Contrasting trends of tuberculosis in the cities of San Pedro Sula and Tegucigalpa, Honduras, 2005–2014

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ABSTRACT

Objective.   *To 1) describe and compare the trends of tuberculosis (TB) case notification rates (CNRs) and treatment outcomes in the two largest cities in Honduras (San Pedro Sula and Tegucigalpa) for the period 2005–2014 and 2) identify possible related socioeconomic and health sector factors.*

Methods.   *This retrospective ecological operational research study used aggregated data from the National TB Program (socioeconomic and health sector information and individual data from the 2014 TB case notification report).*

Results.   *TB CNRs declined steadily over the study period in Tegucigalpa (from 46 to 28 per 100 000 inhabitants) but remained high in San Pedro Sula (decreasing from 89 to 78 per 100 000 inhabitants). Similar trends were observed for smear-positive TB. While presumptive TB cases examined were similar for both cities, in San Pedro Sula the proportions of presumptive cases with a positive smear; (7.7% versus 3.6%) relapses (8.9% versus 4.2%); and patients lost to follow-up (10.9% versus 2.7%) were significantly higher, and the treatment success lower (75.7% versus 87.0%). San Pedro Sula had lower annual income per capita, fewer public sector health workers and facilities, and a higher and increasing homicide index. The 2014 TB case data from San Pedro Sula showed a significantly lower median age and a higher proportion of assembly plant workers, prisoners, drug abusers, and diabetes.*

Conclusions.   *The TB rate was higher and treatment success lower, and health care resources and socio-demographic indicators less favorable, in San Pedro Sula versus Tegucigalpa. City authorities, the NTP, and the health sector overall should strengthen early case detection, treatment, and infection control, involving both public and private health sectors.*

Key words   Tuberculosis; metropolitan zones; prisons; violence; operations research; Honduras.

Tuberculosis (TB) continues to be one of the main public health problems in the world. In 2014, an estimated 9.6 million people developed TB and 1.5 million died from the disease, 0.4 million of whom were HIV-positive (1). In Latin America and the Caribbean (LAC), TB remains one of the leading single causes of morbidity and mortality among infectious diseases. In 2013, there were approximately 285 200 incident cases of TB (29/100 000 inhabitants). Among pulmonary TB (PTB) cases, 2.1% of new and 13% of previously treated patients were estimated to have multidrug-resistant TB (MDR-TB). An estimated 11% of incident cases were HIV-positive (2). In recent years, TB incidence was declining in LAC, except for in Mexico and Central America, where it remained constant (2).

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It is recognized that the TB burden is usually greater in urban versus rural areas, in both developed and developing countries (3–5). There is also evidence that transmission is increased by higher population density and crowded living and working conditions. The TB problem in cities is attributable to 1) the living conditions of people in slums and 2) barriers to TB control programs (3). HIV seropositivity, immune suppression, and poor nutrition also contribute to an increased risk of developing active disease (6).

Among the world's developing countries, the highest urbanization rates are found in LAC, where 80% of the population lives in cities, a percentage that doubled between 1950 and 2010 (3). In Honduras, a LAC low-/middle-income country (7), with a population of 8.72 million in 2014, 25% of the population lives in two cities: Tegucigalpa (the capital) and San Pedro Sula, which have 1.21 and 0.76 million inhabitants respectively (8). Tuberculosis is an important public health problem in Honduras, which has the second-highest case notification rate (CNR) in Central America (9). The DOTS (Directly Observed Treatment, Short-course) strategy was gradually introduced between 1998 and 2003 (10). Since 2003, the overall TB CNR nationwide has decreased from 57.5/100 000 to 32.1/100 000 in 2014 (11). However, the TB epidemic is not uniform across the country: in 2014, the TB CNR in Tegucigalpa was lower (28.3 cases/100 000) than the CNR in San Pedro Sula (70.4/100 000) (11).

Knowledge about the difference in the disease burdens and risk factor prevalence between these two cities is essential to better understand the epidemiology of the disease and improve TB control. The aim of this study was to 1) describe and compare the trends of TB CNRs and treatment outcomes in the two largest cities in Honduras (Tegucigalpa and San Pedro Sula) for the period 2005–2014 and 2) identify possible related socioeconomic and health sector factors.

The specific objectives were to describe and compare these trends, using aggregated epidemiologic and programmatic data from the National TB Program (NTP), and to identify socioeconomic and health sector factors possibly related to the two cities' TB CNRs, using the aggregated data for 2005–2014 and individual TB patient data for 2014.

MATERIALS AND METHODS

Study design

This research was an ecological, operational retrospective study.

