

The Effect of Migration to the United States on Substance Use Disorders Among Returned Mexican Migrants and Families of Migrants

Guilherme Borges, DSc, Maria Elena Medina-Mora, PhD, Joshua Breslau, PhD, DSc, and Sergio Aguilar-Gaxiola, MD

Epidemiological studies have found that among immigrants in general¹ and Mexican immigrants in particular,^{2,3} longer duration of residence in the United States is associated with higher risk for substance use disorders. Transnational migration is likely to have an effect on substance use disorders among Mexican immigrants in native and destination countries. This is particularly important for Mexico because of the large number of Mexican citizens who migrate to work in the United States and subsequently return to Mexico and the even larger proportion of Mexicans who benefit from financial remittances sent home by family members working in the United States.⁴ In the United States, Mexican migrants have greater access to alcohol and drugs and exposure to more liberal norms of substance use. Those who remain in Mexico and receive remittances have indirect exposure to US norms of substance use through their family members as well as increased access to alcohol and drugs because of the increase in household income. Studies of patients in treatment for drug use disorders in Mexico have found that those with migration experiences consumed a greater quantity and variety of drugs than did patients without migration experience.⁵ However, to date, no studies have examined the effect that migration from Mexico to the United States has on substance use disorders in the Mexican general population.

We used data from a national survey of psychiatric disorders in the Mexican general population to examine differences in alcohol and illicit drug use and abuse across 3 groups with different migration experiences. The first group consisted of respondents who had traveled to the United States for work and stayed for at least 3 months. The second group consisted of respondents who currently had a member of their immediate family in the

Objectives. We examined the association between substance use disorders and migration to the United States in a nationally representative sample of the Mexican population.

Methods. We used the World Mental Health version of the Composite International Diagnostic Interview to conduct structured, computer-assisted, face-to-face interviews with a cross-sectional sample of household residents aged 18 to 65 years who lived in Mexico in cities with a population of at least 2500 people in 2001 and 2002. The response rate was 76.6%, with 5826 respondents interviewed.

Results. Respondents who had migrated to the United States and respondents who had family members who migrated in the United States were more likely to have used alcohol, marijuana, or cocaine at least once in their lifetime; to develop a substance use disorder; and to have a current (in the past 12 months) substance use disorder than were other Mexicans.

Conclusions. International migration appears to play a large role in transforming substance use norms and pathology in Mexico. Future studies should examine how networks extending over international boundaries influence substance use. (*Am J Public Health.* 2007;97:1847–1851. doi:10.2105/AJPH.2006.097915)

United States. The third group consisted of respondents with no history of migration and no family member currently in the United States.

METHODS

The Mexican National Comorbidity Survey (M-NCS) was conducted as part of the World Health Organization's World Mental Health Survey Initiative, a coordinated series of household surveys carried out in 28 countries around the world.⁶ The M-NCS used a stratified, multistage area probability sample of household residents aged 18 to 65 years in Mexico who lived in cities with a population of at least 2500 people. Respondents were chosen at random from eligible resident members of selected households. Interviews were conducted from September 2001 through May 2002. The response rate was 76.6%, with 5826 respondents interviewed. Forty-four respondents missing information on key survey identification variables were omitted, leaving a final sample of 5782

respondents. Details of this sample have been published elsewhere.⁷

Measures

In the M-NCS, substance use disorders were defined by the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)*⁸ and were assessed with version 3.0 of the World Health Organization Composite International Diagnostic Interview (CIDI),⁹ a structured lay-administered diagnostic questionnaire used in face-to-face interviews. The World Health Organization translation protocol was used to translate the questionnaire and all training materials. Substance use disorders included 4 diagnoses: alcohol abuse, alcohol dependence, illicit drug abuse, and illicit drug dependence. We analyzed data on alcohol and drug abuse with or without dependence and data on any substance abuse with or without dependence. As described elsewhere,¹⁰ blinded clinical second interviews with the Structured Clinical Interview for *DSM-IV*¹¹ found generally good concordance with CIDI diagnoses of these disorders.

