Maternal Acculturation and the Prenatal Care Experience

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Abstract

Background: Acculturation may influence women's perceptions of health care experiences and may explain the epidemiologic paradox, whereby foreign-born women have lower rates of adverse birth outcomes than United States (US)-born women. We evaluated the relationship between maternal acculturation and specific dimensions of prenatal interpersonal processes of care (IPC) in ethnically diverse women.

Methods: Cross-sectional analysis of 1243 multiethnic, postpartum women who delivered at Kaiser Permanente Medical Center in Walnut Creek or San Francisco General Hospital. Women retrospectively reported on their experiences in seven domains of IPC during their pregnancy pertaining to communication, decision making, and interpersonal style. The primary independent variables were four measures of maternal acculturation: birthplace, English language proficiency, the number of years residing in the US, and age at immigration to the US. Generalized linear models, stratified by infant outcome, measured the association between each maternal acculturation measure and specific IPC domains while adjusting for type of health insurance, demographic, and reproductive factors.

Results: Approximately 60% of the sample was foreign-born, 36% reported low English proficiency, 43% had resided in the US <10 years, and 35% were age 20 years or older when they immigrated to the US. Over 64% of the women reported having public insurance during pregnancy. In adjusted analyses among women who delivered term and normal birth weight infants, less acculturated women and women with non-private health insurance were more likely to have higher mean IPC scores when compared to more acculturated or US-born women and women with private health insurance, respectively.

Conclusion: In a large and ethnically diverse sample of childbearing women in Northern California, less acculturated pregnant women reported better prenatal care experiences than more acculturated and US-born women, another dimension of the "epidemiologic paradox." However, the relationship between acculturation and IPC, as reported during the postpartum period, differed according to infant outcomes.

Introduction

In the United States, prenatal care is one of the most widely used types of preventive health care services.[1] Optimal use of prenatal care can reduce adverse perinatal outcomes, including prematurity, low birth weight, and infant and maternal morbidity and mortality. Research studies have focused on the adequacy of prenatal care use (the timing of initiation and the number of visits) as a way of mitigating adverse pregnancy outcomes but adequacy does not measure the content or quality of care.[2] Timely and frequent prenatal care visits are important for improving pregnancy outcomes, but the quality of care is also important.[3] From 1970 to 2004, use of prenatal care has improved in the US, but health dis-

parities in prenatal care use and perinatal outcomes have persisted.[4] The role of quality of care on health disparities in perinatal outcomes has not been adequately studied.

Two components of the quality of care are the technical quality and the interpersonal quality of care.[5] Data sources, such as the Healthcare Effectiveness and Data Information Set, have been used to assess technical aspects of quality such as receipt of immunizations or screening tests. While some studies have reported that the interpersonal quality of care may be as important as the technical quality in determining patient preferences,[5] it is challenging to operationalize, measure, and analyze these concepts.[6] Interpersonal quality of care is most often assessed in terms of patient satisfaction with various aspects of interpersonal care; a few studies focus

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instead on patients' experiences of that care. The interpersonal processes of care instrument (IPC) has been used to assess patient experiences of interpersonal care in adults and three broad dimensions have been identified: communication, patient-centered decision making, and interpersonal style.[7,8] One study of a diverse population of adult patients explored whether several dimensions of IPC were independently associated with satisfaction with care and whether these associations differed across racial, ethnic, or language subgroups.[6] The investigators reported that good interpersonal processes of care (higher IPC scores) were positively associated with satisfaction, that the associations were consistent across racial/ethnic groups, and that some effects of IPC depended on language among Latinos.[6] Thus, the IPC scores directly relate to patient satisfaction and are reliable in a diverse patient population, and language proficiency influences IPC scores among Latinos.

While some studies of prenatal care have addressed patient experiences with health care,[9] only a limited number of studies have focused on immigrant women or studied pregnant women in a variety of health care settings which have diverse payers for health care.[10] Perinatal health services are particularly important for immigrants because they have higher fertility rates than US-born citizens[11] and are more likely to be of low income and uninsured.[12] While one-eighth of the US population is foreign-born, one-quarter (24%) of childbearing women are foreign-born.[11] Both the quantity and quality of prenatal care can facilitate the detection and treatment of medical and obstetric conditions as well as provide an opportunity for preventive health education.[1]

Previous studies of childbearing women in the US have reported that foreign-born women, especially Mexican-born women, have lower rates of low birth weight infants and infant mortality than US-born women,[13–18] despite the fact that foreign-born women have more demographic and socioeconomic risk factors.[17,19–22] This phenomenon has been called an epidemiologic paradox and has been attributed to several dimensions of acculturation.[23–29]

Acculturation is the process of adaptation to the attitudes, language, values, customs, beliefs, and behaviors of another culture.[30] Measures of acculturation are based on theoretical models that consider acculturation as a multi-dimensional process that involves integration of members of the minority group into the social structure of the majority group.[30,31] Thus, measures of acculturation may be correlated with behavioral and environmental factors that could influence women's perception of health care experiences. These perceptions are important to consider in studies that assess the quality of care. Previous studies of health experiences among multicultural populations, including immigrants, have analyzed multiple measures of acculturation, including country of birth, English language proficiency, years of residence in the US, and age at immigration to the US.[32–34] In studies that measured the relationship between acculturation and health outcomes, US-born individuals (the majority society) usually serve as the comparison group.[23,25,29,31,33]

This study sought to evaluate the relationship between four measures of maternal acculturation and specific measures of interpersonal processes of care among childbearing women who received prenatal care and delivered infants in two distinct health care settings. Based on previous studies which reported that women with low income, low educational attainment and public health insurance reported higher satisfaction with care than their counterparts,[10,35,36] we hypothesized that less acculturated childbearing women would report higher (better) process scores than more acculturated women or US-born women.