Setting

Honduras is a republic situated in the isthmus of Latin America with a population of 8.72 million (2014), a density of 73/km^2, and 53% living in urban/suburban areas (8). The country is composed of 18 administrative departments and 298 municipalities. Honduras has a middle Human Development Index (HDI) score of 0.617 and is ranked 129 out of 189 countries (12). The gross national income (GNI) per capita is US$ 4 138 and there is a high degree of inequity (Gini index: 0.57) (13). Tegucigalpa is the capital city and the largest and most populous municipality, with 1 239 557 inhabitants (2014) and an HDI score of 0.787 (2009) (8, 14). San Pedro Sula is located near the country's major port and is the second-largest city, with a population of 763 626 (8) and an HDI score of 0.768 (2009) (14). San Pedro Sula is home to the largest industries in the country and generates about 58% of the gross domestic product (GDP) and 60% of national exports.

Health system

The Honduran health system is mixed, comprising both the public sector (Ministry of Health and Honduran Social Security Institute (*Instituto Hondureño de Seguridad Social*, IHSS)) and the private sector. It is estimated that 82% of the population has access to health services (60% through the Ministry of Health, 12% through the IHSS, and 10% from the private sector) (15). The Ministry of Health operates at three levels: national, regional, and local. Since 2003 there have been 20 health regions, including the two metropolitan regions studied in this research (San Pedro Sula and Tegucigalpa) (15). During the study period, the NTP had health units at the central, regional, and local levels with diagnostic and treatment services integrated into the general health care system. TB case finding is passive except for screening of contacts. The diagnosis is established through sputum smear microscopy, culture, and/or chest X-ray. Diagnosis and treatment are standardized and only

implemented in the public sector Health Units, with outcomes monitored according to national and WHO recommendations (16, 17). All TB microscopy services and treatment are free nationwide. The NTP received support from the Global Fund to Fight AIDS, Tuberculosis and Malaria ("Global Fund") from 2003–2008 and from 2011 onward (18, 19).

Study population and participants

The study incorporated aggregated notification data for TB cases notified to the NTP and socioeconomic and health sector data collected from Tegucigalpa and San Pedro Sula for the 2005–2014 period. In addition to the aggregated data, individual TB patient data for 2014 were analyzed.

Data variables, sources, and collection

Aggregated information was collected from the NTP on the rate of presumptive PTB cases examined, total TB and new smear-positive TB cases, the proportion of TB cases by type and category, HIV status, and treatment outcomes for Tegucigalpa and San Pedro Sula for each year between 2005 and 2014 (11).

Aggregated data on socioeconomic and health sector factors were not available yearly during 2005–2014 for all indicators for the two cities. The HDI score and life expectancy were available for 2005, 2007, and 2009 from the United Nations Development Programme (UNDP) Human Development Report (12, 14, 20). Income per capita, proportion of households living in poverty, unemployment, and illiteracy rates for each year of the study period were available from the National Statistics Institute (*Instituto Nacional de Estadística*, INE) (21, 22). Child mortality data were available from the National Demographic and Health Survey (*Encuesta Nacional de Demografía y Salud*, ENDESA) for 2005–2006 and 2011–2012 (23, 24), and the annual violence index for all years since 2007 was available from the Violence Observatory of the National Autonomous University of Honduras (*Universidad Nacional Autónoma de Honduras*, UNAH) (25). Health sector indicators (number of doctors and nurses per 10 000 population in the public sector) were obtained from the INE for the period 2009–2013, along with the number of public health clinics (21); the

number of laboratories for the period 2011–2014 was obtained from the National Reference Laboratory (26). Data on support from the Global Fund were obtained from Global Fund reports (18, 19).

Individual TB patient data were collected for both cities for 2014 and included type and category of TB, the diagnostic methods, completion of HIV test, HIV result, age, sex, ethnic group, occupation, prisoner status, alcohol abuse, drug intake, education, homeless status, and violent neighborhood residence status. The source of individual data was new TB cases reported to the NTP in 2014. Data were collected for all TB cases in San Pedro Sula and Tegucigalpa (11).

Analysis and statistics

The aggregated data on the epidemiologic and programmatic TB indicators for detection and treatment outcome for the study period and the individual patient information for 2014 were entered and analyzed in Microsoft Excel (Microsoft Corporation, Redmond, Washington, United States) and EpiData version 3.1 (EpiData Analysis version 2.2.1.171) (EpiData Association, Odense, Denmark).

The data for the entire study period (2005–2014) were compared between the two cities using rates, frequencies, proportions, means, and 95% confidence intervals (CIs). Time trends are presented in the figures below. Individual TB and socioeconomic data for patients for 2014 were compared between the two cities using the Z-test for categorical variables and the CIs for comparing the proportions between both cities. The median ages were compared using the Mann–Whitney U test and the median CI. Levels of significance were set at 0.05.

Ethics

Permission to use the data was obtained from the NTP. Participants' identifiable data were not collected in the study. The individual data were kept in a password-protected computer only available to the first author (CV).

Ethics approval for the study protocol was obtained from the Ethics Advisory Group of the International Union Against Tuberculosis and Lung Disease (Paris) and from the Ethics Committee of the National Institute for Cardiopulmonary Disease (*Instituto Nacional Cardiopulmonar*, INC) (Tegucigalpa).

