ORIGINAL RESEARCH

Social Determinants of Pulmonary Tuberculosis in Families of Migrants participating in Mexico-Canada Seasonal Agricultural Workers Program: A Study in Guadalupe Zaragoza*

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Abstract

Objective: To analyze the social determinants of pulmonary tuberculosis in the families of migrant laborers registered in the Seasonal Agricultural Workers Program (SAWP) and residing in Guadalupe Zaragoza Tlahuapan, Puebla, México. Methods: An exploratory cross-sectional study of the interaction between migration, social determinants, and pulmonary tuberculosis. Results: In this poor and patriarchal community, the SAWP offers financial opportunities for the men of Guadalupe Zaragoza. The remittances of these migrant workers have enabled their families to live in adequate housing, but their health situation is still vulnerable. Only half of the families have access to public health services or the special health programs for migrant worker families. 13% of migrant family members were infected with pulmonary tuberculosis as measured by the Quantiferon-TB test. The female partners of migrants typically do not study past elementary school, become housewives with no pay, are forced to take on added work in the household, and experience subjective symptoms of stress and fatigue. The children of Guadalupe Zaragoza are also vulnerable; the number of children in this community who can regularly attend school is below the national average because many children have to work. These families end up paying more for education, housing, and health services than the average Mexican family. Conclusions: In the families of SAWP migrant workers, the prevalence of latent pulmonary tuberculosis was found to be lower than the national average based on studies using the tuberculin test; this may be due to the greater specificity of the Quantiferon-TB Gold test. There is a significant risk of reactivation tuberculosis in these families due to the inequity in the social determinants of health.

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Introduction

On their arrival in a receiving country, Mexican migrant workers are reported initially to be in better health than other populations. This relatively good state of health poses a paradox. It may be due to the demanding nature of the migration process which selects out those who are not in good health. However, over time migrants tend to change their living conditions and health, gradually adopting the culture of the receiving country. Long days of intense labor damage their health,[1] favoring the development of the main health problems to which this population is vulnerable: tuberculosis, HIV-AIDS, sexually transmitted diseases, diabetes, and hypertension.[2,a] Mexican epidemiology which analyzes disease through the lens of risk factors, classifies

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[a]The next most common health problems are overweight/obesity, cervical and uterine cancer, breast cancer, substance abuse, depression & violence.

these migrants as disease vectors who return to Mexico with infections and unhealthy lifestyles acquired during overseas exposure.[3] This traditional epidemiological perspective fosters preventive interventions focused on the individual behavior of migrants.

It is not surprising that the first priority for the Mexican government has been the prevention of pulmonary tuberculosis in its migrant population.[2] Tuberculosis is the most significant poverty-related health problem,[4] and it is poverty that drives people to migrate for work.[5] This study uses a social epidemiological perspective to examine pulmonary tuberculosis in the families of migrants who participated in SAWP. Rather than fostering the stigmatizing notion that "migrant = vector," we studied the prevalence of tuberculosis in migrant laborers living in the state of Puebla in order to identify those social determinants that might be affecting their collective health situation.

Background & Context

Social Determinants of Health: The social determinants of health can be defined as those social factors which are expressed in human biopsychic processes.[6] They are classified as either structural or intermediate, depending on their relative importance in determining health inequities.[7] *Structural determinants* are the components of social structure (production modes, state, gender, ethnic origin, social status) and are mediated by *intermediate determinants* are also known as the "causes of causes" (health systems and living conditions).[8]

Pulmonary Tuberculosis: Tuberculosis is the signature disease of poverty.[9] If untreated, a person with active pulmonary tuberculosis will infect an additional 10 to 15 people a year. The immune system of most persons infected with tuberculosis will usually destroy the mycobacterium or contain the infection. In the latter case, the mycobacterium remains dormant for many years; this is known as latent tuberculosis. Around 80% of active pulmonary tuberculosis is due to the reactivation of these latent mycobacteria.[4]

SAWP: The SAWP, created in 1974, is the most important documented means of Mexico-Canada labor migration. It is a seasonal labor migration circuit[b] that meets the demands for manual labor in Canadian agricultural fields. Human Resources and Skills Development Canada (HRSDC) sets migration policy for seasonal workers and negotiates with the Mexican government. Administrative tasks are managed by a private non-profit agency called Foreign Agricultural Resource Management Services (FARMS).

