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Private primary health care provider delay in tuberculosis diagnosis and treatment in Georgia

M. Djibuti,[1,2] T. Kasrashvili,[1] T. Zurashvili[1]

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Setting: One national and two regional tuberculosis (TB) hospitals in Georgia.

Objectives: To define the factors associated with private primary health care (PPHC) provider delay in TB diagnosis and treatment.

Design: This was a cross-sectional study of data collected from consecutive patients with pulmonary TB from July 2015 to August 2016, complemented by qualitative data collected among PPHC providers/managers, TB patients and policy makers.

Results: PPHC provider delay (>2 weeks from the first medical consultation for TB symptoms to the initiation of TB treatment) occurred in 43.8% of 320 TB patients. Modifiable factors significantly associated with PPHC provider delay included receiving any non-specific treatment before diagnosis of TB (adjusted OR [aOR] 9.45, 95%CI 5.10–17.51), adequate knowledge of TB (aOR 0.35, 95%CI 0.12–0.99) and lower TB-related stigma (aOR 0.47, 95%CI 0.28–0.81). Inappropriate referral of presumptive TB patients to general health facilities for chest X-ray examination, often followed by misinterpretation of X-ray results in these facilities, might mislead PPHC providers to initiate presumptive TB patients on non-specific treatment.

Conclusion: PPHC provider delay in TB diagnosis and treatment is common in Georgia, highlighting a need for targeted interventions to improve identification and referral of presumptive TB patients to specialised TB services and Xpert testing.

Tuberculosis (TB) is a major public health concern in Georgia, a former Soviet country with a population of 3.7 million.[1] In 2017, the estimated TB incidence remained as high as 86 cases per 100 000 population, and the estimated incidence of multidrug-resistant TB (MDR-TB) was 19/100 000; 30% of previously treated TB cases and 11% of new TB cases were reported to be MDR/rifampicin-resistant (RR) TB;[2] the TB treatment coverage (i.e., case detection rate) was estimated at 77% in 2017.[3]

The government of Georgia provides universal access to health care, including specialised TB services delivered by six public national/regional TB hospitals and 69 outpatient TB units of private district general health facilities, which are responsible for TB diagnosis and initiation of TB treatment.[4] A wide network of private primary health care (PPHC) facilities are also involved in TB prevention and care at local/community level, mainly through identification and referral of presumptive TB patients to specialised TB services, as well as supporting TB treatment; however, some PPHC providers might consider TB-related activities beyond their competencies and be reluctant to implement them.[4,5] It is currently not clear how the different service arrangements of the PPHC facilities/providers might impact delays in TB diagnosis or treatment.[6] Delays, however, can worsen disease prognosis at the individual level, as well as increase the prevalence of infectious TB, thereby also increasing the probability of transmission.[7]

Existing global evidence suggests an important association between certain patient characteristics and longer provider delays (i.e., the time elapsed from medical consultation to diagnosis and to treatment initiation), such as older age, female sex, rural residence, poverty, low geographic and financial access to healthcare, stigma, etc.;[8] most significant provider-related factors included non-specific empirical treatment prior to TB diagnosis, as well as failure to perform appropriate investigations and misdiagnosis of chest X-rays.[9–14] This was the case in a recent Georgian study showing that initiation of inappropriate antibiotic therapy and use of other drugs, both by physicians and by patients, as self-treatment is common in Georgia and associated with an increased risk of TB diagnostic delay.[15] Health care/provider delay in TB diagnosis and treatment specifically in PPHC facilities has not yet been studied in Georgia. The purpose of this study, therefore, was to determine the factors associated with PPHC provider delays and explore selected factors further through qualitative research.

METHODS

Study design and population

A cross-sectional study was conducted in three major public TB hospitals: the national TB hospital located in the Georgian capital, Tbilisi, and two regional TB hospitals located in Kutaisi and Zugdidi, the centres of two major regions of Georgia's ten regions. These hospitals were selected purposefully as the majority of new TB patients in the country are diagnosed and initiated on treatment in these facilities. Eligibility criteria included all consecutive new bacteriologically confirmed pulmonary TB patients (aged ⩾18 years) with any resistance profile diagnosed during July 2015–August 2016. TB patients aged 15–18 years were excluded due to complexities of obtaining parental/guardian consent for patients in this age group required under

AFFILIATIONS
1 Partnership for Research and Action for Health, Tbilisi, Georgia
2 KNCV Tuberculosis Foundation, The Hague, Netherlands

CORRESPONDENCE
Mamuka Djibuti
KNCV Tuberculosis Foundation
Benoordenhoutseweg 46
The Hague 2596 BC, Netherlands
e-mail: mamuka.djibuti@kncvtbc.org

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existing Georgian regulations. Only those patients who received their first medical consultation at a PPHC facility (and not directly at TB hospitals or TB units of general health facilities) due to TB symptoms (e.g., cough, weakness, night sweats, weight loss and fever, etc.) were included.

