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Tuberculosis Care in Mexico's Chiapas Highlands Region: A Right to Health Analysis

ANDREA PÉREZ-MOLINA, HÉCTOR JAVIER SÁNCHEZ-PÉREZ, MARITEL YANES-PÉREZ, AND MARCOS ARANA-CEDEÑO

Abstract

This article analyzes the fulfillment of the four essential and interrelated elements of availability, accessibility, acceptability, and quality (AAAQ) presented in General Comment 14 of the United Nations Committee on Economic, Social and Cultural Rights. We examined the ways that AAAQ criteria are met in tuberculosis (TB) care by evaluating a sample of 33 primary health care units (PHCUs) in 10 municipalities of the Chiapas Highlands region of Mexico. We collected information about 56 people with TB who were treated in those PHCUs, the structural conditions of the health facilities, and data about all health care workers in the PHCUs (n=423). Our results show that there is great variability in how AAAQ criteria are met among the PHCUs and in the way that TB care programs are delivered. Resource shortages and infrastructure characteristics hinder the fulfillment of AAAQ elements despite the commitment made by Mexico to guarantee the right to health as outlined in General Comment 14.

Andrea Pérez-Molina, MD, is a Master of Science student at El Colegio de la Frontera Sur, Chiapas, Mexico.

Héctor Javier Sánchez-Pérez, PhD, is Researcher at El Colegio de la Frontera Sur, Chiapas, Mexico.

Maritel Yanes Pérez, PhD, is Researcher and Department Chair at the National Council of Science and Technology, El Colegio de La Frontera Sur, Tabasco, Mexico.

Marcos Arana Cedeño, MD, MPH, is Researcher at the National Institute of Nutrition and Medical Sciences of Mexico and Director of the Training and Education Centre of Ecology and Health for Peasants in Chiapas, Mexico.

Please address correspondence to Andrea Pérez-Molina. Email: haperez@ecosur.edu.mx.

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Introduction

The high incidence and prevalence of tuberculosis (TB) in a population can reveal a long history of poverty, exploitation, exclusion, and the obstruction of human rights.[1] In Chiapas, Mexico, as in many other places in the world where TB is persistent, a common characteristic among TB patients is their disempowerment and failure to recognize and demand their rights. Medical care is focused on tackling the biological aspects of the disease, with poor practical consideration of its social determinants. This, together with frequent shortcomings in diagnosis and treatment, hinders rights fulfillment for patients and their families, an essential element of full recovery.

The Mexican state is constitutionally bound to recognize and guarantee all human rights contained in the international treaties that it has ratified, including the International Covenant on Economic, Social and Cultural Rights.[2] Even though General Comment 14 of the United Nations Committee on Economic, Social and Cultural Rights is not legally binding, it provides an authoritative interpretation of the scope and meaning of the right to health.[3] In particular, it identifies the availability, accessibility, acceptability, and quality (AAAQ) of health services as essential elements of the right to health and provides guidelines for duty bearers to follow in their efforts to realize the right to the highest attainable standard of health.[4]

This paper analyzes the ways that AAAQ criteria are met in Mexican TB care efforts by evaluating primary health care facilities and services in the Chiapas Highlands region. The Mexican Secretariat of Health's 2013–2018 Specific Action Program for TB Prevention and Control assists health services in providing practical and consistent TB care throughout the country. It is based on Official Mexican Standard NOM-006-SSA2-2013 (NOM-006) for the prevention and control of TB. Both of these standards must be followed in all public, social, and private health care establishments.[5]

Two fundamental features of a human rights-based approach in a study are its intention and purpose—that is, the use to which the information yielded by the study will be put. Structure, process, and outcome indicators can provide useful information about specific populations, territories, and periods of time to measure a state's compliance with its human rights obligations.[6]

In this research project, we sought to identify the merits and shortcomings of Mexican health care institutions and health workforce in the fulfillment of the right to health. In order to address human rights accountability and transparency, we also used information that is routinely gathered by the national TB program.

