Prenatal Health Behaviors and Psychosocial Risk Factors in Pregnant Women of Mexican Origin: The Role of Acculturation

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A B S T R A C T

Objectives. This study examined the association between acculturation of Mexican-origin women and factors in low birthweight and preterm delivery.

Methods. Interviews were conducted with 911 Mexican-origin respondents in Los Angeles prenatal care clinics. Infant outcome data were retrieved from delivery records.

Results. Mexican-American women had generally more undesirable prenatal behaviors and risk factors than Mexican-immigrant women. Although higher acculturation was significantly associated with behavioral risk factors, there were no direct effects of acculturation on infant gestational age or birthweight.

Conclusions. Future research needs to measure multiple factors to assess their effects on culture-specific protective factors. (*Am J Public Health.* 1997;87:1022–1026)

Introduction

The role of protective cultural behaviors as factors in the improvement of birth outcomes is of interest in the United States as we have witnessed increased rates of low birthweight.[1-4] Attention has focused on Mexican-origin women who, despite economic disadvantage, have rates of low birthweight similar to those of non-Hispanic Whites (5.7%).[5-7] Important questions have emerged regarding the pathways through which acculturation, as a proxy of cultural norms, directly affects risk factors and indirectly affects birth outcomes. Investigations show that Mexican immigrant women are more likely than Mexican-American women to engage in prenatal health behaviors (abstinence from alcohol, drug, and cigarette use during pregnancy)[8-10] and to have psychosocial assets (support from the baby's father, availability of social networks, and fewer stressful life events) associated with favorable birth outcomes.[11-13] Less conclusive evidence suggests a link between positive maternal attitudes and favorable prenatal health behaviors.[2,3] This study examined the effects of these multiple variables within a community-based sample of Mexican-origin women. The specific research questions addressed were as follows: (1) Do Mexican immigrants and Mexican Americans differ in prenatal health behaviors and psychosocial behavioral risk factors associated with adverse birth outcomes? (2) Are measures of acculturation commonly used in public health research associated with prenatal health behaviors and psychosocial risk factors? and (3) Do Mexican immigrants and Mexican Americans differ in birthweight and preterm delivery rates? If so, can these differences be accounted for by differences in the prenatal health behaviors and psychosocial risk factors studied?

Methods

Sample and Procedures

Two groups of women were recruited: Mexican Americans (40%; n = 366) and Mexican immigrants (60%; n = 545). Mexican Americans were born in Mexico or the United States and had resided in the United States since at least 10 years of age. Mexican immigrants were born in Mexico and had resided in the United States for no more than 7 years. All respondents were primiparous, were 17 to 35 years of age, had no more than 12 years of education, and were at least at 20 weeks' gestation at the time of the interview (sample mean = 30 weeks).

Face-to-face interviews were conducted in 22 community-based prenatal care clinics in Los Angeles County during the years 1987 through 1989. Potential respondents were approached by female interviewers and screened for eligibility. Of those eligible, 96% agreed to participate. Two thirds (64%) of the interviews were conducted in Spanish. Following delivery, infant outcome data were retrieved from medical records at 26 hospitals. Records were found and retrieved for 78% of the sample. Our 22% loss rate is very reasonable in survey research; with low-income populations, however, it is possible that the unmatched sample differs systematically from the matched sample. For example, women who did not deliver at one of the study hospitals may

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have had less stable family environments, more stress, higher medical risk, and more adverse birth outcomes than the matched sample. However, because there were no differences in match rates for Mexican Americans and Mexican immigrants, any acculturation differences observed in this study are not likely to be due to systematic differences in match rates. This sample included only those women who had complete interview and medical record data.

Measures

Data were collected on demographics, prenatal health behaviors, and psychosocial factors. Demographic variables included age, income, marital status, insurance status, and living arrangements. Initiation of prenatal care was measured by respondent report of number of weeks pregnant at the first prenatal care visit. Substance use variables were measured by respondent reports of smoking behavior (current smokers vs nonsmokers) alcohol use (current or prior alcohol users vs nonusers), and illegal drug use (current or prior drug users vs nonusers) 3 months before and during pregnancy.[14]

Three stress measures were included. A 16-item life events inventory assessed the number of life events that had occurred since the pregnancy.[15] The degree to which these events were distressing was measured by a single five-point scale. An 8-item version of the Perceived Stress Scale assessed perceptions of strain during the pregnancy[16] (alphas were .70 for the English version and .75 for the Spanish version). The three stress measures were standardized and averaged to form a single prenatal stress index for most analyses. A 6-item index measuring amount of support from the baby's father assessed positive and negative behaviors during the pregnancy (alphas were .90 for the English version and .92 for the Spanish version).[17,18] Pregnancy attitudes were included on an exploratory basis.[2,3] Respondents rated a series of items in terms of their feelings about being pregnant. Three items (feel special, feel healthy, and feel lucky) were averaged to form an attitudes toward pregnancy index ($\alpha = .50$).