RESULTS

The TB CNRs in Tegucigalpa declined steadily over the study period (from 46 to 28 per 100 000 inhabitants), whereas the CNRs in San Pedro Sula were more variable (declining from 89 in 2005, increasing in 2011, and then declining again to 78 per 100 000 in 2014). The mean TB CNR for San Pedro Sula for the entire study period (2005–2014) was 80.0 per 100 000 inhabitants (CI: 74.8–85.0) compared to 37.0 per 100 000 (CI: 32.8–41.4) in Tegucigalpa. Similar trends and mean CNRs were observed for smear-positive TB, which was 53.8 per 100 000 (CI: 50.2–57.3) in San Pedro Sula and 23.7 (CI: 21.3–26.1) in Tegucigalpa (Figure 1A). The trends for CNRs of presumptive TB cases who were examined with smear microscopy were fairly similar between the two cities (Figure 1B), with 660.6 per 100 000 (CI: 537.9–783.3) in San Pedro Sula and 696.6 (CI: 497.4–895.8) in Tegucigalpa (Figure 1B). The mean proportion of presumptive TB cases with smear-positive result was higher in San Pedro Sula (7.7% (CI: 6.3–9.0)) than in Tegucigalpa (3.6% (CI: 2.8–4.3)) (Figure 1C).

The proportion of TB relapses was significantly higher in San Pedro Sula (which had a mean for the entire study period of 8.9% (CI: 8.1–9.7)) than in Tegucigalpa (4.2% (CI: 3.1–5.3)). The trend was stable in San Pedro Sula but showed an increase in Tegucigalpa (Figure 2A). The proportions with smear-positive and smear-negative PTB were not significantly different, but the proportion of extrapulmonary cases was significantly higher in Tegucigalpa for the entire study period (18.6% (CI: 17.4–19.9) versus 13.9% (CI: 13.0–14.9) in San Pedro Sula) (Figure 2B).

The overall treatment success rate was significantly lower in San Pedro Sula (75.7% (CI: 72.4–79.0) versus 87.0% (CI: 83.9–90.1) in Tegucigalpa), and the rate of TB patients lost to follow-up was significantly higher in San Pedro Sula (10.9% (CI: 8.5–13.3) versus 2.7% (CI: 2.0–3.4) in Tegucigalpa) (Figure 3).

