
Relapse	153 (2.3)
Defaulter	23 (0.4)
Failure	16 (0.2)
Transfer in	139 (2.1)
Others	175 (2.7)
Not specified	8 (0.1)
TB classification	
Smear-positive	2873 (43.9)
Smear-negative	2493 (38.1)
Extra-pulmonary	1157 (17.7)
Not specified	24 (0.4)
Treatment centre	
Awassa Health Centre	3405 (52)
Leku Health Centre	897 (13.7)
Yirgalem Health Centre	769 (11.7)
Yirba Health Centre	391 (6)
Yirgalem Hospital	335 (5.1)
Mesenkela Health Centre	323 (4.9)
Bushullo Health Centre	260 (4)
Tula Health Centre	167 (2.6)

TB = tuberculosis.

Of 851 children, 123 (14.5%) also had a poor treatment outcome. Of these, 64 (52%) were male and 59 (48%) female, compared to 342 (52.6) male and 308 (47.4%) female children with successful treatment outcomes ($P = 0.3$). Poor treatment outcome occurred in 25.3% of children aged <5 years, 12.9% of 5–9-year-olds and 9.3% of 10–14-year-olds ($P < 0.001$).

Poor treatment outcome was more frequent (82/ 302, 27%) among patients who received retreatment regimens or had been transferred in (31/124, 25%) than among new cases (951/5532, 17%, $P < 0.001$). Treatment outcomes also varied with disease classification, as 23.2% of patients with smear-negative PTB had poor outcome compared to 14.8% of patients with smear-positive PTB and 16.6% of patients with EPTB ($P < 0.001$). Patients residing in urban areas had poorer treatment outcome than patients from rural areas (20.9% vs. 14.1%, $P < 0.001$), and treatment

Table 2 Characteristics of patients by treatment outcome

	Successful outcome (n = 4900) n (%)	Poor outcome (n = 1095) n (%)*	OR (95%CI)	P value
Age, years†				
0–4	204 (74.7)	69 (25.3)	3.32 (2.04–5.39)	<0.001
5–9	196 (87.1)	29 (12.9)	1.45 (0.83–2.54)	0.19
10–14	255 (90.7)	26 (9.3)	1	—
15–24	1600 (86.5)	250 (13.5)	1.53 (1.01–2.34)	0.047
25–34	1379 (80.6)	332 (19.4)	2.36 (1.55–3.6)	<0.001
35–44	636 (76.7)	193 (23.3)	2.98 (1.93–4.6)	<0.001
45–54	336 (75.8)	107 (24.2)	3.12 (1.97–4.94)	<0.001
55–64	142 (75.5)	46 (24.5)	3.18 (1.88–5.36)	<0.001
≥65	106 (73.6)	38 (26.4)	3.52 (2.03–6.08)	<0.001
Sex†				
Male	2632 (80.2)	650 (19.8)	1.26 (1.1–1.44)	<0.001
Female	2223 (83.6)	437 (16.4)		
Residence†				
Rural	1973 (85.9)	325 (14.1)	1	<0.001
Urban	2821 (79.1)	746 (20.9)	1.61 (1.39–1.85)	
Patient category†				
New	4581 (82.8)	951 (17.2)	1	—
Retreatment				
Relapse	106 (74.6)	36 (25.4)	1.64 (1.11–2.4)	0.01
After default	13 (65)	7 (35)	2.59 (1.03–6.52)	0.04
After failure	8 (50)	8 (50)	4.82 (1.8–12.87)	0.002
Transferred in	93 (75)	31 (25)	1.61 (1.06–2.42)	0.02
Other	97 (60.5)	62 (39.5)	3.14 (2.27–4.36)	<0.001
TB classification†				
Smear-positive	2289 (85.2)	397 (14.8)	1	—
Smear-negative	1721 (76.8)	521 (23.2)	1.75 (1.51–2.02)	<0.001
Extra-pulmonary	881 (83.4)	175 (16.6)	1.15 (0.94–1.40)	0.18
Centre				
Awassa HC	2303 (76.3)	715 (23.7)	4.64 (3.41–6.33)	<0.001
Leku HC	794 (90.5)	83 (9.5)	1.56 (1.07–2.27)	0.019
Yirgalem HC	688 (93.7)	46 (6.3)	1	—
Yirba HC	339 (89.7)	39 (10.3)	1.72 (1.1–2.69)	0.017
Yirgalem Hospital	237 (81.4)	54 (18.6)	3.41 (2.24–5.19)	<0.001
Mesenkela HC	262 (85.3)	45 (14.7)	2.57 (1.66–3.97)	<0.001
Bushullo HC	162 (70.4)	68 (29.6)	6.28 (4.16–9.47)	<0.001
Tula HC	115 (71.9)	45 (28.1)	5.85 (3.71–9.23)	<0.001
Year of registration				
2003	998 (79)	266 (21)	χ^2 for trend = 24.14	<0.001
2004	1045 (85.2)	181 (14.8)		
2005	873 (83.4)	174 (16.6)		
2006	1108 (79.4)	288 (20.6)		
2007	876 (82.5)	186 (17.5)		