Methods and instruments

In Chiapas, a mainly rural state with a population of 5,217,908 people, 77.1% of residents live in poverty, the highest rate among Mexico's 32 states.[7] Chiapas is also home to 12 of Mexico's 58 recognized indigenous groups.[8] These social determinants possibly contribute to Chiapas's higher TB incidence rate (24.7/100,000 in 2016) compared to the national incidence rate (17.3/100,000).[9]

Our study focused on primary health care units (PHCUs) within Sanitary Jurisdiction No. 2 of San Cristóbal de Las Casas, Chiapas, which oversees public health care services in the 18 municipalities of the Chiapas Highlands, 13 of which are categorized as very highly marginalized and 4 as highly marginalized.[10] Sanitary Jurisdiction No. 2 has the second-highest prevalence of TB of the 10 jurisdictions in Chiapas. However, official figures on TB incidence and prevalence are likely underestimates, as there have been reports of high numbers of subnotification and underdiagnosis in Chiapas, especially in the highlands.[11] Given the socioeconomic and health conditions in the region, it is probable that the pulmonary TB incidence rate is as high as 276/100,000 in the Chiapas Highlands, as found in other regions of Chiapas.[12]

We chose PHCUs as the study unit because the achievement of health program goals depends both on the performance of the health workforce and the infrastructure and resources in each PHCU.[13] Of the 119 PHCUs in the studied region, we used a randomized technique to select 33 units with sociopolitically secure conditions and a capac-

ity to respond to our study questions. Of these, 10 PHCUs were in municipal capitals and 23 were in rural communities.

We used four instruments to collect data: (1) a structured questionnaire that examined the functioning and structure of each PHCU; (2) a checklist concerning TB care supplies and materials; (3) a health care personnel survey that gathered information pertaining to job position, sex and gender, ethnic group, and training in the topics of TB, interculturality, and gender; and (4) a TB patient information form that gathered clinical and socioeconomic data for patients diagnosed between January 2017 and June 2018 in each PHCU. These instruments were examined and validated by a group of experts on human rights and experts on TB prevention and control programs. Our indicators on AAAQ criteria were developed using NOM-006 and the 2013–2018 Specific Action Program for TB Prevention and Control as guidelines. Our indicator on physician and nursing personnel per 1,000 people in each PHCU was calculated by dividing the number of physicians and nursing staff in each PHCU by the total population targeted by each PHCU.

We used the health secretariat's public electronic registries to locate the total target population of each PHCU.[14] We carried out our fieldwork between July and November 2018. For data capture and analysis, we used IBM SPSS Statistics version 21.

Our study was approved by the Research Ethics Committee of El Colegio de la Frontera Sur in San Cristóbal de Las Casas, Chiapas.

Results

Our study collected information from 30 PHCUs and 423 health care workers in these facilities. Three PHCUs were closed on four different attempts to gather information and were considered nonrespondent. Thirteen PHCUs that had provided services to people with TB between January 2017 and June 2018 were regarded as "treating PHCUs." There were 56 people diagnosed with and registered as having TB by the treating PHCUs during the study's time frame.

Availability

Realization of the right to health requires that health care facilities, goods, services, and programs be available in sufficient quantity.[15] We assessed availability by verifying the existence of specific medical supplies, infrastructure, and resources to provide proper care for TB patients.

In the case of pulmonary TB, the diagnostic protocol begins with sputum collection. All sputum samples collected at the PHCUs undergo a smear test at the Sanitary Jurisdiction No. 2 TB laboratory in San Cristóbal de Las Casas, Chiapas. Table 1 summarizes the availability of supplies and infrastructure required to obtain sputum samples and transport them to the Sanitary Jurisdiction No. 2 TB laboratory.

Although 83.3% of PHCUs had at least one available jar for sputum collection, only 36.7% of PHCUs had ten or more jars. Considering that three samples are needed for smear tests for each person tested, when PHCUs have fewer than ten jars, only three people with respiratory symptoms can be tested until more jars are available.