The only socioeconomic factors that showed different trends over time were annual income per capita, which declined (data not shown), and the homicide index, in which there was a steady increase in San Pedro Sula compared to Tegucigalpa (Figure 4). The HDI was higher and increasing in Tegucigalpa (0.785, 0.794, 0.787) with no increase in San Pedro Sula (0.768, 0.780, 0.768). Child mortality in Tegucigalpa was 26/1 000 born in 2005–2006 and declined to 17/1 000 born in 2011–2012, whereas in San Pedro Sula child mortality increased from 17 to 20/1 000 born. The number of medical doctors per 10 000 inhabitants per year in the public sector was three times higher in Tegucigalpa (1.5/10 000 inhabitants/year) than in San Pedro Sula (0.5/10 000 inhabitants/year) for the period 2009–2013. The number of nurses was also higher in Tegucigalpa (3.2/10 000 inhabitants/year) than in San Pedro Sula (1.2/10 0000 inhabitants/year). Tegucigalpa had more public health clinics and laboratories than San Pedro Sula (85 versus 34 clinics and 27 versus 7 laboratories respectively during 2011–2014). The Global Fund provided support for TB control in Honduras from 2003 to 2008 (US$ 6.0 million) and from 2011 to 2016 (US$ 9.1 million).
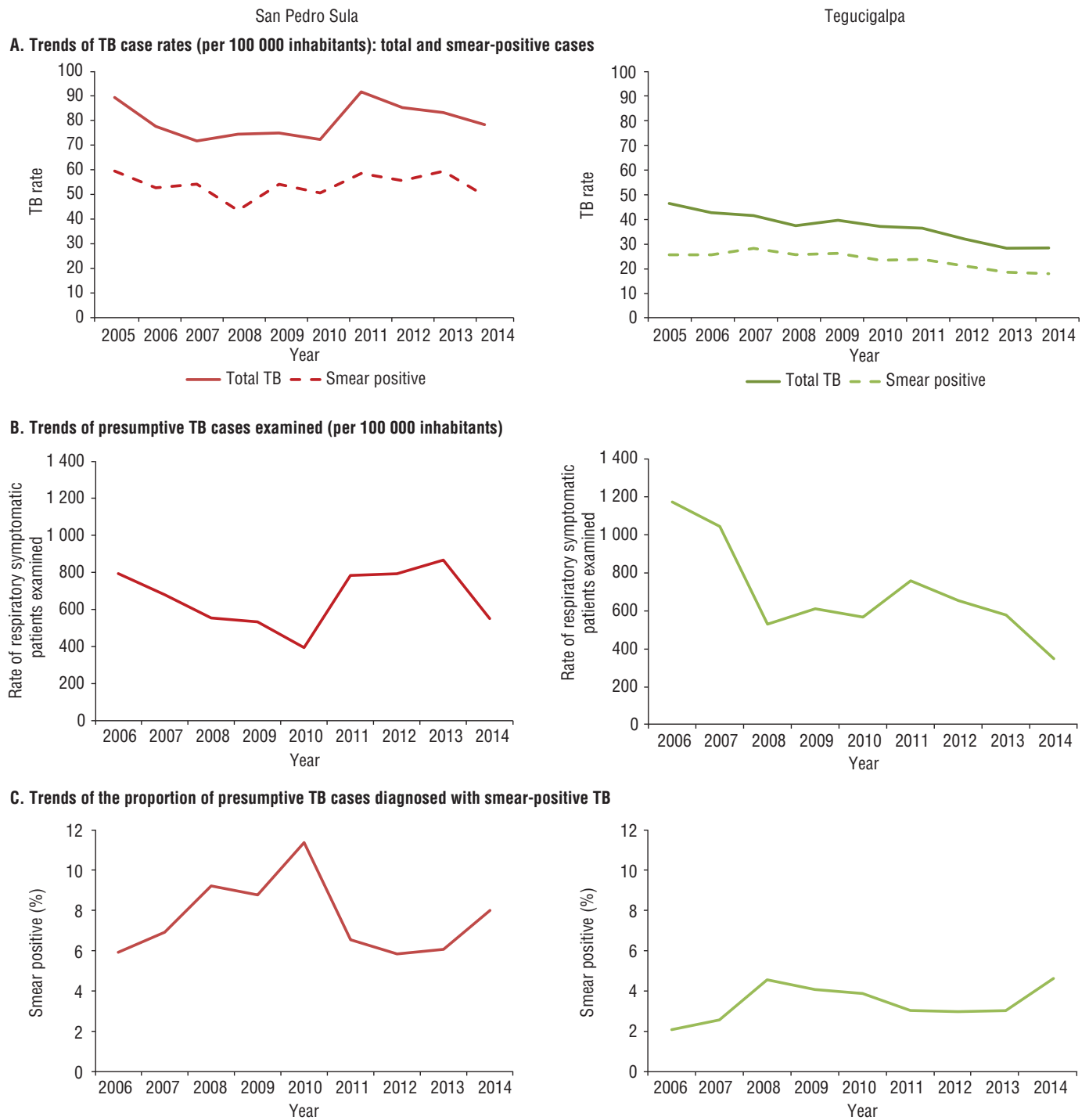
Of all TB patients diagnosed in 2014, those in San Pedro Sula had a significantly lower median age and a higher frequency of working in assembly plants, being in prison, drug abuse, and diabetes, but a lower frequency of alcohol abuse, homelessness, and being HIV-positive than the patients in Tegucigalpa (Table 1).

DISCUSSION

This study indicates that TB CNRs in San Pedro Sula are more than twice that of both Tegucigalpa and the country as a whole. While TB CNRs declined slowly but steadily in Tegucigalpa over the 10-year study period, they remained high in San Pedro Sula. The CNRs for examined patients with presumptive TB were similar in both cities, but the proportion of patients with positive-smear microscopy was nearly double in San Pedro Sula. The relapse rates were higher and the treatment outcomes significantly less favorable in San Pedro Sula, which had lower treatment success and higher rates of loss to follow-up.

Socioeconomic and health sector factors showed that San Pedro Sula had higher rates of violence, as indicated by the homicide index (25); lower per capita income; and lower numbers of doctors, nurses, and laboratories in the public sector than the capital city. In addition, unfavorable indicators (e.g., incarceration, drug abuse and diabetes) were seen more frequently in patients with TB in San Pedro Sula in 2014.

FIGURE 1. Notification rates of tuberculosis (TB) and presumptive TB and the proportion diagnosed with smear-positive TB, San Pedro Sula and Tegucigalpa, Honduras, 2005–2014

San Pedro Sula

Tegucigalpa

A. Trends of TB case rates (per 100 000 inhabitants): total and smear-positive cases

B. Trends of presumptive TB cases examined (per 100 000 inhabitants)

C. Trends of the proportion of presumptive TB cases diagnosed with smear-positive TB

Source: prepared by the authors based on the study results.

Although it was not possible to prove causality due to the mainly ecologic nature of the study, the findings suggest that the higher level of TB in San Pedro Sula could be related to 1) weaker public health services (fewer public health staff and facilities); 2) weaker outcome results for the city TB program (lower success rates, higher losses to follow-up, and more relapses, all of which can contribute to higher TB transmission in the community); 3) a higher prevalence of TB risk factors (e.g., drug abuse, imprisonment, working in assembly plants, and diabetes); and 4) violence, which may make it more difficult for the patients to visit health services and follow DOTS, and for the health workers to ensure the quality of the strategy.

