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Structure and Meaning in Models of Breast and Cervical Cancer Risk Factors: A Comparison of Perceptions among Latinas, Anglo Women, and Physicians

This article reports on a study of perceptions of breast and cervical cancer risk factors among 27 U.S.-born Chicanas, 39 Mexican and 28 Salvadoran immigrants, 27 Anglo women, and 30 physicians in northern Orange County, California. In open-ended responses explaining why women might be at risk for both cancers, Latinas expressed two general themes: physical stress and trauma to the body, and behavior and lifestyle choices. Interviewees ranked the specific risk factors that they themselves mentioned. Cultural consensus of ranked data revealed that Mexican and Salvadoran immigrants had a model of cancer risks that was different from those of Anglo women and physicians. U.S.-born Chicanas were bicultural in their views, which overlapped with both Mexican women's and Anglo women's views, but less so with physicians' views. Comparing views about the two cancers revealed that general themes apply across both cancers, that Latina immigrants agreed less on the risk factors for cervical cancer than for breast cancer, and that there is a consistent pattern in the different ways Latinas, Anglos, and physicians perceive risk factors for both cancers. [Hispanic women and cancer, cervical cancer, breast cancer, cultural consensus analysis and cancer]

The body is not merely capable of generating multiple perceptions; it also gives rise to contradictory ones. [Comaroff 1985:8]

Medical anthropologists have increasingly moved from studying folk illness to studying biomedically defined diseases. This new wave of research attempts to understand the social and cultural construction of biomedical disease concepts and their significance for specific groups under study. The direction medical anthropology has taken recently is indicated by the following work: hypertension in mainstream urban U.S. culture (Blumhagen 1980); hypertension among the Ojibway (Garro 1988); hypoglycemia in U.S. culture (Hunt et al. 1990); premenstrual syndrome in U.S. biomedical culture (Martin 1987); cancer in a working-class community in Philadelphia (Balslem 1991); the way illnesses such as cancer are interpreted (DiGiacomo 1990, 1992); tuberculosis (Rubel and Garro 1992); and oncology practices in Oaxaca, Mexico (Hunt 1994).

We undertook the examination of Latinas' (or Hispanic women's)¹ beliefs about risk factors for breast and cervical cancer. In addition, we wanted to know if there is variation in these beliefs among Latinas, who are often discussed as a single cultural group. To answer this question, we set out to compare Chicanas (defined here as U.S.-born women of Mexican descent) with women born in Mexico and El Salvador who have immigrated to the United States. We wanted to understand what these women believed about breast and cervical cancers. We also asked, "How do the views of Latinas compare with the views of Anglo women and physicians living and working in the same geographic area?" Including physicians in the analysis builds on the assumption that they, too, are actors whose beliefs need to be analyzed as part of an ethnomedical belief system (DiGiacomo 1987; Good and Good 1993; Good et al. 1990; Gordon 1988; Lindenbaum and Lock 1993; Lock 1982; Lock and Gordon 1988; Rhodes 1991).

Our interest in beliefs about breast and cervical cancer risk factors led to two levels of analysis. To answer questions about beliefs, we closely examined what interviewees said about the reasons women get breast and cervical cancer. To categorize the many risk factors mentioned by the interviewees, we identified a number of general themes.

A second level of analysis examined the extent to which the interviewees agreed on the importance of the risk factors that they mentioned. This level of analysis built upon recent research in cultural consensus analysis, which is concerned with determining the extent to which a group of people share "cultural knowledge" within a specific domain of culture (e.g., plant identification, kinship, and diseases) (Boster 1986; Garro 1986, 1988; Weller and Romney 1988; Weller et al. 1993).² When interviewees achieve a specific level of agreement on the elements within a cultural domain, they are said to have an agreed upon "cultural model."

Many anthropologists have long accepted the proposition that culture consists, in part, of shared knowledge (Goodenough 1981; Roberts 1964). The study of intracultural variation focuses on how knowledge is systematically patterned within a culture (Boster 1986; Burton and Kirk 1979; Pelto and Pelto 1975; Sankoff 1971). Garro (1986), for example, has studied this issue in relation to health beliefs among curers and noncurers in Mexico (see also Weller 1983, 1984). She also used

consensus analysis to study high blood pressure among the Ojibway, who she found shared a cultural model of the disease (Garro 1988).

Recently, Weller et al. (1993) conducted a cross-cultural examination of Latinos' beliefs concerning *empacho*. Latinos in their study included Guatemalans interviewed in Guatemala, Mexicans interviewed in Mexico, Mexican Americans interviewed on the U.S. side of the Mexico-Texas border, and Puerto Ricans interviewed in Connecticut. Using both open-ended interviews and systematic data collection techniques, which were examined using cultural consensus analysis, they found that a core set of beliefs about *empacho* (causes, symptoms, and treatments) was shared among all four groups. In addition, none of the variation could be explained by differences in sociodemographic characteristics among the individuals. There was slight variation among the groups, with the Guatemalans subscribing to a more complex model of *empacho*, and the group in Texas emphasizing a more simplified model. In general, however, Latino beliefs about *empacho* are shared and, the authors suggest, have a common origin. They also emphasize the necessity of examining inter- and intracultural variation using methods and techniques that enable informed and comparable cross-cultural analysis.

Building on this line of research, we asked, "Do Latinas, Anglo women, and physicians have cultural models of breast and cervical cancer risk factors? If so, how similar or different are their models?" Another way of asking this question is, "Do they agree on the relative importance of the risk factors?"

Latinas, Cancer, and Cultural Beliefs

The rapid growth of the Latino population in the United States underscores the importance of the questions guiding our research. Latinos are one of the fastest growing ethnic groups in the United States.³ Much of this growth is due to immigration from Mexico and other Latin American countries, where cervical cancer rates are among the highest in the world. In the United States, Latinas have the highest rates of cervical cancer and the highest cumulative risks, compared with Anglo and African American women (Anton-Culver et al. 1992; Muir et al. 1987).⁴ Latinas also have relatively low rates of use of cervical cancer screening tests (Pap smear tests), and they are more likely than other women to have progressed to more advanced stages of cervical cancer when they seek care for the disease (Elder et al. 1991; Harlan et al. 1991; Vernon, Tilley et al. 1985; Vernon, Vogel et al. 1992). Although breast cancer is the most common cancer among Latinas, they have a lower rate of breast cancer than do Anglo or African American women. Latinas, however, often face obstacles to care, such as lack of medical insurance, low incomes, language differences, and lack of knowledge about available services (Hubbell et al. 1991). As a result of such obstacles, Latinas may delay seeking care for a breast problem, which in turn leads to poor outcomes, including large tumors at diagnosis, high rates of multiple primary breast cancer, and relatively high mortality rates (Bastani et al. 1991; Richardson, Langholz et al. 1992; Richardson, Mars et al. 1987; Vernon, Tilley et al. 1985; Vernon, Vogel et al. 1992). Although these structural barriers have been well documented, the influence of cultural beliefs on the use of health services by Latinas is less clear (Perez-Stable et al. 1992).

The limited research on beliefs about cancer among Latinas examines the influence of culture on those beliefs in three basic ways. First, culture is treated as knowledge, but in a negative way; Latinas are thus said to have “deficit knowledge” about cancer. Typically, researchers use the current guidelines suggested by the National Cancer Institute or the American Cancer Society as a benchmark. They then compare the knowledge and perceptions of a targeted group of interviewees to the benchmark. The result is a measure of the interviewees’ deficit knowledge compared to the benchmark. For example, researchers have found Latinas to be less knowledgeable than African American and Anglo American women concerning specific breast and cervical cancer risks and less knowledgeable of agreed-upon standards for seeking cancer screening exams (Loehrer et al. 1991; Michielutte and Diseker 1982).