The storage temperature of sputum samples may not affect positivity in smear tests, but mycobacteria growth in cultures may be lower when samples are stored at room temperature.[16] PHCUs with coolers, ice packs, and a thermometer are more likely to get sputum samples to the TB laboratory in optimal conditions.

Supply shortage or unavailability, inadequate infrastructure, and lack of transportation may delay TB diagnosis and the initiation of treatment, which is a major problem for TB control and prevention programs in low- and middle-income countries.[17]

In addition, we analyzed the availability of resources in each PHCU for the clinical assessment, treatment, and follow-up of people with TB (Table 2).

Adequate infrastructure and safe water are necessary components in health care facilities. The availability of potable water is identified in General Comment 14 as an underlying determinant of health that must be present in functioning public health-care facilities, and it is important for the administration of directly observed therapy short-course (DOTS).[18] However, only 46.7% of PHCUs had it. Furthermore,

in pulmonary TB care, the consultation office must be adequately illuminated and ventilated to prevent contagion of other patients and health personnel.[19] In 30% of the PHCUs, consultation offices did not have adequate ventilation.

The use of surgical masks by respiratory symptomatic people in waiting areas is a preventive action to avoid the spread of infection within PHCUs. Such masks were routinely provided in only 60.6% of PHCUs, even though they were available in 93.3% of them.[20]

Guidelines and manuals are necessary so that health personnel in primary and rural settings can manage and comply with all protocols and programs. The NOM-006 was available in 83.3% of PHCUs and the TB procedures manual for nursing personnel in 50%.

Any person suspected of having TB, as well as people already diagnosed with it, should be tested for HIV and diabetes.[21] All of the PHCUs had the necessary material for diabetes detection and glucose level assessment; however, 50% of the units did not have rapid HIV-testing methods available for TB patients.

A monthly clinical evaluation is also required for every person with TB who is undergoing treatment.[22] All of the PHCUs had a functioning scale to weigh patients, and all but one had a stethoscope.

Five treating PHCUs had completed treatment for TB patients included in this study before the fieldwork was carried out. In eight PHCUs, at least one person was undergoing DOTS at the time of the study, but only two of these PHCUs had all of the medications needed to complete the treatment for each patient. Five PHCUs had no more than a one-week medication supply because they obtained medications on a weekly basis from the Sanitary Jurisdiction No. 2 TB Program, when health workers reported on patient follow-up. One treating PHCU did not have any TB medication because the medical intern assigned to that unit was on leave for two weeks and had not left collection instructions.

Our assessment of health worker availability was based on indicators published by Mexico's National Council for the Evaluation of Social Development Policy in 2018. In 2014, there were 0.88 general and family physicians per 1,000 population.[23] Of the 27 PHCUs that provided us with data, two-thirds had fewer physicians than this. The mean of general and family physicians per 1,000 population in the 27 PHCUs was 0.68 (CI 95%: 0.41–0.96).

In 2015, there were an estimated 2.8 nurses per 1,000 people at the national level.[24] In our study, 92.6% of the 27 PHCUs that responded to this question had fewer nurses than this, with a mean of 1.5 nurses per 1,000 people (CI 95%: 0.80–2.2).

The DOTS nursing network in Mexico was created in 2003 with the purpose of improving detection coverage, treatment follow-up, and quality

TABLE 1. Availability of supplies for sputum collection for TB diagnosis

Materials and infrastructure	Availability in PHCUs (%) (n=30)*
Specimen jars	83.3
Labels for specimen jars	96.7
Markers for the labeling of specimen jars	80
Laboratory request form	96.7
Complete materials for initial sputum collection: jars, labels, markers, and request form	66.7
Portable cooler, ice packs, and thermometer	46.7
Refrigerator for the storage of sputum samples	36.7
Transportation to Sanitary Jurisdiction No. 2	26.7
N-95 respirators	6.7
Well-ventilated, illuminated, and roofless open space for the gathering of sputum samples	70
PHCUs with all of the elements	0
PHCUs with none of the elements	0

*Three PHCUs did not provide information

of care.[25] It aims to have at least one nurse participating in network activities in every PHCU in the country.[26] In our study, only 15 PHCUs had a nurse in the DOTS network.

