PAPER II

INT J TUBERC LUNG DIS 10(1):87–92

Prevalence of smear-positive pulmonary tuberculosis in a rural district of Ethiopia

E. B. Shargie,*† M. A. Yassin,†‡ B. Lindtjørn*

*** Centre for International Health, University of Bergen, Bergen, Norway; † Southern Nations, Nationalities and Peoples' Regional State Health Bureau, Awassa, Ethiopia; ‡ Liverpool School of Tropical Medicine, Liverpool, United Kingdom**

SUMMARY

SETTING: A rural district in Southern Ethiopia.

OBJECTIVE: To estimate the prevalence of smear-positive pulmonary tuberculosis (TB).

DESIGN: In this cross-sectional study, adults aged >14 years were surveyed by home-to-home visit, and asked about cough of ⩾2 weeks with or without sputum, chest pain or difficulty in breathing. Symptomatic suspects submitted three sputum samples for standard smear microscopy.

RESULTS: Of 16 697 adults surveyed, 436 (2.6%) were symptomatic and submitted sputum samples. Thirteen (3%) were positive for acid-fast bacilli, and the prevalence of smear-positive TB was 78 per 100 000 population (95%CI 36–120). Twenty-four smear-positive cases identified through the existing health care delivery were on anti-tuberculosis medication at the time of the survey. The ratio of smear-positive cases on treatment to those newly detected by the survey was 2:1.

CONCLUSION: The prevalence of TB in this rural setting was unexpectedly low. For every two cases of smear-positive TB on treatment, there was one undetected infectious case in the community. However, as our screening technique did not allow detection of cases who did not report symptoms, the true prevalence may have been underestimated.

KEY WORDS: survey; TB prevalence; rural Ethiopia; symptom inquiry

TUBERCULOSIS (TB) is one of the leading causes of morbidity and adult deaths in Ethiopia. There are very few reports on the magnitude of TB from population-based surveys; most of the data come from health institution-based case notifications, and often lack completeness and consistency. In the light of the low health service coverage, poorly developed TB diagnostic network and weak disease notification system in this country, it is difficult to estimate the magnitude of TB from case notifications, nor is it possible to monitor progress in control efforts from such data alone.

The annual risk of tuberculosis infection (ARTI), calculated from tuberculin surveys, gives a valuable estimate of TB incidence and prevalence.[1] A previous tuberculin survey conducted in Ethiopia during 1987–1990 among children aged 6–10 years showed that the prevalence of TB infection was 10.4%, with an ARTI of 1.4%.[2] However, the fast-growing human immunodeficiency virus/acquired immune-deficiency syndrome (HIV/AIDS) pandemic has greatly influenced the trend in the epidemiology of TB in the country over the last decade.[3,4] Screening by radiography followed by sputum microscopy, an alternative community-based approach to estimate prevalence, is expensive and demands time and expertise. Alternative approaches are therefore critical for the estimation of the current prevalence of TB.

A recent population-based survey conducted in Addis Ababa focused on the most important form of infectious TB. It used a simple and less costly tool to estimate the prevalence of smear-positive pulmonary TB (PTB+), giving an estimated prevalence of 189 per 100 000 adults.[5] Our study aimed at estimating the magnitude of PTB+ in a rural district in Southern Ethiopia using symptom inquiry followed by sputum examination.

METHODS

Study setting

The survey was conducted in February 2003 in Lemo *woreda* (a rural district), in the Hadiya zone of Southern Ethiopia. Lemo has 53 *kebeles* (the lowest administrative units) and a population of 206 000.[6,7] The population is settled and there is no notably differen-

Correspondence to: Estifanos Biru Shargie, Centre for International Health, University of Bergen, Armauer Hansen Building, N-5021 Bergen, Norway. Tel: (+47) 5597 4980. Fax: (+47) 5597 4979. e-mail: estifanos.shargie@rasmus.uib.no

Article submitted 14 March 2005. Final version accepted 12 July 2005.

[A version in French of this article is available from the Editorial Office in Paris and from the Union website www.iuatld.org]

tial seasonal movement. Three health centres and four health stations serve the population, with an overall health service coverage of 55% (accessibility of a health facility within 2 h walking distance). All diagnosed TB patients are registered and treated under the DOTS strategy. For practical and logistic reasons, we limited our study to eight kebeles (15%) that were randomly selected, and all households in the selected kebeles were surveyed. Individuals aged >14 years living in the study kebeles were eligible for inclusion in the study.