Culture is also used in cancer research to explain the existence of “misconceptions” about cancer (Loehrer 1993; Perez-Stable et al. 1992). This approach highlights the prevalence of some culturally based beliefs about cancer, but because the beliefs have been defined a priori as “misconceptions,” they are rarely examined as part of a coherent system of beliefs. For example, Perez-Stable et al. (1992) cited beliefs among Latinos that cancer results from eating pork or as God’s punishment to indicate the existence of culturally based “misconceptions” about causes for cancer. Ferreting out culturally based “misconceptions” is a variant of the deficit knowledge approach; it is another way of characterizing culture in a dismembered and nonarticulated fashion.

A third way cancer research introduces culture is through consideration of broader cultural themes, such as familism, fatalism, and language retention (Marin and Marin 1991; Sabogal et al. 1987; Sandoval and de la Roza 1986). These broad cultural themes are believed to influence health-related beliefs and behavior indirectly, a proposition that is sometimes suggested, at other times assumed, and occasionally tested.

The problem with these approaches to the study of culture and health beliefs is that they do little to further an understanding of what women themselves believe about risk factors for cancer. Using the approach followed here, we hope to contribute to an understanding of the risk factors for breast and cervical cancers that Latinas perceive as important. Moreover, we intend to examine differences and similarities between their views and those of Anglo women and physicians. Using cultural consensus analysis, we do not have to make an assumption of unidirectional change in beliefs, as is the case with assimilation analysis. We can show how strongly Latinas, Anglo women, and physicians agree or disagree with each other and on which risk factors their perceptions differ.

Research on Latinas

In 1991 we began a three-year project examining the breast and cervical cancer-related beliefs, attitudes, and behaviors of Latinas in Orange County, California. This article focuses on ethnographic interviews conducted during the first year of the project. Overall, 25 percent of Orange County’s population is Latino; however, the proportion of Latinos rises dramatically in the northern part of the county. For example, in Santa Ana, the county seat, two out of three inhabitants are Latino (U.S. Census Bureau 1991).

Between August 15, 1991, and August 15, 1992, we conducted ethnographic interviews with 121 women. We interviewed 27 Chicanas, 39 women who were born in Mexico and had immigrated to the U.S., and 28 women who were born in El Salvador and had immigrated to the United States. We also interviewed 27 Anglo women. To improve the comparability of the groups, the study design restricted interviews to women without college degrees, and interviews were concentrated in the northern part of Orange County, in its working-class communities, rather than in the more affluent southern part of the county.

We based our sampling procedure on a number of considerations. We planned to conduct the interviews in the respondents' homes. The targeted population included immigrants, many of whom were in the country illegally. Based on these concerns, we relied on organization-based network sampling (Bernard 1988). We made presentations to numerous social, educational, and religious groups in northern Orange County. During these presentations, we explained the study's objectives, our institutional affiliation, and made assurances of our obligation to ensure their anonymity. We then asked women to volunteer for an interview at a later date. We assigned a code number to each volunteer by selection site and randomly selected interviewees. At some sites, we eventually interviewed all volunteers, whereas at others only some were interviewed. Thus, interviewees came from various sites in the northern Orange County area.

Given the sensitive nature of the topic, specially trained female researchers, including the two female coauthors, interviewed female respondents. Interviews ranged between about two and four hours and were conducted in Spanish or English, depending on the respondent's preference. All interviews were transcribed verbatim in the language in which the interviews were conducted.

We also interviewed 30 physicians, 18 men and 12 women, during the same period. They consisted of a convenience sample of primary-care practitioners from the community and from the University of California, Irvine. The physicians received a letter, followed by phone calls, asking for their participation in the study. We interviewed physicians at their place of work, and interviews lasted an average of one hour.

Our approach combined open-ended questions with the systematic data collection techniques of freelist and ranking (Weller and Romney 1988), which have been shown to be effective in eliciting cultural models. Freelist helped to elicit qualitative data from which we developed thematic categories of perceived risk factors. The ranking task provided quantifiable data that allowed us to examine models of cancer risk factors (Weller and Romney 1988).

Freelisting

We asked respondents to list everything that could cause or increase the chance (risk) of getting breast cancer and cervical cancer and then to discuss the reasons for the listings.

Ranking

To determine which beliefs were most common, we reviewed all listed risk factors by an initial set of respondents (approximately one-third of each of the five

groups), determined the 10 factors mentioned most frequently by each group, and then reviewed these 50 factors (10 per group) to ascertain the number of separate risk factors listed. This last step was necessary because more than one group listed some of the same risk factors. Finally, to ascertain the relative importance of the risk factors, we printed each of them on an index card and asked the respondents to rank order them from most important to least important. For the initial group of respondents from whom we established the list of risk factors for ranking, we accomplished the ranking task during a second interview. For the remainder of the respondents, the interviewers included the ranking task during the first and only interview. This rank ordering procedure allowed us to determine the extent of agreement among the interviewees concerning the relative importance of the risk factors. We could also examine variations within individual groups as well as determine differences between groups in the study.

This method does not impose a set of beliefs on the interviewees. We did not establish a set of risk factors a priori. The interviewees themselves provided the risk factors; they came out of the interviewees' own way of thinking about breast and cervical cancers. These items, therefore, vary according to the groups studied.

Qualitative Analysis: Determining Themes

We analyzed responses by iteratively coding and categorizing data to uncover thematic categories (Glaser and Strauss 1967). The investigators independently grouped the freelisted risk factors into categories based upon the similarity of the risks. The investigators then discussed the categories, and all agreed upon them. For example, some women discussed the potential for cancer that results from hitting and bruising the breasts. Others discussed the danger posed by children who bite the breast. We categorized these risk factors under the physical trauma theme.

Quantitative Analysis: Determining Agreement

We used cultural consensus analysis to test for the existence of cultural models that would explain the respondents' rank ordering of the risk factors (Romney, Batchelder, and Weller 1987; Romney, Weller, and Batchelder 1986; Weller and Romney 1988). Cultural consensus analysis uses a mathematical model to determine the degree of shared knowledge within groups and to estimate the "culturally correct" answers where an answer was previously unknown. The analysis contains a measure known as competence that assesses the individual's expertise in relation to a set of culturally correct answers (the model) derived from a group of respondents' answers to questions concerning a specific domain of knowledge. Cultural consensus analysis provides estimates of each individual's competency and the average competency level of the group. The analysis initially solves for individual estimates of competency by factoring an agreement (correlation) matrix among informants. The ratio between the first and second eigenvalues determines whether a single factor solution exists, which would indicate a single, shared cultural belief system. Researchers in this field generally accept a ratio of three to one and all competency scores falling between zero and one (no negative competency scores) as a minimum threshold for asserting that there is a single factor (cultural) solution. The higher the ratio, the stronger the amount of agreement among the group. We

also used metric scaling, employing principal components analysis on the agreement matrix, to display the results graphically (Weller and Romney 1990).

Sample size determination for cultural consensus analysis follows the same principles as those in other types of analyses. For ordinal data, two parameters are necessary: the degree of concordance among respondents (the average Pearson correlation coefficient) and the desired level of validity (estimated by the correlation between the answers obtained from the sample and the "true" answers). If there is a great deal of agreement about a topic, the number of subjects necessary to obtain a high level of validity is small. The lower the average agreement, the larger the number of respondents must be to maintain a specified validity level. Because we had no prior knowledge regarding the amount of agreement about risk factors for breast cancer in our subjects, we chose a low competency score of 0.36 and stringent criteria for proportion of items ordered correctly (95% validity). Using these criteria, a minimum of 17 respondents in each group was necessary (Weller and Romney 1988).

