Prevalence of Sexually Transmitted Diseases in Mexican-American Pregnant Women by Country of Birth and Length of Time in the United States

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Background and Objectives: **The prevalence of sexually transmitted diseases in Hispanic prenatal patients has not been well documented. Studies of disease prevalence in Hispanic patients often are complicated by multiple countries of origin and the combining of foreign-born and U.S.-born Hispanics into a single category.**

Goal of the Study: **The purpose of this study was to document the prevalences of sexually transmitted diseases in low-income, pregnant Mexican-American women and to compare the prevalences of those born in the United States with those born in Mexico. We also compared the prevalence of those who recently arrived from Mexico with those who had been in the United States a longer time.**

Study Design: **Three-hundred-forty-seven pregnant women attending a clinic for low-income populations were screened for syphilis, gonorrhea, chlamydia, and hepatitis B virus on their first perinatal visit.**

Results: **Thirty-five women (10.1%) were positive for chlamydia, four (1.2%) for gonorrhea, one (0.3%) for syphilis, and none for hepatitis B virus. Women born in Mexico reported fewer past chlamydia and total sexually transmitted disease infections than Mexican-Americans and non-Hispanic whites born in the United States However, the prevalence of chlamydia and total sexually transmitted diseases did not differ by ethnicity, country of birth, or length of time in the United States The only variable correlated with chlamydia infection was the presence of vaginal discharge, but the sensitivity of this symptom was too low to be clinically useful as a means of selective screening.**

Conclusion: **Low-income women of Mexican ancestry should be routinely screened for syphilis, gonorrhea, and chlamydia as part of their prenatal care in the United States. The value of hepatitis B virus screening in this population was neither supported nor refuted by this study.**

SEXUALLY TRANSMITTED DISEASES (STDs) are a significant cause of morbidity and mortality among prenatal patients and their offspring. Screening is routinely done for four STDs in prenatal patients: hepatitis B virus (HBV), syphilis, gonorrhea, and chlamydia.

The prevalence of HBV, gonorrhea, chlamydia, and syphilis in pregnant women varies widely depending on the population studied. Hepatitis B virus has been found in 0.3% to 8.8% of prenatal patients,[1-7] gonorrhea in 1% to 7.5%,[8] and chlamydia in 2% to 37%.[9-16] The incidence of congenital syphilis has been increasing since 1985, with rates as high as 18 per 10,000 births in some areas.[17,18]

Risk factors identified for prenatal infection include foreign birth, Asian ancestry, and previous STDs for HBV;[1,3,5] young age, multiple sex partners, early onset of sexual activity, and black ancestry for chlamydia;[9-13,19,20] older age, substance abuse, being single, and black ancestry for syphilis;[21-23] and young age, being single, and black ancestry for gonorrhea.[13]

The prevalence of STDs in Hispanic prenatal patients has not been well documented. The greatest amount of work has been done on HBV, with results generally showing relatively low risk for most Hispanic populations from Mexico and higher risks for those from South and Central America.[1-3,6,24] The study of disease prevalence in Hispanic women is complicated by the multiple countries of origin that are grouped into the Hispanic category and the tendency to combine foreign-born and U.S.-born Hispanics into a single category. The main purpose of the present study was to document the prevalence of four STDs in Mexican-American prenatal patients and to look at the differences in prevalence between those born in the United States and those born in Mexico. A secondary purpose was to look for

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predictors of chlamydia infection to determine whether universal screening could be avoided in this population.

Methods

Women who presented for prenatal care at a community clinic that provides services for a low-income population in Tucson, Arizona, between January 1988 and March 1991, were included in the study after they provided informed consent. On the first prenatal visit, each participant completed a questionnaire in English or Spanish that included questions on country of birth, length of time in the United States, language preferred, highest grade of school completed, number of sexual partners in the past 3 months and year, date of birth, past history of STDs, and current symptoms of STDs. Because the laboratory tests were part of the routine prenatal care protocol and the questionnaire supplemented the normal prenatal history form, the study involved little more than the routine first prenatal visit, and no women refused to participate.