Materials and Methods

As previously described,[37] from March 2004 through August 2006 we conducted a cross-sectional study in two healthcare settings in the San Francisco Bay Area: the Kaiser Permanente Northern California Medical Center in Walnut Creek, California (KPNC-WC), which is part of a group-model integrated healthcare delivery system in the San Francisco Bay Area, and San Francisco General Hospital (SFGH), the only public hospital in San Francisco County, California.

Bilingual (English/Spanish) research assistants recruited women from the post-partum ward at each institution and conducted a brief screening questionnaire to assess eligibility for the study. Women were eligible to participate if they: (1) delivered a live-born, singleton infant; (2) were willing to report their race/ethnicity; and (3) were comfortable responding in English or Spanish. The 45-minute structured interview was performed after delivery of the infant and assessed demographic and health service characteristics, reproductive factors, and several dimensions of interpersonal processes of prenatal care. Information about the infant's gestational age and birth weight was abstracted from the medical record after the interview was completed. The interviews and medical record review were performed by trained research assistants using a standardized procedure manual. The study was approved by the Kaiser Permanente Institutional Review Board for the Protection of Human Subjects as well as the Committee on Human Research at the University of California, San Francisco and written informed consent was obtained from each participant.

Our primary dependent variables were seven measures of interpersonal processes of care that pertain to care during the current pregnancy (prior to delivery). We adapted the questions from two sources: (1) the first version of the Interpersonal Processes of Care (IPC) Survey, which was developed for patients from diverse racial/ethnic groups[7]; and (2) the Prenatal Interpersonal Processes of Care (PIPC) survey,[38] which was an adaptation of the first IPC survey and intended to be used with ethnically diverse samples of pregnant women. Our instrument (Table 1) consisted of three communication scales (elicitation of patient concerns and responsiveness, empowerment and self-care, and explanations); one decision-making scale (patient-centered decision making); and three interpersonal style scales (emotional support and reassurance, perceived discrimination, and respectfulness). We selected these measures because they assess women's experiences rather than satisfaction, and because they have been validated and proven reliable among ethnically diverse adult patients.[8] For this study we adapted the wording of the items to refer to "doctors and other health professionals" because the first IPC scale referred to doctors and the PIPC scale referred to providers. We also added the description "during this pregnancy" to all scale items. The item responses for each scale ranged from 1 to 5 (always, often, sometimes, rarely, and never). Summary scores were calculated by averaging the items within each scale and scores were reversed, as needed, so that a higher

TABLE 1. DEFINITIONS OF THE INTERPERSONAL PROCESSES OF CARE (IPC) MEASURES

Domain/subdomain*	Definition: Frequency with which doctors or other health professionals...
Communication	
Elicitation of patient concerns and responsiveness (4)	Let patient say what was important, listened carefully, did not ignore what patient said, and took patient's concerns seriously
Empowerment and self-care (4)	Made patient feel that following their advice would make a difference in her health and the health of her baby, made patient feel that her everyday activities (e.g., diet, lifestyle) would make a difference in her pregnancy, told her what she could do to take care of herself during pregnancy, and told her how to pay attention to her symptoms and when to call the doctor
Explanations (2)	Gave patient enough information about her health problems and made sure she understood answers to her questions
Decision-making	
Patient-centered decision making (3)	Asked how she felt about the advice doctor gave her, asked if she would have any problems following doctor's recommendations, asked if she felt she could do what doctor recommended
Interpersonal style	
Emotional support and reassurance (4)	Helped her feel less worried about her pregnancy, complimented her on how well she took care of herself during pregnancy, were compassionate and caring
Perceived discrimination (6)	Patient perceived discrimination due to her race/ethnicity, education, having Medicaid insurance, difficulty speaking English, money; had negative attitude (score reversed so higher is less discrimination)
Respectfulness (3)	Really respected patient as a person, respected her privacy when examining her or asking questions

*Number of items in parentheses.

scale score indicated better experiences of the interpersonal labeled process, such as more explanations or less perceived discrimination.

The primary independent variables were four self-reported measures of maternal acculturation status and type of health insurance. We considered multiple measures of acculturation because each measure may represent a different dimension of this complex phenomenon.[32] The first measure was birthplace, a commonly used proxy measure of acculturation that has been utilized to assess patient–provider interactions.[39] We categorized birthplace as Asia, Latin and South America, Mexico or the US. The second measure was English language proficiency, categorized as low (the woman reported that she spoke English not at all or poorly), average, or high (the woman reported that she spoke English well or fluently). The third measure of acculturation was the number of years each woman had resided in the US, another common measure of acculturation used in the healthcare setting,[33,40] which was categorized as <5, 5–9, 10–14, ≥15 years, or US-born. The fourth measure was age at immigration to the US, also analyzed in previous studies of satisfaction with health services,[41] and categorized as ≥20, 10–19, <10 years, or US-born. Health insurance was categorized as MediCal (Medicaid in California)/other public, private or no insurance.