Characteristics of the Interviewees

A note on terminology is in order. "Latinas," like "Hispanics," is a general term that refers to women of Latin American descent and includes Mexican and Salvadoran immigrants and U.S.-born Chicanas. Our use of "Chicanas," "Mexican immigrants," and "Salvadoran immigrants" is intentional and is meant not only to highlight the diversity among Latinas but to allow us to examine for differences among these groups. "Latina immigrants" includes Mexican and Salvadoran immigrants only.

Table 1 presents an overview of the study's participants. Clearly, years of schooling and income levels varied, especially between immigrants and citizens. Experience with U.S. culture and health care institutions also varied among the Latinas. U.S.-born Chicanas were more likely than Mexican and Salvadoran immigrants to speak English and to have a high school education. On characteristics of education and income, Chicanas were closer to Anglo women in some respects.

Although few of the interviewees have had cancer, most had a relative or friend who had experienced cancer (Table 2). Table 2 also suggests that many Mexican and Salvadoran immigrant women did not meet the standard recommendations for yearly Pap exams. About a third of the Mexican and Salvadoran women had never had a Pap exam or had one more than two years before the interview. In contrast, only 18.5 percent of the Chicanas and 14.8 percent of the Anglo women had such low compliance with the recommended Pap test practices. Some Latinas also had characteristics that suggested access to U.S.-based medical care was problematic. A significant proportion of Mexican immigrants (39%) and Salvadoran immigrants (43%) did not have a regular physician or clinic, compared with 7 percent of Chicanas and only 4 percent of the Anglo women. Only 36 percent of Mexicans and 39 percent of Salvadorans had private medical insurance, compared with slightly more than three-quarters of Chicanas and almost all Anglo women. Mexican and Salvadoran immigrants were also more likely to report having trouble communicating with medical personnel. Chicanas (15%) and Mexican immigrants (15%) were twice as likely as Anglos (7%) not to have had a medical checkup within the last year. Many more Salvadorans (39%) had not had a recent medical

TABLE 1
Demographic characteristics of respondents.^a

Variables	Mexican immigrants (N = 39)	Salvadoran immigrants (N = 28)	Chicanas (N = 27)	Anglos (N = 27)
Age, years	40.3 (22–67)	34.9 (19–85)	39.0 (23–67)	38.2 (24–66)
Years of schooling	6.0 (0–13.5)	7.6 (1–16)	12.0 (3–17)	14.1 (12–19)
Years in U.S.	10.4 (0.5–41)	4.5 (0.1–12)	NA	NA
Income/month/dollars	\$944 (80–4,843)	\$949 (140–2,000)	\$1,762 (480–6,000)	\$2,923 (800–5,000)
Language/acclulturation index, 5-point scale [39]	1.13 (1–2.4)	1.15 (1–3)	3.6 (1.6–4.8)	NA

^a Column figures in means and ranges.

checkup. Many Mexicans (28%), however, had sought care in Mexico. This may account for the difference in the Mexican immigrants' greater likelihood of having had a recent medical checkup compared with the Salvadorans, who may not have felt comfortable seeking health care in Mexico, especially if they were of undocumented immigration status and, therefore, would have had to recross the U.S.-Mexico border clandestinely.

Fourteen of the physicians were university-based, and 16 had community-based practices (Table 3). Among the university-based physicians (7 females and 7 males), 6 practiced internal medicine and 8 were family practitioners. The 16 community-based physicians (5 females and 11 males) consisted of 12 obstetricians/gynecologists, 2 general internists, and 2 family practitioners. The physicians also varied by ethnic background (Table 3).

Beliefs about Breast and Cervical Cancer Risk Factors

We found that two broad themes surfaced to explain both breast and cervical cancer. To explain why some women get breast and cervical cancers, Latinas mentioned many specific risks that related to the theme of physical stress and trauma to the body and to the theme that emphasizes the behavior or lifestyle choices a person makes. Moreover, the emphasis Latinas placed on these themes was quite different from the discussions of cancer risks among Anglo women and physicians. Chicanas expressed views that at times coincided with those of Mexican immigrants and at other times with those of Anglo women. The prevalence of two themes suggests that Latinas have some general explanations for disease that are applied, with some modifications, to specific illnesses.

Table 4 presents the most frequently mentioned risk factors for breast cancer. Table 5 presents the most frequently mentioned risk factors for cervical cancer.

TABLE 2
Health-related characteristics of respondents.

Variables	Mexican	Salvadoran	Chicanas	Anglos
	immigrants (N = 39) %	immigrants (N = 28) %	(N = 27) %	(N = 27) %
Women who have had cancer	0	0	3.7	7.4
Women with family or friend who have had cancer	76.9	42.9	96.3	96.3
Women age 40 or older who have never had a mamogram or had a mamogram over two years ago	37.5	87.5	37.5	11.1
Women who have never had a Pap exam or for whom it has been more than two years since their last Pap exam	30.7	35.7	18.5	14.8
Women without a regular physician/clinic, or other health provider	38.5	42.9	7.4	3.7
Women who had private medical insurance	35.9	39.3	77.8	96.3
Women who had their last medical checkup more than a year ago	15.4	39.2	14.8	7.4
Women who sought medical care in Mexico	28.2	3.6	7.4	3.7
Women who had trouble communicating with health care providers	23.1	17.9	7.4	3.7

Interviewees mentioned other risk factors that are not listed in Tables 4 and 5. To have included the risk factors mentioned by only one or two interviewees would have increased the size of the tables considerably.

Theme: Physical Stress and Trauma

One of the most pervasive themes among Latinas was the cancer risk posed by physical stress and trauma to the body. Specific examples related to this theme varied for each cancer.

TABLE 3
Characteristics of physicians.

Variables	All physicians (N = 30)	University-based (N = 14)	Community-based (N = 16)
Age (mean)	41.9	37.8	45.5
Years practicing medicine (mean)	16.7	11.7	21.1
Females	12	7	5
Specialties			
Internal medicine	8	6	2
Family practice	10	8	2
Ob/Gyn	12	0	12
Training and birth place			
Foreign-trained	7	1	6
Foreign-born	9	2	7
Ethnicity			
Latinos	3	1	2
Asians	6	3	3
African Americans	1	0	1
East Indian	1	0	1
Iranian	1	0	1
Anglo	18	10	8

Breast cancer. In discussing breast cancer, Latinas emphasized three main aspects of physical stress and trauma. First, they warned against blows, hits, and bruises to the breast. They believed that the accidental hits to the breast, especially when young, from falling on something sharp or pointed (such as a table corner) or being hit by something hard, would possibly lead to cancer later in life. In addition, Latinas noted that breasts are subject to bruising and rough handling during breast-feeding, especially from older babies with teeth and strong fingers that would pinch the breasts, leaving them bruised. Finally, they suggested excessive fondling of the breasts, which can occur during normal sexual relations, as a cancer risk factor. The comments by a 27-year-old Mexican immigrant woman are illustrative:

I imagine that sometimes when a man and a woman have sexual relations that are very exaggerated it can cause cancer. There are some men that are very rough, brutes you could say. They grab the woman as if she were an object. They don't treat a woman delicately. You know that when a man has sexual relations with his spouse they like to bite them [breasts]. This is not good, that is, sometimes because of the bruises or something from grabbing the woman badly also cause illness.

Another Mexican immigrant captured all three aspects of bruising and hitting in her statement:

Bruises to the breast are bad. The breasts are very delicate. So when a child sucks on the breast and leaves a bruise, it's bad. Hits to the breast can also cause cancer.

And when the husband massages or squeezes the breast or sucks on it, that, too, can cause cancer.