The protocol is as follows: employers must make a formal petition for manual laborers to HRSDC two months before the start of the agricultural season; they must provide a description of the working conditions. If the employer has received no applications by Canadian citizens for work a month prior to the start of the season, HRSDC will then authorize FARMS to follow up on the employers' requests. FARMS attempts to fulfill all manpower requests. If a farmer requests specific individual laborers, FARMS would attempt to hire these individuals.[10] HRSDC then forwards these requests to the Mexican Secretary of Labor and Social Protection (*Secretaría del Trabajo y Previsión Social*), which in turn establishes the following basic requirements: Mexican citizenship; age 22-45 years; good physical health; history of agricultural work; third to ninth grade education; married or common-law partner, preferably with children; or, if single, financial responsibility for others; residency in a rural community. Those laborers who are admitted into the Program are automatically entitled to receive medical insurance benefits for the time of their stay in Canada; these benefits cover accidents, medical treatment, hospitalization, and death benefits for occurrences irrespective of whether they are job-related. The cost of this insurance is deducted from the worker's salary (in 2007 the minimum wage was Canadian $8.90 per hour). In addition to the deduction for medical expenses, an addition 6% is deducted for lodgings, $6.50 per day for food, and the employer is reimbursed for the cost of the migration application.[11,c]

The participation of Mexicans in the SAWP has

[b] Contracts vary from 3 to 8 months depending upon the growing season of the specific crop. [c] Studies by the authors, as well as by Kerry Preibisch, Evelyn Escalada, Jenny Hannebry and others have found that salary deductions are typically larger than those stipulated in the contract. Some day laborers have additional personal expenses and send the rest of their money to their home towns.

steadily increased to meet the Canadian demand for agricultural labor. In 1974 there were 203 registered laborers; by 2007, more than 14,000 Mexicans were working in Canada.[12] In the state of Puebla, 875 laborers emigrated in 2003; 859 in 2004; in the last four months of 2005, 146; in 2006, 531; and by April, 2007, 453 farm workers had travelled to Canada. Puebla ranks third nationwide in terms of the number of laborers migrating to Canada; Mexico City is first, followed by Tlaxcala.[10]

General Objective

To identify and analyze the social determinants of pulmonary tuberculosis in families of SAWP migrants from Guadalupe Zaragoza, Tlahuapan; Puebla.

Methods

This is an exploratory cross-sectional study of the relationship between migration, social determinants of health, and pulmonary tuberculosis prevalence using a triangulation methodology.[13] Data for this study was collected during 2008.

Target Population, Sampling and Data Collection:

Due to limited financial resources, we worked only in the states where the participating universities are located: Puebla, Mexico and Niagara, Canada.

For the quantitative component, Tlahuapan was identified as the municipality with the highest number of SAWP participants. The Mayor of Tlahuapan later informed us that most of the migrant laborers who travel to Canada live in the village of Guadalupe Zaragoza. The target population were all families with at least one member participating in the SAWP during the previous 5 years. This sample included 54 families who were surveyed house to house. Every family answered all questions on the survey. We collected laboratory samples from family members who were legal adults whenever the responses to the survey raised concerns that a family member might be infected with pulmonary tuberculosis. After obtaining informed consent, we obtained samples including both serum (for the QuantiFERON-TB Gold test) and sputum (examined using the Ziehl Neelsen technique). Participants were informed of the results of their lab tests, and when indicated they were referred to the Medical School of the Benemerita Universidad Autónoma de Puebla where they received treatment.

The target population for the qualitative study consisted of male and female farm workers from Puebla participating in the SAWP and working in the Niagara (Canada) region. We interviewed four farm workers using an open, semi-structured guide. Answers were transcribed and the content analyzed.[14]

Results and Discussion

Description of the migrants' families:

The 54 families comprised a total population of 285 individuals; this included the family members working as migrants in Canada. The average family size was 5.3; males represented 50.6% of the sample. Distribution by ages is shown in Figure 1.

The age distribution is markedly uneven. The two largest groups are made up of children under 9

Figure 1: Population Pyramid Guadalupe Zaragoza, Tlahuapan, Puebla, 2008
Source: Survey data

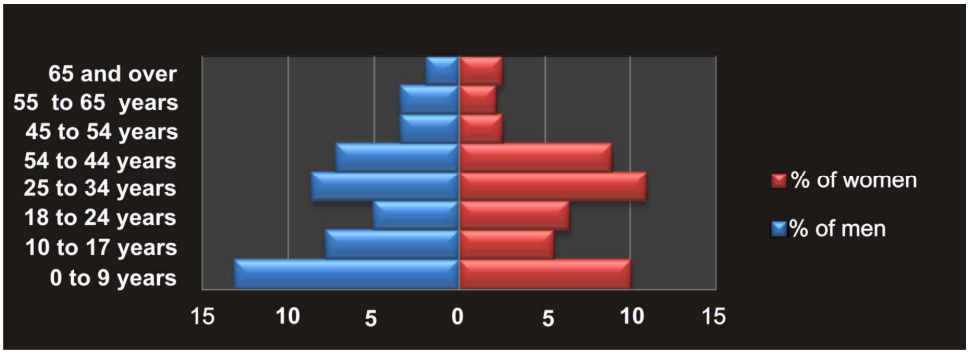


Table 1: TB Cases in the Municipality of Tlahuapan from 2004 to 2008

Year	Pulmonary	Bone	Scrofula	Total
2004	0	1	0	1
2006	1	0	0	1
2007	1	0	0	1
September 2008	0	0	1	1

