



Assessment of stigma associated with tuberculosis in Mexico

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Background: Stigma is a major barrier to health care access and impacts the quality of life for individuals affected by tuberculosis (TB). Assessing TB stigma is essential to addressing health disparities. However, no such instrument was available in Mexico at the time of our study. This study examined the adaptability of the TB and human immunodeficiency virus (HIV) stigma scales previously used in Thailand.

Methods: The original scale, developed in English, was linguistically adapted to Spanish and administered to 217 individuals affected by TB in five states in Mexico. The TB-HIV stigma subscales were designed to assess individual and community perspectives. Additional data collected included general information and socio-demographics. Assessment of psychometric properties included basic statistical tests, evaluation of Cronbach's alpha and factor analysis.

Results: We found no significant statistical differences associated with higher stigma scores by location, age, marital status, education and stigma scores. Factor analysis did not create any new factors. Internal consistency reliability coefficients were satisfactory (Cronbach $\alpha = 0.876-0.912$).

Conclusion: The use of the stigma scales has implications for 1) health improvements, 2) research on stigma and health disparities, and 3) TB and HIV stigma interventions. Further research is needed to examine transferability among larger and randomly selected Spanish-speaking populations.

Stigma associated with tuberculosis (TB) has been identified as a major barrier to health care and quality of life in TB management.¹ Stigma is a social process that exists when elements of labeling, stereotyping, separation, loss of status, and discrimination occur in a power situation that allows them.^{2,3} Falk distinguishes between two types of stigmatization conditions based on the 'cause or root': 'existential' is when the individual did not cause the stigma or has little or no control over it, and 'achieved' is when a person earns the stigma because of conduct or because the individual contributed to attaining it.⁴

Stigma is increasingly recognized as having a major impact on public health interventions and a tendency to produce social inequality.^{5,6} Occasionally, the impact of stigma is positive, especially when individuals being stigmatized successfully adopt an 'empowerment' model as opposed to a 'coping' model.⁷ Stigma and fear of discrimination usually lead to delay in seeking health services, prolonged risk of transmission, poorer adherence and increased risk of disability, and drug resistance, with women bearing the highest

burden of avoiding behaviors.^{8,9} Stigma and discrimination are created by multiple forces, including a lack of understanding of the disease, myths about transmission, prejudice, irresponsible media reporting, and the link between the human immunodeficiency virus/acquired immune-deficiency syndrome (HIV/AIDS) and TB, as well as a fear of relating the illness to disability and death.^{3,10}

Prejudice and discrimination by health personnel or society may result in isolation and decreased self-esteem of the individual affected by TB, thereby impeding that person's potential for empowerment.^{11,12} Stigma and discrimination related to TB can take different forms and are manifested at different levels — societal, community and individual — and in different contexts. Health stigma remains a difficult concept to measure. It involves interaction between those who are healthy and those who are infected or appear to be infected.^{13,14}

Measurement of health-related stigma

Much of the literature cites the complexity of stigma related to TB and other health conditions such as HIV/AIDS and its diversity in cultural settings as the core reason for the limited response to the phenomenon.^{15,16} Van Rie and colleagues noted that the cross-cultural generalizability of TB and HIV/AIDS stigma scales used in Thailand may be limited.¹⁷ They further hypothesized that the difference in the concept of stigma across cultural contexts is more reflective of 'nuances and degree rather than substance'. TB in Mexico is not different from TB in Thailand. In a systematic review of the psychometric assessment of stigma instruments, Van Rie et al.'s scale rated positively on content validity, internal consistency, reliability, and floor and ceiling effects.¹⁸ We therefore decided to assess TB stigma using Van Rie et al.'s TB and HIV/AIDS stigma scales, with their approval, to evaluate for potential cross-cultural adaptation in Mexico.

METHODS

This study is a cross-sectional analysis of a convenience sample of 217 individuals of both sexes affected by TB and on treatment or who had completed treatment in the past 6 months in five study locations in Mexico. The study focused on persons affected by TB, regardless of their HIV status.

Ethics

Approval for this study was obtained from the Institutional Review Board of the University of Texas at El Paso.