*Patients who transferred out or discontinued treatment in the first 4 weeks of treatment were excluded.
†Patients with incomplete information for sex (n = 53), age group (n = 51), disease category (n = 4), disease classification (n = 15) and residence (n = 130) were excluded.
OR = odds ratio; CI = confidence interval; TB = tuberculosis; HC = Health Centre.

success varied each year ($P < 0.001$), but there was no clear trend with time.

The characteristics of patients who defaulted, died or failed treatment are shown in Table 3. Among those who defaulted, 209 (31.2%) did so during the intensive phase and 458 (68.8%) during the continuation phase of treatment. Males were more likely to default than females (11.9% vs. 10.2%, $P = 0.04$). The proportion of defaulters also varied with age, with young children aged <5 years and adults aged >65 years being more likely to default (12.8% and 13.9% respectively) than children aged 10–14 years (7.1%, $P = 0.02$). Transferred-in patients were more likely to default (19.4%) than patients on retreatment

(13.5%) or new cases (10.6%, $P = 0.004$). Patients from urban areas were more likely to default than patients from rural areas (12.6% vs. 8.8%, $P < 0.001$).

Among the 404 (6.7%) deaths recorded, 186 (46%) occurred during the intensive and 218 (54%) during the continuation phases of treatment, with higher mortality among young and old patients (aged <5 and >65 years). Smear-negative PTB cases had higher mortality (10%) than smear-positive PTB (4.9%) and EPTB (4.5%) cases ($P < 0.001$).

Only 24/2849 (0.8%) smear-positive PTB cases failed treatment; of these, 18 (75%) were aged 15–34 years. The failure rate was higher among patients on retreatment (8/190, 4.2%) than among new cases

Table 3 Characteristics of patients with poor treatment by outcome category

	Poor outcome (n = 1095) n (%)	Defaulter (n = 667; 60.9%) n (%)	Died (n = 404; 36.9%) n (%)	Failure (n = 24; 2.2%) n (%)
Age, years*				
0–4	69 (25.3)	35 (12.8)	34 (12.5)	0
5–9	29 (12.9)	20 (8.9)	9 (4)	0
10–14	26 (9.3)	20 (7.1)	6 (2.1)	0
15–24	250 (13.5)	182 (9.8)	54 (2.9)	14 (0.8)
25–34	332 (19.4)	210 (12.3)	118 (6.9)	4 (0.2)
35–44	193 (23.3)	103 (12.4)	87 (10.5)	3 (0.4)
45–54	107 (24.2)	56 (12.6)	48 (10.8)	3 (0.7)
55–64	46 (24.5)	16 (8.5)	30 (16)	0
⩾65	38 (26.4)	20 (13.9)	18 (12.5)	0
Sex*				
Male	437 (19.8)	390 (11.9)	249 (7.6)	11 (0.3)
Female	650 (16.4)	271 (10.2)	153 (5.8)	13 (0.5)
Residence*				
Rural	325 (14.1)	203 (8.8)	114 (5)	8 (0.3)
Urban	746 (20.9)	451 (12.6)	279 (7.8)	16 (0.4)
Category				
New	951 (17.2)	584 (10.6)	351 (6.3)	16 (0.3)
Retreatment	51 (28.7)	24 (13.5)	19 (10.7)	8 (4.5)
Defaulter	7 (35)	5 (25)	2 (10)	0
Failure	8 (50)	4 (25)	0	4 (25)
Relapse	36 (25.4)	15 (10.6)	17 (12)	4 (2.8)
Transferred in	31 (25)	24 (19.4)	7 (5.6)	0
Other	62 (39.5)	35 (22.3)	27 (17.2)	0
Classification*				
PTB+	397 (14.8)	242 (9)	131 (4.9)	24 (0.9)
PTB−	521 (23.2)	296 (13.2)	225 (10)	NA
EPTB	175 (16.6)	128 (12.1)	47 (4.5)	NA
Centre				
Awassa	715 (23.7)	454 (15)	242 (8)	19 (0.6)
Leku	83 (9.5)	27 (3.1)	56 (6.4)	0
Yirgalem	46 (6.3)	17 (2.3)	27 (3.7)	2 (0.3)
Yirba	39 (10.3)	29 (7.7)	10 (2.6)	0
Yirgalem Hospital	54 (18.6)	30 (10.3)	24 (8.2)	0
Mesenkelo	45 (14.7)	22 (7.2)	22 (7.2)	1 (0.3)
Bushulu	68 (29.6)	55 (23.9)	11 (4.8)	2 (0.9)
Tula	45 (28.1)	33 (20.6)	12 (7.5)	0
Year				
2003	266 (21)	149 (11.8)	112 (8.9)	5 (0.4)
2004	181 (14.8)	111 (9.1)	69 (5.6)	1 (0.1)
2005	174 (16.6)	110 (10.5)	58 (5.5)	6 (0.6)
2006	288 (20.6)	206 (14.8)	75 (5.4)	7 (0.5)
2007	186 (17.5)	91 (8.6)	90 (8.5)	5 (0.5)