Multiple studies have shown that in Europe (4–6, 27–30), LAC (3, 31, 32), and other regions (33, 34) the incidence of

FIGURE 2. Type and category of disease for tuberculosis (TB) patients, San Pedro Sula and Tegucigalpa, Honduras, 2005–2014

San Pedro Sula

A. Proportion of new and relapse TB patients

Tegucigapia

B. Proportion of new smear-positive TB, new smear-negative TB, and new extrapulmonary TB (EPTB) patients
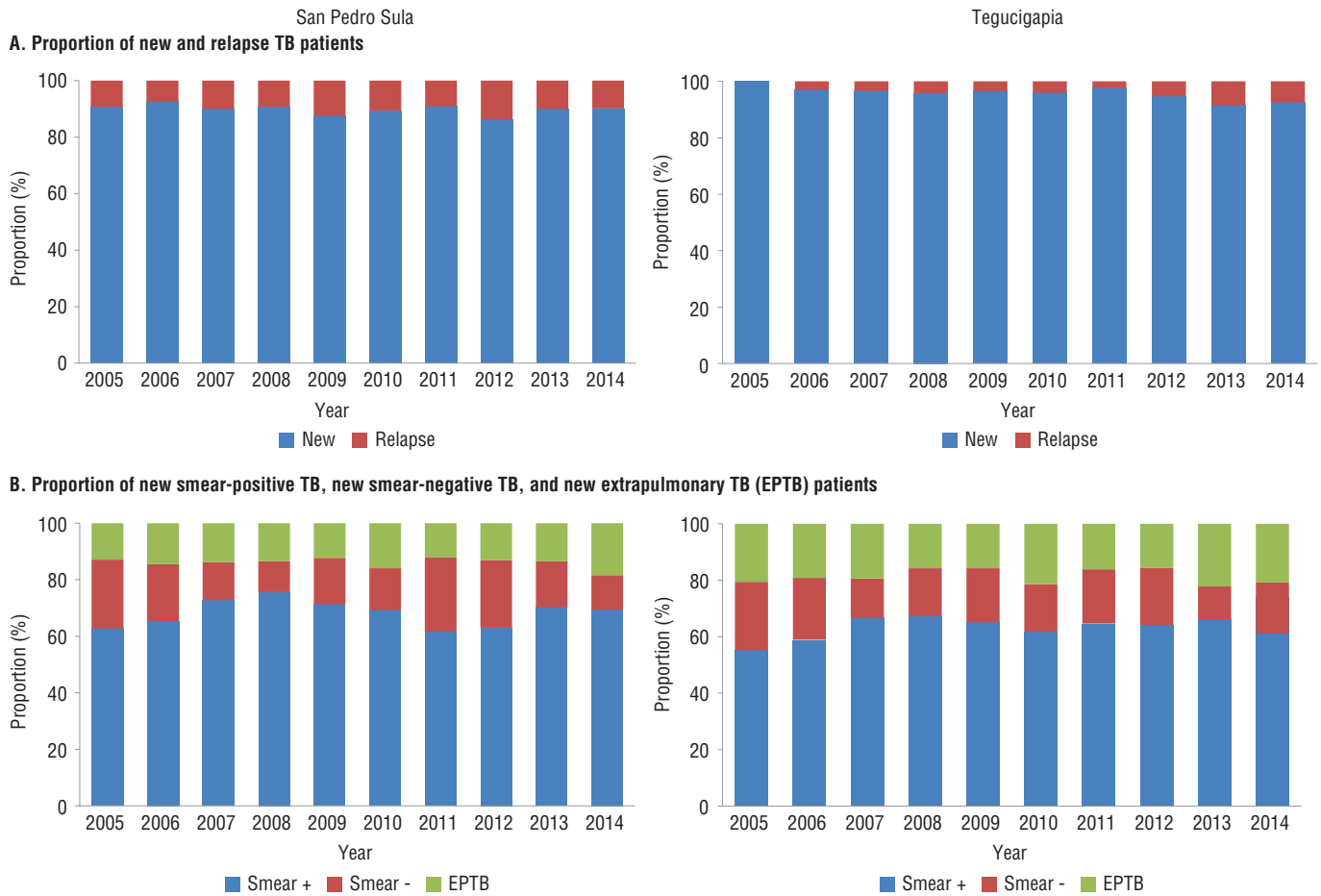
Source: prepared by the authors based on the study results.

