
Ethnic differences in the substance use patterns of low-income pregnant women

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DURING THE PAST 20 years, extensive attention has been directed at the effects of the use of substances such as alcohol, cigarettes, and recreational drugs on birth outcome. Strong associations have been found between the use of any such substance during pregnancy and adverse birth outcomes. For example, several studies have identified the detrimental effects of excessive alcohol, cigarette, and drug use on fetal growth and development.^{1,2} The major potential risk factors for the infant include: biologic impairment, reduced infant-parent contact due to need for longer hospital stays, and greater likelihood of a vulnerable, unsupported home.³⁻⁶ Although there appears to be a direct correlation

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between use of these substances and perinatal outcome, this relationship is confounded by the fact that substance users are more likely to delay prenatal care than non-substance users.^{7,8} Few studies have examined the relationship between cigarette or alcohol use and prenatal care. However, a number of studies have suggested that early intervention during prenatal care visits decreases the use of cigarettes and alcohol during the pregnancy.^{9,10}

Current evidence on the teratogenic effects of individual substances is inconclusive. The lack of consistent results appears to be related to small sample sizes and methodological problems in data collection regarding the amount and frequency of substance consumption. In addition, the overall effect of multiple substance use on maternal and child health has not been adequately explored and documented.

Reports on the incidence of smoking and alcohol use during pregnancy in the United States vary. The reported number of women who use alcohol during pregnancy is high (50% to 88%), and 20% to 60% of pregnant women report cigarette smoking.¹¹ Ethnic differences have been identified with respect to alcohol and cigarette use. Among Hispanics, several studies have shown that women of Mexican origin have a high level of abstinence from both cigarettes and alcohol.¹²⁻¹⁵ For example, in studies of smoking habits among Anglo and Mexican-American women, the latter were less likely to smoke and were more likely to begin at a later age and smoke fewer packs than their Anglo counterparts.^{12,13} However, in another study, women of Mexican origin born in the United States were more likely to drink than women born in Mexico.¹⁴ Black women have also been found to be more

likely to drink and smoke than women of Mexican origin but less likely than Anglo women.¹⁵

A number of studies examining the characteristics of women who use substances during their pregnancy have found them to have fewer sources of social support, experience more stressful life events, use multiple substances, and be of lower socioeconomic class and less educated.¹⁶⁻¹⁸

Thus, one purpose of this exploratory study was to examine the patterns of substance use before and during pregnancy in a sample of low-income, primiparous, ethnic minority women and to assess what sociodemographic and psychosocial factors were characteristic of women who continue to use substances during their pregnancy.

METHOD

Sample and procedures

A sample of 107 primiparous women between the ages of 18 and 34 were interviewed at seven Los Angeles county clinics during 1987 and 1988. The sample included 20 African-American, 21 Mexican-American, and 66 recent Mexican immigrant women. Women who were born in the United States of Mexican origin parents or had lived in the United States since the age of 10 were identified as Mexican-American. Women who were born in Mexico of Mexican origin parents and who resided in the United States for 7 years or less were defined as recent Mexican immigrants.

All subjects were interviewed at one of the prenatal care clinics using a structured questionnaire. The sampling procedure entailed reviewing all patient medical charts

prior to the prenatal care session to identify those respondents who met the criteria for inclusion in the study. Eligibility criteria were ethnicity, parity (primiparous only), Medi-Cal (Medicaid) or low-income self-pay status, and educational level of 12 years or less. Eligible respondents were approached by the interviewer and informed of the nature of the study. If women agreed to participate, an informed consent was obtained. All subjects were interviewed face-to-face in the prenatal clinic by a trained interviewer with background characteristics similar to those of the respondent. Due to the sensitive nature of substance use information, respondents were reassured of confidentiality and anonymity prior to being asked these questions. The purpose of the procedure was to decrease socially desirable responses and increase reliability of data. Interviews lasted approximately 40 minutes. Of the 112 women approached to participate in the study, only 5 refused to participate.