For an estimated PTB+ prevalence of 0.19%,[5] a margin of error of 0.1% at 95% confidence interval (CI) and a design effect of 2, the required sample size was 13 700 persons. This amounts to 4000 households with an estimated 3.5 adults/household.

Data collection

Before commencing data collection, we discussed the aims and data collection procedures with the zonal, woreda and kebele leaders. We recruited 10 enumerators who had completed high school. The data collectors received training on basic interview techniques and on how to collect and transport sputum samples. The data collectors were assigned to the study kebeles in five groups, with two in each group. They then made house-to-house visits and registered the number of people living in each household.

The data collectors asked the household head, or the next responsible person in the absence of the head, if any person aged >14 years in the household had cough that lasted for >2 weeks, with or without sputum, chest pain or difficulty in breathing. They also asked if any member of the household was under treatment for TB. If there was no individual with at least one of the above complaints, they proceeded to the next house. Individuals who reported one or more of the above symptoms were interviewed in detail using the structured questionnaire, and submitted sputum for examination.

The enumerators collected three sputum samples, 'spot-morning-spot', from each symptomatic TB suspect—the first specimen during the interview, the second early the next morning, and the third when they returned to collect the early morning specimen the next day.[3] Persons with symptoms who were not at home during the initial visit were later traced by repeated visits to the households. If they were absent on three consecutive visits, the family was advised to inform the person to see the data collectors or the nearest health facility. We checked the TB registers in the health facilities within the district to verify that those suspects who said they were taking anti-tuberculosis medication were actually on medication. The registers were also used to check PTB+ patients on treatment from the study kebeles who did not report symptoms and to check if any had defaulted from TB treatment.

Two field supervisors monitored the daily data collection activities. Sputum samples were collected in iceboxes and transported to the regional health research laboratory in Hossana at the end of each day. Two experienced senior laboratory technicians examined the sputum smears for acid-fast bacilli (AFB) after standard Ziehl-Neelsen (ZN) hot staining technique.[8] As a means of internal quality check, each slide was cross-read twice by two independent technicians.

For all individuals with a positive sputum smear result who were not yet on treatment, we ensured that TB treatment was started at their nearest health facility. All TB suspects who were smear-negative during the survey were advised to seek medical advice if their symptoms persisted. Data were entered using SPSS for Windows version 11.0 (SPSS Inc, Chicago, IL, USA) and we calculated the prevalence among the total eligible population.

The study was approved by the Regional Committee for Medical Research Ethics in Western Norway (REK Vest) and the Southern Regional State Health Bureau in Ethiopia.

RESULTS

The study involved 5176 households with a population of 28 464. A total of 16 697 individuals (59% of the total population) who fulfilled the inclusion criteria were surveyed for symptoms suggestive of PTB (Table 1). Of these, 436 (2.6%) individuals, 204 (47%) men and 232 (53%) women from 408 households, reported symptoms suggestive of TB. The maximum number of persons with such symptoms in a household was three. The median (range) duration of symptoms was 150 (15–3650) days. The main symptoms were cough 433 (99.3%), sputum 426 (97.7%), tiredness 416 (95.4%), chest pain 406 (93.1%), difficulty in breathing 402 (92.2%), night sweats 383 (87.8%), fever 374 (85.8%) and loss of appetite 357 (81.9%).

Of the 436 individuals who reported symptoms, 49 said they were on anti-tuberculosis medication during the survey. However, a review of their medical records revealed that only 24 were on anti-tuberculosis

Table 1 Population of study kebeles

Kebeles	Households *n*	Population Total *n*	Population Age >14 years *n* (%)	Family size Median (range)
Haysie	464	2 805	1 658 (59.1)	6 (1–14)
Lissana-Kenema	337	1 735	1 051 (60.6)	5 (1–12)
Ajo Taisa	572	2 952	1 853 (62.8)	5 (1–12)
Ana Darisha	689	3 781	2 167 (57.3)	5 (1–13)
Kallisha	207	1 180	744 (63.1)	5 (1–14)
Dijo Demala	722	4 175	2 518 (60.3)	6 (1–13)
Demala Balbula	1024	5 412	2 849 (52.6)	5 (1–12)
Shurmo Dacho	1161	6 424	3 857 (60.0)	5 (1–13)
Total	5176	28 464	16 697 (58.7)	5 (1–14)

Table 2 Individuals with symptoms suggestive of TB and proportion of smear-positives in each kebele