Source: Dr. Ana Dolores González Santellán, State official responsible for mycobacterial diseases. SSEP 2008

years of age and working-age adults; many of these adults were working in Canada. This distribution is consistent with economic theories of population. Karl Marx noted that the expropriation of land and labor migration – both characteristic of Mexico – create a surplus population of workers whose prospects for work are irregular. The relative surplus of children less than 9 years of age may represent the children of migrants who will, when they grow up, form the "industrial reserve army."[15] Although Marx's population theory was abandoned given later technological advances, Guadalupe Zaragoza seems to be an exception; its population structure is related to the formal labor requirements[16] of Canadian agriculture.

Prevalence of Pulmonary Tuberculosis:

We identified one former migrant who had contracted pulmonary tuberculosis; this person stated that his anti-TB treatment had never been completed. Four percent of the families had been exposed to someone with active pulmonary tuberculosis. Only 78% of the families stated that all members had received vaccination against TB. In order to compare these findings with other parts of Mexico, we used records of the Health Services Department of the State of Puebla (SSEP: Servicios de Salud del Estado de Puebla, SSEP). The only available data from the Department is presented in Table 1.

The SSEP does not distinguish between incident and prevalent cases. This creates some difficulty in the interpretation of Table 1. We can only assume that the sole pulmonary TB case diagnosed by the SSEP in 2006 and/or 2007 is the former migrant to Canada we identified in Guadalupe Zaragoza. However, the fact that 22% of the families have members who have not received vaccination against TB creates a risk for the spread of this disease.

Even more confusing is an examination of tuberculosis statistics from the various public health agencies of the Mexican government. (See Table 2)

According to the World Health Organization,[17] Canada has one of the world's lowest rates of tuberculosis; this agrees with figures provided by the

Table 2 Incidence of TB (per 100,000 population) in Canada and Mexico (National, State and Municipality): 2006-2008

Location	Incidence	Source
Canada	5	WHO (2008)
Canada	5.1	Canadian Public Health Agency (2006)
Mexico	27.8	PAHO (2006)
Mexico	16.3	SSa. SINAVE (2007)
Latent TB, Mexico	"30-40%"	Dr. Lourdes García. INSP (2007)
Puebla	4.9	SSa. Sistema de Vigilancia epidemiológica de la tuberculosis (2006)
Puebla	7.2	SSa. Programa de acción Tuberculosis (2007)
Actual Cases in Tlahuapan	1	Dr. Ana Dolores González Santellán, State official responsible for Mycobacterial Diseases. SSEP (2008)

Notes: SSa: Mexican Ministry of Health; SINAVE: National Epidemiological Surveillance System; Sistema de Vigilancia epidemiológica de la tuberculosis: Tuberculosis Surveillance System; Programa de acción Tuberculosis: Tuberculosis Action Program INSP: National Institute for Public Health, SSEP: Health Services Department of Puebla State.

Table 3. QuantiFERON-TB Gold Test Results. Guadalupe Zaragoza, Tlahuapan; Puebla. 2008
Source: FMBUAP Laboratory & Brock University, 2008

Variable			Postive Interferon Gamma		Negative Interferon Gamma	
	n	%	n	%	n	%
Gender						
Male	11	23%	1	2.2%	10	21%
Female	35	77%	5	10.8%	30	66%
Age/Yrs.						
14-19	6	13%	1	2.2%	5	11%
20-25	5	11%	2	4.3%	3	7%
26-30	9	19%	1	2.2%	8	17%
31-35	7	15%	0	0%	7	15%
36-40	7	15%	0	0%	7	15%
41-45	3	7%	0	0%	3	7%
46-50	3	7%	0	0%	3	7%
51 or more	6	13%	2	4.3%	4	9%
Total	46	100%	6	13.0%	40	87%

Note: Serological samples were obtained from all but one subject.