Study setting

Mexico has a population of 112 337 000, with a male/female ratio of 95.4:100 and a median age of 26

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KEY WORDS

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years.¹⁹ The incidence rate of pulmonary TB in 2013 in Mexico was 13.6 per 100 000 population.²⁰ TB and HIV co-morbidity is well documented globally. The incidence rate of HIV/AIDS and TB co-infection in 2010 was 8.7/100 000.²¹

Experienced, trained interviewers conducted face-to-face interviews using the TB and HIV/AIDS stigma scales that had been linguistically adapted to Spanish from the English version by Van Rie et al.¹⁷ The criteria for selecting five sites included highest risk of TB, higher prevalence of TB than national rates, and presence of the SOLUCION TB Project. The locations included three cities in the north (Tijuana, Ciudad Juarez, and Reynosa), one in the central region (Guadalajara), and one in the south (Tuxtla Gutierrez).

Inclusion criteria

The focus of the study is on TB. Participants consisted of individuals aged ≥ 18 years of both sexes on treatment for TB, who had completed treatment in the past 6 months, regardless of their HIV status. Participation was voluntary. Participants with active TB were not interviewed due to the risk of exposing themselves or others to additional risk during the interview.

Sample

The sample size for this study was obtained using Epi Info v6 software (Centers for Disease Control and Prevention, Atlanta, GA, USA, 2014). Systematic sampling was used based on the assumption that the TB cases represent each of the three geographical regions in Mexico from which all the cases came. The sample was increased by 18% based on assumptions, non-response of 5%, and non-participation of 10%. The sample for each location varied, based on prevalence rates and case number.

Instrument

The standardized questionnaire included general and socio-demographic data, perception of support during treatment and the subscales of Van Rie et al. These scales were first linguistically adapted into Spanish, back-translated by the University Department of Linguistics and field-tested for comprehension among a sample of 30 individuals affected by TB and recruited by the SOLUCION TB Project.

Interview locations and schedule

The scales were administered at a health clinic or TB program office. The questionnaires were administered between January and February 2009.

Data entry

Data entry was conducted using SPSS Version 15.0.1.1 (SPSS, Chicago, IL, USA, 2007). The 45 stigma scale items were scored on a four-point Likert scale.²² The raw scores were mathematically computed into a standardized summary score (SS50) so that the level of stigma on each of the subscales would be between 0 and 50, with the highest scores representing higher stigma.

Statistical analysis

The descriptive data analysis focused on frequencies and cross-tabulations of key variables, which were used to detect relationships between the dependent variable (stigma) and the independent variables being surveyed (e.g., site, age, sex, education, and occupation). A factor analysis was performed for the 45 items of the scales. No items were excluded using SPSS V15.

A factor analysis was conducted using the principal component factor extraction method on the selected set of items to identify the factors and factor loadings.^{17,23} The oblique rotation method was used when the correlation between factors was >0.40 , and the orthogonal rotation method in situations where

the loading factors were <0.40 . The first round of un-rotated factor analysis yielded screen plots to determine the number of factors underlining the TB and HIV/AIDS stigma scales, followed by rounds of factor analysis, with rotations to provide a relationship among these items for each factor. Items with absolute value loading of ≥ 0.40 were identified. Estimates were conducted of the correlation among the variables of the four stigma scales by means of the internal consistency of the variables, using the Cronbach's α statistic. A scale $\alpha \geq 0.7$ was considered to have a good to excellent reliability.²⁴ We assumed that the 45 items in the four scales were linearly related to the total score. Tukey's test of non-additivity was used to assess that there was no interaction between the cases and the items at the 0.95% level.

RESULTS

The distribution of the characteristics across participants by region with their respective probability values (P values) are shown in Table 1. The following participant characteristics show statistically significant differences ($P < 0.05$): perceived health status at the time of interview, health insurance type, employment status, occupation, marital status, age group, and sex.

Standardized stigma scores

The scores were distributed normally, with mean scores (\pm standard deviation [SD]) of 28.9 (± 8.7) for community perspectives of TB; 28.3 (± 8.2) for the person affected by TB; 29.4 (± 9.0) for community perspectives of HIV/AIDS; and 34.3 (± 7.5) for persons affected by TB perspectives toward HIV/AIDS scales. These results compared well to the study by Van Rie et al.¹⁷

Factor analysis

Factor analysis demonstrated high loadings of most items (≥ 0.40). Items with an absolute value loading of ≥ 0.40 have relatively greater importance.^{17,25,27} Tables 2–5 present the two stigma subscales.