Kebele	Population surveyed *n*	Symptomatic TB suspects *n* (%)*	Smear-positive for AFB *n* (%)†
Haysie	1 658	47 (2.8)	2 (4.3)
Lissana-Kenema	1 051	26 (2.5)	1 (3.8)
Ajo Taisa	1 853	55 (2.9)	3 (5.5)
Ana Darisha	2 167	62 (2.9)	1 (1.6)
Kallisha	744	8 (1.1)	0
Dijo Demala	2 518	65 (2.6)	1 (1.5)
Demala Balbula	2 849	75 (2.6)	4 (5.3)
Shurmo Dacho	3 857	98 (2.5)	1 (1.0)
Total	16 697	436 (2.6)	13 (3.0)

* Percentage of population surveyed.
† Percentage of symptomatic patients.
TB = tuberculosis; AFB = acid-fast bacilli.

Table 3 General characteristics of TB suspects, cases detected by the survey and cases detected by the existing health care services

Characteristics	TB suspects (n = 436) *n* (%)	Smear-positive TB cases: Detected by the survey (n = 13) *n* (%)	Smear-positive TB cases: Detected by the TB programme (n = 24) *n* (%)
Age, mean (SD)	33 (16)	25 (6.6)	32 (14)
Female	232 (53)	7 (54)	7 (29)
Peasant	293 (67)	7 (54)	12 (50)
Student	91 (21)	5 (38)	6 (25)
Unemployed	15 (3)	1 (1)	3 (1)
Non-literate	224 (51)	3 (23)	6 (25)
Symptom duration, days			
⩽90	176 (41)	6 (46)	10 (42)*
>90	254 (59)	7 (54)	14 (58)*
Past history of anti-tuberculosis treatment	113 (26)	2 (15)	2 (8)

* Symptom duration at beginning of treatment.
TB = tuberculosis; SD = standard deviation.

medication for PTB+ and six for smear-negative TB (PTB−). Among the 24 PTB+ patients already on medication, 11 could not produce sputum. Four hundred and twenty-five individuals (13 known PTB+ patients, 6 known PTB− patients and 406 TB suspects) gave three spot-morning-spot sputum specimens for examination. Thirteen new suspects were found to have PTB+, and none of those who were on anti-tuberculosis medication was smear-positive.

Thus, 13 PTB+ patients were identified from 16 697 individuals, making the estimated prevalence of PTB+ in the area 78/100 000 population (95%CI 36–120). Table 2 shows the proportion of symptomatic population and that of PTB+ cases among the symptomatic individuals.

Twenty-four PTB+ cases detected through the existing health care delivery system were on anti-tuberculosis medication at the time of the survey. The ratio of PTB+ cases on treatment to those newly detected was 2:1, suggesting that for every two cases of PTB+ on treatment during the survey, there was one case of undetected PTB+ in the community. Two of the 13 (15%) cases detected by the survey and two of the 24 (8%) cases on treatment during the survey reported a past history of anti-tuberculosis treatment.

The male to female (M:F) ratio among PTB+ patients on treatment was 2.43 (17/7), while that among patients detected by the survey was 0.86 (6/7) (odds ratio [OR] 2.8; 95%CI 0.7–11.5). Patients detected by the survey were younger than those on treatment (Table 3). There was no difference in other socio-demographic characteristics between patients on treatment and those who were not. Seventy per cent (9/13) of those detected by the survey had been symptomatic for more than 1 month and 54% (7/13) for >3 months, whereas 3/13 had been symptomatic for <3 weeks.

DISCUSSION

The results of this survey show that for every two cases of confirmed PTB+ on treatment during the survey, there was one case of undetected infectious TB in this community. The burden of undiagnosed PTB+ in this setting was higher than that reported for a rural district in South Africa, where for every nine cases on treatment, there were two undiagnosed cases of the disease.[9] However, the prevalence of 78/100 000 is unexpectedly much lower than the finding of 189/100 000 (95%CI 112–267) in Addis Ababa.[5] This may partly be explained by the current urban-rural dichotomy in the prevalence of HIV in Ethiopia, which may significantly influence the epidemiology of both smear-positive and -negative TB. The HIV prevalence in urban residents was reported to be 2–3 times that in rural residents.[10,11] Urban overcrowding could also contribute to the difference.