The Spanish-language World Mental Health CIDI used in Mexico was developed using the standard World Health Organization approach (i.e., translating, back translating, and harmonizing modules), with Spanish versions of the *International Classification of Diseases, 10th Revision*¹² and *DSM-IV*, and with previous Spanish versions of the Diagnostic Interview Schedule and CIDI. The CIDI and Diagnostic Interview Schedule have shown good performance in validity studies in Mexico^{13,14} and other Spanish-speaking countries.¹⁵ The prevalence and demographic factors associated with substance use disorders in Mexico were presented recently,¹⁶ and the general results are in accordance with previous surveys in Mexico.¹⁷

All respondents were asked about their educational attainment. These responses were coded with the standard categories in the Mexican educational system: completed none or some elementary education (0–5 years), completed the bulk of elementary education (6–8 years), completed some secondary education (9–11 years), and completed high school (≥ 12 years). We also controlled for gender, age at interview (18–29, 30–44, 45–54, ≥ 55 years), marital status (married, separated/widowed/divorced, and never married), and region of the country. The region of the country where the respondents resided at the moment of interview was included as a control variable because there were large differences within the country in migration patterns and substance use. Region was coded as 1 of 6 categories:

- Self-representing metropolitan areas, including the 3 largest metropolitan areas in Mexico, Mexico City, Guadalajara, and Monterrey;
- Northwest, including the states of Baja California, Baja California Sur, Nayarit, Sinaloa, and Sonora;
- North, including the states of Coahuila, Chihuahua, Durango, Nuevo Leon (excluding Monterrey), San Luis Potosi, Tamaulipas, and Zacatecas;
- West central, including the states of Aguascalientes, Jalisco (excluding Guadalajara), Colima, Guanajuato, and Michoacan;
- East central, including the states of Guerrero, Morelos, Estado de México (excluding

counties that are part of Mexico City), Queretaro, Hidalgo, Tlaxcala, and Puebla; • Southeast, including the states of Veracruz, Oaxaca, Tabasco, Chiapas, Campeche, Yucatan, and Quintana Roo.

We asked respondents a series of questions about migration to the United States (if any), including questions regarding their motivation for migration and whether respondents had members of their immediate family living permanently or temporarily in the United States. This information was used to define 3 categories: (1) migrants—respondents who had themselves stayed in the United States for at least 3 months and gave work as their reason for visiting the United States, (2) family members of migrants—respondents who had members of their immediate family currently in the United States, and (3) others—respondents in neither migration category.

Analyses

The data were weighted to adjust for differential probabilities of selection and nonresponse and poststratified to represent the Mexican population according to the 2000 census. The lifetime prevalence of substance use and substance use disorders was calculated as the proportion of the entire sample reporting each outcome. We used the design-adjusted χ^2 test and SUDAAN version 8.0.1 (Research Triangle Institute, Research Triangle Park, NC) to compare proportions. We estimated odds ratios adjusted for age, gender, education, marital status, and region in logistic regression model¹⁸ and used SUDAAN software to adjust statistical tests for the survey design. Statistical significance was evaluated with 2-sided design-based tests at the .05 level of significance.

RESULTS

Table 1 presents the demographic characteristics of the 3 groups defined by migrant status. Migrants were mostly men and were less educated, slightly older, more likely to be married, and more likely to live in the north or west of Mexico than were people from families without migrants. Family members of migrants were more similar to people from families without migrants, except in location

within Mexico, with larger proportions living in the north, west, and east central regions of Mexico, as expected.¹⁹

The prevalence of alcohol, marijuana, and cocaine use at least once in one's lifetime was higher among migrants and family members of migrants than among other Mexicans; these differences were statistically significant after we controlled for age, gender, education, marital status, and region (Table 2). The lifetime prevalence of alcohol abuse, drug abuse, and any substance abuse was similar among migrants and family members of migrants.