Factors associated with tuberculosis stigma

The effect measures of adjusted mean differences (MD) along with 95% confidence intervals (CI) from summed stigma scores are small, <1 in the relative scale; most of these effects are not consistent across the scales and few were statistically significant, as shown in Table 6. Table 2 illustrates the score distribution and Cronbach's α values for the subscales.

DISCUSSION

The results of the study determined that the scales developed and validated by Van Rie et al. and linguistically adapted to Spanish for this study have good overall internal consistency, reliability, and psychometric characteristics among the sub-populations studied.

Similarities and differences between tuberculosis and HIV/AIDS stigma

Understanding stigma associated with HIV/AIDS and TB is essential to address the social exclusion of individuals and groups impacted and affected by HIV/AIDS and/or TB. HIV-related stigma is sometimes layered and compounded in addition to existing TB stigma. The results also identified some similarities between the stigma related to TB and HIV/AIDS. Items related to fear of infection through casual contact, such as eating or drinking with relatives and friends and touching others, were the most significant determinants of stigma in both TB and HIV/AIDS, based on the absolute loading factors. The item 'Some people do not want

TABLE 1 Participant demographics by study location

Characteristic	North region <i>n</i> (%)	Central region <i>n</i> (%)	South region <i>n</i> (%)	<i>P</i> value
Sex (<i>n</i> = 206)				
Male	83 (64.3)	36 (27.9)	10 (7.8)	0.002
Female	31 (40.3)	31 (40.3)	15 (19.5)	
Age, years (<i>n</i> = 184)				
18–20	8 (57.1)	5 (35.7)	1 (9.1)	0.001
21–30	36 (75.0)	5 (10.4)	7 (14.6)	
31–40	19 (48.7)	12 (30.8)	8 (20.5)	
41–50	22 (52.4)	19 (45.2)	1 (2.4)	
51–60	7 (30.4)	11 (47.8)	5 (21.7)	
≥61	6 (33.3)	11 (61.1)	1 (5.6)	
Marital status (<i>n</i> = 209)				
Single	60 (65.2)	19 (20.7)	13 (14.1)	0.003
Common law	16 (61.5)	6 (23.1)	4 (15.4)	
Married	28 (48.3)	23 (39.7)	7 (12.1)	
Divorced	2 (28.6)	5 (71.4)	0 (0)	
Other	9 (34.6)	16 (61.5)	1 (3.8)	
School years (<i>n</i> = 201)				
<6	24 (53.3)	16 (35.6)	5 (11.1)	0.077
6	42 (70.0)	12 (20.0)	6 (10.0)	
>6	45 (46.9)	37 (38.5)	14 (14.6)	
Occupation (<i>n</i> = 207)				
Informal	56 (62.2)	23 (25.6)	11 (12.2)	0.000
Formal	6 (42.9)	3 (21.4)	5 (35.7)	
Home	14 (31.8)	21 (47.7)	9 (20.5)	
Unemployed	35 (68.6)	16 (31.4)	0 (0)	
Disabled	0 (0)	2 (100)	0 (0)	
Student	5 (83.1)	1 (16.7)	0 (0)	
Earning wages (<i>n</i> = 172)				
Yes	40 (61.5)	15 (23.1)	10 (15.4)	0.414
No	61 (57.0)	34 (31.8)	12 (11.2)	
Employment status (<i>n</i> = 145)				
Regularly	35 (56.5)	14 (22.6)	13 (21.0)	0.000
Occasionally	7 (35.0)	12 (60.0)	1 (5.0)	
Unemployed	38 (60.3)	24 (38.1)	1 (1.6)	

those with HIV/AIDS playing with their children' loaded third highest, which is interesting given the important differences in the modes of transmission between TB and HIV/AIDS. The investigation revealed that participants living with TB perceived that the community stigmatizes because of how TB is contracted and how persons affected with TB are perceived as vectors of a disease such as TB, and therefore they should be kept away to avoid infection or transmission. The item on TB patient perceptions toward HIV/AIDS, 'Some people who have HIV/AIDS keep their distance from others to avoid spreading the AIDS virus', loaded low. This can probably be explained by reflecting the knowledge and understanding of how HIV is transmitted. The results also identify some similarities between the stigma related to TB and HIV/AIDS. Items related to fear of infection through casual contact (eating or drinking with relatives and friends or touching others) were the most significant determinants of stigma in both TB and HIV/AIDS, based on the absolute loading factors. The same item for TB loaded high.