In Mexico, medical and nursing students must complete a year of social service in PHCUs.[27] When medical and nursing interns were excluded from health workforce calculations, the means lowered from 0.88 to 0.45 (CI 95%: 0.22–0.67) and from 1.5 to 0.93 (CI 95%: 0.53–1.3), respectively. This suggests that PHCUs are dependent on health workers in training to provide essential primary health services, even though they may not have the expertise to diagnose and treat patients with TB.

Accessibility

Accessibility refers to people's ability to seek and obtain health care.[28] There are four overlapping and complementary dimensions of accessibility: physical access, financial access (affordability), access to information, and non-discrimination.[29]

Physical accessibility. Physical accessibility means that everyone must be able to safely reach health facilities, goods, and services. This includes adequate access to buildings for people with disabilities and those who are vulnerable or marginalized.[30]

Geographic accessibility is estimated by the distance, measured by the time taken using the usual means of transport, between the attendant population and the health facility.[31] The mean time-distance between each PHCU and the furthest communities they serve was 70.38 minutes (CI 95%: 37.4–103.3), based on data from 26 (78%) of the PHCUs. In two other units, health workers knew the distance in kilometers (2 and 12 kilometers) but could not give a time-distance estimate. One PHCU provided health care services directly in each of the five locations it served, and one PHCU functioned as an open service unit and did not have a target population or geographic limits. The other three PHCUs had no available information.

There was adequate access to buildings in 16 units (53.5%), assessed by the presence of a functional ramp or the absence of steps or ladders.

Economic accessibility. Payments for health care should be based on the principle of equity, ensuring that they are within economic reach of the entire population and that poorer households are not dis-

TABLE 2. Availability of supplies for TB care, treatment, and follow-up

Materials and infrastructure	Availability in PHCUs (%) (n=30)*
Consultation office with adequate illumination and ventilation	70.0
Physical or electronic copy of the Official Mexican Standard NOM-006-SSA2-2013 for TB control and prevention	83.3
Physical or electronic copy of the TB procedures manual for nursing personnel	50.0
Surgical masks for respiratory symptomatic subjects	93.3
Stethoscope	96.7
Glucometer, lancets, and glucose test strips	100.0
Weighing scale	100.0
Rapid HIV tests	50.0
TB diagnostic and follow-up registry notebook	45.5
Potable water	46.7
PHCUs with all of the elements	6.1
PHCUs with none of the elements	0.0
Treating PHCUs with complete TB treatments (in the eight units that were administering directly observed therapy short-course at the time of the study)	25

*Three PHCUs did not provide information

proportionately burdened with health expenses.[32]

In Mexico, people with TB are entitled to free care in the public health system, including all medications under the DOTS strategy, medical consultations, X-rays, and other diagnostic tests. If the person with TB is not affiliated with a public health program, they are enrolled in "popular insurance," which covers all costs within public health units. None of the 33 PHCUs solicited payment for medical consultations, and none of the people with TB was charged for medication, treatment of adverse effects of DOTS, medical consultations, or follow-up. Free lab tests and X-rays are performed in the Jurisdictional Laboratory and in the Ministry of Health public hospital San Cristóbal de Las Casas. When these services are unavailable in these institutions, patients must obtain them in the private health sector (our study did not inquire if these services were available at the time of the study). According to the information provided by health personnel, none of the PHCUs gives aid to cover the costs of private lab tests or X-rays, and even though health personnel recalled that some patients had used private services, we were unable to gather the exact details, as such information was not registered in patients' clinical records.