Three-quarters of the Mexican women (74.4%) and almost half (46.4%) of the Salvadoran women mentioned at least one risk factor having to do with physical stress and trauma to the breasts (includes all risks mentioned, including those not listed on Table 4). Of the Chicanas, 26 percent suggested risks posed by blows or bruises to the breast (physical trauma), which was more often than Anglo women (15%) but not as often as Mexican or Salvadoran women.

The following statement by a Chicana is similar to those of Mexican and Salvadoran immigrants:

My sister had cancer and they removed a breast. At first, when it was a little lump and it was growing, she said to me, "Well, why is this here if I never hit my breast?" But I think for sure that at some time she hit it on something, she hit the wall or something, and she didn't realize it. It is the only thing I can think of that might have caused it.

Although few (15%) of the Anglo women mentioned physical stress or trauma to the breast, this idea was once pervasive in Anglo American society (Patterson 1987). The view of a few of the Anglo women concerning physical trauma is illustrated by this woman's comment:

I used to think—this is really stupid—but when I was in grade school the boys used to think that it was the funniest thing to run up to a girl who was just developing and squeeze her boob. They thought it was so much fun. I had that done to me so many times, because I developed pretty early, that it would hurt me so bad. I used to sleep at night thinking that I am going to get breast cancer because they won't stop tweaking my boobs. [laughs] I know it is really funny, but that is what I've always had in the back of my mind. I would still put it as a possibility because no one has ever told me no, that would not happen.

Cervical cancer. Comparing the groups of women on the theme of physical stress/trauma for cervical cancer indicates that Mexican and Salvadoran immigrants differ from Chicanas and Anglo women. Mexicans (53.9%) and Salvadorans (39.3%) were much more likely to list physical trauma risk factors, compared with Chicanas (10.7%) and Anglo women (7.1%). Latina immigrants pointed to miscarriages, having many children, childbirth itself, birth control devices, operations in the vaginal area (including dilation and curettage), vaginal contraceptives, abortions, and hits and bruises in the vaginal area, including sexual relations (too much sex or sex in a rough way) as risk factors. Each of these behaviors resulted in physical strain and possible damage to the vaginal area, including the cervix. Latina immigrants generally considered the whole vaginal area a delicate and somewhat weak area. As this 22-year-old Mexican immigrant said: "It [cervical cancer] could also be from constant sexual relations. That is, when women work to be with men [prostitutes], they can get cancer."

Because operations are physically damaging, they were also considered to pose risks for the cervical area, as this 28-year-old Mexican immigrant explained: "Operations can cause cancer; for example, women who have operations so that they cannot have children, that can cause cervical cancer, can cause tumors."

TABLE 4
Most frequently freelisted risk factors for breast cancer.

Salvadoran women (N = 28)	Mexican women (N = 39)	Chicanas (N = 27)	Anglo women (N = 27)	Physicians (N = 30)	%
Blows, bruises	29	64	30	67	100
Problems producing milk	29	33	26	26	37
Breast implants	21	28	26	19	33
Disorderly, wild life	16	23	26	19	30
Excessive fondling	14	23	26	19	30
Smoking	14	18	22	19	30
Never breast-feeding	14	15	19	15	27
Lack of hygiene	14	15	11	15	20
Family history	11	13	11	11	17
Abortions	11	13	11	11	13
Illegal drugs	11	13	11	11	13
Dirty work environment	11	8	8	11	13
	Illegal drugs	8		Birth control pills	13
	Family history	8			

^aRespondents often listed more than one risk factor. Consequently, percentages do not add up to 100.

TABLE 5
Most frequently freelist ed risk factors for cervical cancer.

Salvadoran women (N = 28)	Mexican women (N = 39)		Chicanas (N = 27)		Anglo women (N = 27)		Physicians (N = 30)	
	% ^a		%		%		%	
Birth control pills	43	Lack of hygiene	44	Lack of hygiene	27	Family history	44	Many sex partners
Many sex partners	29	Birth control pills	23	Infections	23	Many sex partners	37	Exposure to STDs
Improper diet 40 days after giving birth	25	Many sex partners	23	Lack of medical attention	23	Exposure to STDs	33	First sex at a young age
Sex during 40 days after giving birth	21	Abortion	21	Many sex partners	15	Vaginal contraceptives	22	Smoking
Not caring for self after giving birth	21	Lack of medical attention	21	Exposure to STDs	12	Unhealthy diet	19	Family history
Abortions	21	Infections	18	Infected male	12	Birth control pills	19	Poverty
Sex during menstruation	18	Infected male	18	Irregular menstruation	12	Infections	19	Birth control pills
Having many children	18	Miscarriages	15	Family history	12	Lack of medical attention	15	
Vaginal contraceptives	18	Sexual relations	13	Prostitution	12			
Improper diet during menses	18	Rough sex	13	Ignoring bodily needs	12			
Lack of hygiene	14	Having many children	13					
Tampons	7	Being hit in that area	10					
Illegal drugs	7	Tumors	10					
		Family history	8					
		Illegal drugs	8					

^a Respondents often listed more than one risk factor. Consequently, percentages do not add up to 100.

Sexual relations can be physically stressful and therefore pose a cancer risk. A 45-year-old Salvadoran woman provided an example of how this might occur:

What I believe is that the delicate nature of the woman inside is also a cause. I heard a story in El Salvador about a woman who, they say, had a husband whose penis was very big. So each time she had sex with her husband she bled, and her mother-in-law told her on one occasion to go get an exam. So when she went for her exam they told her she had cancer. People said it was because her husband was like that, and he was not careful when he had relations with her. He was very brusque with her and he scratched her a lot. And so it grew worse and she died.

Some Latina immigrants suggested that beginning sexual relations early is a risk for cervical cancer. But the reason they gave that such activity posed a risk was not the same as that of physicians, who believed that it increased risk of exposure to sexually transmitted diseases (STDs) and human papillomaviruses (HPVs). For the Latina informants, early sexual activity was a behavioral risk, with both moral overtones and implications for the physical stress caused by added years of sexual experience, as is suggested by this 32-year-old Mexican immigrant: "Women who begin to have intimate relations when very young, they are more likely to get cancer here [cervix]. Wouldn't that be from so much use? [laughs] That's why I tell my husband 'Honey, stop!'"

Having vaginal deliveries and miscarriages can also cause physical stress to the area, posing a cancer risk, as this 32-year-old Mexican immigrant noted:

[A friend] had many miscarriages. She couldn't keep the babies, so at two months, three months, once even at four months, they came out. I imagine that this does a lot of damage to the womb. I had my children by cesarean. The gynecologist that delivered my daughter, in my country, told me that people who have their children by cesarean are less likely to get cervical cancer than those who have them normally [vaginally] because the womb does not have to work so hard.

It must be noted, however, that these are not discrete themes. Some risk factors obviously overlap themes. For example, abortions are believed to cause physical stress and trauma to a woman and so we classified them in this theme, but women who have abortions are engaging in behavior often perceived as non-normative and risky, and thus having implications for health. A 59-year-old Mexican immigrant put it succinctly: "There are women who search out clinics to abort children; they are more likely to get this [cervical cancer]. [Does God give them cancer?] No, they look for it."

Theme: Behavior and Lifestyle Choices

The second dominant theme in the Latina immigrants' perceptions surrounds a number of behaviors and lifestyle choices that could increase a woman's chances of getting breast and cervical cancers. The specific behaviors also varied by the particular cancer.

Breast cancer. Mexican women (53.9%), Salvadoran women (64.3%), and Chicanas (60.7%) were about equally likely to suggest that a woman's behavior or lifestyle (personal responsibility) resulted in a breast cancer risk. Most Anglo women (67.9%) also mentioned such risk factors. Although there were some overlaps in these risks, Latinas and Anglos displayed some different concerns:

Latinas with physically destructive behavior such as drinking and taking illegal drugs, Anglos with diet.