We adjusted for several covariates in our analyses, including demographic, reproductive, and infant characteristics. Maternal age was categorized as <22, 22–35, or >35 years. Educational attainment was categorized as low (<12 years), intermediate (12 years), or high (>12 years). Marital status was dichotomized as nonmarried (single, divorced, widowed, or other) or married (married or living with partner). Gravidity, the total number of pregnancies (including the current pregnancy), was categorized as primigravid (one), intermediate (two–three) or multigravid (at least four). Because women rated IPC retrospectively after delivery, their perceptions of prenatal care and IPC scores could be influenced by the delivery experience and/or infant outcomes. Thus, we also analyzed the effect of a combined variable for the infant's gestational age and birth weight. We defined four categories: preterm gestation and low birth weight (<38 weeks gestation and <2500 grams); preterm gestation and normal birth weight (<38 weeks gestation and birth weight ≥2500 grams); term gestation and low birth weight (≥38 weeks gestation and <2500 grams); or term gestation and normal birth weight (≥38 weeks gestation and ≥2500 grams).

General linear models (GLM) measured the association between maternal acculturation, demographic, reproductive, and infant factors and the interpersonal processes of care (mean scores). Each IPC scale was separately modeled to test the hypothesis that acculturation was associated with each dimension of IPC. In the first set of multivariable models, we included each IPC measure, maternal birthplace, and all covariates (Model 1). In subsequent models, we substituted English language proficiency (Model 2), the time residing in the US (Model 3), or age at immigration to the US (Model 4) for the birthplace variable. The modification effect of infant outcome on maternal acculturation was tested by adding an interaction term between these two variables to each of these models. Infant outcome significantly influenced the relationship between maternal acculturation and IPC scores, therefore all GLM models were stratified by infant outcome.

Data were reported as the adjusted least square means and the type-3 sums of square p-value; we defined p-values <0.05 as significant. The data analyses were conducted with SAS/STAT® software version 9.3.[42]

Results

Of the 1332 women in the study, we restricted the analytic sample to 1243 women who had complete information for all

study variables. Approximately 60% of the sample was foreign-born, 36% reported low English proficiency, 43% had resided in the US less than 10 years, and 35% were age 20 or older when they immigrated to the US. Nearly two-thirds of women reported having public insurance during pregnancy (Table 2).

Overall, the unadjusted mean IPC scores were relatively high; there were only a few scores under 3.50 (Table 2). The best prenatal experiences, defined as the highest mean IPC scores, were in the interpersonal style domain, specifically ''no perceived discrimination'' (range 4.91 to 4.99) and the worst prenatal experiences were in the domain of patient-centered decision-making (range 2.94 to 4.43).

There was evidence of effect modification, thus, all subsequent GLMs were stratified by infant outcomes as well as adjusted for the maternal variables. The domain-specific mean IPC scores for the acculturation measures were statistically different in each stratified model.

Elicitation of patient problems

In each model that analyzed women who delivered preterm and/or low birth weight infants, the type of prenatal health insurance was significantly associated with mean score for elicitation of patient problems and women with no insurance reported the lowest mean scores (Table 3, Models 1–4). In all four models for women who delivered term and normal birth weight infants, maternal acculturation status was significantly associated with the mean score for elicitation of patient problems; US-born women (Table 4, Models 1, 3, and 4) and women with high English proficiency (Table 4, Model 2) reported the lowest mean scores. In the model that assessed English language proficiency, type of insurance was significantly associated with elicitation of patient problems and publicly insured women reported the highest mean scores (Table 4, Model 2).

Empowerment and self-care

In all four models that assessed the domains of empowerment and self-care among women who delivered preterm and/or low birth weight infants, the type of prenatal health insurance was significantly associated with IPC score; women who reported no insurance had lower mean scores than women with other types of prenatal insurance (Table 3, Models 1–4). In addition, age at immigration was significantly associated with mean score in the empowerment and self-care domain, and women who were 20 or older when they immigrated reported higher scores (Table 3, Model 4). Among women who delivered term and normal birth weight infants, maternal acculturation and type of insurance were significantly associated with IPC score (Table 4). US-born women (Table 4, Models 1, 3, and 4) and women with high English proficiency (Table 4, Model 2) reported the lowest mean scores and women with private insurance (Table 4, Models 1–4) reported the lowest mean scores for empowerment and self-care.

Explanations

In each model that analyzed women who delivered preterm and/or low birth weight infants, type of insurance was significantly associated with mean score for the explanations domain; women with no insurance reported the lowest mean scores (Table 3, Models 1–4). Among women who delivered term or normal birth weight infants, birthplace (Table 4, Model 1), the number of years living in the US (Table 4, Model 3) and age at immigration (Table 4, Model 4) were significantly associated with the mean scores for the explanations domain; US-born women reported the lowest mean scores. In all four models, the type of health insurance was significantly associated with the rating of explanations during prenatal care and privately insured women reported the lowest mean scores.