Public Health Agency of Canada.[18] The situation in Mexico, however, is quite different. PAHO provides an estimate of TB prevalence[19] that does not match the one reported by the Mexican Health Ministry.[20] The Health Ministry reports a TB prevalence in Puebla similar to that given by the WHO for Canada. What is more, the Ministry provides markedly divergent figures depending upon which agency is reporting them. The National TB Surveillance Program[21] ranks Puebla as number 20 among the 32 Mexican states, while the TB Action Program puts Puebla in 8th place.[22] These discrepancies among official data are nothing new; they have even become a topic for study among Mexican researchers. [23]

Twenty six families (48%) reported that at least one member experienced clinical symptoms associated with pulmonary tuberculosis[d], primarily a persistent and productive cough. This finding is consistent with the most common cause of disease in Puebla, namely Acute Respiratory Infections. [24] We encouraged these families to undergo specific laboratory testing. Forty-seven individuals provided sputum and serum samples. One person declined the laboratory tests, so that our final sample included 46 subjects. Although we had originally excluded children, exceptions were made in cases where the mother specifically asked for the child to be tested because of severe symptoms.

Of the 46 people, only 18 provided a sputum sample.[e] The five samples (all from females aged 46-50) were unsuitable for microscopy. All of the remaining 13 sputum samples (28% of the population who underwent laboratory testing) tested negative for active TB. These results illustrate how difficult it is to obtain useful sputum samples for analysis using the Zielh Nielsen test, especially from women.[f] Table 3 shows results using the QuantiFERON-TB Gold test (based on interferon-gamma).

All 46 serum samples were considered of high quality, indicating that no deterioration had occurred during transport to the Brock University laboratory. A positive test means that an individual has contracted either latent or active TB. In our

[d] Productive and persistant cough, hemoptysis, thoracic pain, unexplained fever, involuntary loss of weight, chronic fatigue, and nocturnal sweats. We asked about the presence of each symptom separately and for two different time periods: in the past two weeks and in the past 12 months.

[e] The researchers made home visits over a period of five months in an attempt to get adequate samples, desisting only when the study was coming to an end.

[f] Women in Mexico are taught not to expectorate.

study, 13% of the population tested positive for the QuantiFERON-TB Gold Test but negative for the additional smear test, indicating latent pulmonary tuberculosis.

These results are not strictly comparable to official Mexican data, since official data is based on tuberculin skin testing[24] which is less specific and thus more likely to produce false positives.[26] Nonetheless, it worth noting that official statistics report that between 30-40% of the Mexican population is infected with latent TB. (Table 2). As might be expected, we found a lower prevalence of TB using the QuantiFERON-TB Gold test (based on interferon-gamma).[g] Although the prevalence we obtained were less than that reported nationally, our subjects remain at risk for reactivation disease, particularly given the context of immunosuppression seen in poor populations.[4]

Social Determinants of Health

Poverty

According to the 2005 UNDP Human Development Report, [27] nearly every country in the world has seen a rise in income inequality in the last decades. Canada ranks 4th worldwide in terms of human development; Mexico is in 52nd place.[28] Mexican social inequality is grounded in the fact that the wealthiest 10% of Mexicans receive almost 48% of the country's total income while its poorest 40% receive only 7%.[29] According to the UN High Commissioner for Refugees (UNHCR) the main drivers of migration are unemployment, sub-employment, low wages, poverty, and social marginalization.[30] This closely matches the results obtained in this study. Seven of ten families report that the reason for seasonal work in Canada are local salaries insufficient to support a family. The remaining families (30%) cite the ease of participating in the SAWP.

According to the classification presented by the National Population Council (CONAPO: Consejo Nacional de Población), there are six levels of poverty in Mexico; Level 1 being the greatest level of poverty and Level 6 the lowest.[29] The Council notes that Levels 1, 2 and 3 present "serious income inequality issues." In 1995, the state of Puebla was placed in Level 3. By 2000, it was classified in Level 2, indicating that inequality had risen in the state, with the poorest households sharing less than 1% of income, while 52.9% was concentrated in the richest households. Within Puebla, the municipality of Tlahuapan is classified in Level 3, with less inequality than the state average, but much more inequality than that seen in Canada. Thus, we can conclude that the main motivation for migration in Guadalupe Zaragoza is poverty, reflected in the scarcity of local employment providing sufficient income to maintain a family.