Disclosure and guilt

The dimension of disclosure or secrecy of either of the two conditions was prominent. In both the TB and the HIV/AIDS scales, the

item 'Some people who have TB (or HIV/AIDS) are afraid to tell their family (or those outside their family) that they have the condition' loaded high. Maintaining the diagnosis of TB (or HIV/AIDS) confidential also rated very high. These perceptions indicate that moral judgment and fear of disclosure are associated with delayed care and stigmatization.

The concept of guilt was stated in the following items: 'Some people who have TB feel guilty about getting the disease because of their smoking, drinking and other careless behaviors' and 'Some people think that those with TB (or HIV/AIDS) are disgusting.' The HIV/AIDS scale item: 'Some people prefer not to have those with HIV/AIDS living in their community' indicated strong moral values and norms as well as punishment and judgment. Discrimination perceptions were also disclosed: 'If a person has HIV/AIDS (or TB), some community members will behave differently toward the person for the rest of his/her life' or 'Some people do not want to talk to others with HIV/AIDS.' Shame or guilt could be a root cause in delaying timely access to health services, as expressed in the following item: 'Some people with TB are afraid of going to TB clinics because other people may see them there.' This item suggests that there may be embarrassment and judgment involved in having TB and seeking care from a TB clinic.

TABLE 2 Absolute loading values for TB stigma scales by item of importance

I. Community perspectives on TB (assessed by patients)	Mean	SD	Loading value
Algunas personas no quieren beber o comer con familiares que tienen TB <i>Some people may not want to eat or drink with relatives who have TB</i>	2.61	0.75	0.812
Algunas personas tratan de no tocar a otras con TB <i>Some people try not to touch others with TB</i>	2.65	0.71	0.773
A algunas personas no les gusta beber o comer con amigos/as que padecen TB <i>Some people may not want to eat or drink with friends who have TB</i>	2.79	0.69	0.763
Si alguien tuviera TB, algunas personas de la comunidad se comportarían diferentes con él/ella por el resto de su vida <i>If a person has TB, some community members will behave differently towards that person for the rest of his/her life</i>	2.66	0.73	0.741
Algunas personas se sienten incómodas al estar cerca de quienes padecen TB <i>Some people feel uncomfortable about being near those with TB</i>	2.87	0.67	0.717
Algunas personas no quieren hablar con quienes tienen TB <i>Some people do not want to talk to others with TB</i>	2.73	0.72	0.701
Algunas personas no quieren que sus hijos jueguen con niños que tienen TB <i>Some people do not want those with TB playing with their children</i>	2.86	0.72	0.699
Algunas personas le tienen miedo a quienes tienen TB <i>Some people are afraid of those with TB</i>	2.89	0.73	0.647
Algunas personas mantienen su distancia de aquellas con TB <i>Some people keep their distance from people with TB</i>	2.89	0.69	0.569
Algunas personas piensan que quienes padecen TB son desagradables o indeseables <i>Some people think that those with TB are disgusting</i>	2.62	0.73	0.531
Algunas personas prefieren que quienes padecen TB no vivan en su comunidad <i>Some people prefer not to have those with TB living in their community</i>	2.6	0.77	0.085

TB = tuberculosis; SD = standard deviation.