Patient-centered decision making

In all four models and among women who delivered preterm and/or low birth weight infants, type of health insurance was associated with patient-centered decision making (Table 3, Models 1–4). Women with private insurance reported the lowest mean scores. In all four models and among women who delivered term and normal birth weight infants, maternal acculturation and type of health insurance were associated with patient-centered decision making (Table 4, Models 1–4). Women who were US-born (Table 4, Models 1, 3, and 4), women with high English proficiency (Table 4, Model 2), and privately insured women (Table 4, Models 1–4) reported the lowest mean scores.

Emotional support and reassurance

In the domain of emotional support and reassurance and among women who delivered preterm and/or low birth weight infants, women with no insurance had lower mean scores in the models for English proficiency and number of years in the US (Table 3, Models 2 and 3). Among women who delivered term and normal birth weight infants, maternal acculturation and type of insurance were significantly associated with mean scores for emotional support and reassurance (Table 4). US-born women (Table 4, Models 1,3, and 4) and women with high English proficiency (Table 4, Model 2) reported the lowest mean scores, while privately insured women reported the lowest mean scores (Table 4, Models 1–4).

Perceived discrimination

In all four models that assessed the domains of perceived discrimination among women who delivered preterm and/or low birth weight infants, neither maternal acculturation nor type of insurance was significant (Table 3, Models 1–4). In models restricted to women who delivered term and normal birth weight infants, two of the acculturation measures were associated with perceived discrimination (Table 4, Models 3 and 4); US-born women and women who had resided in the US more than 14 years reported lower mean scores. There was no association between the type of health insurance and perceived discrimination in any of the models.

Respectfulness

In all four models among women who delivered preterm and/or low birth weight infants, health insurance was associated with respectfulness scores; women with no insurance had the lowest mean scores (Table 3, Models 1–4). In addition, women who had resided in the US more than 14 years

TABLE 2. CHARACTERISTICS AND MEAN INTERPERSONAL PROCESSES OF CARE SCORES OF THE WOMEN IN THE PREGNANCY EXPERIENCES STUDY

			Domain/subdomain						
Characteristic	N	%	Elicitation of patient problems mean IPC	Empowerment and self-care mean IPC	Explanations mean IPC	Patient-centered decision making mean IPC	Emotional support and reassurance mean IPC	Perceived discrimination mean IPC	Respectfulness mean IPC
TOTAL SAMPLE	1270	100	4.73	4.57	4.71	3.83	4.48	4.95	4.79
Birthplace									
Asia	86	6.8	4.67	4.49	4.68	3.80	4.48	4.94	4.77
Latin/South America	257	20.2	4.83	4.71	4.79	4.30	4.70	4.96	4.89
Mexico	418	32.9	4.83	4.73	4.82	4.28	4.69	4.97	4.90
US	509	40.1	4.62	4.38	4.58	3.24	4.20	4.92	4.66
English proficiency									
Low	454	35.8	4.84	4.75	4.82	4.42	4.75	4.98	4.89
Average	160	12.6	4.79	4.63	4.74	4.00	4.54	4.93	4.90
High	654	51.6	4.65	4.43	4.62	3.38	4.28	4.93	4.70
Years in the US									
<5 years	379	29.8	4.83	4.71	4.82	4.36	4.74	4.98	4.89
5–9 years	173	13.6	4.84	4.78	4.84	4.25	4.70	4.96	4.91
10–14 years	118	9.3	4.85	4.73	4.81	4.01	4.63	4.97	4.92
≥15 years	91	7.2	4.63	4.43	4.57	3.93	4.38	4.91	4.71
US-born	509	40.1	4.62	4.38	4.58	3.24	4.20	4.92	4.66
Age at immigration									
≥20 years	445	35.0	4.84	4.73	4.83	4.30	4.72	4.99	4.91
10–19 years	244	19.2	4.79	4.68	4.74	4.17	4.61	4.93	4.83
<10 years	72	5.7	4.71	4.53	4.69	4.02	4.58	4.96	4.85
US-born	509	40.1	4.62	4.38	4.58	3.24	4.20	4.92	4.66
Insurance									
Public/other	815	64.2	4.79	4.68	4.79	4.31	4.64	4.95	4.84
None	15	1.2	4.58	4.53	4.53	4.43	4.48	4.98	4.53
Private	439	34.6	4.63	4.36	4.57	2.94	4.17	4.94	4.71

(continued)

TABLE 2. (CONTINUED)

Characteristic	N	%	Domain/subdomain Elicitation of patient problems mean IPC	Empowerment and self-care mean IPC	Explanations mean IPC	Patient-centered decision making mean IPC	Emotional support and reassurance mean IPC	Perceived discrimination mean IPC	Respectfulness mean IPC
Age, years									
<22	239	18.8	4.77	4.59	4.71	4.03	4.57	4.92	4.78
22–35	904	71.2	4.73	4.58	4.72	3.81	4.47	4.95	4.80
≥36	127	10.0	4.65	4.45	4.63	3.61	4.36	4.96	4.75
Educational attainment									
Low	480	38.5	4.80	4.66	4.77	4.28	4.64	4.96	4.84
Intermediate	328	26.3	4.77	4.64	4.79	3.91	4.52	4.95	4.84
High	439	35.2	4.64	4.42	4.59	3.30	4.27	4.93	4.71
Marital status									
Married	1047	82.4	4.74	4.58	4.72	3.81	4.49	4.96	4.81
Nonmarried	223	17.6	4.69	4.53	4.65	3.93	4.42	4.90	4.68
Gravidity									
Primigravid	412	32.4	4.77	4.59	4.71	3.93	4.57	4.95	4.83
Intermediate	585	46.1	4.73	4.56	4.72	3.75	4.46	4.96	4.79
Multigravid	273	21.5	4.67	4.55	4.68	3.86	4.39	4.92	4.72
Gestational age and BW									
<38 weeks and LBW	63	5.0	4.63	4.42	4.63	3.81	4.29	4.93	4.68
<38 weeks and non- LBW	145	11.4	4.69	4.52	4.66	3.92	4.45	4.91	4.75
≥38 weeks and LBW	14	1.1	4.63	4.04	4.32	3.69	3.80	4.95	4.79
≥38 weeks and non- LBW	1045	82.5	4.75	4.59	4.73	3.83	4.51	4.95	4.80