Another possible explanation is that the existing TB programme has been able to effectively detect and treat most of the infectious TB cases and that the incidence of the disease is on the decline in this setting. An earlier study on the impact of DOTS in the area has also documented a declining trend in case notification in the years prior to the survey.[12] The total number of PTB+ cases notified over a 1-year period (2003) from the eight study kebeles was 39, and the ratio of case notification to point prevalence was higher than that reported for Bangladesh (3:1 vs. 2:1).[13]

One of the limitations of our study is that the number of clusters is so few that our sample may not sufficiently represent the study district. The estimated design effect of 2 was, however, sufficient, as the design effect calculated from the current study data is 1.04.[14] Most community TB surveys used either radiography, symptom inquiry or sputum culture, or a combination, besides sputum microscopy.[15–17] As we did not screen the population by clinical diagnosis or radiography before the sputum smear examination, we

might have missed some TB cases who did not report symptoms. Furthermore, we questioned a single individual, mainly the head, for symptoms suggestive of TB in the household. Although we used screening questions that were powerful enough to elicit symptomatic suspects with a symptom duration of ⩾2 weeks,[18] the household heads may not have sufficient information about all symptomatic individuals in their household. As such, our study result might be an underestimate of the true prevalence.

A considerable proportion of symptomatic active TB cases might have been missed as a result of TB and HIV co-infection, which reduces the occurrence of smear positivity.[19–21] Furthermore, due partly to atypical manifestations, many HIV-positive individuals do not often report symptoms, and this may further undermine the true prevalence. TB and HIV co-infection in the southern region of Ethiopia is estimated to be 15% in the rural and 30% in the urban population.[22]

Besides the unexpectedly low prevalence, none of those PTB+ cases on treatment had a positive smear during the survey; this raises the question as to the quality of the laboratory work. Although >95% of PTB+ cases convert to negative at the end of the second month of treatment in this area,[12] patients with a low load of bacilli in the sputum might easily have been missed among both symptomatic suspects and those under treatment. Earlier work on the quality of sputum microscopy in the routine TB programme in the region showed a 97% overall agreement between the peripheral laboratory readings and the reference laboratory readings.[23] Furthermore, the sputum samples in our survey were processed and read by experienced microscopists from the regional reference laboratory, who independently cross-read the slides as a means of internal quality check.

We used five pairs of data collectors during screening; therefore the possibility of inter-observer variability in the way data were gathered and specimens collected cannot be excluded. Efforts have been made to ensure the validity of the screening tool; the data collectors received intensive practical training, and the questionnaires were pre-tested before the actual data collection. The efficiency of symptom inquiry and sputum microscopy in prevalence surveys has been well documented.[9,13,24] Non-symptomatic TB cases who might have been missed are less infectious, more reluctant to initiate treatment, and more likely to default, and are hence of less epidemiological importance.[25]

There are suggestions that case finding through community surveys has little benefit, and that strengthening the existing health care delivery would be a better alternative.[25] However, patients identified through our community survey were younger than those identified by the TB programme, with a similar pattern of duration of symptoms, and socio-economic and educational background. The majority (70%) of these untreated patients had been symptomatic for >1 month and 54% for >3 months, implying that if they continue undetected and untreated, they would continue to be an important pool from where the disease spreads across the community in an uninterrupted manner.[26] Barriers to access to health care among these patients who were not detected by the routine TB programme remain unknown and warrant further investigation. The existing health system seems to have already been over-stretched to identify as many cases as possible, and the programme might benefit from alternative mechanisms of intensified case finding.

This survey revealed an imbalance in the male to female ratio between those on treatment and those not. More men had been identified before the survey and were on treatment, whereas more women were identified during the survey. Besides the possibility of a real gender difference in TB epidemiology,[13,27,28] one cannot exclude possible existence of gender differentials in access to health care facilities in this setting, with women having less access.[29,30] It might be interesting to look at the gender perspective of TB in this rural population.

The prevalence of infectious TB is a valuable epidemiological indicator to gauge the magnitude of the problem in a community and monitor progress in TB control efforts. This survey method employs a simple technique and requires little money and expertise. It could bridge the information gap on the magnitude of TB in resource-constrained settings where case notification data are mostly incomplete and more sophisticated approaches of estimating incidence and prevalence are not logistically possible. It may also help to monitor the progress in TB control programmes in such settings given the current HIV situation. However, it should not be considered as a substitute for larger studies such as tuberculin surveys and combined screening by radiography and symptom inquiry, which obtain more accurate estimates. Furthermore, the effectiveness of questioning key informants (like household heads) about symptoms in the family may need to be confirmed using more vigorous approaches to elicit symptoms and detect infectious cases.

Acknowledgements

We would like to thank the Southern Region Health Bureau and the Regional Health Research Laboratory for providing technical expertise, transportation and laboratory supplies for the study. We are grateful for the co-operation we received from the public officials and health personnel at the zonal, woreda and community levels.