*Information was not recorded in the registers for sex (n = 3), age group (n = 5), disease classification (n = 2) and residence (n = 24).
PTB+ = smear-positive pulmonary tuberculosis; PTB− = smear-negative pulmonary tuberculosis; EPTB = extra-pulmonary tuberculosis; NA = not applicable.

Table 4 Independent risk factors for unsuccessful outcome by disease classification

	PTB			All forms	
	Smear-positive aOR (95%CI)	Smear-negative aOR (95%CI)	Extra-pulmonary TB aOR (95%CI)	OR (95%CI)	aOR (95%CI)
Registered at Awassa Health Centre	2.09 (1.5–2.83)	2.31 (1.74–3.05)	1.22 (1.02–1.45)	2.12 (1.85–2.43)	2.3 (1.85–2.69)
Retreatment	2.14 (1.5–3.05)	NA	NA	1.83 (1.31–2.56)	2.07 (1.47–2.92)
Age <5 years	3.64 (1.25–10.59)	NS	NS	1.55 (1.17–2.05)	NS
Age ⩾55 years	NS	2.13 (1.55–3.01)	NS	1.39 (1.08–1.77)	1.44 (1.12–1.86)
Male	1.28 (1.02–1.6)	NS	NS	1.26 (1.1–1.43)	1.24 (1.09–1.42)
Urban residence	NS	NS	1.39 (1.15–1.67)	1.61 (1.39–1.85)	NS
Smear-positive at 2 months follow-up	1.7 (1.08–2.7)	NA	NA	1.73 (1.12–2.66)	1.68 (1.07–2.63)
Smear-negative PTB	NA	NA	NA	1.68 (1.47–1.91)	1.62 (1.4–1.86)

PTB = pulmonary tuberculosis; aOR = adjusted OR; CI = confidence interval; OR = odds ratio; NA = not applicable; NS = not significant.

(16/2659, 0.6%, *P* < 0.001). Factors independently associated with poor treatment outcome are summarised in Table 4. Age >55 years (adjusted OR [aOR] 1.44, 95%CI 1.12–1.86), male sex (aOR 1.24, 95%CI 1.09–1.42), treatment at Awassa HC (aOR 2.30, 95%CI 1.85–2.69), being on retreatment (aOR 2.07, 95%CI 1.47–2.92), having a positive smear after 2 months of treatment (aOR 1.68, 95%CI 1.07–2.63) and a diagnosis of smear-negative PTB (aOR 1.62, 95%CI 1.4–1.86) were independently associated with a poor outcome.

DISCUSSION

The evaluation of outcome of anti-tuberculosis treatment is one of the major indicators for the assessment of the performance of a national TB programme. Although all DOTS programmes routinely report the treatment outcomes of smear-positive PTB patients, high TB burden LMICs have started monitoring the treatment outcome of patients with smear-negative PTB and EPTB only recently.

Seventy-five per cent of patients in this study had a successful treatment outcome, which is lower than the NTLCP and WHO target of 85%. Success rates varied from 70% to 94% across the health facilities. A significant proportion of patients (7%) were transferred to other districts, and their outcome was unknown. The large number of patients transferred could compromise the treatment success rate reported, as this group is often included in the denominator, the feedback system is poor and there are no mechanisms to confirm whether these patients registered to continue treatment in other centres. In addition, as this study was based on a retrospective record review of TB registers maintained at the health facilities, it was difficult to obtain unrecorded information. Incompleteness of the information on some variables is thus one of the limitations of this study. The proportion of patients with incomplete information, however, was very low (ranging from 0 to 2% for all variables), and may not have significantly hindered the interpretation of the data.