BW, birth weight; IPC, interpersonal processes of care; LBW, low birth weight.

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TABLE 3. ADJUSTED* MEAN IPC SCORES AMONG WOMEN IN THE PREGNANCY EXPERIENCES STUDY, STRATIFIED BY BIRTH OUTCOME: <38 WEEKS GESTATION AND/OR <2500 GRAMS BIRTH WEIGHT INFANTS (N=219)

Elicitation of patient problems

	Model 1		Model 2		Model 3		Model 4	
Characteristic	*Birthplace*	*p Value*	*English proficiency*	*p Value*	*Years in the US*	*p Value*	*Age at immigration*	*p Value*
Birthplace		0.93						
Asia	3.98							
Latin/South America	4.09							
Mexico	4.07							
United States	4.02							
English proficiency				0.90				
Low			4.07					
Average			4.08					
High			4.02					
Years in the US						0.10		
<5 years					4.05			
5–9 years					3.82			
10–14 years					4.28			
≥15 years					3.89			
US-born					4.00			
Age at immigration								0.24
≥20 years							4.17	
10–19 years							4.00	
<10 years							3.85	
US-born							4.00	
Insurance		**0.001**		**0.001**		**<0.001**		**<0.001**
Public/other	4.64		4.65		4.64		4.61	
None	2.96		2.97		2.90		2.88	
Private	4.52		4.55		4.49		4.52	

Empowerment and self-care

	Model 1		Model 2		Model 3		Model 4	
Birthplace		0.55						
Asia	3.79							
Latin/South America	3.98							
Mexico	4.00							
US	3.82							
English proficiency				0.94				
Low			3.90					
Average			3.91					
High			3.86					

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TABLE 3. (CONTINUED)

Empowerment and self-care

Characteristic	Model 1 Birthplace	p Value	Model 2 English proficiency	p Value	Model 3 Years in the US	p Value	Model 4 Age at immigration	p Value
Years in the US						0.64		
<5 years					3.94			
5–9 years					3.96			
10–14 years					4.01			
≥15 years					3.78			
US-born					3.80			
Age at immigration								**0.03**
≥20 years							4.08	
10–19 years							3.89	
<10 years							3.54	
US-born							3.78	
Insurance				**0.006**		**0.005**		**0.004**
Public/other			4.48		4.50		4.43	
None			2.97		2.95		2.85	
Private			4.22		4.25		4.20	

Explanations

Characteristic	Model 1 Birthplace	p Value	Model 2 English proficiency	p Value	Model 3 Years in the US	p Value	Model 4 Age at immigration	p Value
Birthplace		0.99						
Asia	3.94							
Latin/South America	3.95							
Mexico	3.96							
US	3.99							
English proficiency				0.38				
Low			4.00					
Average			3.79					
High			3.98					
Years in the US						0.39		
<5 years					4.04			
5–9 years					3.85			
10–14 years					4.04			
≥15 years					3.73			
US-born					3.95			
Age at immigration								0.20
≥20 years							4.11	
10–19 years							3.86	
<10 years							3.77	
US-born							3.97	
Insurance		**0.01**		**0.009**		**0.008**		**0.009**
Public/other	4.54		4.52		4.52		4.51	
None	2.97		2.91		2.88		2.90	
Private	4.37		4.34		4.36		4.38	

(continued)

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TABLE 3. (CONTINUED)

Patient-centered decision making

Characteristic	Model 1 Birthplace	p Value	Model 2 English proficiency	p Value	Model 3 Years in the US	p Value	Model 4 Age at immigration	p Value
Birthplace		0.38						
Asia	3.93							
Latin/South America	4.12							
Mexico	4.10							
US	3.75							
English proficiency				0.30				
Low			4.12					
Average			4.13					
High			3.83					
Years in the US						0.29		
<5 years					4.12			
5–9 years					3.99			
10–14 years					3.74			
≥15 years					4.15			
US-born					3.71			
Age at immigration								0.42
≥20 years							4.06	
10–19 years							3.98	
<10 years							4.05	
US-born							3.71	
Insurance		<0.001		<0.001		<0.001		<0.001
Public/other	4.12		4.17		4.14		4.15	
None	4.80		4.93		4.66		4.68	
Private	3.00		2.98		3.03		3.02	