TABLE 3 Absolute loading values for TB stigma scales by item of importance

II. Perspective of individuals affected by TB	Mean	SD	Loading value
Algunas personas con TB tienen miedo de decirle a sus familiares que tienen la enfermedad <i>Some people who have TB are afraid to tell their family that they have TB</i>	2.41	0.86	0.799
Algunas personas con TB tienen miedo de ir a las clínicas de TB o a los centros de salud por temor que otros los vean <i>Some people who have TB are afraid of going to TB clinics because other people may see them there</i>	2.4	0.85	0.771
Algunas personas con TB tienen miedo de decirles a otros que tiene la enfermedad pues pueden pensar que también tienen SIDA <i>Some people who have TB are afraid to tell others that they have TB because others may think that they also have AIDS</i>	2.61	0.8	0.678
Algunas personas con TB se sienten culpables de haber contraído la enfermedad por fumar, tomar o por otras conductas irresponsables <i>Some people who have TB feel guilty for getting TB because of their smoking, drinking, or other careless behaviors</i>	2.72	0.83	0.673
Algunas personas con TB están preocupadas porque podrían tener SIDA <i>Some people who have TB are worried about having AIDS</i>	2.59	0.76	0.436
Algunas personas con TB se sienten culpables por ser una carga para su familia <i>Some people who have TB feel guilty because their family has the burden of caring for them</i>	2.66	0.81	0.386
Algunas personas que tienen TB son cuidadosas al escoger a quien decirle que padecen la enfermedad <i>Some people who have TB will choose carefully who they tell about having TB</i>	2.99	0.66	0.266
Algunas personas con TB pierden a sus amigos/as cuando les comentan que tienen la enfermedad <i>Some people who have TB lose friends when they share with them they have TB</i>	2.59	0.77	0.264
Algunas personas con TB guardan su distancia de otras para evitar contagiarlas con gérmenes de la enfermedad <i>Some people who have TB keep their distance from others to avoid spreading TB germs</i>	3.01	0.65	0.241
Algunas personas con TB tienen miedo de decirles a otros, que no son miembros de su familia, que tienen la enfermedad <i>Some people who have TB are afraid to tell those outside their family that they have TB</i>	2.87	0.72	0.212
Algunas personas con TB se sienten solas <i>Some people who have TB feel alone</i>	2.71	0.78	0.043
Algunas personas con TB se sienten lastimadas por la manera en que los demás reaccionan cuando se enteran que tienen la enfermedad <i>Some people who have TB feel hurt because of how others react when they find out they have TB</i>	2.86	0.73	-0.003

TB = tuberculosis; SD = standard deviation; AIDS = acquired immune-deficiency syndrome.

TABLE 4 Absolute loading values for HIV/AIDS related stigma scales by item of importance

III. Community perspective on HIV/AIDS (assessed by patients)	Mean	SD	Loading values
Algunas personas no quieren que sus hijos jueguen con niños que tienen el VIH/SIDA <i>Some people do not want those with HIV/AIDS playing with their children</i>	2.9	0.72	0.811
Algunas personas guardan su distancia ante una persona con VIH/SIDA <i>Some people keep distance from people with HIV/AIDS</i>	2.96	0.7	0.782
Algunas personas le tienen miedo a quienes tienen VIH/SIDA <i>Some people are afraid of those with HIV/AIDS</i>	2.96	0.74	0.776
Algunas personas se sienten incómodas al estar cerca de alguien con VIH/SIDA <i>Some people feel uncomfortable being near those with HIV/AIDS</i>	2.88	0.72	0.76
Algunas personas tratan de no tocar o tener contacto con quienes tienen VIH/SIDA <i>Some people try not to touch others with HIV/AIDS</i>	2.88	0.68	0.728
Algunas personas prefieren que las personas con VIH/SIDA no vivan en su comunidad <i>Some people prefer not to have those with HIV/AIDS living in their community</i>	2.77	0.74	0.72
Si alguien tuviera VIH/SIDA, algunas personas de la comunidad se comportarían diferentes con él/ella por el resto de su vida <i>If a person has HIV/AIDS, some community members will behave differently towards that person for the rest of his or her life</i>	2.97	0.7	0.704
Algunas personas piensan que quienes tienen VIH/SIDA son desagradables o indeseables <i>Some people think that those with HIV/AIDS are disgusting</i>	2.73	0.81	0.691
Algunas personas no quieren hablar con otras personas sobre el VIH/SIDA <i>Some people do not want to talk to others with HIV/AIDS</i>	2.72	0.75	0.639
Algunas personas piensan que las personas que tienen VIH/SIDA son sucias <i>Some people think that people with HIV/AIDS are unclean</i>	2.6	0.82	0.411
Algunas personas piensan que las personas con VIH/SIDA se lo merecen <i>Some people think that people with HIV/AIDS get what they deserve</i>	2.16	0.79	0.042

HIV = human immunodeficiency virus; AIDS = acquired immune-deficiency syndrome; SD = standard deviation.