Among those who used any substances at least once in their lives, both migrants and family members of migrants had significantly higher risk for alcohol abuse, and family members had significantly higher risk for drug abuse than did other Mexicans. Current-year alcohol and any substance abuse were also higher among both migrants and family members of migrants. However, as a proportion of lifetime cases of abuse, current-year abuse was not significantly elevated among migrants and family members of migrants.

DISCUSSION

In this Mexican national sample we found a strong relationship between substance abuse and migration to the United States. Respondents who had past experience as migrant laborers in the United States and respondents with family members currently working in the United States were more likely to have used alcohol, marijuana, cocaine, and other illicit drugs at least once in their lives; more likely to have met the criteria for substance abuse; and more likely to meet the criteria for substance abuse in the current year than were other Mexicans. This pattern of elevated risk for substance abuse remained even after we controlled for factors associated with migration and substance use disorders, including age, gender, marital status, educational attainment, and region. In the subset of those who met criteria for abuse, persistence of disorder was not related to migration experience.

To our knowledge, no previous research in Mexico has examined the association between migration and substance abuse in the general population. Our findings are consistent with anecdotal reports regarding families

TABLE 1—Sample Characteristics of Mexicans With a History of Labor Migration to the United States, Mexicans With Family Members Currently in the United States, and Other Mexicans: Mexican National Comorbidity Survey, 2001–2002

	Migrants, % or No. (%)	Family of Migrants, % or No. (%)	Other, % or No. (%)	χ^2	<i>P</i>
Unweighted total	352 (6.1)	2546 (44.0)	2884 (49.9)	143.31	
Gender					<.001
Men	84.4	44.7	45.7		
Women	15.6	55.3	54.3		
Age, y				28.86	<.001
≤29	23.5	41.9	40.3		
30–44	45.6	35.8	35		
45–54	17.3	12.6	14.7		
≥55	13.7	9.8	10		
Education, y				45.08	<.001
0–5	23.6	13.7	19.7		
6–8	20.2	21.5	21.9		
9–11	28.8	27.5	30.2		
≥12	27.5	37.3	28.2		
Marital status				13.42	.009
Married	76.3	68.6	65.3		
Separated, widowed, or divorced	6.38	6.8	7.8		
Never married	17.3	24.6	26.9		
Region				150.26	<.001
Metro ^a	23.5	28.1	28.3		
Northwest ^b	12.8	9.2	6.2		
North ^c	26.3	17	12.7		
West central ^d	16.9	17.1	7.8		
East central ^e	11.4	15.5	19.1		
South ^f	9.2	13.1	25.9		

^aIncludes the 3 largest metropolitan areas in Mexico, Mexico City, Guadalajara, and Monterrey.

^bIncludes the states of Baja California, Baja California Sur, Nayarit, Sinaloa, and Sonora.

^cIncludes the states of Coahuila, Chihuahua, Durango, Nuevo Leon (excluding Monterrey), San Luis Potosi, Tamaulipas, and Zacatecas.

^dIncludes the states of Aguascalientes, Jalisco (excluding Guadalajara), Colima, Guanajuato, and Michoacan.

^eIncludes the states of Guerrero, Morelos, Estado de México (excluding counties that are part of Mexico City), Queretaro, Hidalgo, Tlaxcala, and Puebla.

^fIncludes the states of Veracruz, Oaxaca, Tabasco, Chiapas, Campeche, Yucatan, and Quintana Roo.

of migrants^{20,21} and with studies of clinical samples⁵ that have suggested that substance use and risk for substance use disorders change because of migration from Mexico to the United States. Similar patterns of change have been observed among migrants with respect to sexual risk behaviors^{22–24} and needle sharing.²⁵ Our findings are also consistent with the finding of a study of Mexican Americans in Fresno County, Calif, that longer residence in the United States is associated with higher risk for substance use disorders.³

One factor responsible for this change is likely direct exposure of migrants to a wider availability of illicit drugs in the United States. However, direct exposure to opportunities to use substances cannot explain several aspects of these results. First, migrants and family members of migrants were more likely to use alcohol than were other Mexicans, despite the wide availability of alcohol in Mexico. Second, family members of migrants were equally likely to use substances and to develop substance use disorders as people who had

themselves migrated to the United States. Third, among those who had tried substances at least once and thus had at least some opportunity to use substances, risk for disorder was also higher among migrants and family members of migrants than among other Mexicans.