Acculturation was measured with the 10-item version of the Cuellar scale.[19] Items were standardized and averaged to form an acculturation index ($\alpha = .87$ in both languages), with higher scores representing more acculturation. As expected, Mexican Americans and Mexican immigrants differed on this index (means of

TABLE 1—Selected Maternal Characteristics, Prenatal Psychosocial and Health Behaviors, and Infant Birth Outcomes for Mexican-Immigrant and Mexican-American Women

	Mexican Immigrants (n = 545)	Mexican Americans (n = 366)
Maternal characteristics		
Mean age, y	21.81	20.08*
Mean education, y	8.18	10.49*
Medi-Cal, %	14.00	49.00*
Live with baby's father, %	72.00	52.00*
Married, %	51.00	35.00*
Mean medical risk score	1.24	1.55*
Prenatal psychosocial and health behaviors		
Prenatal stress	−.14	.05*
Social support from baby's father	23.90	22.05*
Positive attitudes toward pregnancy	4.27	4.06*
Drug use (ever), %	2.00	7.00*
Alcohol use (ever), %	19.00	30.00*
Current smoking, %	1.00	1.00
Weeks to initiate prenatal care	14.03	13.28
Infant birth outcomes		
Birthweight, g	3363.67	3341.10
Gestational age (3-group)	2.90	2.90
Gestational age, wk	39.69	39.91

*$P < .001$.

2.22 and 1.20, respectively; $P < .001$). As a means of determining whether this acculturation scale measured a single underlying construct or several related dimensions, a factor analysis was conducted on the Cuellar items and two additional items: years of education and years residing in Los Angeles. Two factors emerged. The first, labeled integration in the United States, included English language preference, literacy in English (reading and writing), years residing in Los Angeles, and education. The second factor, labeled Mexican identity, included ethnic self-identification as Mexican, mother and father identification as Mexican, and literacy in Spanish. Two acculturation subscales, derived from the Cuellar scale, were then formed by standardizing and averaging the items on each factor ($\alpha s = .88$ for integration and .70 for identity).

Maternal medical risk and infant outcome data were abstracted from medical records via a standardized code book. A medical risk index was computed on the basis of criteria from the Problem Oriented Perinatal Risk Assessment System.[20] The birth outcome variables were birthweight (in grams) and gestational age (in completed weeks). Because of the small number of preterm deliveries, gestational age was coded into three categories (clearly preterm [<35 weeks], marginally

preterm [36 or 37 weeks], or full term [>38 weeks]) for some analyses.

Results

Mexican immigrants and Mexican Americans were compared on all study variables. As shown in Table 1, Mexican Americans were younger, had completed more education, were more likely to have public insurance (Medi-Cal), were less likely to be living with the baby's father, and were at higher medical risk than Mexican immigrants. There were no significant differences between the groups in terms of annual income (sample mean = $11 058) or the percentage of respondents (20%) currently employed.

Mexican Americans reported more prenatal stress, less support from the baby's father, less positive attitudes toward their pregnancy, and more drug and alcohol use (see Table 1). There was no significant difference between the groups on initiation of prenatal care (sample mean = 13.73 weeks pregnant). As can be seen in Table 1, there were no group differences in gestational age or birthweight. Among Mexican Americans, 7.7% of infants were delivered preterm or marginally preterm, and 4.6% had low birthweights. Among Mexican immigrants, 8.4% were preterm or marginally

TABLE 2—Correlations between Continuous Acculturation Indices and Prenatal Psychosocial Factors, Health Behaviors, and Infant Birth Outcomes: Total Sample

	Cuellar Acculturation Index	Integration in United States	Mexican Identity
Prenatal stress	.196**	.172**	−.146**
Positive attitudes toward pregnancy	−.167**	−.154**	.120**
Social support from baby's father	−.125**	−.141**	.088*
Weeks to initiate prenatal care	−.106*	−.119**	.044
Medical risk	.103**	.164*	−.028
Substance use	.186**	.143**	−.173**
Drug use (ever)	.238**	.192**	−.222**
Alcohol use (ever)	.191**	.211**	−.147**
Current smoking	.029	.011	−.025
Infant birth outcomes			
Birthweight	−.010	−.012	.049
Gestational age (3-group)	−.013	−.017	.038

*$P < .01$; **$P < .001$.