Whole blood was collected for a complete blood count using an automated coulter counter, and serum was separated for HBV and syphilis testing. Testing for hepatitis B surface antigen was conducted using an enzyme immunoassay (AUSZYME IV; Abbott, N. Chicago, IL). Testing for syphilis was performed in two stages, the first using a venereal disease research laboratory (VDRL). All VDRL-positive samples then were tested using a treponemal antibody test, microhemagglutination assay for antibody to Treponema pallidum (MHA-TP). Samples positive using VDRL with a negative MHA-TP were considered to be false positives. A positive MHA-TP in a patient who had not been previously diagnosed and properly treated for syphilis in the past was defined as representing a syphilis case.

Cervical samples were collected for gonorrhea and chlamydia tests using collection materials and methods as specified by the protocol for each test. Samples were placed on a Thayer-Martin plate to test for gonorrhea in the clinic lab. All positive plates were sent to the state health department lab for beta-lactamase confirmation. Chlamydia testing was performed using two nonculture methods: During the first half of the study, an immunofluorescent antibody test (Microtrack, Syva, Palo Alto, CA) was used; in the second half, a solid phase enzyme immunoassay (chlamydiazyme; Abbott) was used. Chlamydia testing was performed at the state health department lab. The two tests used have similar sensitivities and specificities.[25]

Participants were divided into four groups for analysis based on race, country of birth, and number of years residing in the United States. Group 1 was defined as Hispanics born in Mexico, living in the United States 3 years or less; Group 2 were Hispanics born in Mexico living in the United States more than 3 years; Group 3 were Mexican-American Hispanics (born in the United States); and Group 4 were white non-Hispanics born in the United States.

The prevalence of each STD in the four groups was compared using contingency tables and the chi-squared analysis. Demographic variables for each group were analyzed using the chi-squared analysis for categorical variables or analysis of variance for continuous variables.

The final analysis used the presence or absence of chlamydia as the outcome variable and demographic variables, sexual history, and clinical symptoms as predictor variables to test for significant correlations with positive chlamydia tests using chi-squared or t-tests. Because of the number of tests performed, a probability of .01 was used as the level of significance. All tests were two-tailed.

Results

A total of 402 women participated in the study; 55 did not fit into one of the four study categories, and their results were not analyzed. Three-hundred-forty-seven women fit into the four groups as follows: 88 (21.9%) in group 1, 93 (23.1%) in group 2, 88 (21.9%) in group 3, and 78 (19.4%) in group 4.

Thirty-five women were positive for chlamydia (10.1%), four for gonorrhea (1.2%), one for syphilis (0.3%), and none for hepatitis B surface antigen. The prevalence of chlamydia did not change between the first half and second half of the study.

Table 1 provides a comparison of the four groups regarding marital status, age, estimated gestational age at presentation, risk factors for STDs, and other perinatal risks. The two groups of women born in Mexico contained a significantly smaller percentage of smokers and were more likely to present later for prenatal care than the U.S.-born Mexican-American and white non-Hispanics.

Table 2 presents data on the history and point prevalence of STDs in the four groups. Women born in Mexico reported significantly fewer past cases of chlamydia and overall STD infections than Mexican-Americans and white non-Hispanics. However, there were no differences in the point prevalence of chlamydia and total STDs between the four groups.

There were no significant differences between those with and without chlamydia for 22 out of 23 variables studied. Cervical inflammation diagnosed on physician exam was the only variable positively correlated with chlamydia infection (21% of 76 women with cervical inflammation were chlamydia positive versus 7% of 263 women without inflammation; $P < .001$).

TABLE 1. Age, Gravidity, and Perinatal Risks of Women, by Ethnicity, Place of Birth, and Length of Time in the United States

	Group 1	Group 2	Group 3	Group 4	P
Mean age (yr)	23.2	26.4	22.4	23.1	<.01
Mean gravidity	2.1	2.9	2.4	2.7	.013
Percent married	40.0	45.0	35.	43.0	NS
Percent smokers	9.1	6.5	18.2	32.5	<.001
Mean EGA first visit	22.6	19.6	17.6	18.7	<.01
Mean number of sex partners past 12 months	1.03	1.15	1.12	1.25	NS
Percent with sex partners who use intravenous drugs	0	2.2	5.7	2.6	NS
Percent with anemia*	7.0	6.5	8.0	6.7	NS

Group 1, Born in Mexico, lived in U.S. 3 years or less.
Group 2, Born in Mexico, lived in U.S. more than 3 years.
Group 3, Mexican-Americans (born in U.S.).
Group 4, White non-Hispanics (born in U.S.).
EGA-estimated gestational age.
NS, not significant.
*HCT <33%.