FIGURE 3. Treatment outcomes in new smear-positive tuberculosis (TB) patients, San Pedro Sula and Tegucigalpa, Honduras, 2005–2014
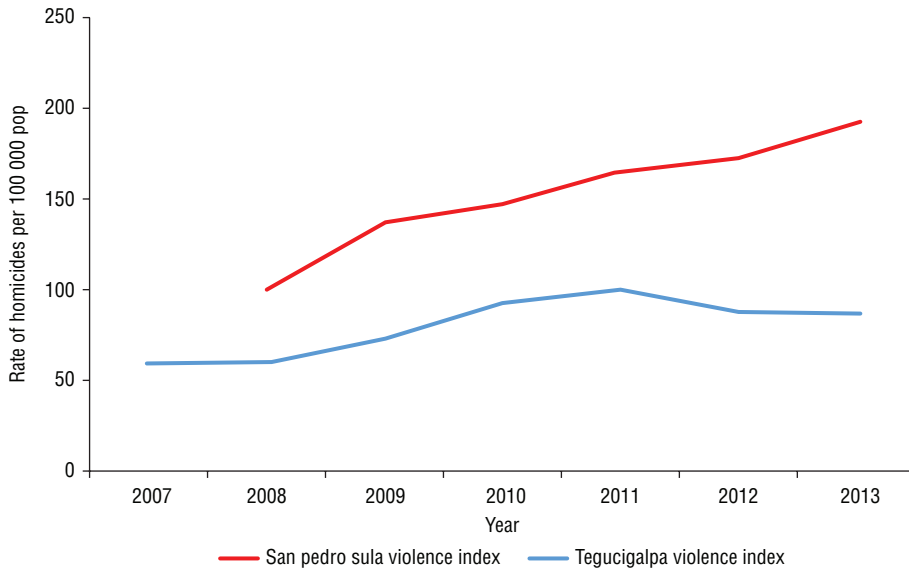

San Pedro Sula

Tegucigalpa
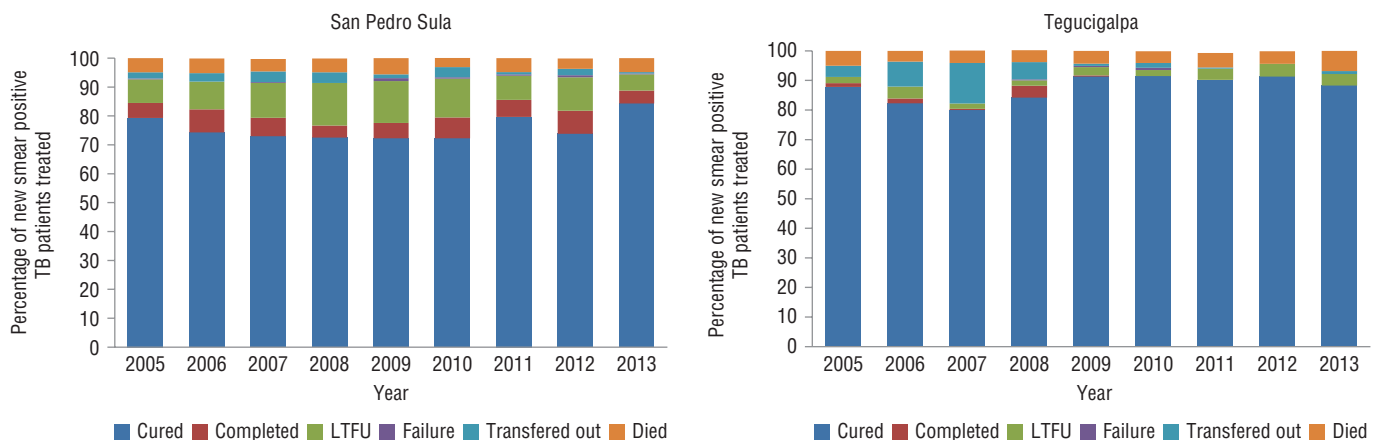
Source: prepared by the authors based on the study results.
LTFU: Lost to follow-up.

TB is greater in some large cities than in nonurban areas or in the country as a whole. The LAC region has the highest proportion of urban people, the highest levels of inequality in the world, and large inequities between urban dwellers. Rapid unplanned population growth has overburdened the governments' capacity to 1) regulate public services and 2) provide essential services such as health care (3, 33, 34). Some cities, such as Rio de Janeiro (Brazil), Lima (Peru), and Buenos Aires (Argentina), harbor the highest proportion of TB cases in their respective countries (9). Therefore, the two largest

FIGURE 4. Homicide Index, San Pedro Sula and Tegucigalpa, Honduras, 2007–2013

Source: prepared by the authors based on data from (25).

TABLE 1. Socio-demographic and health characteristics of tuberculosis patients, San Pedro Sula and Tegucigalpa, Honduras, 2014