Gender

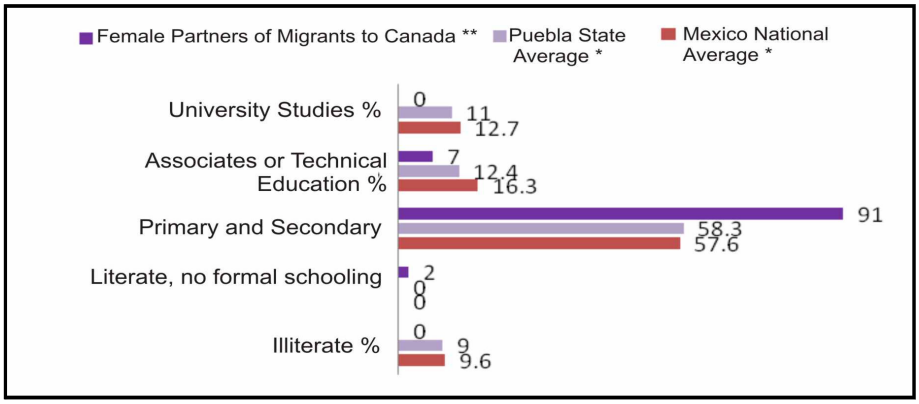
In Mexico-Canada migration, a high proportion of the female partners of migrants remain in their community of origin as heads of family. We located 53 male migrants who reported 52 female partners. This figure is consistent the SAWP's preference for hiring married or cohabitating males; males with family obligations are considered more like to return to their families.

While the men are in Canada, most of their female partners (87%) remain in the marital home; a far smaller number (9%) moved to their in-law's homes and the remaining women either moved in with their parents (2%) or found other housing (2%). Their choice of housing was dictated by differing considerations. Only 1/3 of women living in the marital home indicated that this was done at the request of their husbands. Among women living with their in-laws, ¾ reported that they had been told to do so by their spouses, while ¼ indicated that this was their own choice.

While their partner is in Canada, 8 out of 10 women work as unpaid housewives; this means they look after both nuclear and extended family, depending on whether they move in with their parents or with their partner's parents. 1 out of 10 works in agricultural activities. Their participation in community activities is minimal. Most stated that they engage in the same types of activities, irrespective of whether their spouse is in Mexico or

[g] Researchers at Brock University compared QuantiFERON-TB Gold and the tuberculin skin test for the detection of latent TB. Eighteen percent of subjects were positive with the QuantiFERON-TB and 34% with the tuberculin skin test.

Figure 2: Female Educational Attainment 2005 and 2008
Source: Immigrant wives: Survey data
National & State: Second Census of Population and Housing Stock INEGI, 2005



Canada. Those who are homemakers assume the task of raising their children alone. Faced with multiple responsibilities, these women work the equivalent of two or three shifts a day.

The social arrangement of these communities is based on a division of labor between men and women, creating two completely distinct worlds and generating female subordination. In Guadalupe Zaragoza, women are in charge of maintaining the family under the "protection" of the family head, the man. This gender division of labor also creates distinct social and economic spaces. Women do their unpaid domestic work at home and without any limits on the length of time worked; men have jobs with salaries that take place in a social space outside of the home. Women who cannot go beyond these limits are more vulnerable to becoming poor, especially if their ties with male partners are somehow broken.[31]

Figure 2 shows a comparison of the highest educational attained between women who are partners of migrants, women living in Puebla, and all Mexican women. Most female participants in this study had a primary school education. At higher levels, the partners of migrant workers lag behind Puebla and national levels. In Mexico, those who have only primary schooling are at a disadvantage when they are incorporated into the country's economic, social, and political life. Their possibilities are limited; it is difficult for them to get additional training, a pre-requisite for better-paying jobs. They are less likely to be empowered.[32]

Most of those who tested positive for latent TB were women. In search of possible immunosuppression, we asked female partners if they had any health concerns when their male partner was in Canada.[h] Most responded affirmatively (70%). Table 4 lists their self-reported health concerns. These symptoms are similar to those seen in other studies on gender, work, and health and are considered somatic manifestations of stress[33,34] and fatigue.[35] While women may undertake the same kinds of activities when their partner is in Canada, the quantity of work increases, and with this increase comes a worsening of their health manifested in stress and fatigue.

Intermediate Factors

Living Conditions

Living conditions are defined as the material conditions necessary for living and are determined by the existing model of social production.[36] The indicators used in the study are some of those which have been established by UNDP.[37]

Housing

Homes are the physical space where the family is maintained and reproduced; thus housing is the principal indicator of levels of basic consumption. Eighty percent of the housing surveyed was considered "adequate;"[i] these homes had either been built

[h] We chose "health concerns" rather than "pathologies" to highlight their subjective nature as an expression of something foreign in their bodies.

Table 4 Women's Self-Reported Health Concerns

	No.	%
Women reporting Health concerns	37	70*
Discomfort / Ailment		
"Cholesterol"	2	5.4
"Depression"	10	27.2
"Back Pain"	3	8
"Stress"	4	10.8
"I feel bad"	4	10.8
"Cold"	2	5.4
"Migraine"	4	10.8
"Pressure"	4	10.8
"Back problems"	2	5.4
"Arthritis"	2	5.4
Total	37	100**

Source: Survey Data; * Percentage of all women surveyed; ** Percentage of all women with health concerns

or remodeled with the remittances from Canada. This advantage favored the sharing of family life, consumption, production, and health conditions.