Sample size was estimated to compares proportions of dichotomous variables for alpha error = 0.05 (two-sided test), power = 80%, and the expected smaller proportion = 0.05 (according to the National Tuberculosis Programme [NTP] unpublished monitoring and evaluation data; only 5% of TB patients were referred by PPHC facilities to TB clinics in <2 weeks) for the detection of difference = 0.10. By this method, it was determined that a minimum of 141 patients should be selected per group to reach an adequate statistical significance for mutual comparisons of urban vs. rural and drug-susceptible vs. drug-resistant groups. Therefore, we aimed to enrol 320 patients in total, 160 per group, assuming a potential 90% response rate.

Data collection

The five study interviewers were experienced physicians involved in the daily clinical care of patients with TB, including record management, at the participating TB hospitals. Interviewers were trained in the study protocol. All prospective participants being managed at the study hospitals were approached for consent. Those who provided written informed consent were recruited into the study. Patient data were collected using a structured questionnaire upon initiation of TB treatment.

Two researchers experienced in qualitative research conducted each focus group discussion (FGD): a moderator (principal investigator), who led the discussion, and a facilitator (co-investigator), who handled all logistics and took recordings/notes, collected the qualitative data through FGDs among providers/managers of PPHC facilities where TB patients received their first medical consultation due to TB symptoms, TB patients, and the NTP/Ministry of Health (MOH) managers. FGD guides were developed separately for each of these three groups. A total of six FGD sessions were conducted during September–November 2016, three in the capital (two among PPHC providers/managers and one among the NTP/MOH managers); and three in the regions (two among PPHC providers/managers and one among TB patients). A total of 14 providers/managers (11 females and three males) from seven randomly selected PPHC facilities participated in FGDs in the capital city, and 16 providers/managers (all females) from 16 randomly selected PPHC facilities participated in FGDs in the regions. One FGD session was conducted in the regions among seven patients (four males and three females) who had already completed the course of TB treatment. One FGD session was conducted among eight NTP/MOH managers (five males, three females) in the capital. The average duration of the FDGs was 1.5 h. Investigators explained the aim and purpose of the study to the participants before the beginning of each FGD. The discussions were recorded without identification of the participants. Digital audio recordings of the discussions were uploaded to a password-protected computer after which the recordings were erased on the audio recorder. The recorded information was used to prepare transcripts.

Definition of variables

Private primary health care provider delay

PPHC delay was defined as the time elapsed (>2 weeks) from the first medical consultation at a PPHC facility for TB symptoms to initiation of TB treatment. This variable was measured through patient interviews (the date of the first visit to PPHC facility due to TB symptoms, the date of referral to a specialised TB clinic) and hospital records (the date of TB diagnosis, the date of initiation on TB treatment). The threshold of elapsed time, i.e., 2 weeks, was defined based on the results from a previous Georgian study, in which the median health care system delay, defined as time from first presentation at the health care system until TB diagnosis, was reported to be 14 days.[15]

Sociodemographic characteristics

The sociodemographic characteristics were patient age, sex, number of household members, the geographic area of residence, education level, employment and marital status.

Subjective measure of poverty

Subjective measure of poverty was defined as the patient's household socio-economic status (SES) and total household expenditures in the past year (calculated as average monthly spending in the past year).

TB knowledge

A patient's TB knowledge was classified as adequate if a respondent knew that TB is transmitted from person to person through the air and could name five TB symptoms such as cough, weakness, night sweats, weight loss and fever.

Symptoms at presentation

Symptoms at presentation were defined as any combination of cough, tiredness/weakness, weight loss, night sweat and fever.

Feelings of stigma

Feelings of stigma was defined per a Likert scale response to the statement that TB negatively affected the patient's relationship with other people (from 1 = strongly agree to 5 = strongly disagree), as had previously been used in studies among TB patients in Georgia.[16]

Patient pathway before TB diagnosis and treatment

The patient pathway prior to TB diagnosis and treatment consisted of the history of any treatment due to TB symptoms before diagnosis of TB, the type of treatment before a TB diagnosis and the existence of any comorbidity.