Among patients with poor treatment outcome, the majority (61%) had defaulted, 36% had died and very few had treatment failure (2%). Previous studies from this region have reported that factors associated with treatment default among smear-positive patients include age >25 years and distance, with the need for public transport to reach a treatment centre.[11] A study of 19 971 patients (1994–2001) also reported that females, 15–24-year-olds and smear-positive PTB patients had better treatment outcomes.[9]

In addition, poor health system organisation and deficient follow-up procedures have been associated with poor treatment outcome.[12] The patients' attitude and behaviour towards the disease are also major factors influencing treatment adherence.[13] Most defaulters had discontinued treatment during the continuation phase, which is in agreement with other studies,[3] and could be due to the symptoms of TB subsiding after the intensive phase; once patients feel better they assume they are cured and don't require further medication or, if there is no improvement after the intensive phase, they may lose interest in continuing treatment. Costs associated with visiting health facilities to collect drugs and missing work could also be important reasons for abandoning treatment.[3]

The 6% death rate documented in this study was relatively low given the 19% prevalence of HIV coinfection,[14,15] the late presentation of patients[16] and the high prevalence of other infections in the area. As this study was retrospective and health centres rarely trace defaulting patients, it is likely that a proportion of patients who were reported as defaulters actually died.

The main risk factors for treatment failure reported in the literature are drug resistance and poor treatment adherence.[3,4] The proportion of smear-positive PTB cases who failed treatment in this study was relatively low (0.8%). This low rate could reflect underreporting of defaulting patients who may have failed treatment or died, but their outcome was not recorded, and because only 62% of smear-positive PTB patients had follow-up smear examinations at months 5 and 7 (data not shown). Prospective studies might be needed to corroborate these findings.

Treatment failure was higher among retreatment cases. This could be due to a higher frequency of drug resistance, as the prevalence of multidrug-resistant TB (MDR-TB) in Ethiopia is estimated to be 1.6% among new cases and 12% among retreatment cases.[17]

As reported in other studies, males had poorer outcome than females.[9,18] This sex difference remained significant even after controlling for age and it is likely to be due to a multitude of social, environmental and biological factors.[19,20]

Individuals at the extremes of age had the poorest outcomes. Older individuals often have concomitant diseases, are less able to reach health facilities and are poorer than the younger population. Children have an immature immune system, are frequently malnourished in this setting and depend on their parents' perception of the seriousness of their disease and economic conditions. In addition, the confirmation of the diagnosis of TB is difficult in children, and diagnosis may be delayed or confounded by other concurrent illnesses.

Receiving treatment in the regional capital was independently associated with poor treatment outcome. The regional capital is expanding rapidly, with a large number of migrants without permanent housing and at higher risk for HIV co-infection. A previous study from this region also reported that attending small institutions was associated with better treatment

outcomes than attending hospitals and health centres located in main towns; this was attributed to a better relationship between health workers and patients in small centres.[9] However, there was no association with the size of the health facility in our case series, and it is likely that poor treatment outcome is multi-causal.

Patients living in urban areas had poorer outcome than those living in rural areas, but this was a confounding factor for attending Awassa HC. If patients registered in Awassa HC are excluded, more patients from rural than urban areas defaulted, reflecting the poor accessibility of health facilities in rural areas.[21]

As previously reported, smear-negative PTB patients had the lowest rate of successful treatment outcome.[1,22] These patients have a higher frequency of HIV co-infection in this area[14] and elsewhere, they may be less able to develop an adequate immune response to control the infection and their diagnosis is difficult, often resulting in treatment delay and poor outcome.

As expected, patients on retreatment had poorer outcomes than newly diagnosed cases. Risk factors are associated with patient behaviour and attitudes, as patients registered as defaulters tend to default again, selection of drug-resistant strains and the development of severe and complicated forms of the disease, all of which contribute to poor outcome among previously treated patients. Previous studies from the same setting had reported a progressive increase in the treatment success rate over time, which correlated with the expansion of the DOTS programme to peripheral centres.[8,9] However, this trend has not been observed in more recent years. As patient default was associated with both urban patients, who are highly mobile, and the accessibility of services in rural areas, any improvement in treatment success may require targeted interventions using patient-centred approaches and further decentralisation of the DOTS programme to improve access to services for the rural population. Specific measures should thus be considered to reduce the rate of poor treatment outcome among high-risk groups, such as the young and the elderly, those on retreatment and with other high-risk characteristics.