Emotional support and reassurance

Characteristic	Model 1 Birthplace	p Value	Model 2 English proficiency	p Value	Model 3 Years in the US	p Value	Model 4 Age at immigration	p Value
Birthplace		0.51						
Asia	3.84							
Latin/South America	3.88							
Mexico	3.86							
US	3.65							
English proficiency				0.69				
Low			3.85					
Average			3.77					
High			3.71					

TABLE 3. (CONTINUED)

Emotional support and reassurance

Characteristic	Model 1		Model 2		Model 3		Model 4	
	Birthplace	*p Value*	*English proficiency*	*p Value*	*Years in the US*	*p Value*	*Age at immigration*	*p Value*
Years in the US						0.11		
<5 years					3.95			
5–9 years					3.53			
10–14 years					3.98			
≥15 years					3.70			
US-born					3.61			
Age at immigration								0.36
≥20 years							3.95	
10–19 years							3.79	
<10 years							3.81	
US-born							3.64	
Insurance		0.05		**0.03**		**0.03**		0.05
Public/other	4.32		4.31		4.31		4.32	
None	3.04		3.04		2.93		3.01	
Private	4.06		3.99		4.02		4.07	
Perceived discrimination								
Birthplace		0.46						
Asia	4.85							
Latin/South America	4.82							
Mexico	4.92							
US	4.92							
English proficiency				0.32				
Low			4.88					
Average			4.78					
High			4.89					
Years in the US						0.06		
<5 years					4.91			
5–9 years					4.64			
10–14 years					4.86			
≥15 years					4.83			
US-born					4.88			
Age at immigration								0.48
≥20 years							4.89	
10–19 years							4.81	
<10 years							4.93	
US-born							4.91	

(continued)

TABLE 3. (CONTINUED)

Perceived discrimination

Characteristic	Model 1 Birthplace	p Value	Model 2 English proficiency	p Value	Model 3 Years in the US	p Value	Model 4 Age at immigration	p Value
Insurance		0.99		0.99		0.99		0.96
Public/other	4.86		4.85		4.84		4.87	
None	4.90		4.85		4.80		4.90	
Private	4.87		4.86		4.84		4.89	
Respectfulness								
Birthplace		0.55						
Asia	4.07							
Latin/South America	4.20							
Mexico	4.20							
US	4.04							
English proficiency				0.31				
Low			4.18					
Average			4.25					
High			4.07					
Years in the US						<0.05		
<5 years					4.19			
5–9 years					3.99			
10–14 years					4.35			
≥15 years					3.95			
US-born					4.01			
Age at immigration								0.17
≥20 years							4.26	
1019 years							4.10	
<10 years							3.99	
US-born							4.02	
Insurance		0.001		0.001		<0.001		<0.001
Public/other	4.67		4.70		4.68		4.65	
None	3.07		3.12		2.99		2.99	
Private	4.64		4.68		4.63		4.64	

*Models adjusted for maternal age, education, marital status, and gravidity.

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TABLE 4. ADJUSTED* MEAN IPC SCORES AMONG WOMEN IN THE PREGNANCY EXPERIENCES STUDY, STRATIFIED BY BIRTH OUTCOME: GESTATIONAL AGE >37 WEEKS AND BIRTH WEIGHT >2499 GRAMS INFANTS (N=1024)

Characteristic	Model 1		Model 2		Model 3		Model 4	
	Birthplace	p Value	English proficiency	p Value	Years in the US	p Value	Age at immigration	p Value
Elicitation of patient problems								
Birthplace		**0.001**						
Asia	4.72							
Latin/South America	4.82							
Mexico	4.83							
US	4.66							
English proficiency				**0.02**				
Low			4.80					
Average			4.79					
High			4.69					
Years in the US						**<0.001**		
<5 years					4.82			
5–9 years					4.87			
10–14 years					4.84			
≥15 years					4.67			
US-born					4.66			
Age at immigration								**0.002**
≥20 years							4.82	
10–19 years							4.79	
<10 years							4.74	
US-born							4.66	
Insurance		0.16		**0.04**		0.23		0.19
Public/other	4.77		4.78		4.78		4.77	
None	4.82		4.82		4.83		4.80	
Private	4.69		4.68		4.71		4.69	
Empowerment & self-care								
Birthplace		**<0.001**						
Asia	4.58							
Latin/South America	4.68							
Mexico	4.72							
US	4.46							
English proficiency				**<0.001**				
Low			4.71					
Average			4.63					
High			4.49					

(continued)

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TABLE 4. (CONTINUED)

Empowerment & self-care

Characteristic	Model 1		Model 2		Model 3		Model 4	
	Birthplace	p Value	*English proficiency*	p Value	*Years in the US*	p Value	*Age at immigration*	p Value
Years in the US						**<0.001**		
<5 years					4.68			
5–9 years					4.78			
10–14 years					4.77			
≥15 years					4.48			
US-born					4.46			
Age at immigration		**<0.001**						**<0.001**
≥20 years	4.66						4.68	
10–19 years	4.74						4.68	
<10 years	4.44						4.63	
US-born							4.45	
Insurance		**<0.001**		**<0.001**		**<0.001**		**<0.001**
Public/other	4.66		4.67		4.67		4.67	
None	4.74		4.73		4.76		4.72	
Private	4.44		4.42		4.46		4.44	
Explanations								
Birthplace		**0.01**						
Asia	4.74							
Latin/South America	4.76							
Mexico	4.79							
US	4.62							
English proficiency				0.20				
Low			4.74					
Average			4.74					
High			4.65					
Years in the US						**0.004**		
<5 years					4.79			
5–9 years					4.82			
10–14 years					4.80			
≥15 years					4.61			
US-born					4.62			
Age at immigration								**0.01**
≥20 years							4.78	
10–19 years							4.75	
<10 years							4.73	
US-born							4.62	