Mexican and Salvadoran women often cited smoking, taking birth control pills, drinking alcohol, lack of appropriate hygiene, breast implants, and taking illegal drugs as risk factors for breast cancer. Although none of the interviewees freely said that “God gives people cancer,” they sometimes spoke of these behaviors as morally questionable (“bad”) and said that women who engage in such behaviors run the risk of ill health and cancer. As this 32-year-old Mexican woman said: “God doesn’t punish [by giving cancer], but cancer can originate from the bad life that one leads, sexually. I don’t believe God sends it.”

Or, as another Mexican immigrant noted:

Well, there are so many medicines that they take so as not to conceive, that I believe this damages them because I have seen various persons that take [birth control] pills have sore breasts, they have swollen legs, they have a lot of problems when they menstruate, some months they menstruate, another two or three months they don’t. I believe that because of all this their whole body gets out of order [breaks down—*descompensa*].

Within this broad theme of behavior and lifestyle choices, Anglo women often discussed the importance of a healthy diet, especially the potential negative consequences of a eating a high fat diet. When speaking about breast cancer risk factors, 30 percent of the women mentioned something similar to “Eating meat. Just not getting enough fruits and vegetables in your diet.” Chicanas shared with Anglo women a concern for the risk posed by eating an unhealthy diet, especially one with a high fat content.

Cervical cancer. Latina immigrants also were more likely than the other women to cite behavioral or lifestyle risks for cervical cancer. Almost all of the Salvadoran women (92.9%) and most of the Mexican women (79.5%) cited such risks. Many of the Chicanas (60.7%) and Anglo women (64.3%) also cited such risks, but less often than the Latina immigrants, for whom perceived non-normative or morally tinged behaviors were associated with cancer, especially cervical cancer.

The risk of cervical cancer posed by having many sexual partners was mentioned by 23 percent of Mexicans, 29 percent of Salvadorans, 15 percent of Chicanas, and 37 percent of Anglo women. For Latinas, the risk posed by liberal sexual practices resulted from the behavioral or lifestyle theme rather than possible infection with HPVs or other STDs. As one 59-year-old Mexican woman said concerning cervical cancer risks: “Having [sexual relations] with people you don’t know, I believe [is a cause].” It was not merely sex, but sex with someone a woman does not know, that was important.

It should be noted that interviewees could discriminate between various causal explanations, attributing behavioral reasons or physical stress reasons to specific cancer cases, depending on the circumstances. For example, this 29-year-old Salvadoran woman’s mother and a friend both had cervical cancer, but she saw the disease as having different causes:

My mother called me two weeks ago and said she was very ill, they had to operate on her. She had had many miscarriages. When a woman has a miscarriage it scrapes the womb, and she had a lot, about eight. She had one, and then about two months later she was pregnant again. Her womb was very weak. She had eight in

a row and her womb had to be left bad because each miscarriage is a scraping. . . . My friend in El Salvador [had cervical cancer]. But she loved the happy life, prostitution. Her cancer was caused by having sexual relations during her menstruation, and having many lovers, too, drinking, and all that helped her to develop cancer.

Respondents mentioned two risks associated with infections: 18 percent of the Mexican women believed that women who get many vaginal infections were at risk for cervical cancer, and another 18 percent believed that men who pick up infections as a result of illicit sexual activity posed a risk to women. The sexual activities of men could, however, also be easily placed under the behavior/lifestyle theme. The following quote from a 33-year-old Mexican immigrant woman expresses how the practice of having multiple sexual partners is interpreted morally:

When men have relations with other women and come and do it with their wives they are going to cause them to have a disease. Men give their wives diseases but they do not analyze what they do, and unfortunately in this country we are in there is more prostitution. There are women who do it for nothing more than to pay the rent, that's all. But now even when the man does not fool around, now also the woman goes out with men other than her husband and they get infected and then they have children.

Anglo women (37%) also suggested risks related to sexual behavior, such as multiple sexual partners and exposure to STDs, as illustrated by the following quote by a 39-year-old Anglo woman:

I know that a lot of sexually transmitted diseases seemed to lend itself towards that. Multiple partners. I don't know, it seemed that at one time I heard, and I don't know how true this was, that when women became more [sexually] active at a young age. I think it could have been, that it seemed to be something that could lend itself toward that [cervical cancer].

Latinas mentioned other behavioral/lifestyle risk factors for cervical cancer, including a lack of cleanliness and the failure to follow hygienic practices. Almost half (44%) of the Mexican women, 27 percent of Chicanas, and 14 percent of the Salvadoran women cited a lack of hygiene as a cancer risk. This statement by a 50-year-old Mexican immigrant is illustrative:

Well I'll tell you, it's a lack of care. When one doesn't take care of oneself, because one should, how should I say, clean oneself on the inside. Because a woman who is married should be careful to be clean and all that, she should buy one of those things that they sell, what are they called, those things that they use vaginally, one of those things they use to clean themselves on the inside. I say that if one does not take care of oneself, when you're done with your period, when you're with your husband [sexually] and you don't take care of yourself and you don't do any of that, that is lack of cleanliness and attention is also a reason [for cervical cancer].

Some of the Anglo women who mentioned vaginal contraceptives also had hygiene in mind. Consider the following comment by a 24-year-old Anglo woman: "Cervical caps that are not properly taken care of, that are kind of stuck up there and left to kind of get dirty and rot. I think an IUD might [cause cancer]. Maybe not douching regularly."

About a quarter (23%) of the Mexican women and 43 percent of the Salvadoran women said that women who take birth control pills were at risk for cervical cancer. In listing possible cancer risks, some Salvadoran women cited the belief that birth control pills accumulate and do not dissolve in the woman's body, causing damage, as did this 45-year-old Salvadoran immigrant:

Taking [birth control] pills, I heard that you can get this illness. It develops because, I heard of a woman in El Salvador who was pregnant, anyway, she had taken birth control pills for eight years. She stopped taking them and got pregnant. And then they did some tests on her, and she thought she was going to have twins. You could see two round balls in the X-ray they did of her, and one was the baby and the other one was like a big ball, like a ball of dough made from the pills that she had taken.

Some Anglo women (19%) and none of the Chicanas suggested that women who take birth control pills are at risk for cervical cancer. Some Anglo women (19%) also suggested that eating an unhealthy diet posed a risk for cervical cancer.

Sexual intercourse during menstruation was another behavioral risk mentioned by almost one-fifth (18%) of Salvadoran women and some (5%) of the Mexican women. As this 52-year-old Mexican immigrant explained: "If you have bad nutrition, that is bad. If you do it during your period, well, forget it. This is going to make a mess there, no? I believe it would affect the cervix."

Lack of postnatal care. A number of behavioral risks were related to postnatal care. For example, Mexican and Salvadoran women cited having sex sooner than 40 days after giving birth (8% and 21%, respectively), not taking proper care of oneself after giving birth (8% and 21%, respectively), and not following the proper diet after giving birth (25% of Salvadorans). As this 25-year-old Mexican woman explained: "We have the belief that when a woman delivers a baby she has to take care of herself, not do heavy housework because the womb can fall and you can catch infections during the 40 days after birth if you are not careful."

In addition to these two pervasive themes, Latinas discussed a number of other themes specific to each cancer.

Theme: Breast Functions

This theme revolved around the functions of the breast. Mexican and Salvadoran women listed as possible breast cancer risk factors not breast-feeding (33% and 14%) and problems in producing milk (23% and 29%). Fifteen percent of Mexican immigrants listed breast-feeding as a risk factor for breast cancer, but only 4 percent of the Salvadoran women listed it. As a Mexican woman explained:

They say that when one has children but does not breast-feed, the milk accumulates in the breast and this is bad. I have heard this, but I know old women who have not breast-fed and they are fine, they have not been sick. But for most, they have to breast-feed. If a child does not take out the milk, where does it all go? It stays there, it gathers into clots.