TABLE 5 Absolute loading values for HIV/AIDS related stigma scales by item of importance

IV. Perspective of individuals affected by tuberculosis on HIV/AIDS	Mean	SD	Loading values
Algunas personas con VIH/SIDA tratan de mantener su enfermedad en secreto <i>Some people who have HIV/AIDS try very hard to keep the issue of having AIDS a secret</i>	3.26	0.58	0.835
Algunas personas con VIH/SIDA tienen miedo de decirles a otros, que no son sus familiares, que tiene VIH/SIDA <i>Some people who have HIV/AIDS are afraid to tell those outside their family that they have AIDS</i>	3.15	0.59	0.816
Algunas personas con VIH/SIDA se preocupan de que otros digan su secreto <i>Some people who have HIV/AIDS worry that others will reveal their secret</i>	3.24	0.62	0.815
Algunas personas que tienen VIH/SIDA son cuidadosas al escoger a quien decirle que tienen la enfermedad <i>Some people who have HIV/AIDS will choose carefully who they tell about having AIDS</i>	3.22	0.57	0.736
Algunas personas con VIH/SIDA tienen miedo de que otros miembros de su comunidad comenten que tiene la enfermedad <i>Some people who have HIV/AIDS are afraid that other people in the community will talk about them having AIDS</i>	3.13	0.62	0.691
Algunas personas que tienen VIH/SIDA se sienten lastimadas por la manera en que otras reaccionan cuando se enteran que tienen la enfermedad <i>Some people who have HIV/AIDS feel hurt because of how others react to knowing they have AIDS</i>	3.16	0.64	0.498
Algunas personas con VIH/SIDA pierden a sus amigos cuando les comentan que tienen SIDA <i>Some people who have HIV/AIDS lose friends when they share with them they have AIDS</i>	2.99	0.72	0.33
Algunas personas con VIH guardan su distancia de otras para evitar el contagio del virus que ocasiona el SIDA <i>Some people who have HIV/AIDS keep their distance from others to avoid spreading the AIDS virus</i>	2.83	0.72	0.264
Algunas personas con VIH/SIDA tienen miedo de ir a las clínicas de atención para VIH/SIDA o a los centros de salud por temor a que otros los vean <i>Some people who have HIV/AIDS are afraid to go to the clinic or AIDS program because they are afraid that others might see them there</i>	2.7	0.82	0.183
Algunas personas con VIH/SIDA se sienten culpables porque su familia tiene la carga o responsabilidad de cuidarlos <i>Some people who have AIDS feel guilty because their family has the burden of caring for them</i>	2.91	0.7	0.086
Algunas personas con VIH/SIDA se sienten solas <i>Some people who have HIV/AIDS feel alone</i>	3.15	0.68	0.061

HIV = human immunodeficiency virus; AIDS = acquired immune-deficiency syndrome; SD = standard deviation.

TABLE 6 Score distributions and Cronbach's α values for communities and individuals affected by TB and HIV/AIDS stigma-related scales

Values	Community perspectives on/of TB (11 items)	Community perspectives on/of HIV/AIDS (11 items)	TB patient perspectives on/of TB (12 items)	TB patient perspectives on/of HIV/AIDS (11 items)
Total, <i>n</i>	203	199	202	199
Cronbach's α^*	0.911	0.912	0.876	0.888
Tukey's estimate (<i>P</i> value)	0.103 (0.70)	0.324 (0.10)	2.720 (0.001)	1.263 (0.56)

*Based on standardized items.
TB = tuberculosis.

Individuals aged ≤ 21 years had lower TB and HIV stigma in both subscales than older people. Participants living in a marital or partnership relationship seemed to indicate lower stigma perceptions on all scales, consistent with other studies.^{27,28} Some studies have indicated that financial problems and economic distress were found to increase stigma.^{27,29} The less educated the participants, the more perceived stigma was found in this study. This finding has important implications for developing health literacy interventions to reduce stigma, primarily among orally literate participants.

This study served as groundwork for the first Tuberculosis Knowledge, Attitudes and Practices National Survey in Mexico (2010), which included the 23-item TB stigma subscale. The first author is currently working on these data, a sample of 1250 individuals (not affected by TB) in five locations in Mexico, to measure community members' perspective on TB.

Limitations

The study had some limitations. We focused on one particular population, namely those affected by TB, and captured affected individuals' self-perceived and individual forms and manifestations of stigma related to TB and not community perspectives. It is also possible that stigma is present in other sub-groups, such as persons affected by TB and not in treatment. We did not inquire about the participants' HIV status. We can only infer that a sample of those in the study was affected by HIV, due to the local data on incidence and prevalence of HIV. We encourage further understanding of stigma among those affected by HIV/AIDS. Second, there is no gold standard for measuring TB stigma. A more complete assessment of stigma would require the use of standardized, quantitative instruments, extensive interviews and qualitative analysis. The study does not offer sufficient data to assess the true meaning of the stigma scores of the scales. The sample was not randomly selected, which limits the ability to apply it to the general TB patient population or to draw conclusions about the impact of perceptions of stigma related to TB and HIV/AIDS in Mexico. Third, differences in language and culture need to be assessed.