The Centre for International Health, University of Bergen funded this study.

References

1 Styblo K. The relationship between the risk of tuberculosis infection and the risk of developing infectious tuberculosis. Bull Int Union Tuberc Lung Dis 1985; 60: 117–119.

2 Azbite M. Tuberculin Survey in Ethiopia. Kekkaku 1992; 67: 539–544.

3 Ministry of Health of Ethiopia. Manual: Tuberculosis and Leprosy Control Programme. 2nd ed. Addis Ababa, Ethiopia: MOH, 2002.
4 Styblo K. The impact of HIV infection on the global epidemiology of tuberculosis. Bull Int Union Tuberc Lung Dis 1991; 66: 27–32.
5 Demissie M, Zenebre B, Berhane Y, Lindtjorn B. A rapid survey to determine the prevalence of smear-positive tuberculosis in Addis Ababa. Int J Tuberc Lung Dis 2002; 6: 580–584.
6 Central Statistics Authority. The 1994 population and housing census of Ethiopia: results for the southern nations, nationalities and people's region. Addis Ababa, Ethiopia: CSA, 1996.
7 Hadiya Zonal Department of Finance and Economic Development. The population of Hadiya zone by woredas: projected from the results of 1994 Population and Housing Census. Hossana, Ethiopia: HZDFED, 2002.
8 International Union Against Tuberculosis and Lung Disease. Sputum examination for tuberculosis by direct microscopy in low income countries: 5th ed. Paris, France: IUATLD, 2000.
9 Pronyk P M, Joshi B, Hargreaves J R, et al. Active case finding: understanding the burden of tuberculosis in rural South Africa. Int J Tuberc Lung Dis 2001; 5: 611–618.
10 Abebe Y, Schaap A, Mamo G, et al. HIV prevalence in 72 000 urban and rural male army recruits, Ethiopia. Aids 2003; 17: 1835–1840.
11 Ministry of Health. AIDS in Ethiopia. 4th ed. Addis Ababa, Ethiopia: MOH, 2002.
12 Shargie E B, Lindtjorn B. DOTS improves treatment outcomes and service coverage for tuberculosis in South Ethiopia: a retrospective trend analysis. BMC Public Health 2005; 5: 62.
13 Hamid Salim M A, Declercq E, Van Deun A, Saki K A. Gender differences in tuberculosis: a prevalence survey done in Bangladesh. Int J Tuberc Lung Dis 2004; 8: 952–957.
14 Bennett S, Woods T, Liyanage W M, Smith D L. A simplified general method for cluster-sample surveys of health in developing countries. World Health Stat Q 1991; 44: 98–106.
15 Norval P Y, Roustit C, San K K. From tuberculin to prevalence survey in Cambodia. Int J Tuberc Lung Dis 2004; 8: 299–305.
16 Alvi A R, Hussain S F, Shah M A, Khalida M, Shamsudin M. Prevalence of pulmonary tuberculosis on the roof of the world. Int J Tuberc Lung Dis 1998; 2: 909–913.
17 Gopi P G, Subramani R, Radhakrishna S, et al. A baseline survey of the prevalence of tuberculosis in a community in south India at the commencement of a DOTS programme. Int J Tuberc Lung Dis 2003; 7: 1154–1162.
18 Santha T, Garg R, Subramani R, et al. Comparison of cough of 2 and 3 weeks to improve detection of smear-positive tuberculosis cases among out-patients in India. Int J Tuberc Lung Dis 2005; 9: 61–68.
19 Maartens G, Beyers N. Tuberculosis in the tropics. Clin Chest Med 2002; 23: 341–350.
20 Maher D. Health care in-depth. Tuberculosis and HIV. Afr Health 1996; 19: 17–18.
21 Bruchfeld J, Aderaye G, Palme I B, et al. Evaluation of outpatients with suspected pulmonary tuberculosis in a high HIV prevalence setting in Ethiopia: clinical, diagnostic and epidemiological characteristics. Scand J Infect Dis 2002; 34: 331–337.
22 Yassin M A, Takele L, Gebresenbet S, et al. HIV and tuberculosis coinfection in the southern region of Ethiopia: a prospective epidemiological study. Scand J Infect Dis 2004; 36: 670–673.
23 Shargie E B, Yassin M A, Lindtjorn B. Quality control of sputum microscopic examinations for acid fast bacilli in southern Ethiopia. Ethiop J Health Dev 2005; 19: 104–108.
24 Elink Schuurman M W, Srisaenpang S, Pinitsoontorn S, Bijleveld I, Vaeteewoothacharn K, Methapat C. The rapid village survey in tuberculosis control. Tubercle Lung Dis 1996; 77: 549–554.
25 Santha T, Renu G, Frieden T R, et al. Are community surveys to detect tuberculosis in high prevalence areas useful? Results of a comparative study from Tiruvallur District, South India. Int J Tuberc Lung Dis 2003; 7: 258–265.
26 Styblo K, Meijer J, Sutherland I. The transmission of tubercle bacilli: its trend in a human population. Bull Int Union Tuberc 1969; 42: 1–104.
27 Holmes C B, Hausler H, Nunn P. A review of sex differences in the epidemiology of tuberculosis. Int J Tuberc Lung Dis 1998; 2: 96–104.
28 Balasubramanian R, Garg R, Santha T, et al. Gender disparities in tuberculosis: report from a rural DOTS programme in south India. Int J Tuberc Lung Dis 2004; 8: 323–332.
29 Demissie M, Lindtjørn B. Gender perspective in health: does it matter in tuberculosis control? Ethiop J Health Dev 2003; 17: 1–5.
30 Boeree M J, Harries A D, Godschalk P, et al. Gender differences in relation to sputum submission and smear-positive pulmonary tuberculosis in Malawi. Int J Tuberc Lung Dis 2000; 4: 882–884.