TB resistance profile and human immunodeficiency virus (HIV) status

The TB resistance profile and HIV status were defined as those recorded in the patient cards in the respective TB facility where the patient was included in the study.

Ethics

The study underwent review and was approved by the World Health Organization Research Ethics Review Committee (Geneva, Switzerland, Protocol ID B40142), as well as the Health Research Union (Tbilisi, Georgia, IRB 2015–01).

Data analyses

Statistical analysis of the quantitative data was performed using SPSS v16.0 software (Statistical Package for the Social Sciences, Chicago, IL, USA). We used univariable logistic regression analysis to determine the factors associated with PPHC provider delay. Multivariable logistic regression was used to estimate the adjusted associations by selecting the variables purposefully in the model. A decision to select a variable in the model was made based on statistical and epidemiological significance.[17] Statistical significance was set at $\alpha = 0.05$ for all tests.

Qualitative data analysis

A study co-investigator transcribed the FGD recordings and organised the information using QDA Miner Lite v 2.0.5 software (Provalis Research, Montreal, QC, Canada) and predefined codes, followed by contextual analysis conducted jointly by the principal investigator and the co-investigator.

RESULTS

Study population

The study recruited 320 patients during 13 months (from 1 July 2015 to 1 August 2016). The mean age of the patients was 42.6 years (±16.2); 235 (73%) were males; 250 (78%) patients were diagnosed with drug-susceptible TB.

Private primary health care provider delay

PPHC provider delay occurred in 43.8% of all patients. The median elapsed time in days from first medical consultation at a PPHC facility due to TB symptoms to initiation of TB treatment for the entire sample was 12 days (mean 26.7 ± 38.6 days). The median elapsed time in days from first consultation at a PPHC facility to TB diagnosis was 9 days (mean 23.9 ± 38.6); and the median elapsed time in days from TB diagnosis to initiation of TB treatment) was 1 day (mean 2.5 ± 4.38). For patients with drug-susceptible TB, the median elapsed time in days from the first medical consultation at a PPHC facility to initiation of TB treatment was 11 days, it was 14 days for drug-resistant TB patients (the median was 10 days for PPHC facilities located in the capital and 14 days for PPHC facilities located in the regions).

In the univariable analysis, the factors associated with PPHC provider delay included receiving any non-specific treatment before TB diagnosis (odds ratio [OR] 9.10, 95% confidence interval [CI] 5.17–16.09), existence of any comorbidity (OR 1.77, 95%CI 1.12–2.79) and being employed (OR 1.66, 95%CI 1.02–2.71), whereas experiencing lower TB-related stigma was associated with decreasing PPHC provider delay (OR 0.57 95%CI 0.37–0.87) (Table).

In the multivariable analysis, receiving any non-specific treatment before TB diagnosis was independently associated with PPHC provider delay (adjusted OR [aOR] 9.45, 95%CI 5.10–17.51); the factors associated with lessening PPHC provider delay included lower TB-related stigma (aOR 0.47, 95%CI 0.28–0.81), adequate knowledge of TB (aOR 0.35, 95%CI 0.12–0.99) and larger household size (aOR 0.75, 95%CI 0.63–0.89) (Table).

Focus group discussions

Initiation of non-specific treatment

The FGDs revealed inconsistent practices in the referral of presumptive TB patients to specialised TB services for further diagnostic investigations, particularly for Xpert® MTB/RIF (Cepheid, Sunnyvale, CA, USA) testing. Instead of prompt referral to specialised TB services for Xpert testing, which is recommended as first-line TB diagnostic test in the national TB diagnostic algorithm, presumptive TB patients were mostly referred to general (i.e., non-TB) health facilities for chest X-ray examination (also included in the national TB diagnostic algorithm together with TB symptoms screening); the X-ray results were frequently misinterpreted by radiologists working in these facilities, which prompted the PPHC providers to initiate unnecessary non-specific treatment:

> "When I suspect TB, I perform X-ray first; this is financed through the State Universal Health Care Programme… in patients with no specific changes I give general antibiotics for 10 days, if there is no improvement I refer to the TB unit…"
>
> (PPHC doctor, West Georgia region)

> "Poor qualification of radiologists is a major problem… the radiologist in our region is young and has inadequate qualification, so I almost don't trust him…"
>
> (PPHC doctor, West Georgia region)

> "We just heard about the Xpert test … we do not refer presumptive TB patients or sputum samples specifically for Xpert testing…"
>
> (PPHC doctor, West Georgia region)