CONCLUSIONS

The study findings will help move from understanding stigma to implementing reduction interventions to mitigate the impact of stigma and promote empowerment. TB and HIV/AIDS stigma are linked to the actions and attitudes of individuals and communities. To mitigate stigma, interventions should be multidimensional and address underlying social processes. Drawing on the experiences of advocacy, communication and social mobilization rather than individual behavior change is important. Strategies that focus on personal empowerment of marginalized groups are essential. Effective methods to mitigate stigma are those that engage the affected communities in addressing stigma, such as Photovoice projects, support groups, and media campaigns. The find-

ings can serve as the basis for stigma measurement research with Spanish-speaking populations in other countries. Developing a generic set of stigma assessment instruments, given the similarity in the consequences of stigma in various cultural settings and crosscutting applicability, needs to be researched.

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Contexte : La stigmatisation est un obstacle majeur à l'accès aux soins de santé et elle altère la qualité de vie des personnes affectées par la tuberculose (TB). L'évaluation de cette stigmatisation relative à la TB a un rôle crucial dans la lutte contre les disparités sanitaires. Cependant, aucun instrument de mesure n'était disponible au Mexique à l'époque de notre étude. Cette étude a examiné l'adaptabilité des échelles de stigmatisation de la TB et du virus de l'immunodéficience humaine (VIH) utilisées jusqu'alors en Thaïlande.

Méthodes : L'échelle originale, élaborée en anglais, a été adaptée à la langue espagnole et soumise à 217 personnes affectées par la TB dans cinq états du Mexique. Les sous-échelles de stigmatisation relatives à la TB et au VIH ont été conçues afin d'évaluer les perspectives des individus et de la communauté. Des données supplémentaires générales et sociodémographiques ont été recueillies. L'évaluation des propriétés psychométriques incluait les

tests statistiques de base, l'évaluation du coefficient alpha de Cronbach et l'analyse factorielle.

Résultats : Nous n'avons pas trouvé de différence statistiquement significative associée à une stigmatisation plus importante en fonction du lieu, de l'âge, du statut marital, du niveau d'instruction et des scores de stigmatisation. L'analyse factorielle n'a pas créé de nouveaux facteurs. Les coefficients de fiabilité de la cohérence interne ont été satisfaisants (Cronbach $\alpha = 0,876$ à $0,912$).

Conclusion : L'utilisation des échelles de stigmatisation a des implications pour 1) l'amélioration de la santé ; 2) la recherche relative à la stigmatisation et aux disparités en matière de santé ; et 3) des interventions relatives à la stigmatisation du VIH et de la TB. D'autres recherches sont requises afin d'étudier la possibilité de transférer cette méthode dans des populations hispanophones plus importantes et sélectionnées au hasard.

Antecedentes: El estigma es un gran obstáculo para el acceso a la salud y afecta la calidad de vida de las personas con tuberculosis (TB). Evaluar el estigma relacionado con la TB es esencial para abordar las desigualdades. Dicho instrumento no estaba disponible en México en el momento del estudio. Se examinó la adaptabilidad de las escalas de estigma de TB y del virus de la inmunodeficiencia humana (VIH) utilizadas anteriormente en Tailandia.

Métodos: La escala original, desarrollada en inglés, fue lingüísticamente adaptada al español y administrada a 217 personas afectadas por la TB en cinco estados de México. Las sub-escalas fueron diseñadas para evaluar las perspectivas individuales y comunitarias. Recopilación de datos generales, evaluación de

propiedades psicométricas y alfa de Cronbach, pruebas estadísticas básicas, y análisis factorial.

Resultados: No encontramos diferencias estadísticas significativas asociadas con valores altos de estigma por ubicación, edad, estado civil, educación y calificaciones de estigma. El análisis factorial no creó nuevos factores. Los coeficientes de confiabilidad de consistencia interna fueron satisfactorios (Cronbach $\alpha = 0.876$ a 0.912).

Conclusión: Las implicaciones de uso de las escalas de estigma para: 1) mejoras de salud; 2) investigación en estigma; e 3) intervenciones. Se necesitan investigaciones adicionales para examinar la transferibilidad entre las poblaciones de habla hispana en una muestra mayor al azar.