Costs related to transportation, lodging, or meals that patients incur when seeking TB care are not covered by Mexico's public health services. Of the 13 treating PHCUs, only 5 had given some form of assistance to cover transportation expenses: 4 PHCUs had ambulances and had helped with free transportation to San Cristóbal de Las Casas for patients; another PHCU delivered DOTS directly to a patient at their home. There was no financial support for lodging near the PHCU where DOTS was administered for people who had to stay overnight. Three PHCUs gave advice to people to use the shelters in San Cristóbal de Las Casas if they required accommodation there, five PHCUs gave patients food supplies, and three provided vitamin B supplements.

Even if there are no direct costs for medications and clinical examinations, a health service cannot be considered fully financially accessible if patients cannot afford the indirect costs.[33] In resource-poor settings, illness imposes high direct and indirect cost burdens on patients and their families; equipment shortages for TB diagnosis, follow-up, and treatment, a low number of health facilities, and the understaffing of PHCUs all contribute to such cost burdens.[34] In Mexico, TB programs do not consider the economic burden that TB imposes on patients, and public health services have no financial assistance program aimed at covering indirect costs for TB patients, such as transportation, lodging, and nourishment.

Information accessibility. Adequate access to information refers to the capacity to seek, obtain, and divulge information and ideas related to health issues.[35] Health workers are responsible for providing appropriate information to people with TB to help them understand the disease, the importance of compliance with treatment, and preventive measures.[36] In the Chiapas Highlands, information is needed in the indigenous languages of Tsotsil and Tseltal, as well as in Spanish.

Physicians or nurses who could convey health information in Tsotsil or Tseltal were categorized as bilingual health professionals in our study. In total, 28 PHCUs (93.3%) had a bilingual health professional; these bilingual professionals were general physicians (licensed or interns) in 3 (10%) of the PHCUs, and licensed or intern nurses in 25 of the PHCUs. Two PHCUs reported that they did not have any health workers who spoke Tsotsil or Tseltal. Ten people with TB in our study (17.9%) did not speak Spanish; nine of them had information translated to them by nurses, and one received care in a PHCU without any bilingual health professionals.

Within the Sanitary Jurisdiction No. 2 coverage area, each community has at least one health promoter, appointed by that community's assembly, who serves as a liaison between the PHCU and the community. The health promoter receives a symbolic monthly payment of 250 Mexican pesos (about US$11) by the public health system as an incentive to undertake the role. Their duties include the translation of health information to people who do not speak or read Spanish.

Our health care worker survey found that

only seven PHCUs referred to these community health promoters as part of the workforce. The two PHCUs mentioned above that had no health workers who spoke Tsotsil or Tseltal also had no health promoters in their workforce. Further research into the role of health promoters and their interactions with both health workers and TB patients would be helpful to assess their contribution to the fulfilment of the right to health.

Our health care worker survey found that 73 (17.3%) of the 423 workers surveyed could translate health information. Of these, 5 (6.8%) were licensed medical physicians, 25 (34.2%) were licensed nurses, 12 (16.4%) were nursing interns, 3 (4.1%) were primary health care technicians, 24 (32.8 %) were health technician assistants (people with basic level education who have received a two-month training in rural hospitals to be certified for this position), and 4 (5.5%) were either administration, maintenance, social work, dentistry, or psychology professionals.

People with TB who do not speak Spanish may receive a different standard of TB care and treatment than those who do speak the language, depending on whether there are health personnel in the PHCU who speak Tsotsil or Tseltal and on the level of education and training among those health workers. Language is a known barrier in health care and in TB prevention and control in intercultural contexts.[37]

Breaches of the right to access to information in TB care may lead to misunderstanding of the disease, which in turn results in poorer control and prevention efforts, social discrimination, and stigma. It can also lead patients to delay their search for care, diagnosis, and treatment, which further perpetuates disease transmission and increases the likelihood of treatment failure or death.[38] The consequences of stigma can be greater among women than among men because women are more likely to live in poverty and to be worse off in terms of the social determinants of health. In this sense, stigma exacerbates the loss of spousal, family, social, and economic support.[39]