Instruments

Sociodemographic data collected included age, type of health insurance coverage, work status, living arrangements with the baby's father, whether the pregnancy was planned, timing of initiation of prenatal care, and whether care was obtained as soon as they wanted. Medical risk data were

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abstracted from a review of medical records at the clinic sites. High medical risk was defined as the presence of a chronic disease such as heart disease or pregnancy-induced problems such as gestational diabetes or hypertension.

Psychosocial factors were measured using multiple-item scales. A 16-item life events scale was used to assess whether life events such as "recent move, loss of home, problems at work, or unusual money worries" had occurred since the respondent became pregnant. This scale was adapted from that used in a large epidemiologic study in Los Angeles.¹⁹ Shortened versions of two social support scales developed by Procidano and Heller²⁰ were used to measure perceived social support. One scale examined family support and the other friend support. The scales had 10 and 13 items respectively. Items were scored on a 3-point scale. Reliability analyses on these scales yielded a Cronbach alpha of .84 for the Family Support Scale and .85 for the Friend Support Scale.

A series of questions on the use of alcohol, smoking behavior, and recreational or hard drug use was also asked of all respondents to ascertain frequency of drinking behavior and type and frequency of drugs used. Respondents were asked about their use of substances "3 months before they became pregnant" and the same question was asked about "since they became pregnant." The ratings for each of the three items (beer, wine, and liquor) were summed to develop a liquor scale. Marijuana was a single item response. The "hard drugs" category included cocaine, phencyclidine hydrochloride (PCP), and heroin. Prescription drugs included three items related to the use of stimulants (pep pills), tranquiliz-

ers, and prescribed drugs. Four items related to over-the-counter (OTC) medications were asked and included use of aspirin, medicine for indigestion, laxatives, or other nonprescription medicines. All items were rated on a 6-point scale (from 1 = never to 6 = daily intake). The potential range of scores for each substance scale was 3 to 18. A minimum score (3) refers to those respondents who report "never" using the substance. These scales consisted of adapted items used in the Human Population Laboratory questionnaire.²¹ Information was also obtained on current cigarette smoking behavior and number of cigarettes smoked daily. The item on cigarette smoking behavior was a forced-choice response which separated respondents into never smoked, past smokers, and present smokers. Past smokers were asked when they stopped smoking relative to their pregnancy. For current smokers, the approximate number of cigarettes smoked per day was obtained.

Analyses of data

Goals of data analysis were to examine changes in patterns of substance use before and during pregnancy for the total sample and by ethnicity and to develop a profile of characteristics of users and nonusers of substances during pregnancy. Bivariate analyses were conducted to assess differences by ethnicity on selected sociodemographic and pregnancy-related characteristics. T-tests, chi-squares and analyses of variance were conducted to examine differences on study variables and changes in substance use patterns before and during pregnancy.

To develop a substance use profile, the respondents were classified into two groups:

Group 1 included all women who reported that they never drank alcohol, smoked cigarettes, or took drugs before or during pregnancy as well as women who reported that they stopped using all substances during pregnancy ($n = 60$). Group 2 consisted of women who reported smoking cigarettes, drinking alcohol, or using hard drugs during pregnancy ($n = 47$).

RESULTS

Sociodemographic characteristics of sample

Table 1 presents the data on the sociodemographic characteristics of the respondents by ethnicity. The mean age of all respondents was 21.2 years. Recent Mexican immigrants were significantly older than Mexican-Americans ($F[2,102] = 3.9$; $P < .05$). Mexican-American and recent Mexican immigrant respondents were significantly more likely to be married to and/or living with baby's father than black respondents ($X^2[2] = 10.1$; $P < .01$). Level of educational attainment was significantly different by ethnicity. Recent Mexican immigrant women had the lowest mean level of education (mean = 7.9); black women were the most educated with 50% having completed 4 years of high school ($F[2,104] = 28.4$; $P < .001$).