RÉSUMÉ

CONTEXTE : Un district rural du sud de l'Ethiopie.
OBJECTIF : Estimer la prévalence de la tuberculose (TB) pulmonaire à bacilloscopie positive.
SCHÉMA : Dans cette étude transversale, on a pratiqué une enquête chez des adultes âgés de plus de 14 ans par des visites à domicile où on leur a demandé s'ils souffraient d'une toux depuis ⩾2 semaines avec ou sans expectoration, de douleurs thoraciques ou de dyspnée. Les sujets suspects symptomatiques ont fourni trois échantillons d'expectoration pour un examen microscopique standard des frottis.
RÉSULTATS : Sur 16.697 adultes ayant fait l'objet de l'enquête, 436 (2,6%) étaient symptomatiques et ont fourni des échantillons d'expectoration. On a trouvé des bacilles acido-résistants chez 13 d'entre eux (3%), et la prévalence de la TB à bacilloscopie positive a été de 78/100.000 (IC95% 36–120). Au moment de l'enquête, les 24 cas à bacilloscopie positive identifiés par le système de soins existant étaient sous médication antituberculeuse. Le ratio entre les cas à bacilloscopie positive sous traitement et ceux nouvellement détectés par l'enquête a été de 2/1.
CONCLUSION : La prévalence de la TB dans ce contexte rural a été étonnamment basse. Pour deux cas de TB à bacilloscopie positive sous traitement, il n'y avait qu'un cas contagieux non détecté dans la collectivité. Toutefois, comme notre technique de dépistage ne permettait pas la détection de cas asymptomatiques, la véritable prévalence peut avoir été sous-estimée.

RESUMEN

MARCO DE REFERENCIA : Un distrito rural en el sur de Etiopía.

OBJETIVO : Estimar la prevalencia de tuberculosis (TB) pulmonar con baciloscopia positiva.

MÉTODO : En este estudio transversal se practicó una encuesta puerta a puerta y se interrogó a los adultos mayores de 14 años sobre la presencia de tos de ⩾2 semanas, acompañada o no de expectoración, dolor torácico o disnea. Las personas sintomáticas con sospecha de TB dieron tres muestras de esputo para examen baciloscópico.

RESULTADOS : De los 16 697 adultos encuestados, 436 (2,6%) refirieron síntomas y dieron muestras de esputo y 13 (3%) tuvieron un examen positivo para bacilos ácido-alcohol resistentes. La prevalencia de TB bacilífera fue de 78 por 100 000 (IC95% 36–120). Veinticuatro casos bacilíferos detectados en los centros de atención existentes recibían tratamiento antituberculoso en el momento de la encuesta. La relación de casos bacilíferos en tratamiento con respecto a los casos recién diagnosticados fue de 2 a 1.

CONCLUSIÓN : La prevalencia de TB en este medio rural fue inesperadamente baja. Por cada dos casos de TB bacilífera en tratamiento, se encontró un caso aún no detectado en la comunidad. Sin embargo, como el método de detección utilizado no reconocía los casos asintomáticos, es posible que estos datos subestimen la prevalencia real.