These findings suggest that patterns of substance use disorders in Mexico are linked to broader social changes associated with transnational migration. In addition to the direct exposure of individuals who migrate to substance use opportunities in the United States, the transfer of social norms of substance use and the economic means for consuming drugs also appear to be involved. At the same time that migrants in the United States are exposed to substance use opportunities, they are cut off from the social control they experience as part of their extended household and family networks in Mexico. They also face loneliness, social isolation, and discrimination. For family members of migrants, changes in family dynamics as the result of having the head of the family absent may create additional stressors for wives and children of the migrants²⁶ and limit the ability of parents to monitor their children's behavior. The exploration of complex forms of acquiring and retaining substance-related conduct patterns in multicultural contexts²⁷ is an important matter that should be the subject of future research.

Studies in the United States have found significant gender differences in the magnitude of changes in substance use behaviors associated with migration to the United States. The increase in substance use appears to be much greater among women than among men.² However, we did not find a significant gender difference in the association between migration experience and substance abuse (results not shown).

Limitations

This study has important limitations that should be considered when interpreting our findings. First, we do not know the timing of respondents' migration, so we do not know whether the initiation or onset of substance use disorders occurred before or after migration. It is possible that some portion of the association between migration and substance abuse is attributable to factors that precede

TABLE 2—Lifetime and 12-Month Prevalence of Substance Use Disorders Among Mexicans With a History of Labor Migration to the United States, Mexicans With Family Members Currently in the United States, and Other Mexicans, 2001–2002

	Migrants		Family of Migrants		Others		χ^2	P
	% (SE)	OR ^a (CI)	% (SE)	OR ^a (CI)	% (SE)	OR ^a		
Lifetime use (ever)								
Alcohol	95.0 (1.3)	2.1* (1.1, 3.9)	88.0 (0.8)	1.5* (1.2, 1.8)	83.0 (1.0)	1.0	39.15	<.001
Marijuana	18.2 (2.6)	2.1* (1.3, 3.4)	8.8 (0.8)	1.5* (1.1, 2.1)	5.8 (0.7)	1.0	25.37	<.001
Cocaine	10.0 (2.3)	2.8* (1.5, 5.2)	4.8 (0.7)	2.0* (1.4, 2.8)	2.6 (0.4)	1.0	14.02	.002
Other drug	6.4 (1.9)	4.1* (2.0, 8.5)	2.9 (0.5)	1.8* (1.1, 3.0)	1.7 (0.3)	1.0	10.27	.009
Lifetime abuse								
Alcohol	19.2 (3.2)	2.0* (1.1, 3.5)	8.1 (0.6)	1.6* (1.2, 2.1)	5.8 (0.7)	1.0	17.19	.001
Drugs	3.6 (1.2)	3.5* (1.2, 9.7)	1.9 (0.4)	3.2* (1.7, 6.1)	0.6 (0.2)	1.0	14.94	.001
Any substance	19.6 (3.2)	2.0* (1.2, 3.5)	8.4 (0.6)	1.7* (1.3, 2.2)	5.9 (0.7)	1.0	19.38	<.001
Current year abuse								
Alcohol	4.6 (1.7)	2.6 (1.0, 6.9)	2.6 (0.5)	2.8* (1.5, 5.1)	1.2 (0.3)	1.0	8.05	.023
Any substance	5.2 (1.7)	2.5* (1.0, 6.2)	3.1 (0.5)	2.8* (1.6, 4.8)	1.4 (0.3)	1.0	11.1	.006
Lifetime abuse ^b								
Alcohol	20.20 (3.3)	1.9* (1.1, 3.3)	9.1 (0.7)	1.5* (1.1, 2.0)	7.1 (0.8)	1.0	4.78	.012
Drugs	15.6 (5.1)	1.9 (0.6, 6.4)	17.4 (2.9)	2.2* (1.1, 4.3)	8.2 (1.8)	1.0	2.57	.085
Any substance	20.5 (3.4)	1.9* (1.1, 3.3)	9.5 (0.7)	1.6* (1.2, 2.0)	7.2 (0.8)	1.0	5.76	.005
Current year abuse among lifetime abusers								
Alcohol	23.9 (7.6)	1.4 (0.5, 4.2)	32.7 (5.7)	1.7 (0.8, 3.4)	21.3 (4.7)	1.0	2.98	.234
Any substance	26.6 (7.6)	1.3 (0.5, 3.6)	36.4 (5.6)	1.5 (0.8, 3.1)	23.3 (4.5)	1.0	3.97	.146