(continued)

TABLE 4. (CONTINUED)

| | Explanations | | | | | | | |
| | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
Characteristic	Birthplace	p Value	English proficiency	p Value	Years in the US	p Value	Age at immigration	p Value
Insurance		**0.01**		**0.001**		**0.03**		**0.02**
Public/other	4.78		4.78		4.77		4.77	
None	4.77		4.76		4.77		4.75	
Private	4.63		4.60		4.64		4.63	
Patient-centered decision making								
Birthplace		**<0.001**						
Asia	3.99							
Latin/South America	4.00							
Mexico	4.03							
US	3.63							
English proficiency				**<0.001**				
Low			4.10					
Average			3.84					
High			3.71					
Years in the US						**<0.001**		
<5 years					4.04			
5–9 years					4.03			
10–14 years					3.93			
≥15 years					4.01			
US-born					3.62			
Age at immigration								**<0.001**
≥20 years							4.06	
10–19 years							3.96	
<10 years							3.94	
US-born							3.62	
Insurance		**<0.001**		**<0.001**		**<0.001**		**<0.001**
Public/other	4.24		4.22		4.25		4.23	
None	4.36		4.36		4.36		4.32	
Private	3.14		3.07		3.16		3.14	
Emotional support & reassurance								
Birthplace		**<0.001**						
Asia	4.56							
Latin/South America	4.63							
Mexico	4.64							
US	4.34							

(continued)

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TABLE 4. (CONTINUED)

Emotional support & reassurance

Characteristic	Model 1 Birthplace	Model 1 p Value	Model 2 English proficiency	Model 2 p Value	Model 3 Years in the US	Model 3 p Value	Model 4 Age at immigration	Model 4 p Value
English proficiency				**0.001**				
Low			4.65					
Average			4.52					
High			4.41					
Years in the US						**<0.001**		
<5 years					4.65			
5–9 years					4.72			
10–14 years					4.62			
≥15 years					4.46			
US-born					4.35			
Age at immigration		**<0.001**						**<0.001**
≥20 years							4.66	
10–19 years							4.56	
<10 years							4.58	
US-born							4.34	
Insurance				**<0.001**		**<0.001**		**<0.001**
Public/other	4.64		4.63		4.65		4.64	
None	4.70		4.70		4.71		4.67	
Private	4.30		4.25		4.32		4.30	

Perceived discrimination

Characteristic	Model 1 Birthplace	Model 1 p Value	Model 2 English proficiency	Model 2 p Value	Model 3 Years in the US	Model 3 p Value	Model 4 Age at immigration	Model 4 p Value
Birthplace		**0.01**						
Asia	4.95							
Latin/South America	4.98							
Mexico	4.97							
US	4.92							
English proficiency				0.09				
Low			4.97					
Average			4.95					
High			4.94					
Years in the US						**<0.001**		
<5 years					4.98			
5–9 years					5.00			
10–14 years					4.98			
≥15 years					4.91			
US-born					4.93			

(continued)

TABLE 4. (CONTINUED)

Perceived discrimination

Characteristic	Model 1 Birthplace	p Value	Model 2 English proficiency	p Value	Model 3 Years in the US	p Value	Model 4 Age at immigration	p Value
Age at immigration								**0.002**
≥20 years							4.99	
10–19 years							4.95	
<10 years							4.96	
US-born							4.92	
Insurance		0.53		0.78		0.33		0.43
Public/other	4.94		4.94		4.94		4.94	
None	4.97		4.97		4.97		4.96	
Private	4.96		4.95		4.96		4.96	

Respectfulness

Characteristic	Model 1 Birthplace	p Value	Model 2 English proficiency	p Value	Model 3 Years in the US	p Value	Model 4 Age at immigration	p Value
Birthplace		**<0.001**						
Asia	4.75							
Latin/South America	4.83							
Mexico	4.84							
US	4.65							
English proficiency				**0.01**				
Low			4.78					
Average			4.83					
High			4.68					
Years in the US						**<0.001**		
<5 years					4.83			
5–9 years					4.88			
10–14 years					4.86			
≥15 years					4.69			
US-born					4.65			
Age at immigration								**<0.001**
≥20 years							4.83	
10–19 years							4.78	
<10 years							4.84	
US-born							4.65	
Insurance		0.42		0.07		0.51		0.40
Public/other	4.81		4.83		4.82		4.82	
None	4.74		4.73		4.76		4.74	
Private	4.75		4.73		4.77		4.77	

*Models adjusted for maternal age, education, marital status, and gravidity.

reported lower mean scores for respectfulness (Table 3, Model 3).

In all four models among women who delivered term and normal birth weight infants, acculturation status was associated with respectfulness scores (Table 4, Models 1–4). Women who were US-born (Table 4, Models 1, 3, and 4) and women with high English language proficiency reported lower mean scores for respectfulness (Table 4, Model 2).