Women who chose not to breast-feed and chemically stop milk production are also engaging in potentially risky behavior. As this Mexican woman said: "Maybe it's because, for example, when one has a baby and one doesn't want to breast-feed,

there are women who get injections to stop the milk. Maybe this is one of the causes.”

Theme: Pollution

Some Mexican women (28%) worried that the chemicals in processed food in the United States posed a cancer risk. A few Salvadorans (11%) mentioned the breast cancer risk posed by a dirty work environment. Mexicans contrasted life in the U.S. with life in Mexico, where they ate mostly fresh food. Salvadorans also spoke of the greater purity of the water and land in their country, compared with what they perceived as the ubiquity of chemicals in the United States:

Pollution is a cause of cancer. Here in this environment we live in there is a lot of pollution from the factories, car exhaust, and cigarettes. All this can cause cancer, I say, including the food. This food is bad. I think that canned food is especially bad because it is canned so long. When you buy it, it doesn't have any nutrition left for the body. They are not healthy foods. . . . I think that in our environment [in El Salvador] fewer people die of cancer than here. Perhaps it's because life is different there. The food is more healthy, more natural. Maybe here they use more dangerous fertilizers.

Nineteen percent of the Anglo women mentioned environmental pollution as a risk factor for breast cancer. Environmental pollution included a wide array of risks, some of which had to do with electromagnetic fields:

Maybe depending on where she works, you know, there might be like, might be exposed to nuclear radiation. Not radiation but, just like waves, and like if she works on televisions or something. You know, it depends. Or maybe sitting at, like, at a computer. Maybe the computer gives off something.

Water could also be polluted, as this Anglo woman noted: “I have a feeling it's the water. I just feel all the cancer here might have to do with people's water, treating the water. That's not going to stop me from drinking water.”

Theme: Lack of Medical Attention

In addition, 15 percent of the Mexican women and 26 percent of Chicanas cited a lack of medical attention as a risk factor for breast cancer. Latinas often realized that women should seek preventive care for breast cancer. As one Mexican woman said,

I don't have insurance. In my opinion, if one doesn't have insurance, it's bad because, well, here cures are expensive and, well you know, sometimes for many people, what we earn is not enough even to eat and live. So when we have these types of illnesses, we don't go to the doctor because of a lack of money.

Another Mexican immigrant was clear about the risk posed by a lack of access to medical care, which could result in late diagnosis of cancer.

There is a good reason why we don't seek medical attention. If I should have cancer, how can I look for a clinic? I don't have a social security number. I am not in this country legally. What am I going to do? Let myself die here or return to my country? But either way it's the same. There [in Mexico] I would go to a

general hospital where they'd give me three pills, but I know I am going to die because they could not cure an advanced case of cancer.

Theme: Family History and Other Biomedical Risk Factors

Anglo women noted some risk factors not prevalent among Mexican and Salvadorans, but sometimes mentioned by Chicanas. Most Anglo women interviewees (67%) cited a family history of breast cancer when discussing breast cancer risk factors. Interestingly, many Anglo women (44%) also mentioned a family history of cervical cancer. Anglo women also cited other biomedically recognized risk factors (those also cited by the physicians, below) for both breast and cervical cancers. For breast cancer they mentioned the influence of hormones, age at first child, breast-feeding, smoking, diet, birth control pills, and fibrocystic disease. For example:

Taking the pill or other hormonal things. Having a hysterectomy because that really affects your hormonal level. I know that you have a higher chance of getting it if you have your first baby after you're 30, I believe that's what they say. They also say that women who breast feed have a lower chance of getting breast cancer.

Some Anglo women also emphasized risk factors for breast cancer not mentioned by physicians, such as environmental pollution (19%) and the radiation from medical X-rays (26%). For example:

I understand that it kind of runs in families. I really can't tell you if this is true, but I would suspect that sometimes a drug that we take may affect breast cancer, but I can't really tell you which ones. I'm kind of hesitant about X-rays, even on my teeth.

Anglo women listed biomedical risk factors, but then questioned the validity of these factors. They are doubtful of these risk factors, and even critical of them, in a manner similar to that found by Balshem (1991).

God, I don't know. There have been so many things tossed about. Cigarette smoking, of course. I don't know. You hear about all kinds of junk. Well, I stopped smoking five years ago. I believe that if it's in your family you have more likelihood to get it. That's probably it. I don't know that it really singles out anybody for any specific reason. My mother never smoked a single cigarette in her life and she has breast cancer.

Chicanas

The views of Chicanas need to be highlighted. They consistently cited possible cancer risk factors that were similar in some respects to those expressed by Mexican immigrant women and in other respects to those expressed by Anglo women. For example, Chicanas suggested that a family history of breast cancer more often than Latina immigrants, but not nearly so often as Anglo interviewees. Chicanas shared with Mexican women a belief that a lack of medical care posed a risk for breast cancer. They shared with the Anglo interviewees the view that environmental pollution and an unhealthy diet posed cancer risks for breast cancer.

Chicanas were particularly concerned with the risk posed by a lack of hygiene or cleanliness, especially during sexual relations. This concern for hygiene was

similar to that of the Mexican women. This may account, in part, for why Chicanas mentioned the risk posed by multiple sexual partners less frequently than the other groups of women. For example, a 46-year-old Chicana discounted the risk posed by multiple sexual partners, emphasizing physical trauma, as did Mexican women: "One time I thought maybe if you had sex with a lot of people but I don't think that is true. Maybe if you douche a lot, maybe if you had a lot of kids, or maybe if you had abortions or something."

Chicanas also listed the risk posed by men who themselves get infected as a result of having multiple sexual partners, a concern listed more often by Mexican women than Anglo women. On the other hand, Chicanas also suggested that heredity and exposure to STDs posed cancer risks, which were also cited frequently by Anglo women. Few Mexican and Salvadoran women listed heredity or exposure to STDs as risk factors.

The Views of Physicians

Physicians showed less variation in their responses than the lay women interviewed. When considering breast and cervical cancer risks, physicians cited items generally found in the epidemiological literature. The following comment expressed many of the risk factors for breast cancer offered by the physicians: "Family history, nulliparity [no children], children after age thirty; a woman who carries her fat or heaviness above the belt. Family history is probably the overriding [factor]."

When discussing the risk factors associated with cervical cancer, almost all of the physicians mentioned exposure to sexually transmitted diseases and multiple sex partners. Most mentioned beginning sexual relations at an early age. Fewer physicians mentioned smoking, heredity, low socioeconomic status, and birth control pills as possible risk factors.

Agreement on the Relative Importance of Risk Factors

In this section, we examine how much agreement the Latinas, Anglo women, and physicians had on the relative importance of the risk factors that surfaced in their discussions. To explore this, we had the interviewees rank order the most often mentioned risk factors (see Tables 6 [breast cancer] and 7 [cervical cancer]).

Figure 1 represents the level of agreement of these rankings by Latinas, Anglo women, and physicians. The closer two points are in Figure 1, the more the two interviewees represented by those points agreed in their rank ordering of the breast cancer risk factors.

Agreement on Breast Cancer Risk Factors

Figure 1 shows that a single cultural model of breast cancer risk factors does not exist when all respondents are included in the analysis of the rankings.⁵ Mexican (*m*'s) and Salvadoran (*s*'s) immigrants are at the opposite end of the figure from physicians (*p*'s), which reflects their widely divergent views of breast cancer risk factors. Salvadoran and Mexican immigrants overlap, indicating a high level of agreement in rankings of the risk factors. As one moves from the Latina immigrants toward the right of the figure, Chicanas (*c*'s) begin to become interspersed among

the Latina immigrants. Chicanas are in a pivotal position between Latina immigrants and Anglo women (a's), among whom Chicanas are also located. This reflects that Chicanas' rankings were sometimes similar to those of Mexicans and other times similar to the rankings of Anglo women.