Note. OR = odds ratio; CI = confidence interval. Abuse and dependence were defined according to *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*.⁸

^aOdds ratios were estimated in logistic regression equations adjusted for age, gender, marital status, educational attainment, and region of residence.

^bAmong entire population.

* $P < 0.05$.

migration to the United States. Future studies that assess the timing of substance use with respect to migration could help specify the relative contributions of the direct exposure of migrants to the United States and preexisting factors associated with migration, particularly low socioeconomic status. Second, we relied on retrospective reports of substance use and associated symptoms of abuse. Although prospectively collected data would be preferable, there is no reason to believe that errors in recall are related to migration experience in a way that would account for our findings.

Third, there may have been some respondents included in our “other” Mexicans category who had family members who had migrated to the United States in the past. These respondents shared their indirect exposure to the substance use norms of the United States with other family members of migrants. This limitation may have led to an underestimation of the association between substance use

disorders and migration. Finally, we were limited in our ability to analyze the longitudinal course of alcohol abuse. We found that the persistence of abuse was not related to migration experience. However, future research should investigate the long-term course of the disorder in greater detail.

Conclusions

Our findings suggest that the risk for substance use disorders in Mexico is closely related to the flow of migrants between Mexico and the United States. Given that there are approximately 11 million Mexican-born individuals in the United States (approximately 10% of the total Mexican population) and that most Mexicans who travel to the United States return to Mexico, direct and indirect involvement with this migrant flow is very common in the Mexican population. Nearly half of this sample had a family member residing in the United States. There are many potential

avenues through which migration to the United States may increase risk for substance abuse in Mexico. Studies that aim to identify these pathways could lead to effective strategies for the reduction of risk for substance use disorders. It is also important to note that research in Mexico has found positive health effects of remittances sent from migrants working in the United States. Families receiving such remittances were less likely to have children with low birthweight than were families that were not receiving remittances.²⁸ An understanding of the health effects of transnational migration should take multiple aspects of health into account.

These findings have important implications for public health policy in Mexico. First, because the Mexican migration to the United States is not expected to decrease in the short term, we can expect further increases in substance abuse in Mexico associated with this process. Second, our results point to a need for

substance abuse counseling and treatment for many migrants who return from the United States. Third, families of migrants need more aggressive programs to help them cope with the absence of the family member, to help them to make the best use of additional financial resources in the household, and to provide specialized treatment for substance abuse disorders when needed. Finally, the differences between the 3 population groups we defined should not obscure the public health impact of high levels of dependence and abuse found in all sections of the population. The development of comprehensive prevention and treatment programs for substance abuse and dependence is imperative for Mexico. ■

About the Authors

Guilherme Borges is with the National Institute of Psychiatry and the Metropolitan Autonomous University, Mexico City, Mexico. Maria Elena Medina-Mora is with the National Institute of Psychiatry, Mexico City. Joshua Breslau and Sergio Aguilar-Gaxiola are with the Center for Reducing Health Disparities, University of California, Davis, Sacramento.