Regular attendance at school

Education is fundamental for the individual's full integration into the social, economic and political life of Mexico. It is also essential to develop the individual's talents and potential, serving to lessen social and cultural disparities. Education forms citizens and is the foundation for a just, informed, participative, responsible, and democratic society.[38]

We surveyed whether the children of migrant families went to school and if so, whether this was their main activity.[j] Most families (74%) reported that the youngest children went to school and that this was their main activity. This figure is still far below national levels for school participation by Mexican children and adolescents (93%).[39] Twenty per cent of the families stated that their youngest children did not go to school on a regular basis because they had "other activities," such as "helping out at home, in the field or working." According to UNICEF and the ILO, these tasks would be considered as child labor[40,41] and constitute a violation of the childrens' human rights. Puebla ranks 3rd in Mexico with respect to child labor.[42] Compared to state figures for Puebla, families of migrant reported 150% more child labor

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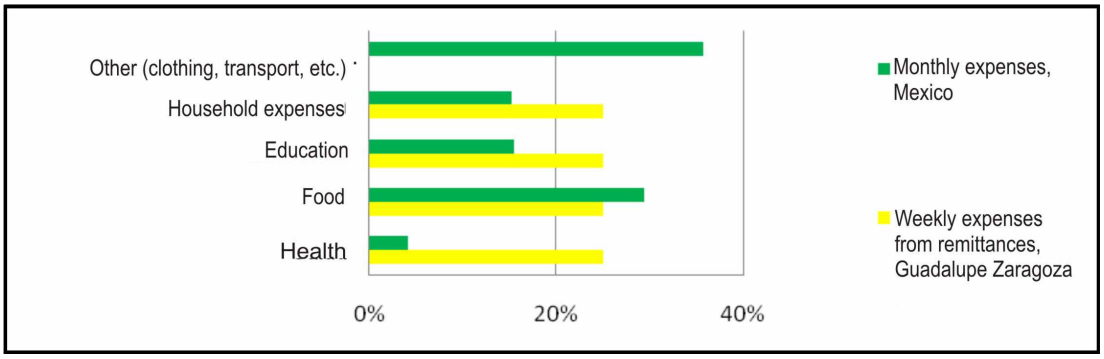
Use of Remittances for Daily Expenses

Graph 3 compares typical spending patterns in Mexican families with the use of remittances by the families of migrants in Guadalupe Zaragoza. The most recent National Survey of Household Income and Expenses (Encuesta Nacional de Ingresos y Gastos de los Hogares, ENIGH)[43] conducted by the National Institute of Geography and Statistics, (Instituto Nacional de Estadística y Geografía) shows that Mexican households have seen their real income increase by 10.1%. Spending on health, clothing, housekeeping, and household appliances went up. Nonetheless, the largest single expense (29%) for Mexican households remains purchases of food.

The families from Guadalupe Zaragoza spend more than the national average on education, hous-

[i] Adequate housing was defined as having the following characteristics: walls made of brick or concrete; roofs made of cement or any other impermeable material that keeps out unwanted animals; floor made of cement, brick or mosaics; adequate ventilation and lighting; indoor water and adequate plumbing; kitchen separated from bedrooms; clean and in good general condition.

Figure 3: Local and National Family Spending . 2006 to 2008
Source: Survey data (2008); ENIGH (2006)



ing, and health. The difference in health care spending was particularly striking; health care costs were 400% more than the national average. Families are also investing in the construction and/or remodeling of their homes. While the families in Guadalupe Zaragoza, spend more for education than the average Mexican, they also reported lower rates of school attendance by their children. Our dataset did not clarify this apparent contradiction. As in other communities that have traditionally supplied migrant workers, we found that 80% of families contribute some of their remittances for religious celebrations (feasts of the patron saint, civic festivities, and the occasional important family celebrations such as weddings, baptisms, etc). They also make contributions for public works.