Characteristic	San Pedro Sula		Tegucigalpa		CI[a]	P[b]
	No.	(%)	No.	(%)		
Total (n)	542		347		–[c]	–
Age (years)						
Median (CI)	34	(32–36)	41	(37–44)	–	< 0.001[d]
0–14	43	(7.9)	16	(4.6)	(–0.001 to 0.067)	0.0713
≥ 15	499	(92.1)	331	(95.4)		
Sex						
Female	221	(40.8)	130	(37.6)	(–0.036 to 0.100)	0.378
Male	321	(59.2)	216	(62.4)		
Education						
None	27	(6.7)	37	(13.2)	(–0.115 to –0.016)	0.0059
Primary	231	(56.9)	142	(50.5)	(–0.015 to 0.142)	0.1169
High school	95	(23.4)	71	(25.3)	(–0.087 to 0.050)	0.6372
Technical	29	(7.1)	12	(4.3)	(–0.009 to 0.066)	0.1619
Superior	24	(5.9)	19	(6.8)	(–0.049 to 0.032)	0.7702
Occupation						
Unemployed	213	(39.3)	149	(42.9)	(–0.105 to 0.032)	0.3135
Housewife	31	(5.7)	29	(8.4)	(–0.064 to 0.011)	0.1638
Informal sector	36	(6.6)	50	(14.4)	(–0.123 to –0.033)	0.0002
Health worker	13	(2.4)	16	(4.6)	(–0.050 to 0.006)	0.1057
Professional/retired	15	(2.8)	23	(6.6)	(–0.071 to –0.007)	0.0092
Assembly plants	19	(3.5)	2	(0.6)	(0.010 to 0.049)	0.0099
Other	215	(39.7)	78	(22.5)	(0.109 to 0.234)	< 0.001
Risk condition						
Incarceration	50	(9.2)	13	(3.8)	(0.021 to 0.089)	0.003
Alcohol abuse	21	(3.9)	43	(12.4)	(–0.126 to –0.045)	< 0.001
Drug abuse	47	(8.7)	15	(4.3)	(0.009 to 0.078)	0.0189
Homelessness	3	(0.6)	11	(3.2)	(–0.048 to –0.004)	0.0054
External migration	11	(2.0)	10	(3.0)	(–0.032 to 0.015)	0.5552
Comorbidity						
Diabetes mellitus	77	(14.2)	30	(9.0)	(0.012 to 0.100)	0.0173
HIV	48	(9.0)	52	(16.3)	(–0.108 to –0.014)	0.0067

Source: prepared by the authors based on the study results.
[a] CI: 95% confidence interval.
[b] Z-test.
[c] Not applicable.
[d] Mann–Whitney U test.

cities in Honduras follow the regional trends: San Pedro Sula and Tegucigalpa combined have 25% of the population yet 32% of national TB cases, two-thirds of which live in San Pedro Sula (8).

With regard to health services and DOTS, PAHO recommends a minimum of one laboratory per 100 000 habitants. This requirement is met in Tegucigalpa but not in San Pedro Sula (2). Bothamley et al. found that 1) there was greater TB incidence in large European cities than in nonurban areas and 2) in cities that did not achieve WHO's recommended target of one nurse per 40 TB case notifications, the TB control indicators were worse (higher rate of TB case notification, smear-positive cases, loss to follow-up, and treatment abandonment) than in cities that reached this target (27).

A study of TB trends in 134 countries by Dye et al. (1997–2006) (35) found that 10 years after DOTS implementation, TB incidence declined more quickly in countries with a higher HDI, lower child mortality, and better access to improved sanitation. The association between the HDI and the rate of case decline may also explain some inter- and intra-city differences in TB CNRs (35).

The above-mentioned health inequities have been described by WHO/UN–Habitat (34). The research team found higher child mortality and violence, lower per capita income and HDI scores, and lower numbers of doctors, nurses, and health facilities in San Pedro Sula than in Tegucigalpa. Dye et al. observed that the strong TB program activities in LAC countries had a positive influence on TB control but concluded that TB diagnosis and treatment programs in the region have not yet become the principal determinants of TB transmission and incidence. Instead, recent trends in TB incidence are more strongly associated with biological, social, and economic determinants that differ across countries and regions (35). Lönnroth et al. (6), in a review of social determinants and risk factors of TB, found that although the "DOTS strategy is effective in curing patients and saving lives, additional interventions are required to reach the long-term epidemiological targets for global TB control" to reduce people's vulnerability for TB. Risk factors at the population level include poor living and working conditions associated with high

risk of TB transmission (assembly plants, prisons, slums, hospitals) and factors that impair the host's defense against TB infection and disease, such as HIV infection, malnutrition, diabetes, drug and alcohol abuse, and indoor air pollution (28–30, 32, 36, 37). The identification of risk groups also helps target strategies for early detection of people in need of TB treatment (37).

This study's findings have several implications. First, San Pedro Sula would benefit from a city administration that connects public health more closely with other sectors such as the private health sector, industry, urban planning, housing, transportation, water and sanitation, education, environment, nongovernmental and community organizations, and finance agencies. Municipal authorities, and probably also national authorities, need to raise more funds, invest in public health services, and tackle violence and homicide, thereby making cities a safer and better place to live (38–40). Second, the higher proportion of presumptive TB cases with smear-positive disease suggests that patients come too late for diagnosis and/or the health staff is not well trained in detection. Too few laboratories in the public sector, insufficiently trained health personnel in the private sector, lack of knowledge about TB, and stigma might also be contributing factors (41–44). Whatever the reasons for the lack of early detection, a concerted effort is needed to improve access to diagnostic facilities and to educate the general population about symptoms and signs of TB. Finally, the NTP needs to reduce losses to follow-up, and thereby improve treatment success, strengthen infection control and TB programs in prisons and assembly plants, and improve public–private links, especially in San Pedro Sula.