Reprint requests should be sent to Guilherme Borges, Instituto Nacional de Psiquiatria, Calzada Mexico Xochimilco No 101 - Col. San Lorenzo Huipulco, Mexico D.F. C.P.14370, Mexico (e-mail: guibor@imp.edu.mx). This article was accepted October 16, 2006.

Contributors

G. Borges originated the study, collected data in Mexico, analyzed the data, and wrote the initial draft and the final version of the article. M. E. Medina-Mora originated the study, collected data in Mexico, and reviewed the final version of the article. J. Breslau originated the study, participated in planning and data analyses, wrote drafts, and reviewed the final version of the article. S. Aguilar-Gaxiola originated the study, discussed drafts, and reviewed the final version of the article.

Acknowledgments

The Mexican National Comorbidity Survey (M-NCS) was supported by the National Institute of Psychiatry Ramon de la Fuente (grant INPRFM-DIES 4280) and by the National Council on Science and Technology (grant CONACyT-G30544-h), with supplemental support from the Pan American Health Organization. This article was made possible by US National Institute of Mental Health (NIMH), Office of Global Mental Health support to Guilherme Borges. The M-NCS is carried out in conjunction with the World Health Organization World Mental Health Survey Initiative, which is supported by the NIMH (grant R01-MH070884), the John D. and Catherine T. MacArthur Foundation, the Pfizer Foundation, the US Public Health Service (grants R13-MH066849, R01-MH069864, and R01-DA016558), the Fogarty International Center (grant FIRCA R01-TW006481), the Pan American Health Organization, Eli Lilly and Company, Ortho-McNeil Pharmaceutical, GlaxoSmithKline, and Bristol-Myers Squibb.

We thank the World Mental Health staff for assistance with instrumentation, fieldwork, and data analysis.

Human Participant Protection

The institutional review board of the National Institute of Psychiatry (Mexico City) approved this project.

References

- Breslau J, Aguilar-Gaxiola S, Borges G, Kendler KS, Su M, Kessler RC. Risk for psychiatric disorder among immigrants and their US-born descendants: evidence from the National Comorbidity Survey Replication. *J Nerv Ment Dis.* 2007;195:189–195.
- Vega WA, Alderete E, Kolody B, Aguilar-Gaxiola S. Illicit drug use among Mexicans and Mexican Americans in California: the effects of gender and acculturation. *Addiction.* 1998;93:1839–1850.
- Vega WA, Kolody B, Aguilar-Gaxiola S, Alderete E, Catalano R. Lifetime prevalence of DSM-III-R psychiatric disorders among urban and rural Mexican Americans in California. *Arch Gen Psychiatry.* 1998;55:771–778.
- Massey DS, Espinosa KE. What's driving Mexico-U.S. migration? A theoretical, empirical, and policy analysis. *Am J Soc.* 1997;102:939–999.
- Sánchez-Huesca R, Arellano-Hernández JL, Pérez-Islas V, Rodríguez-Kuri SE. Study of the relationship between drug consumption and migration to the north border of Mexico and United States [in Spanish]. *Salud Ment.* 2006;29:35–43.
- Demyttenaere K, Bruffaerts R, Posada-Villa J, et al. Prevalence, severity and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys. *JAMA.* 2004;291:2581–2590.
- Medina-Mora ME, Borges G, Lara C, et al. Prevalence, service use, and demographic correlates of 12-month DSM-IV psychiatric disorders in Mexico: results from the Mexican National Comorbidity Survey. *Psychol Med.* 2005;35:1–11.
- Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.* Washington, DC: American Psychiatric Association; 1994.
- Kessler RC, Ustun TB. The World Mental Health (WMH) Survey Initiative Version of the World Mental Health (WHO) Composite International Diagnostic Interview (CIDI). *Int J Methods Psychiatr Res.* 2004;13:93–121.
- Kessler RC, Abelson J, Demler O, et al. Clinical calibration of DSM-IV diagnoses in the World Mental Health (WMH) version of the World Health Organization (WHO) Composite International Diagnostic Interview (WMHCIDI). *Int J Methods Psychiatr Res.* 2004;13:122–139.
- First MB, Spitzer RL, Gibbon M, Williams JB. *Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Non Patient Edition (SCID-I/NP).* New York: Biometrics Research, New York State Psychiatric Institute; 2002.
- Organización Panamericana de la Salud/Organización Mundial de la Salud. Manual of the international statistical classification of diseases, injuries, and causes of death, 10th revision [in Spanish]. Vol. 1. Primera impresión. [First reprint.] Washington DC: Organización