Health care services

Entitlement to public health care services

Sixty percent of the families do not receive any coverage through public health programs. The remaining 40% stated that they participated in the following programs (in order of descending frequency): *Seguro Popular* (Popular Insurance), *Oportunidades* (Opportunities) and *De Dos* (a combination of *Seguro Popular* with either *Oportunidades* or *Desarrollo Integral de la Familia* (Comprehensive Family Development)); each of the latter three programs enrolled barely 6% of the families. None of the families reported benefitting from the "Leave healthy, Return healthy" (*Vete sano, regresa sano*) program. Health services coverage for these families was better than the state average (34%) but remained below the national average (48%).[39] There were, however, marked differences in the particular services used. For example, the Social Development Ministry (SEDESOL, Secretaría de Desarrollo Social)[44] reports that one-fourth of all Mexican families receive benefits from *Oportunidades;* in Puebla 60% of the population uses *Oportunidades.* Yet barely 6% of the families in Guadalupe Zaragoza receive benefits from this program. The difference is explained by the objectives of *Oportunidades*: "to help families living in extreme poverty,"[45] i.e. those in Level 1. By contrast Guadalupe Zaragoza is classed in poverty Level 3.[29] The inverse of this situation occurs with *Seguro Popular* which covers one-fourth (26%) of the families in this study. This figure is higher than state (14.5%) or national (10%) enrollment in *Seguro Popular*.[45] The Ministry of Health[47] describes *Seguro Popular* as a voluntary medical insurance; the social circumstances of each family enrolling in *Seguro Popular* is evaluated, their income is stratified into ten groups and those families classified in the lowest two income deciles are exempted from payments. Families in the third decile are also exempted if they have a child less than five years old. The remaining families pay an annual fee which varies between $500.00 to $797.00 USD.[k] Families belonging to poverty Levels 1 and 2 are automatically classified in the first two or three deciles and the government does not charge them any fees. However, it appears that those who aren't "all that bad off" – like the families living in Guadalupe Zaragoza (Level 3) – are nonetheless expected to pay for their health

[k] Payment is made in Mexican pesos. As of May 31, 2009 one US dollar was worth $13.24 Mexican pesos.

care.

Different agencies within the Mexican government have different ways of defining "poverty." According to SEDESOL,[45] there are three types of poverty: food-related, ability-related, and landlessness; the first being the most extreme form of poverty. CONAPO,[29] on the other hand, bases its criteria on social inequalities and classifies poverty into 6 different levels, where 1,2 and 3 are serious poverty. This diversity of definitions ends up excluding some from obtaining coverage through health programs.

None of the families in the study were enrolled in the "Leave healthy, Return healthy" program and we saw no evidence of it being publicized in the village. "Leave healthy, Return healthy" is different from other health programs; it was created during the previous government and had the goal of offering health protection to a migrant population so that it might go abroad, stay well, and return healthy. The idea was to use the public and private health infrastructures to benefit a highly mobile population in making their own decisions about caring for their health. Three approaches were adopted - information, preventive care, and medical services – and these were to be offered at the three critical moments of migration: when leaving the country of origin, during transit, and when abroad.[2] The program identified the ten most mobile states; among them was Puebla. In 2001, two states were chosen to develop special measures for community diagnosis. One state was taken as an example of economic mobility (Puebla) and the other as a model of social mobility (Guanajuato).[48] "Leave healthy, Return healthy" was implemented in the state of Puebla based on the destination of its migrants: the United States of America and Canada.[1]

On October 20th, 2008, the SSEP published the approach the Health Ministry would be adopting to provide migrant laborers with health care assistance. The program *Bienvenido poblano (Welcome back Citizen)* would not replace prior initiatives. Of the three components of "Leave healthy, Return healthy" two would be dropped (preventive care and medical services); only the provision of information was retained.[49] The Health Ministry set out the procedures to apply for the program and noted that a fee would be charged. This fee is in violation of Mexican law. The General Health Act, Title II, Chapter I, Art. 27 defines health protection as a right and stipulates that the state must guarantee this right. Furthermore, the law states that the most vulnerable groups–such as migrant day agricultural laborers—must be given social assistance.[50]

How migrants view the "Leave healthy, Return health" program

In order to evaluate the impact of "Leave health, Return healthy" we asked migrants in Canada how they viewed the program. None of the informants knew anything about it, so we asked them about any health procedures prior to their trip to Canada.

> *I haven't gone to a clinic in 3 years. Those who come for 8 months are not sent (to seek medical attention); they only go if they want to. Only the new ones.* Informant A

> *I was sent to a health center…They checked me all over, blood, bones, lungs…Last year too. This year they also did all the tests too.* Informant B

> *When I started in the program, they gave me a medical examination. They check us each year, only if one wants to be checked, if not, then they don't…The last time that I was checked was three years ago. It's usually one year they check you, the next they don't, because if you are actually there for eight month, they don't examine you there.* Informant C

> *When I started in the program I had a complete checkup: x-rays, a general blood test, everything… I had it done each year until about three years ago, because they said that since we were going to be here for eight months, then we did have to get the medical examination*