Mexican and Salvadoran immigrants. At the upper left of Figure 1 is the representation of the responses of the Mexican and Salvadoran immigrants.⁶ Although there is overlap between Mexican and Salvadoran women, Mexican women generally are closer to Chicanas in their responses than are the Salvadorans. Also note that the immigrants' responses are more dispersed than those of the other groups, indicating that they do not always agree with each other, and yet clearly they are far from agreement with physicians and Anglo women. Although the Mexican immigrant women had a lower mean competency (.51, s.d. = .20) than all but the Salvadoran women, they still exhibited a single cultural model of breast cancer risks (ratio = 3.1 to 1). The Salvadoran immigrant women had the lowest mean competency (.47, s.d. = .21), but they, too, had a single cultural model (ratio = 3 to 1).

Mexican and Salvadoran women's rankings of the breast cancer risk factors exhibited a high level of agreement, which is reflected in a high correlation coefficient ($r = .84$). As a consequence, we collapsed Mexican and Salvadoran women into one group, which we called Latina immigrant women. Using consensus analysis, Latina immigrant women were found to have a single cultural model of breast cancer risks (ratio = 3.0 to 1).

Latina immigrant women are the farthest away from the physicians in Figure 1. They disagreed most with the biomedical model as represented by the physicians' rankings. Latina immigrants' rankings of the risk factors for breast cancer were practically the inverse of the physicians' rankings. Indeed, both Mexican women and physicians and Salvadoran women and physicians had negatively correlated rankings: $r = -.13$ and $r = -.35$, respectively.

What Latina immigrants perceived as important, physicians perceived as unimportant, and vice-versa. Put another way, the primary risk factors in the biomedical model, represented by the physicians' rankings, are not part of what we are calling the Latina immigrant model. With the exception of smoking, Latina immigrant women ranked low all of the risks for breast cancer that the physicians ranked high. They did not perceive having a first child after age 30, getting older, early menstruation, fatty foods, and obesity as important risk factors. Heredity received a ranking of 7 by Mexican women and 20 by Salvadoran women.

The physical trauma theme was reflected in the Latina immigrants' rankings. Mexicans gave bruises and hits to the breast and excessive fondling of the breast a ranking of 1 and 6, respectively. Salvadorans gave a ranking of 1 to excessive fondling of the breast and 2 to blows and bruises to the breast.

The personal behavior/lifestyle theme was also prevalent in the rankings. Both Mexican and Salvadoran women placed in the top 12 risk behaviors such as acquiring breast implants, smoking, taking birth control pills, using illegal drugs, leading a wild life, and a lack of hygiene or cleanliness. The emphasis on behavioral risk factors suggests that the implications of lifestyle choices weigh heavily in the Latina immigrants' model of breast cancer risks.

TABLE 6
Order of breast cancer risk factor rankings for all groups.

Item	Mexicans	Salvadorans	Chicanos	Anglos	Physicians
Blows, bruises, hits to the breast	1	2	3	20	26
Lack of medical attention	2	5	8	12	11
Smoking cigarettes	3	7	6	5	10
Birth control pills	4	6	5	4	13
Breast implants	5	3	4	9	15
Excessive fondling of the breast	6	1	16	28	29
Heredity, family history	7	20	1	1	1
Illegal drugs	8	4	11	14	23
Chemicals in food	9	9	9	3	14
Exposure to radiation (i.e., medical X-rays)	10	12	2	7	7
Lack of hygiene	11	10	24	29	27
Disorderly, wild life	12	8	22	26	28
Drinking too much alcohol	13	15	12	16	16
Poverty	14	29	26	27	18
Problems with milk production	15	13	13	17	22
Hormone supplements	16	11	7	2	6
Obesity	17	22	19	15	5
Never breast-feeding	18	16	25	18	12
Polluted environment	19	14	10	6	20
Fatty, greasy foods	20	23	14	10	9
Having first child after age 30	21	18	20	19	3
Dirty work environment	22	17	21	24	25
Not having a baby	23	26	29	22	4
Medications	24	21	17	11	19
Getting older	25	19	15	13	2
High stress	26	28	23	8	21
Large breasts	27	24	18	23	17
Breast-feeding	28	27	28	25	24
Early menstruation	29	25	27	21	8

The importance of access to medical care was also emphasized in the rankings. Mexican and Salvadoran women ranked a lack of medical attention as, respectively,

TABLE 7
Order of cervical cancer risk factor rankings for all groups.

Item	Mexicans	Salvadorans	Chicanas	Anglos	Physicians
Lack of medical attention	1	11	3	6	5
Tumors	2	3	1	2	9
Abortions	3	1	6	11	16
Many lovers, sexual partners	4	7	9	4	2
Sexually transmitted diseases	5	2	4	3	1
Blows, being hit in chest area	6	8	14	22	22
Husband/boyfriend who is infected	7	4	5	5	4
Birth control pills	8	12	8	7	13
Rough sex	9	10	19	20	20
Lack of care after giving birth	10	9	7	15	19
Vaginal contraceptives (e.g., sponges, foam, diaphragms, IUD)	11	6	10	9	14
Having sex during menstruation	12	5	18	23	21
Not following a proper diet 40 days after giving birth	13	14	21	21	23
Starting sexual relations at a young age	14	15	17	12	3
Heredity, family history	15	21	2	1	7
Poverty	16	24	23	19	10
Lack of hygiene	17	13	12	13	12
Ignoring the body's needs	18	17	11	10	17
Not following a proper diet during menstruation (food that's too hot or too cold)	19	19	24	24	24
Illegal drugs	20	18	16	16	15
Smoking cigarettes	21	16	15	8	6
Tampons	22	22	13	14	18
Sexual relations	23	23	20	17	8
Having many children	24	20	22	18	11

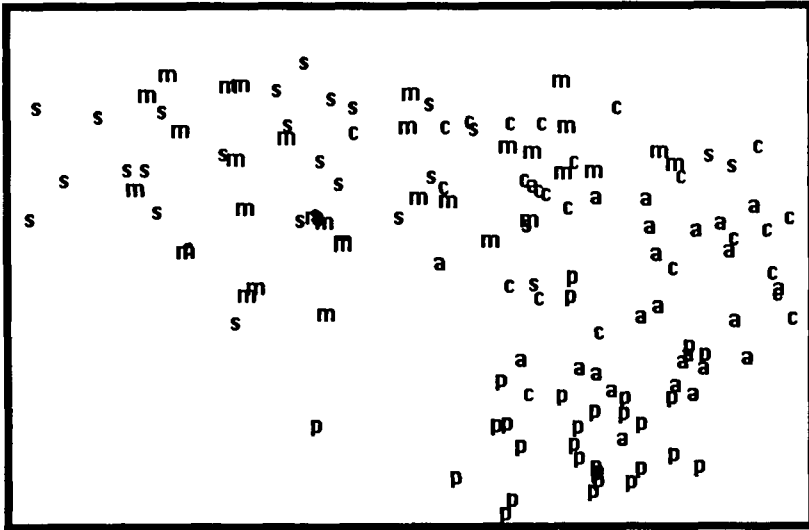


FIGURE 1

Visual representation of respondents' agreement on breast cancer rankings. (Note: p = Physicians; a = Anglos, c = Chicanas, m = Mexican immigrants, s = Salvadoran immigrants. The figure displays the spatial configuration of the risk factor rankings obtained by plotting the first and second principal components. Because the purpose of the figure is to display the relationship of the points to each other and not to the x and y axes, it does not contain labels of the axes. Each letter represents the rankings of one respondent. The closer the letters appear, the more the respondents agreed about the risk factor rankings.)

the second and fifth most important breast cancer risk factors. This reflects the major obstacle to medical care faced by many of these women as a result of a lack of insurance, low earnings, and other structural barriers.