Panamericana de la Salud/Organización Mundial de la Salud; 1996. Publication No. 554.

- Caraveo AJ, González C, Ramos L. The concurrent validity of the DIS: experience with psychiatric patients in Mexico City. *Hispan J Behav Sci.* 1991;13:63–77.
- Caraveo AJ, Martínez N, Rivera E. A model for epidemiological studies for mental health and psychiatric morbidity [in Spanish]. *Salud Mental.* 1998;21:48–57.
- Wittchen HU. Reliability and validity studies of the WHO-Composite International Diagnostic Interview (CIDI): a critical review. *J Psychiatr Res.* 1994;28:57–84.
- Medina-Mora ME, Borges G, Fleiz C, et al. Prevalence and correlates of drug use disorders in Mexico. *Rev Panam Salud Publica.* 2006;19:265–276.
- Medina-Mora ME, Natera G, Borges G. Alcoholism and alcohol abuse [in Spanish]. In: Secretaría de Salud. [Ministry of Health.] *Mexican Observatory on Tobacco, Alcohol and Other Drugs* [in Spanish]. Mexico City, Mexico: CONADIC-Secretaría de Salud; 2002: 15–25.
- Hosmer DW, Lemeshow S. *Applied Logistic Regression.* New York: John Wiley & Sons; 2000.
- Durand J, Massey DS, Zenteno RM. Mexican immigration to the United States: continuities and changes. *Lat Am Res Rev.* 2001;36:107–127.
- Salgado de Snyder VN. Motivations of the migration of Mexicans towards the United States [in Spanish]. In: Alba Medrano MM, ed. *Selected Topics on Health and Rights* [in Spanish]. Mexico City, Mexico: Universidad Nacional Autónoma de México. Instituto de Investigaciones Jurídicas; 2002:89–108.
- Vidal L, Tuñón P, Rojas E, Ayús R. From Paraiso to North Carolina. Support networks and perceptions from the migration to the United States of crab farmer women from Tabasco [in Spanish]. *Migraciones Internacionales.* 2002;1:1–49.
- Magis-Rodriguez C, Gayet C, Negroni M, et al. Migration and AIDS in Mexico: an overview based on recent evidence. *J Acquir Immune Defic Syndr.* 2004;37:S215–S226.
- Salgado de Snyder VN, Diaz M, Maldonado M. AIDS: risk behaviors among rural Mexican women married to migrant workers in the United States. *Educ Prev.* 1996;8:134–142.
- Sanchez MA, Lemp GF, Magis-Rodriguez C, Bravo-Garcia E, Carter S, Ruiz JD. The epidemiology of HIV among Mexican migrants and recent immigrants in California and Mexico. *J Acquir Immune Defic Syndr.* 2004;37:204–214.
- Magis-Rodriguez C, Brouwer KC, Morales S, et al. HIV prevalence and correlates of receptive needle sharing among injection drug users in the Mexican-U.S. border city of Tijuana. *J Psychoactive Drugs.* 2005;37:333–339.
- Salgado de Snyder VN. Psycho-social problems of the international migration [in Spanish]. *Salud Mental.* 1996;19:53–59.
- Room R. Multicultural contexts and alcohol and drug use as symbolic behaviour. *Addiction Research Theory.* 2005;13:321–331.
- Frank R, Hummer RA. The risk of low birth weight among infants of migrant and nonmigrant households within Mexico. *Int Migr Rev.* 2002;36:746–765.