The majority of the recent Mexican immigrants and Mexican-American women had no health insurance. Close to 20% in each group were currently working full-time. Sixty-three percent of black women had health insurance (Medi-Cal—the state-financed health insurance coverage for eligi-

Table 1. Sociodemographic and pregnancy-related characteristics of respondents by ethnicity

	Total	Black (n = 20)	Mexican-American (n = 21)	Mexican Immigrant (n = 66)
Age (means)	21.2*	20.6	19.8	21.8
Marital status (%)				
Married	41.1	5.6	61.9	45.0
Separated/divorced	1.9	5.6	—	3.0
Never married	57.0	89.8	38.1	51.0
Living with baby's father (%)				
yes (response)	59.8†	30.0	76.2	63.6
Years of education (means)	9.1†	11.4	10.6	7.9
Have Medi-Cal (%)	18.1†	63.2	9.5	7.7
Sources of income (%)				
Salary (self, partner, other)	48.6	44.4	100.0	28.7
Unemployment insurance/disability	3.7	11.2	4.8	—
Social Security	2.8	11.2	—	—
Public assistance/food stamps/WIC	36.4	83.3	29.6	3.9
Planned pregnancy (%)	46.7*	25.0	52.4	51.5
response				
Weeks of initiation of prenatal care (means)	15.1	15.8	15.7	14.6
High medical risk group (%)	17.1†	50.0	4.8	10.9

* $P < .05$

† $P < .001$

‡ $P < .01$

ble low-income individuals). However, although black women had the highest mean level of education, they were significantly more likely to be unemployed with public assistance as their source of income (50%).

Pregnancy-related characteristics

Data on number of weeks pregnant at first visit for prenatal care show a mean of 15.1 weeks for the entire sample. However, fewer than 50% of all respondents initiated prenatal care in the first trimester, close to one third (32.5%) initiated care in the second trimester, and 10% in the third trimester. There were no significant differ-

ences by ethnicity in mean weeks initiation of prenatal care. Sixteen percent of recent Mexican immigrants reported initiation of care in the third trimester compared with 10% of African-Americans and 5% of Mexican-Americans. Whether or not the pregnancy was planned revealed significant differences by ethnicity. Approximately 52% of recent Mexican immigrants and Mexican-Americans reported that the pregnancy was planned, while only 25% of the black respondents reported a planned pregnancy. Medical record information on risk showed that 50% of the black respondents were identified as high risk, while 11% of the

recent Mexican immigrants and 5% of the Mexican-Americans were so identified. Thus, black women were significantly less likely to have planned their pregnancy and significantly more likely to be at high medical risk than the Mexican-origin groups.

Frequency of substance use

Approximately 25% of the respondents reported drinking wine. Thirty-three percent of recent Mexican immigrants, 30% of Mexican-Americans, and 25% of blacks reported drinking beer. Consumption of liquor was least likely to be reported by recent Mexican immigrants (12.1%) and Mexican-Americans (14.3%); almost twice as many black respondents reported consumption of liquor (25%). Marijuana use was reported by 25% of black respondents, 1.5% of recent Mexican immigrants, but by none of the Mexican-Americans. Although none of the respondents of Mexican origin reported use of hard drugs, 10% of black respondents reported use of these drugs. Use of OTC medications was reported by almost 50% of the black respondents, 31% of recent Mexican immigrants and 21% of Mexican-American respondents. Close to 70% of the black respondents and 24% of the recent Mexican immigrant respondents reported use of prescription drugs. However, none of the Mexican-American respondents reported use of prescription drugs.

Substance use patterns

Table 2 presents mean use of substances before and during pregnancy for the entire sample. With respect to changes in the patterns of substance use "since the woman

Table 2. Patterns of substance use before and during pregnancy for total sample

Variable	Mean	Standard deviation	t
Liquor			
Before	4.2	2.1	
During	3.2	.6	5.8*
Marijuana			
Before	3.3	1.5	
During	3.0	.6	1.9†
Hard drugs			
Before	3.0	3	
During	3.0	0	1.3
Prescription drugs			
Before	3.7	1.5	
During	3.4	1.3	1.6
OTC			
Before	4.4	1.4	
During	3.4	1.2	6.0*

N = 107

*P < .001

†P < .10

became pregnant," reported use of liquor and over-the-counter medications reflect a significant decrease ($P < .001$). A trend toward a decrease in the use of marijuana is also apparent but not significant ($P < .10$). There were no significant changes found from before pregnancy to during pregnancy in use of hard and prescription drugs. Overall significant changes in substance use patterns were in OTC medications and alcohol consumption—substances most likely to be used by all respondents.