Non-discrimination. Non-discrimination is a core human rights principle. Health services, goods, and facilities must be accessible to all, especially the most vulnerable or marginalized groups, without any form of discrimination.[40]

Our study found that services were denied to specific people or groups in 10 PHCUs. In five (16.7%) of these, people who were not affiliated with any form of public insurance ("popular insurance" or the Prospera Program) were not admitted for consultations; in four, complying with the PHCU management guidelines, service was denied to people who were not part of that PHCU's target population, or to people who had been drinking alcohol. One PHCU, acting on instruction of the authorities of the host community, denied care to a group of families who had settled near the unit after having been displaced from their territory due to social conflicts.

The PHCUs' consultation times also represented barriers to care: only 19 PHCUs (57.6%) received patients throughout the entire workday; 11 (33.3%) limited their consultation hours or set a maximum number of consultations that could be conducted in a day. As a result, some patients are turned away from the PHCUs and are rescheduled or asked to arrive earlier another day. This makes access difficult for people who live far away from the PHCU or who need to be attended to promptly.

The absence of ramps in 46.5% of the PHCUs impedes physical accessibility and discriminates against people with physical disabilities.[41]

Regulations in public or private organizations that prevent the equal exercise of rights to all groups in society are a form of institutionalized discrimination.[42] This, in turn, results in health inequities between social groups, further impeding fulfilment of their right to health.[43]

Acceptability

Health facilities, goods, and services must be respectful of medical ethics and provide culturally acceptable services for all people, all genders and ages.[44]

Twenty PHCUs (66.7%) stated that certain population groups did not attend the unit. The non-attending groups included members of the Zapatista National Liberation Army (EZLN) (seven

PHCUs), members of other autonomous organizations (two PHCUs), families whose customs and religions allow healing only through prayer or rituals (five PHCUs), people who are not affiliated with any public health program (three PHCUs), families who do not cooperate in the organization of the community's health services (one PHCU), families of traditional authorities (one PHCU), families who oppose vaccination (one PHCU), and men (two PHCUs). The health personnel we interviewed listed a number of reasons for this lack of attendance:

- *rejection of state-provided health services as a form of civil resistance*
- *poor perception of health care services*
- *long travel distance to the PHCU*
- *cultural factors, such as beliefs in supernatural causes and treatments of diseases, as well as gender roles, such as women not being allowed out of their homes without a male companion*
- *conflicts between communities*

Among these 20 PHCUs, 7 carried out open workshops or distributed information about TB to the groups who did not attend their facilities. This was an indicator of the PHCUs' efforts to increase acceptability. However, according to the health personnel we interviewed, the groups at whom these actions were directed remained unwilling to seek the facilities' health care services.

The 2013–2018 Specific Action Program for TB Prevention and Control acknowledges the importance of culturally appropriate and gender-sensitive service delivery, as well as the need for all health workers to undergo relevant training in the context of TB care.[45] In the year preceding our study, 22% (92/423) of health workers had undertaken gender training and 42.6% (180/423) had attended trainings on interculturalism. Further research into the content and impact of training would be helpful to assess whether it enhances the acceptability of TB care.

People may describe health services as acceptable if the services satisfy their culturally determined priorities.[46] In Chiapas, many people self-medicate using traditional remedies, which may delay the diagnosis and treatment of TB and promote its spread.[47] This makes the need to identify culturally appropriate ways of providing effective clinical care ever more important.

Quality

We evaluated the provision of TB care through process and result indicators.[48] Active case seeking must be performed among all respiratory symptomatic, vulnerable, and high-risk populations (such as people in prisons, asylums, or shelters; migrants; people who use drugs; alcoholics; people with diabetes; immune-compromised people; and indigenous groups).[49] All PHCUs provided services to at least one high-risk group; 7 PHCUs (21.2%) identified these groups and undertook systematic screening, 14 PHCUs (42.4%) did not, and 9 PHCUs (27.3%) did not identify any risk groups among whom to do systematic screening. Pulmonary TB case identification in all respiratory symptomatic people was fulfilled in only 15 PHCUs (50%).