> "My symptoms started with a high temperature, I was coughing, I am a smoker and I thought that was the reason for the coughing … for the temperature I used antipyretics myself … I visited the doctor in a month, they performed an X-ray and told me I had pneumonia and prescribed injections, which were good for nothing…"
>
> (Male patient, age 35 years, West Georgia region)

Private primary health care provider training

Not all of the PPHC providers had received training in TB within the past 2–3 years; not all PPHC providers had adequate knowledge of the key high-risk populations who particularly need timely referral to a TB unit:

> "We have not had TB trainings for the past 2–3 years … it's so good when you get training; you understand everything, but time passes and you forget some issues…"
>
> (PPHC doctor, West Georgia region)

> "The main focus should be on TB risk groups… detection and follow-up in high risk groups will support timely referralv… this should be properly organized…"
>
> (PPHC manager, Tbilisi)

User fees at TB outpatient units

At some TB facilities, presumptive TB patients had to pay the user fees, mostly entailing entrance fees or consultation fees, which could hinder seeking specialised TB care after referral.

> "Patients have to pay for the initial visit at the TB outpatient unit in our region… at first they perform an X-ray, and the patient has to pay for it…"
>
> (PPHC doctor, West Georgia region)

> "If I can be sure that the initial diagnostic services at the TB outpatient unit are free of charge I would more easily refer patients. I would tell patients that they don't have to pay money there…"
>
> (PPHC doctor, West Georgia region)

TB-related stigma

A TB diagnosis is associated with severe stigma in local communities, which discourages presumptive patients from seeking care at the TB facilities to which they are referred. This is further exacerbated by a lack of adequate knowledge about TB among the community members.

> "There is still some kind of insurmountable stigma … what if the TB diagnosis is confirmed, who will marry their daughter, and stuff like that…"
>
> (PPHC doctor, West Georgia region)

> "Patient education level is very low … especially in TB issues … they may not follow our advice to visit a TB doctor until they see blood in their sputum…"
>
> (PPHC doctor, Tbilisi)

TABLE Patient-related factors associated with PPHC provider delay

Characteristic	Delay (*N* = 140)* *n* (%)	No delay (*N* = 180)* *n* (%)	OR (95%CI)	aOR (95%CI)
Age, years, mean ± SD	44.0 ± 17.2	41.5 ± 15.4	1.01 (0.99–1.02)	1.00 (0.98–1.02)
Sex				
Male	96 (40.9)	139 (59.1)	1	
Female	44 (51.8)	41 (48.2)	1.55 (0.94–2.56)	1.35 (0.72–2.50)
Number of household members, mean ± SD	3.76 ± 1.69	4.14 ± 1.80	0.88 (0.78–1.00)	0.75 (0.63–0.89)‡
Area of residence				
Urban	101 (42.8)	135 (57.2)	1	
Rural	39 (46.4)	45 (53.6)	1.16 (0.70–1.91)	
Education level				
High (university/post-graduate)	37 (40.7)	54 (59.3)	1	
Low (elementary/high school, professional college)	103 (45.0)	126 (55.0)	1.19 (0.73–1.95)	
Employment				
Unemployed	91 (40.1)	136 (59.9)	1	
Employed	49 (52.7)	44 (47.3)	1.66 (1.02–2.71)‡	1.39 (0.76–2.54)
Marital status				
Married	86 (46.5)	99 (53.5)	1.29 (0.82–2.02)	
Not married	54 (40.3)	80 (59.7)	1	
Household self-evaluated SES				
Poor	117 (42.5)	158 (57.5)	1	
Good	23 (51.1)	22 (48.9)	1.41 (0.75–2.65)	
Household's average monthly spending, GEL, mean ± SD	721.8 ± 431.6	545.1 ± 359.9	1.00 (1.00–1.00)‡	1.00 (1.00–1.00)‡
Any alcohol use				
Never	55 (47.8)	60 (52.2)	1	
Past	39 (39.8)	59 (60.2)	0.72 (0.42–1.24)	
Current	46 (43.0)	61 (57.0)	0.82 (0.48–1.40)	
Injecting drug use				
Never used drugs	128 (44.6)	159 (55.4)	1	
Ever used drugs	12 (36.4)	21 (63.6)	0.71 (0.34–1.50)	
TB knowledge				
Inadequate	133 (45.4)	160 (54.6)	1	
Adequate	7 (25.9)	20 (74.1)	0.42 (0.17–1.03)	0.35 (0.12–0.99)‡
TB negatively affected other people attitude towards patient,† mean ± SD	4.12 ± 0.53	4.28 ± 0.54	0.57 (0.37–0.87)‡	0.47 (0.28–0.81)‡
Symptoms at presentation (cough, weakness, weight loss, night sweat, fever), *n*				
⩾3	133 (54.5)	111 (45.5)	1	
2	30 (63.8)	17 (36.2)	1.47 (0.77–2.81)	
1	17 (58.6)	12 (41.4)	1.18 (0.54–2.58)	
Received any non-specific treatment prescribed by PPHC doctor before TB diagnosis				
No		106 (84.8)	1	
Yes§	121 (62.1)	74 (37.9)	9.10 (5.17–16.09)‡	9.45 (5.10–17.51)‡
Any comorbidity¶				
No	77 (38.5)	123 (61.5)	1	
Yes	63 (52.5)	57 (47.5)	1.77 (1.12–2.79)‡	1.54 (0.88–2.71)
TB resistance profile				
Drug-susceptible	106 (42.4)	144 (57.6)	1	
Drug-resistant	34 (48.6)	36 (51.4)	1.28 (0.75–2.18)	
HIV status				
Unknown	2 (33.3)	4 (66.7)	1	
HIV-negative	134 (43.6)	173 (56.4)	1.55 (0.28–8.59)	
HIV-positive	4 (57.1)	3 (42.9)	2.67 (0.28–26.63)	