TABLE 3—Intercorrelations among Prenatal Psychosocial Factors, Substance Use Index, and Medical Risk: Total Sample

	1	2	3	4	5	6
1. Prenatal stress	1.000					
2. Social support from baby's father	−.294***	1.000				
3. Positive attitudes toward pregnancy	−.303***	.192***	1.000			
4. Weeks to initiate prenatal care	.000	−.069*	.129***	1.000		
5. Substance use index	.202***	−.134**	−.160***	−.024	1.000	
6. Medical risk	.066*	.004	−.016	−.047	−.032	1.000

*$P < .05$; **$P < .01$; ***$P < .001$.

preterm, and only 2.6% had low birthweights.

Correlational Analyses

We examined links between our three continuous measures of acculturation and all study variables (Table 2). Greater acculturation was associated with more prenatal stress, less positive attitudes toward pregnancy, less social support from the baby's father, earlier initiation of prenatal care, higher medical risk, and more drug and alcohol use. The three acculturation indices showed the same pattern, with two exceptions. Increased medical risk and early initiation of prenatal care were associated with more integration in the United States, but not with Mexican identity.

Next, we computed correlations among all of the prenatal variables (Table 3). For this analysis, the three substance use measures were standardized and averaged to form a single index. Women who reported more prenatal stress had less support from the baby's father, had less positive attitudes toward pregnancy, used more substances, and had higher medical risks. Women with more social support from their baby's father had more positive attitudes toward pregnancy, initiated prenatal care earlier, and used fewer substances. Finally, women with more positive attitudes reported less substance use and initiated prenatal care later in pregnancy.

Modeling Relationships between Acculturation, Psychosocial Factors, and Outcomes

In the last analysis, we performed structural equation modeling to determine whether there were indirect pathways (via the prenatal factors) between accultura-

tion and birth outcomes. The hypothesized model included regression paths from the two acculturation factors to each of the prenatal variables and from each of the prenatal variables to the two birth outcomes. Thus, links between acculturation and birth outcomes were expected to be mediated by the prenatal variables. The prenatal variables were allowed to freely correlate with each other, and a path from gestational age to birthweight was also included because early delivery was expected to be a cause of low birthweight.

The model was analyzed via maximum likelihood estimation.[21] After estimation of the hypothesized model, the model was modified to improve fit. Nonsignificant paths were dropped, and several correlated residuals within the latent constructs were added. These modifications improved the fit but did not alter any of the regression paths. The final model, presented in Figure 1, provided a good fit to the data according to a number of indicators (comparative fit index = .958; chi square to degrees of freedom ratio = 2.3, df = 2; average standardized residual = .03). (For clarity, correlated residuals and correlations among prenatal variables are not shown.)

Integration into the United States was associated with more prenatal stress, which was associated with earlier delivery. As expected, early delivery was associated with lower infant birthweight. Women who were more integrated also had less positive attitudes toward their pregnancy, received less support from the baby's father, had higher medical risks, and initiated prenatal care earlier. However, these variables were not associated with birth outcomes. We also ran additional models using the group variable (Mexican American, Mexican immigrant) instead of the acculturation factors, along with a substance use variable that included alcohol. Results were similar to those presented here and did not change the substantive conclusions.