TB diagnosis among respiratory symptomatic people requires the analysis of three seriated sputum samples.[50] In 22 PHCUs (73.3%), health personnel requested, but did not always obtain, three sputum samples from each person with suspected pulmonary TB.

Between January 2017 and June 2018, 56 people were diagnosed with TB and registered in the surveyed PHCUs. Table 3 summarizes their classification upon admission. Two of these individuals are not included, as both died before starting treatment.

In Mexico, people undergoing TB care must have a complete medical record that complies with NOM-004-SSA3-2012.[51] We reviewed the records of the 54 TB patients outlined in Table 3 to verify whether their age, sex, ethnic group, and HIV and diabetes type 2 status were registered (Table 4).

Not all people with TB had their HIV or diabetes status recorded. Even if each patient's co-morbidities are known by health workers, information may be lost if it is not recorded. The loss of information makes it difficult to guarantee continuity in treatment and follow-up; this is particularly important in light of the frequent health personnel turnover in the studied PHCUs.

Complete clinical records are necessary for health systems to analyze morbidity and mortality,

the quality of care, patients' socioeconomic status, and risks, as well as to conduct follow-up and contact studies. Such information is also necessary for health promotion and planning, as well as accountability.[52]

Of the 54 patients who began TB treatment, 20 had finished their treatment and were registered as cured with laboratory confirmation (11 women and 9 men); 6 finished treatment with clinical recovery but no laboratory confirmation (1 woman and 5 men); 5 patients died during treatment (1 woman and 2 men without a registered cause; 1 woman from TB; 1 woman from another cause); 1 man had a failed treatment; 1 woman was transferred to another PHCU during treatment; 1 man discontinued treatment, and 1 man had finished treatment but had no final classification. These numbers place treatment success at 74.3%, which is lower than the goal of 86% set in the Specific Action Program for TB.[53] The remaining 19 patients were still undergoing treatment when our study ended.

People classified as cured by clinical or laboratory findings must undergo sputum sample screening every six months for the following two years.[54] Fifteen TB patients were classified as cured at least six months prior to the gathering of information (6 women and 9 men). Of these, 8 had undergone at least one sputum smear test as follow-up to a finished treatment (4 men and 4 women); the other 7 cases lacked registered follow-up information.

Discussion

Insufficient supplies for collecting sputum samples, personnel shortages, and the lack of systematic screening hinder the timely detection of TB and, as a result, epidemiologic surveillance. Newer, more accurate methods of diagnosis (such as GeneXpert MTB/RIF) are more expensive and require more sophisticated equipment, infrastructure, and health worker training than sputum smear tests, which means that they are not available in regions such as Chiapas. Cheaper sputum smear tests remain the routine method of TB diagnosis, despite their known limitations. In addition, the difficulty of recruiting trained health workers to remote regions limits TB case follow-up, contact studies, and active case seeking in areas of high incidence. These challenges help explain the underreporting of TB in remote states such as Chiapas.[55]

The failings in the fulfillment of the right to health in Chiapas highlight the challenges faced in

Table 3. Patients with TB: Classification upon admission to treatment

Classification	Pulmonary		Extrapulmonary		Total
	Female	Male	Female	Male	
New case	19	22	4	4	49
Re-entry	0	2	0	0	2
Relapse	0	1	0	0	1
Transferred from another facility	0	1	0	0	1
Incomplete data	0	1	0	0	1
Total	19	27	4	4	54

Table 4. Registration of TB patients' age, sex, ethnic group, and HIV and diabetes status