Table 3 presents data on patterns of substance use before and during pregnancy by ethnicity. Black women were significantly more likely to use marijuana and

Table 3. Ethnic differences in patterns of substance use before and during pregnancy

Variable	Black (n = 20)	Mexican immigrant (n = 66)	Mexican-American (n = 21)	(F, prob)
Liquor				
Before	4.8	4.1	4.1	NS
During	3.2	3.2	3.2	NS
Marijuana				
Before	1.5	1.0	1.0	(9.2, P < .001)
During	1.1	1.0	1.0	NS
Hard drugs				
Before	3.2	3.0	3.0	(3.7, P < .05)
During	3.0	3.0	3.0	NS
Prescription drugs				
Before	3.5	3.8	3.4	NS
During	3.5	3.4	3.2	NS
OTC				
Before	6.5	5.8	5.2	(2.9, P < .10)
During	5.5	4.3	4.9	(4.8, P < .01)
Cigarettes				
Mean number smoked (by current smokers)	1.8	5	1.1	(2.3, P < .10)

NS = not significant

hard drugs (cocaine, PCP, heroin). The use of OTC medications and cigarettes consumed by black respondents approached significance. With the exception of use of OTC medications during pregnancy by black women, no significant differences were found.

Data on smoking behavior showed that close to 30% of the Mexican immigrants smoked, followed by 38% of the Mexican-Americans, and 61% of the black women. Among the respondents who reported use of cigarettes, an average of 0.9 cigarettes were smoked a day. Black women reported smoking an average of 1.8 cigarettes a day. Among Mexican-origin women who smoked, Mexican-American respondents were more likely to smoke than Mexican immigrant women. Mexican-Americans re-

ported smoking an average of 1.1 cigarettes per day compared with only one-half cigarette per day for Mexican immigrants.

A comparison of users and nonusers of substances

Chi-square was computed to determine whether women who continued to use alcohol, drugs, or cigarettes during their pregnancies (i.e., substance use group, n = 47) differed from the nonuser group (n = 60) in ethnic group composition. The test revealed no significant differences in ethnic composition within the user and nonuser groups. Within the user group, 62% were Mexican immigrants, 23% black, and 15% Mexican-American. Within the nonuser group, 62% were Mexican immi-

grant, 23% Mexican-American, and 15% black.

Analyses of variance and chi-square were conducted to examine whether there were differences in age, living with baby's father, education, planned pregnancy, life events, and medical risk by ethnicity within each of the two groups.

Recent Mexican immigrant nonusers were significantly older than Mexican-American and black nonusers ($F(2,57) = 3.4; P < .05$). Further, among nonusers, 70% of the recent Mexican immigrants were living with the baby's father compared with 28% of Mexican-Americans and 3% of blacks ($X^2(2) = 13.66; P < .001$). These differences were not significant for users.

For both users and nonusers of substances, Mexican immigrants are less educated than the other two ethnic groups (as in the overall sample). For users, Mexican immigrants had significantly more life events

(mean = 4.3) than Mexican-Americans (mean = 2.6) and blacks (mean = 2.7) ($F(2,44) = 3.1; P < .05$). For nonusers, there was no ethnic difference in number of life events but the means were in a similar direction. For users, 78% of high risk patients were black and 22% were Mexican immigrant, whereas 11% of low risk patients were black, 69% Mexican immigrant, and 20% were Mexican-American ($X^2(2) = 17.5; P < .001$). These analyses did not reveal any significant ethnic differences in medical risk for nonusers.