[1] Declaration of MSP Carmen Morán V; Director of Migration and Health Affairs for the Puebla State Health Service, made to the authors on June 19th, 2007. The authors chose to interview Ms. Morán V because this information has not been published.

done over there, but, yes, if we want to, I mean, the official [translator's note: Licenciado] in Puebla said that if you want to, I can send you to get a medical checkup done, but it's easier for me to say "no" so that I don't have to be going like that, just for that, but, yes, the official in Puebla did suggest it. Informant D

It is striking that none of the informants admitted to knowing of "Leave health, Return healthy" particularly since Puebla is one of the two main states where it was started eight years ago. Moreover, informants who had participated in the program the longest mentioned that medical health examinations were not a constant; the flowchart provided by the Puebla State Health Services [51] indicates that prior to leaving Mexico, all migrants receive a medical examination, a chest x-ray, a blood count, syphilis test, blood glucose test, and blood group test. No exceptions to this requirement are noted.

Carmen Morán V, Migration and Health coordinator at the Puebla State Health Services (interviewed on June 19th, 2007) noted that the SAWP program (which was part of "Leave health, Return healthy") was decentralized in Puebla in 2005. This date matches information from informants about the irregular medical examinations.

Although our qualitative data cannot be used to draw definitive conclusions, the information obtained from our informants is consistent on several points: the irregularity of medical attention in Puebla, the fact that they had never heard of "Leave health, Return healthy," and that these impoverished farmers migrating because there was no work in their communities of origin, had to end up paying in order to have access to the SAWP.

Access and Use of Health Care Services

When health care is needed, the families in the study go to the Health Center of the SSEP which is located in the center of their community. Their second choice for care is a private allopath. Eight-nine percent of health services come – in about equal parts – from these two sources. The remaining 11% of families go to the Mexican Social Security Institute (Instituto Mexicano del Seguro Social, IMSS) and to the municipal services provided by the DIF.

These findings reflect the availability of public and private health care in the community. They also show that families enrolled in *Oportunidades* or *Seguro Popular* have to go to public health institutions for health care. Those people who don't use the public sector turn to private physicians. This choice appears to be voluntarily, because the health center of the SSEP provides care to all comers. This situation highlights the high opportunity costs involved in using the public health services for the very poor; using public health care services is more costly in terms of time lost than the savings resultant from the fact that the services are free.[m] This is why 40% turn to private physicians, although, as previously stated, this community is classified in Level 3 because of its poverty conditions. This is why health services cost them 400% more than the average Mexican family, a situation which could lead to pauperization and to a further dependency on the SAWP.

Conclusions

In the families of migrant laborers participating in the SAWP, we found a lower prevalence of latent TB than that which is reported nationally. This is not an unexpected result since we used the QuantiFERON-TB Gold test which is more specific than the tuberculin skin test. This test is recommended not only because of its greater specificity, but also because it is easier to obtain an adequate serum sample when compared to sputum for Ziehl Neelsen smears. What is important is not the "relatively small" number of people who had latent TB, but rather the high risk of activation disease in these families living in social conditions of great inequity.

Guadalupe Zaragoza is a poor, patriarchal community whose people suffer the effects of profound income inequality. This injustice is the motor driving migration of males to Canada through the

[m] This is due to the long waiting times (time = salary/money) as well as the high probability that patients will be required to purchase medicines. In the current political context which favors the privatization of public services, many public institutions lack basic materials, including medicines.

SAWP. Remittances have allowed families to meet certain basic needs such as living in adequate housing. But the health status of the migrant families is precarious since only half of the inhabitants of Guadalupe Zaragoza have access to social health care programs. The children of this community are also vulnerable. Compared to state and national averages, less children in Guadalupe Zaragoza regularly attend school because they must work. The families we studied have ended up paying about four times more for education, housing and health services than the average family in the state of Puebla or even the average Mexican family. They also allocate a percentage of their family remittances for community services.

Women who are partners of migrant laborers are vulnerable to the effects of the patriarchal relationships within which they must live. It is usually their male partner who decides where they will live while he is working in Canada; they rarely study more than grade school, become housewives without pay, work for long hours, and experience subjective symptoms such as stress and fatigue when their partner is away in Canada.

It may be true that remittances from Canada have enabled the families of Guadalupe Zaragoza to improve some fundamental aspects of their life, and that this is the reason for the relatively moderate rate of latent TB. Yet, the economic dependence on the SAWP and the reigning patriarchal relationships are evidence of a structural violence which increases the risk of reactivation pulmonary TB should Canada stop needing Mexican migrants. If this happens, the most group mostly likely to be affected in this poor community will be the women.

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