*The separate cells might not add up to the total due to missing values.
‡Statistical significance set at $P \leqslant 0.05$.
†Likert scale: from 1 = strongly agreed to 5 = strongly disagreed.
§Of 195 patients taking any treatment, 167 (85.6%) patients received general antibiotics.
¶Includes hypertension, ischaemic heart disease, diabetes mellitus, COPD, cancer, hepatitis C/B and other diseases.
PPHC = private primary health care; OR = odds ratio; CI = confidence interval; aOR = adjusted odds ratio; SD = standard deviation; SES = socio-economic status; GEL = Georgian lari; TB = tuberculosis; HIV = human immunodeficiency virus; COPD = chronic obstructive pulmonary disease.

DISCUSSION

The most significant factor associated with PPHC provider delay in our study was receiving any non-specific treatment prescribed by a PPHC doctor before a TB diagnosis. This was in line with the findings from a previous Georgian study that showed that initiation of inappropriate antibiotic therapy and the use of other drugs by both doctors and patients was common in Georgia and associated with an increased risk of TB diagnostic delay.[15]

Our study revealed that a major delay occurred between the time of the first medical consultation at a PPHC facility and TB diagnosis (the median elapsed time from first consultation at a PPHC facility to TB diagnosis was 9 days; in a previous 2012 study, the median health care system delay, defined as time from first presentation to the health care system until diagnosis of TB, was 14 days).[15] The factors related to PPHC provider delay explored in our study are therefore relevant to and explain the diagnostic delay. The positive trend in reducing the TB diagnostic delay from a median of 14 days in 2012 to a median of 9 days in 2016 could be attributed to the considerable progress Georgia has made since 2012 in providing universal health coverage.[18]

Lower TB-related stigma, adequate knowledge of TB and larger household size were found to be significantly associated with a shorter PPHC provider delay in our study. TB-related stigma plays a negative role by hindering health-seeking by presumptive TB patients, as has been shown in a systematic review of 58 studies addressing delay in diagnosis and treatment of TB.[19] Patients who are more knowledgeable about TB will presumably seek care earlier, directly from a TB specialist, thereby reducing provider delay by avoiding non-specific treatment. In larger households, presumably with more children, adults may be more concerned about transmitting TB to others, particularly children, which may result in seeking TB specialist care with no delay.

Our study had some important limitations. The study design could lead to recall bias among patients recollecting their first visit to a PPHC facility, as well as details on treatment and clinical examinations prior to a TB diagnosis. Furthermore, as the study sample size was relatively small, the power to detect statistical significance between the examined associations was limited. Considering that the patients were recruited at specialised TB hospitals that catered to patients from the capital city and surrounding regions in eastern Georgia, as well as from two major cities and surrounding regions in western Georgia (which together cover more than 75% of the country's population) we believe that most of the data can be generalised to new pulmonary TB patients who initially visit a PPHC facility in Georgia, although we recognise that the results of this study should be interpreted with some caution.