Discussion

Although there is growing evidence that psychosocial factors and health behaviors during pregnancy are linked to adverse birth outcomes, we did not find consistent relationships in the current sample, with one exception: higher integration in the United States was associated with higher prenatal stress, which was associated with preterm delivery. This prenatal stress, which was also associated with substance use and low social support,
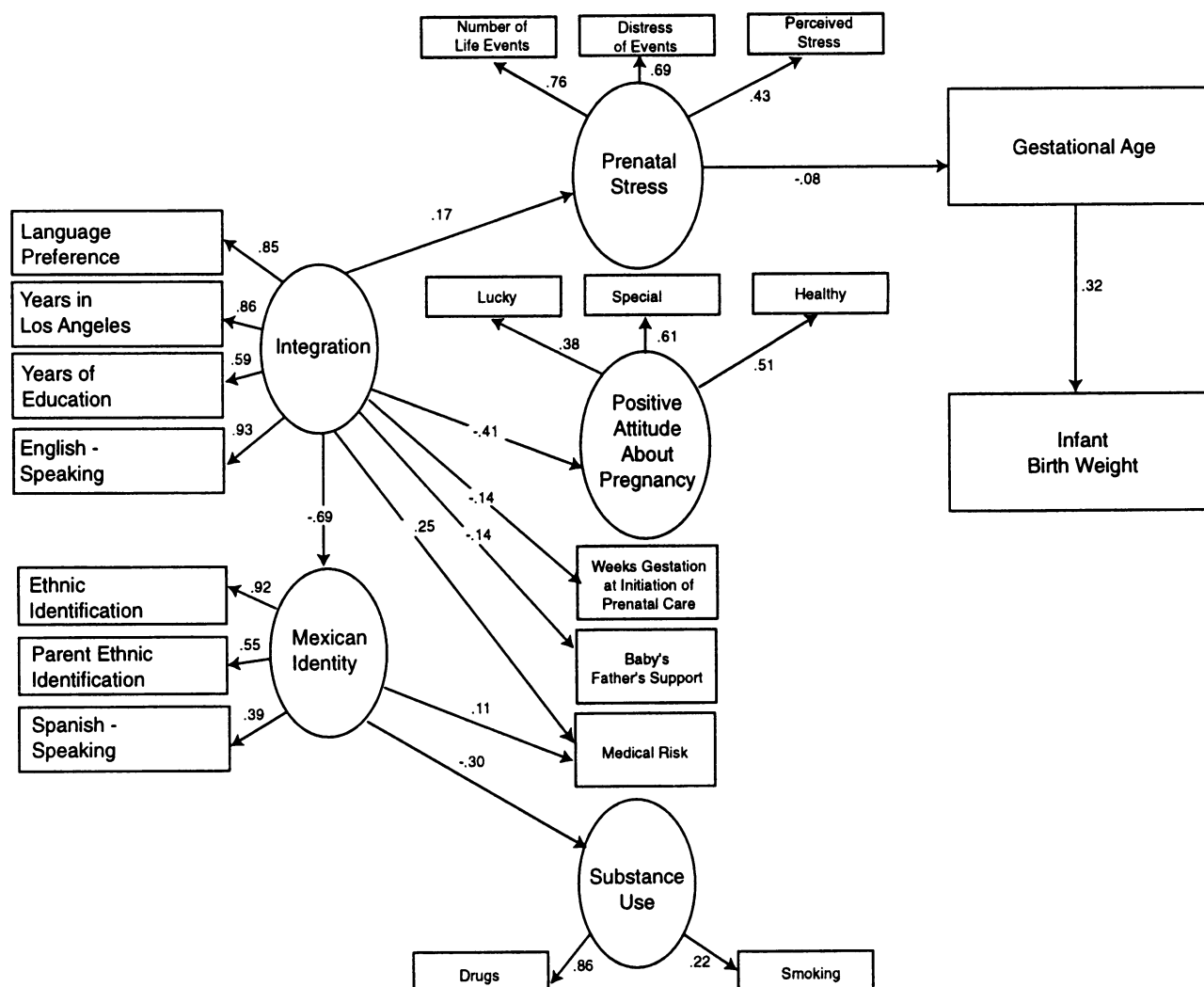
Note. Standardized coefficients are shown; all paths are significant at $P \le .05$ ($\chi^2 = 347$, $df = 151$, n = 911).

FIGURE 1—Structural equation model of the relationships between two acculturation factors—prenatal psychosocial and health behaviors—and gestational age and birthweight.

reveals that low-income Mexican-American women as a group are at risk for preterm delivery. As Scribner has noted and we empirically tested, Mexican-American women, as they integrate into the United States, experience a decrease in culture-specific protective factors that are integrally related to the quality of the community environments in which they live.[22] The pattern of differences in birth outcomes by group is noteworthy. The rate of low birthweight for Mexican Americans (4.6%) in this sample was similar to the rate for Mexican-origin women in Los Angeles County (4.9%),[23] and the low-birthweight rate among Mexican immigrants (2.6%) in this study was almost one half that rate. Thus, combining

these groups in future studies may mask the emerging group risk profile for Mexican-American women.

The processes that contribute to the decrease in protective cultural behaviors in Mexican-American women merit focused investigation. Measures of acculturation, such as those used in this study and in public health research, assess a limited set of socioeconomic characteristics (the causal linkages between income, education, occupation, and language use) but do not measure the process of acculturation or change in cultural norms. Analyses of acculturation measures show that English language use is the dominant component of acculturation.[22,24] Future researchers need to measure multiple factors—

including values, beliefs, and attitudes toward pregnancy and motherhood; prenatal health behaviors; and life stressors—to advance knowledge of the role of cultural and community norms in protective and behavioral risk factors for Mexican-origin women. □

Acknowledgments

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