Table 4 presents a comparison of nonusers and users of substances on selected demographic, medical, and psychosocial variables. Only two variables were significantly different between the two groups. First, at-risk substance users were slightly older than nonusers ($t(103) = -2.17; P < .05$). Second, substance users were significantly less likely to have planned the

Table 4. Profile of non-substance users and at-risk substance user groups on selected demographic, medical, and psychologic variables

Variables	Total	Non-substance users (n = 60)	At-risk users (n = 47)
Age (mean)	21.3*	20.6	22.0
Living with baby's father (%)	59.8	65.0	53.0
Education (mean)	9.1	8.8	9.4
Planned pregnancy (%)	46.7†	58.0	31.0
Weeks pregnant at first visit (mean)	15.0	15.2	14.8
Pregnancy care as soon as wanted (%)	70.1	75.0	64.0
High medical risk (%)	17.1	15.0	20.0
Life events (mean)	3.6	3.4	3.7
Family support (mean)	26.8	26.3	27.2
Friend support (mean)	31.0	30.3	31.7

* $P < .01$

† $P < .05$

pregnancy ($X^2(1) = 6.4; P < .01$). In fact, the data show that nonusers were almost twice as likely as users to have planned the pregnancy. Initiation of prenatal care was not significantly different between groups.

The two groups also reported a similar number of life events (mean = 3.6) during the pregnancy and similar levels of perceived family and friend support.

DISCUSSION AND IMPLICATIONS

Most of the work on substance use has focused on chronically addicted drug abusers. Little is known about the range of substance use patterns in black and Mexican-origin populations. These data provided a unique opportunity to examine the substance use patterns in a group of low-income, primiparous, pregnant women who have been recently defined as a "vulnerable population."¹² Although the number of black respondents was small, the number of women of Mexican origin was greater and together these groups provide important preliminary information on substance use behaviors in low-income ethnic minority women.

The substance use patterns reflect a range of health behaviors. These data support existing information regarding health behaviors among recent Mexican immigrant and Mexican-American women. That is, the majority tend not to use hard drugs and a significant number have never smoked.^{12,13} These health behaviors may decrease the relative risk of demographic factors on perinatal outcome.²³ However, the surprising finding was the similar although moderate patterns of use of alcohol among all three groups. These data challenge two notions

regarding Mexican origin women: first, the belief that women of Mexican origin are abstainers of alcoholic beverages and, second, that use of alcohol increases with acculturation.¹⁴ These areas need to be further explored with larger samples.

Of interest was the data on use of prescription drugs and OTC medications. Prescription drugs and OTC medications were used by a significant portion of each of the ethnic groups. The effects of these medications on the unborn child have yet to be determined. The use of these medications may suggest that these groups are medically and psychosocially at risk. However, separate analyses of these data revealed no relationship between medical risk and use of OTC and prescription drugs. Alternatively, the study respondents may require more medications to relieve minor symptoms or they may be more likely to use more accessible OTC medications due to lack of access to a usual source of care. Nonetheless, these findings emphasize the need for greater awareness of the potential overreliance on prescription and OTC medications in low-income pregnant women.

Finally, the finding that having a planned pregnancy was the most significant characteristic distinguishing nonusers from users of substances was of interest. It has been noted that a planned pregnancy is highly correlated with a cluster of attitudinal variables whereby women engage in self-care practices to protect the health of the baby.

The surprising finding was the similar although moderate patterns of use of alcohol among all three groups.

These "protective" behaviors related to a planned pregnancy require further inquiry.²³ Previous research has identified users of substances as having fewer social supports and experiencing more stressful life events.¹⁶ These data do not support that finding; one possible explanation is that women in this study were not chronic drug users and thus the results are not comparable.

These data suggest some possible avenues of clinical interventions during the prenatal and postnatal care of mother and infant. For example, maternal-child health care providers should educate all patients concerning the potentially harmful effects of the use of OTC medications and prescription drugs. This information should be presented during initial prenatal care assessment and reinforced at each visit. Also important are prenatal assessment pro-

cedures that involve taking a complete detailed history including all types of substances used. Chasnoff has stated "substance abuse in pregnancy may be the most frequently missed diagnosis in all of obstetric and pediatric medicine."^{24(p206)} Interdisciplinary teams who conduct infant assessment need to take into account that a pregnant woman's use of substances may contribute to "definite behavioral and neurological effects that place the neonate, infant, and child at risk for developmental abnormality."^{25(p1,403)} The interactive effect of the multiple use of substances, including prescription drugs and OTC medications, during the gestational period should constitute a serious area of professional concern in providing services to low-income pregnant minority women.

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