Strengths and limitations

Strengths of this study include the fact that the analysis of trends of TB and TB treatment outcomes in two cities during an extended study period (10 years) was combined with both ecologic and individual data assessing TB program, health sector, and socioeconomic data. In addition, to the best of the authors' knowledge, this was the first national study using data from the new individual notification form used by the NTP.

Study limitations were related to the operational nature of the research, which led to some gaps in the quality and completeness of the ecologic data. The TB information system in Honduras has been adequate since the NTP reached full coverage for DOTS, including patients with HIV-positive status (11). However, sex and age groups in TB cases were only included starting in 2009. The NTP has no external funds for monitoring and supervision of the regions or other activities that could have improved diagnosis during 2008–2011. This might explain the decrease in diagnosis activity in both Tegucigalpa and San Pedro Sula, and the fact that San Pedro Sula did not include presumptive TB expected cases from the IHSS for 2005–2010 or 2014 (as opposed to Tegucigalpa, which included that data for all years studied (11). This policy partly explains the low rate of examined presumptive TB cases in San Pedro Sula in 2010, and the considerable increase in presumptive TB cases beginning in 2011, when they were first included in the reporting and the TB control program obtained external funding from the Global Fund.

Aggregated data on socioeconomic and health sector factors were not available for all years of the study period for all factors, including welfare indicators such as the HDI score or life expectancy, the Gini index, and child mortality. While the individual TB notification report was a successful data collection tool, because of its recent introduction, some of the variables (e.g., drug and alcohol abuse, migration status, occupation) are not yet standardized.

Recommendations

Recommendations include early introduction and adaptation of WHO's Global Strategy for Tuberculosis Prevention, Care and Control after 2015 (45), with a variety of interventions to be implemented in 1) cities, especially San Pedro Sula; 2) the public and private health sector; and 3) the NTP, in order to strengthen TB prevention, early case detection, and treatment and infection control, and thus lower the case burden.

Conclusions

This study showed a higher TB burden, an increasing trend of TB cases, and less favorable treatment outcomes in San Pedro Sula compared to Tegucigalpa. The challenges in the first city appeared to be associated with fewer public health workers and facilities, weaknesses in the implementation of the Stop TB strategy, and social determinants. Individual data for 2014 showed that 1) TB patients in San Pedro Sula were younger; 2) more of them were assembly plant workers, prisoners, and drug abusers; and 3) more of them had diabetes compared to those in Tegucigalpa.

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RESUMEN

Tendencias discordantes de tuberculosis en San Pedro Sula y Tegucigalpa, Honduras, del 2005 al 2014

Objetivo. Describir y comparar las tendencias de las tasas de notificación de casos de tuberculosis y los desenlaces terapéuticos en las dos principales ciudades de Honduras (San Pedro Sula y Tegucigalpa) durante el período del 2005 al 2014; y reconocer los posibles factores socioeconómicos y del sector de la salud que se relacionan con estos resultados.

Métodos. Estudio ecológico retrospectivo de investigación operativa con datos agregados del Programa Nacional contra la Tuberculosis. La información socioeconómica y del sector de la salud y los datos individuales se obtuvieron del informe de notificación de casos de tuberculosis del 2014.

Resultados. Las tasas de notificación de casos de tuberculosis disminuyeron en forma sostenida durante el período del estudio en Tegucigalpa (de 46 a 28 por 100 000 habitantes) pero permanecieron altas en San Pedro Sula (disminuyeron de 89 a 78 casos por 100 000 habitantes). Se observaron tendencias análogas en los casos de tuberculosis con baciloscopia positiva. Si bien el número de casos con presunción clínica de tuberculosis examinados en ambas ciudades fue equivalente, en San Pedro Sula los casos con baciloscopia positiva, las recaídas (8,9% frente a 4,2%) y los pacientes perdidos durante el seguimiento (10,9% frente a 2,7%) fueron significativamente más frecuentes y la tasa de éxito terapéutico fue más baja (75,7% frente a 87,0%). En San Pedro Sula se observó un ingreso anual por habitante más bajo, menos personal y establecimientos de salud en el sector público, y un índice más alto y creciente de homicidios. Los datos sobre los casos de tuberculosis del 2014 en San Pedro Sula revelaron una mediana de edad de los pacientes significativamente menor y una mayor proporción de trabajadores de instalaciones de montaje, prisioneros, consumidores de drogas y pacientes con diabetes.

Conclusiones. En San Pedro Sula la tasa de tuberculosis fue más alta, la tasa de éxito terapéutico fue inferior y los indicadores sobre los recursos de atención de salud y los aspectos sociodemográficos fueron menos favorables en comparación con Tegucigalpa. Las autoridades municipales, el Programa Nacional contra la Tuberculosis y el sector sanitario en general deben fortalecer la detección temprana de casos, el tratamiento y el control de la infección mediante la participación del sector público y el sector privado de la salud.

Palabras clave Tuberculosis, zonas metropolitanas; prisiones; violencia; investigación operativa; Honduras.