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_____ RÉSUMÉ

CONTEXTE : Centres de traitement de la tuberculose (TB) dans le Sud de l'Ethiopie.

OBJECTIF : Décrire les résultats chez les patients enregistrés pour traitement antituberculeux et identifier les facteurs en association avec un résultat médiocre du traitement.

SCHÉMA : Audit rétrospective des patients enregistrés entre 2002 et 2007. Les patients ont été classés comme traités avec succès (guérison ou traitement achevé) ou avec un résultat médiocre du traitement (échec, abandon ou décès). On a utilisé la régression logistique pour identifier les facteurs de risque des résultats médiocres.

RÉSULTATS : Ont été enregistrés pour le traitement 6547 patients (55,6% d'hommes, 44,4% de femmes) d'un âge moyen de 27,5 ans. Il s'agissait de 2873 cas de TB à frottis positif (43,9%), de 2493 cas de TB à frottis négatif (30,1%) et de 1157 cas de TB extrapulmonaire (17,7%). Le plus souvent, il s'agissait de nouveaux cas

(6033, 92%). Le traitement a été réussi chez 4900 patients (74,8%) et le résultat était médiocre chez 1095 (16,7%). Parmi les patients à résultats médiocres, il y a eu 667 abandons (60,9%), 404 décès (36,9%) et 24 échecs du traitement (2,2%). Les facteurs indépendants de risque des résultats médiocres sont le fait de fréquenter le Centre de Santé de la Région de la capitale (aOR 2,09 ; IC95% 1,85–2,69), le fait d'être en retraitement, (aOR 2,07 ; IC95% 1,47–2,92), le fait d'avoir un frottis positif lors du suivi du deuxième mois (aOR 1,68 ; IC95% 1,07–2,63), le fait d'être atteint d'une TB pulmonaire à bacilloscopie négative (aOR 1,62 ; IC95% 1,4–1,86), l'âge >55 ans (aOR 1,44 ; IC95% 1,12–1,86) et le sexe masculin (aOR 1,24 ; IC95% 1,09–1,42).

CONCLUSION : Le résultat du traitement n'est pas optimal et des mesures ciblées devraient être envisagées pour abaisser le taux de résultats médiocres du traitement dans les groupes à haut risque.

_____ RESUMEN

MARCO DE REFERENCIA: Centros de tratamiento de tuberculosis (TB) en el sur de Etiopía.

OBJETIVOS: Describir el pronóstico de los pacientes con tuberculosis registrados para iniciar tratamiento e identificar factores asociados a resultado terapéutico no exitoso.

MÉTODOS: Estudio retrospectivo de pacientes que iniciaron tratamiento entre 2002 y 2007. Los pacientes fueron catalogados como aquellos que tuvieron tratamiento exitoso (pacientes curados o que completaron tratamiento) o no exitoso (fracaso terapéutico, abandono o muerte). Para identificar factores asociados a tratamiento no exitoso se utilizó análisis de regresión logística.

RESULTADOS: De 6547 pacientes (55,6% hombres, 44,4% mujeres) con edad media de 27,5 años registrados para iniciar tratamiento, 2873 (43,9%) tenían esputo positivo, 2493 (30,1%) esputo negativo y 1157 (17,7%)

TB extrapulmonar. La mayoría (6033, 92%) fueron casos nuevos; 4900 (74,8%) pacientes tuvieron tratamiento exitoso y 1095 (16,7%) no exitoso; 667 (60,9%) pacientes con tratamiento no exitoso abandonaron, 404 (36,9%) murieron y 24 (2,2%) tuvieron fracaso terapéutico. Ser atendido en el centro de salud de la capital de la región (ORa 2,09; IC95% 1,85–2,69), estar en retratamiento (ORa 2,07; IC95% 1,47–2,92), tener esputo positivo en el segundo mes de seguimiento (ORa 1,68; IC95% 1,07–2,63), tener TB con esputo negativo (ORa 1,62; IC95% 1,4–1,86), tener más de 55 años (ORa 1,44; IC95% 1,12–1,86) y ser hombre (ORa 1,24; IC95% 1,09–1,42) fueron factores de riesgo independientes para tratamiento no exitoso.

CONCLUSIÓN: El resultado del tratamiento fue subóptimo. Deben considerarse medidas específicas para reducir el porcentaje de tratamiento no exitoso en los grupos de alto riesgo.