We also explored issues related to the initiation of non-specific treatment before a TB diagnosis. These are important findings, given that TB-related activities are implemented at primary health care level by a wide network of private facilities, and can therefore inform the development and implementation of interventions targeting the PPHC sector. These interventions were discussed among the NTP/MOH managers and some key recommendations were made, including 1) improving referral for Xpert testing (e.g., through improving the knowledge of PPHC providers on rapid molecular assays for detecting TB, as well as supporting a system for sputum/specimen transportation from PPHC facilities to Xpert sites), 2) improving the knowledge of PPHC providers about key populations with a higher risk for TB, and 3) eliminating user fees for presumptive TB patients at all TB facilities, which are expected to avoid unnecessary diagnostic examinations and non-specific treatment among presumptive TB patients, with a potential to reduce the PPHC provider delay.

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Contexte : Un hôpital national et deux hôpitaux régionaux pour la tuberculose (TB) en Géorgie.
Objectif : Définir les facteurs associés au retard de diagnostic et de traitement de la TB dus aux prestataires de soins de santé primaires (PPHC).
Schéma : Ceci est une étude transversale des données recueillies parmi les patients consécutifs atteints de TB pulmonaire de juillet 2015 à août 2016, complétées par des données qualitatives recueillies parmi les prestataires de PPHC et leurs responsables, des patients TB et des décideurs en matière de politique.
Résultats : Le retard lié aux PPHC (>2 semaines entre la première consultation médicale due à des symptômes de TB et la mise en route du traitement de la TB) a concerné 43,8% de 320 patients TB. Les facteurs modifiables significativement associés au retard dus aux prestataires de PPHC ont inclus le fait d'avoir reçu un quelconque traitement non spécifique avant le diagnostic de TB (OR ajusté [ORa] 9,45 ; IC 95% 5,10–17,51), des connaissances suffisantes en matière de TB (ORa 0,35 ; IC 95% 0,12–0,99) et une moindre stigmatisation vis-à-vis de la TB (ORa 0,47 ; IC 95% 0,28–0,81). Une référence inappropriée de patients présumés atteints de TB vers des structures de santé généralistes pour une radiographie pulmonaire, souvent suivie d'une mauvaise interprétation des résultats dans ces structures, peut amener les prestataires de PPHC à mettre en route un traitement non spécifique chez des patients présumés atteints de TB.
Conclusion : Le retard au diagnostic et au traitement de la TB lié aux prestataires de PPHC est fréquent en Géorgie, ce qui requiert des interventions ciblées sur les prestataires de soins afin d'améliorer l'identification et la référence des patients présumés atteints de TB vers des services spécialisés en TB et vers un test Xpert.

Marco de Referencia: Un hospital nacional y dos hospitales regionales especializados en tuberculosis (TB) de Georgia.
Objetivos: Definir los factores asociados con el retraso en el diagnóstico y el tratamiento de la TB, atribuibles al profesional de atención primaria de salud del sector privado (PPHC).
Método: Fue este un estudio transversal en el cual se recogieron datos de los pacientes consecutivos que acudieron con TB pulmonar de julio del 2015 a agosto del 2016, complementados con datos cualitativos obtenidos de los profesionales y los gestores de PPHC y los encargados de formular las políticas.
Resultados: El retraso dependiente del profesional de atención primaria (más de 2 semanas desde la primera consulta motivada por los síntomas de TB hasta el inicio del tratamiento antituberculoso) ocurrió en el 43,8% de 320 pacientes con TB. Entre los factores modificables asociados de manera significativa con el retraso atribuible al profesional de atención primaria se contaban cualquier tratamiento inespecífico recibido antes del diagnóstico de TB (OR ajustado [ORa] 9,45; IC 95% 5,10–17,51), los conocimientos adecuados en materia de TB (ORa 0,35; IC 95% 0,12–0,99) y un menor estigma relacionado con la TB (ORa 0,47; IC 95% 0,28–0,81). Una derivación inapropiada de los pacientes con presunción diagnóstica de TB hacia establecimientos generales de atención de salud para examen radiológico, con frecuencia seguido de una interpretación errada de las imágenes radiográficas, podría inducir al profesional de atención primaria a iniciar un tratamiento inespecífico a los pacientes con presunción de TB.
Conclusión: El retraso en el diagnóstico y el tratamiento de la TB dependiente del profesional de PPHC es frecuente en Georgia, lo cual exige intervenciones dirigidas a estos profesionales, con el fin de mejorar la detección de los casos presuntivos de TB y su derivación a servicios especializados, que practican la prueba Xpert.

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