Discussion

The prevalence rates of STDs found in the present study are consistent with those found elsewhere. Syphilis and gonorrhea were less common than chlamydia, which was present in 10% of women screened. These results support a policy of screening all pregnant women in our population for syphilis, gonorrhea, and chlamydia, and leave open the question of the value of HBV screening.

We found no differences in STD prevalence between our four groups based on ethnicity, country of birth, and length of time in the United States. Other studies that have compared STD rates between Hispanics and non-Hispanic Whites have yielded varying results. Some have shown increased rates in Hispanics,[26,27] others have not.[28,29] Most have been performed on adolescents at family planning or teen clinics and are not directly comparable with our prenatal population. Only one studied Mexican-Americans. It found no difference in chlamydia prevalence.[28]

Studies of gonorrhea and syphilis prevalence also have usually involved adolescents, have not specifically identified Mexican-Americans, and have not been limited to pregnant women.[26,30–32]

We found no variables useful in predicting positive chlamydia tests. Cervical inflammation, the only variable significantly correlated with infection, had a sensitivity of only 34%. Others have found vaginal discharge and cervical discharge to be correlated with chlamydia infection and also have found that each clinical symptom is not sensitive enough in predicting infection to avoid universal screening.[27]

TABLE 2. Reported History and Point Prevalence of STDs in Women, by Ethnicity, Place of Birth, and Length of Time in the United States

	Group 1	Group 2	Group 3	Group 4	
History of STD					
Syphilis	0	2 (2.2)	1 (1.1)	0	NS
Gonorrhea	0	0	2 (2.3)	2 (2.6)	NS
Chlamydia	0	1 (1.1)	5 (5.7)	7 (9.0)	<.01
Herpes	0	0	1 (1.1)	0	NS
PID	0	1 (1.1)	1 (1.1)	1 (1.3)	NS
Total	0	4 (4.3)	10 (11.4)	8 (10.3)	<.01
Positive STD screen					
Syphilis	0	1 (1.1)	0	0	NS
Gonorrhea	1 (1.1)	2 (2.2)	1 (1.1)	0	NS
Chlamydia	11 (12.5)	8 (8.6)	8 (9.1)	8 (10.3)	NS
Hepatitis B virus	0	0	0	0	—
Total	12 (13.6)	11 (11.8)	9 (10.2)	8 (10.3)	NS

Group 1, Born in Mexico, lived in U.S. 3 years or less.
Group 2, Born in Mexico, lived in U.S. more than 3 years.
Group 3, Mexican-Americans (born in U.S.).
Group 4, White non-Hispanics (born in U.S.).
NS, not significant.

None of the women in our study population were positive for hepatitis B surface antigen. These results are consistent with others that have shown low rates of HBV antigen in Mexican-American women.[1-3,6,24] Because we screened only for the active disease and carrier states, we do not know the rate of past infections in our study population.

Women born in Mexico reported a past history of chlamydia infection less frequently than women born in the United States, even though their prevalence rates of chlamydia during the study were the same. There are several possible explanations for this finding.

First, women born in Mexico might not contract chlamydia until they move to the United States. However, this seems unlikely because our two immigrant groups had similar rates despite a difference in time since arrival. Sexual practices of Mexican women and their partners may change when they move to the United States. Relatively little is known about this issue. Responses on our questionnaire indicated few differences regarding the number of sexual partners in the prior 12 months in our four groups, but it is possible that these responses were inaccurate because they were not anonymous.

Second, women in Mexico might have high rates of chlamydia that are undetected. Chlamydia screening may not be as available in Mexico and Mexican women may be less likely to recognize chlamydia symptoms or more reluctant to seek out treatment. One study showed a relatively low level of knowledge about STDs and STD prevention among Mexican-American migrant farm workers.[33]

Third, the terminology used to describe STDs, especially chlamydia, may differ between countries, causing women from Mexico to misunderstand the historical questions on the questionnaire.

Fourth, the women born in Mexico may be more reluctant to report past STD infections on a study questionnaire.

The issue of STD prevalence in Mexican-Americans and Mexican nationals in the United States and in Mexico is worthy of further study.

The main conclusion that can drawn from this study is that low-income women of Mexican ancestry, regardless of their country of birth, length of time in the United States, or their past medical histories, had chlamydia and overall STD rates similar to those of non-Hispanic whites, and all should be screened routinely for syphilis, gonorrhea, and chlamydia.

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