Discussion

The current study contributes new knowledge regarding the complex relationship between acculturation and women's perceptions about their prenatal care experiences. Although patient satisfaction with healthcare and healthcare providers is a key indicator of quality of care,[43] we considered experiences of interpersonal processes of care as an aspect of prenatal care that influences patient satisfaction. In our large, ethnically diverse sample of childbearing women in Northern California, we found that among women who delivered term and normal birth weight infants, less acculturated and non-privately insured women reported better prenatal care experiences than more acculturated or US-born women and privately insured women, respectively. Our findings align with previous studies that have reported that women with low income and low educational attainment [35] and publicly insured women [10] reported higher satisfaction with health care than women in the reference groups (although none of these studies assessed processes of care). While satisfaction with care was measured differently across these studies, taken together, these findings demonstrate that socially vulnerable women report higher quality of care than their socially advantaged peers. However, it is also possible that socially vulnerable women may have a different perception about what constitutes quality of care. If there are socially derived concepts of quality of care, it is possible that the higher scores we obtained, and the results reported by others, may represent ''adaptive preferences'' to limited healthcare options among socially disadvantaged and less acculturated women,[44] but further study is needed to test this hypothesis.

We analyzed four different measures of maternal acculturation, and while each measure assessed different aspects of the acculturation experience, the results were fairly similar across the four models and demonstrate that acculturation is inversely associated with the mean scores. This consistency between the four measures of acculturation is reassuring, both from the internal consistency standpoint (all trends were in the same direction) and for external comparison purposes (as compared with other studies that may have only analyzed one or two acculturation measures).[31,45,46]

Among the 1024 women who delivered term and normal birth weight infants in our study, we found the largest variation in adjusted mean scores for the patient-centered decision making domain (scores ranged from 3.62 among more acculturated women to 4.10 among less acculturated women) and also varied substantially by type of health insurance (scores ranged from 3.07 among privately insured women to 4.36 among uninsured women). This variation in scores may reflect underlying differences in expectation or preferences, with higher expectations for patient-centered decision making among US-born and privately insured women than among less

acculturated and publicly insured women. In a prior study of health care experiences among pregnant women, the investigators reported ethnic variation in patient-centered decision making; foreign-born Latinas reported the highest and white women reported the lowest scores.[38] Patient-centered shared decision making is a process during which clinicians and patients work together to make choices about a patient's care, taking both the clinical evidence as well as patient's informed preferences into consideration.[47] Increasingly, healthcare delivery guidelines encourage informed patient choice and suggest that clinicians engage in collaborative discussions about patients' preferences and understand how patients' unique context (family history, personal health history, and values) influences their choice.[48] Based on our findings and those of the prior study, we recommend that prenatal providers more actively engage patients in the decision-making process during prenatal care and ask patients how they feel about the medical advice and recommendations they have been given, particularly US-born and privately insured women.

There is no consensus regarding the optimal time to assess interpersonal processes of care during pregnancy; prenatal assessments cannot capture the entire pregnancy and delivery experiences, and postpartum assessments may be subject to recall bias or confounding related to birth outcomes. We choose to interview women during the postpartum period to capture the entire prenatal care and delivery time periods and we addressed effect modification by stratifying on adverse infant outcomes. Thus, the relationship between acculturation and IPC, as reported during the postpartum period, differed according to infant outcomes. Among women who delivered preterm and/or low birth weight infants, we observed that acculturation had less of an influence, while health insurance status had a greater influence on IPC scores. In addition, for five of the seven IPC domains, the adjusted mean scores for women who delivered preterm and/or low birth weight infants were lower than for women who delivered term and normal birth weight infants. These results are clinically important and suggest that adverse infant outcomes may influence maternal reports of the prenatal experience.

Other limitations of our study include the number and type of study sites (urban [SFGH] and suburban [KPNC-WC]) and the birthplace distribution of the study sample (predominately US- or Mexico-born). However, this sample is representative of the maternity patients at these two institutions. In our study, the women with public insurance who delivered at SFGH may not have had access to delivery at alternative health care facilities, just as women with Kaiser Foundation Health Plan, Inc. health insurance may not have had alternatives to delivering at a KPNC facility. Lastly, while most of the adjusted mean IPC scores were relatively high (between 4.50 and 4.97) and varied over a relatively narrow range, the most attention should be placed on those domains and subdomains where the scores were lower and varied widely—such as patient-centered decision making and emotional support and reassurance.

Improving patients' healthcare experiences has garnered attention and appreciation with the passage of the Patient Protection and Affordable Care Act[49] because healthcare institutions and providers may gain or lose reimbursement depending on their patients' perceptions of the quality of care. Our findings demonstrate yet another unique characteristic of childbearing immigrant women and reveal a new dimension of the epidemiologic paradox. Given the high rates of adverse

perinatal outcomes in the US[50] and the importance of developing new approaches to improving perinatal outcomes as a means of achieving national goals,[51] we believe that our findings have important implications for clinicians and policymakers. Clinicians should focus on patients' expectations for care and engage their patients more actively during prenatal care. Policymakers and healthcare administrators should implement policies that encourage clinicians and healthcare systems to identify and respond to patients' preferences, thereby improving the interpersonal quality of care.

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