	Total patients registered (n=54)	Registered males (n=30)	Registered females (n=24)
Age	54 (100%)	30 (100%)	24 (100%)
Sex*	42 (79.2%)	23 (82.6%)	19 (76.7%)
Ethnic group	32 (59.3%)	15 (50.0%)	17 (70.8%)
HIV status	46 (85.2%)	24 (80.0%)	22 (91.7%)
Diabetes type 2 status	43 (79.6%)	22 (73.3%)	21 (87.5%)
All five indicators registered	27 (50%)	12 (40%)	15 (62.5%)

*In the 12 cases where the sex was not registered, health personnel reported it verbally.

achieving the goals outlined in the global End TB Strategy.[56] The first and foremost challenge is the explicit incorporation of the strategy's principles into Mexico's TB program and the way it is implemented in Chiapas. In Chiapas, government accountability, monitoring, and evaluation are based on reports that do not reflect the real epidemic (principle one). There are also few coalitions between organizations and communities centered around TB prevention and care (principle two). Further, the protection and promotion of human rights, ethics, and equity is mentioned only marginally in the 2013–2018 Specific Action Program for TB Prevention and Control and is not explicitly incorporated into the program's activities. In practice, human rights—specifically the right to health—are being neither guaranteed nor protected by the different duty bearers that provide TB care (principle three). It would thus seem that the global strategy and targets are not being observed in Chiapas.

Accountability calls for duty bearers to have dynamic and meaningful dialogues with rights holders and public servants about their actions or omissions to fulfill their rights obligations.[57] Mexico's health sector has lacked accountability due to two main factors. First, public health reports and information are not presented to the general population, meaning that citizens are unable to monitor or evaluate duty bearers' actions. Second, in the best-case scenario, bodies such as the Secretariat of the Civil Service base their evaluations on the use of resources and not on the impact of health programs and activities of the health sector.

Under international law, states have legal obligations to realize human rights. One function of national human rights institutions is to monitor the acts of commission or omission by the state regarding its duty to respect, protect, and fulfill economic, social, and cultural rights, and its specific obligations to not discriminate and to adopt measures to progressively realize these rights. Periodic monitoring of the indicators used in our study could provide a useful tool for this purpose. The information shared by health workers, patients, and users of the services could become a relevant contribution to the improvement of services and to the enhancement of platforms to increase the enforceability of the right to health.

Study limitations

Our study had several limitations. Insecure conditions resulted in a reduction of the number of PHCUs that could be included. In addition, clinical files and registries were often unavailable or incomplete. Further, there was a lack of knowledge in some PHCUs about the way that TB care was provided, and in some PHCUs, the personnel we interviewed were unaware of their facility's structure and availability of supplies, which resulted in multiple visits to several PHCUs, limiting our time and research funds.

Conclusion

Our evaluation of AAAQ in Chiapas's PHCUs found that these four criteria are not fully achieved in TB care, despite the commitment made by Mexico to guarantee the right to health as described in General Comment 14.

Even though TB care varied across the PHCUs we studied, in general, TB programs were inadequately implemented due to a scarcity of supplies (such as materials for sputum sample collection, rapid HIV tests, and complete TB treatments), personnel shortages, patients' inability to assume the indirect costs of care, discrimination, and a lack of systematic screening among high-risk groups. These aspects may be considered violations of the right to health because they impede the adequate prevention, diagnosis, and treatment of the TB patients.[58] The low treatment success rate (74.3%) reflects the poor quality of TB care.

TB programs require more explicit and specific integration of AAAQ indicators, because even if they had been completely and correctly implemented in all PHCUs, there would still have been shortcomings in the AAAQ elements for two main reasons. First, TB programs do not consider the indirect economic burdens that patients face when obtaining TB care. Second, relevant guidelines

do not consider the needs of specific populations, such as rural, indigenous, or isolated communities, which, in Chiapas's multicultural context, hinders the fulfillment of acceptability.

Finally, inadequate access to information, along with physical inaccessibility, discrimination, stigmatization, and lack of consideration of social, cultural, and economic factors that affect the care-seeking behavior of people with TB form combined barriers whereby the unfulfillment of one AAAQ element relates to shortcomings in the others.[59]

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