The breast function theme followed the more salient physical trauma and behavior/lifestyle themes. Mexican and Salvadoran women gave a woman who has problems with milk production rankings of 15 and 13, respectively, and they gave a women who never has breast-fed rankings of 19 and 15, respectively. Both Mexican and Salvadoran women gave breast-feeding low rankings, 28 and 27, respectively.

The pollution theme also was evident. Mexican and Salvadoran immigrants gave chemicals in food a ranking of 9, and they gave a polluted environment rankings of 18 and 14, respectively. Clearly, chemicals in food was of more importance as a risk factor than a polluted environment.

Anglo women. Anglo women were closest in agreement with physicians in their rankings of the possible risk factors for breast cancer (correlation coefficient $r = .56$). When examined separately, the Anglo women had a single cultural model

of breast cancer risk (ratio = 4.1 to 1), and a mean agreement score of .64 (s.d. = .16).

Anglo women gave high rankings to some factors found in the biomedical model, such as heredity (ranked 1), hormone supplements, smoking, exposure to radiation, and high fat foods (Table 6). Anglo women, however, did not replicate the biomedical model. They gave higher rankings to some factors than did physicians: chemicals in food, birth control pills, a polluted environment, high stress, breast implants, and medications. They gave low rankings to some of the most important items in the biomedical model: getting older, having a first child after age 30, never having a baby, obesity, beginning menstruation early.

We call the Anglo women's model the lay biomedical model because it consists of some of the elements of the biomedical model as well as elements that women may have acquired through interactions with physicians, popularized medical findings such as those found in health-related and popular publications and health food stores, and wisdom passed within social networks such as between mothers and daughters.

Chicanas. Chicanas occupy an interesting position in Figure 1. Their model lies largely between the lay biomedical model of the Anglo women and immigrants' model. Chicanas had a mean competency score of .58 (s.d. = .18) and exhibited a single cultural model (ratio = 4.2 to 1).

Chicanas' perceptions overlap both the immigrant and the lay biomedical models. They ranked heredity first, as did the Anglo women. But they ranked blows, bruises, and hits to the breast third, much higher than did Anglo women (ranking = 20). This overlap is also revealed in the correlation coefficients of the rankings. The Chicanas' rankings correlated highly with the Anglo women's rankings ($r = .76$), as well as with the Mexican immigrant women's rankings ($r = .72$). The Anglo women's rankings, however, had a low correlation with the Mexican immigrant women's rankings ($r = .26$). As a group, the Chicana interviewees were bicultural in their perceptions of breast cancer risks. And yet Chicanas achieved consensus on a single model of breast cancer risks despite incorporating elements from divergent cultural models.

Although Chicanas can be found among the Anglo women in Figure 1, few Chicanas are found among the physicians. Chicanas' and physicians' rankings had a low correlation ($r = .24$).

Physicians. As the relatively tight cluster of p 's in Figure 1 indicates, physicians expressed a high level of agreement on the risk factors that make up the biomedical model of breast cancer risks. When analyzed separately, the physicians' mean competency score is .73 (s.d. = .16), a relatively high level of competency (they agree with each other about 73% of the time). The ratio between first and second eigen values is 8.8 to 1, well above the 3 to 1 threshold for asserting that the physicians share a cultural model of breast cancer risk factors. The risk factors that physicians ranked high were also those found in the medical literature: heredity or family history, aging, early menstruation, never having children, having a first child after age 30, hormone supplements (estrogen), exposure to radiation in medical X-rays, and obesity.

In sum, each study group achieved consensus on its own culturally based model for beliefs about breast cancer risk factors. More broadly, the groups could

also be said to subscribe to either of two cultural models of breast cancer risk: the Latina immigrant model and the biomedical model. Mexican and Salvadoran immigrants and Chicanas shared the beliefs that characterize the Latina immigrant model, stressing physical trauma to the breast and behaviors such as smoking, drinking alcohol, and illegal drug use as important risk factors. Physicians and Anglo women shared a general biomedical model that differed considerably from the Latina immigrant model. Physicians' beliefs, in particular, fit into a biomedical model that embraced epidemiologically determined risk factors and gave little credence to other considerations. Anglo women shared enough of the physicians' views to be included in a general biomedical model, but they also believed that other factors, such as environmental pollution and chemicals in food, were important. For this reason, we argue that Anglo women's views form an important submodel, the lay biomedical model, that only partially reflects the physicians' biomedical beliefs and includes beliefs found in popular culture concerning health. Chicanas held a bicultural model that fit well with the beliefs of both the immigrants and the Anglo women, but not with those of the physicians.

Immigrant women agreed less, however, about the risk factors for cervical cancer than they did about those for breast cancer. In addition, moral interpretations were much more prevalent in the discussions of cervical cancer risk factors than was the case for breast cancer risk factors.

Cervical Cancer Risk Factors

Figure 2 visually presents the agreement of the respondents' rankings of cervical cancer risk factors. The pattern is similar to that for breast cancer risks: immigrants are farthest from the physician interviewees, and there is no agreement on a model of cervical cancer risk factors.⁷

Mexican and Salvadoran immigrants. Mexican and Salvadoran immigrants and physicians were farthest apart in their relative rankings. Indeed, the correlation coefficients for Mexicans and physicians ($r = .19$) and Salvadorans and physicians ($r = .08$) were low.

There was, however, a high correlation between Mexican women's and Salvadoran women's rankings ($r = .83$). Nevertheless, neither group achieved a level of consensus among themselves that would allow us to say they exhibited a single cultural model of cervical cancer risks.⁸ They appeared to have many possible models operating, which explains the diffuse positions of the Mexicans and Salvadorans in Figure 2. Even though they did not have a single cultural model for cervical cancer risk factors, Mexicans and Salvadorans ranked many of the cervical cancer risk factors significantly different from the physicians, resulting in their divergent positions in Figure 2.

Mexican and Salvadoran immigrants' aggregate rankings were high for behavioral/lifestyle risk factors. For example, they highly ranked abortions, coming in contact with sexually transmitted diseases, having many sexual partners, contact with a boyfriend or husband who has an infection, taking birth control pills, not receiving proper care after delivering a baby, using vaginal contraceptives, sex during menstruation, not following a proper diet after having a baby, starting sexual activity early, and a lack of hygiene.

Mexican and Salvadoran immigrants ranked sexual behaviors, such as having many sexual partners, as high risk factors, as did physicians. Latina immigrants and physicians diverged, however, on other factors. Most of the behavioral/lifestyle risks ranked high by Latina immigrants were ranked relatively low by physicians. On the other hand, risk factors that Latina immigrants ranked low, such as sex at an early age, smoking, and poverty, physicians ranked high.

The theme of physical trauma was supported in the rankings. Mexican and Salvadoran immigrants gave high rankings to blows or hits to the vaginal area and rough sex.

Chicanas. Chicanas had a mean agreement score of .57 and also achieved consensus on a single cultural model of cervical cancer risks (ratio = 3.1 to 1). Chicanas gave relatively high rankings to some factors that Mexican women ranked high (lack of medical attention, lack of care after giving birth, abortion, birth control pills), but they also ranked heredity relatively high, as did Anglo women. Compared to physicians, Chicanas ranked having many lovers and starting sexual relations young relatively low. Once again, Chicanas' rankings were correlated with those of both Anglo women ($r = .85$) and Mexican women ($r = .66$), and yet Mexican and

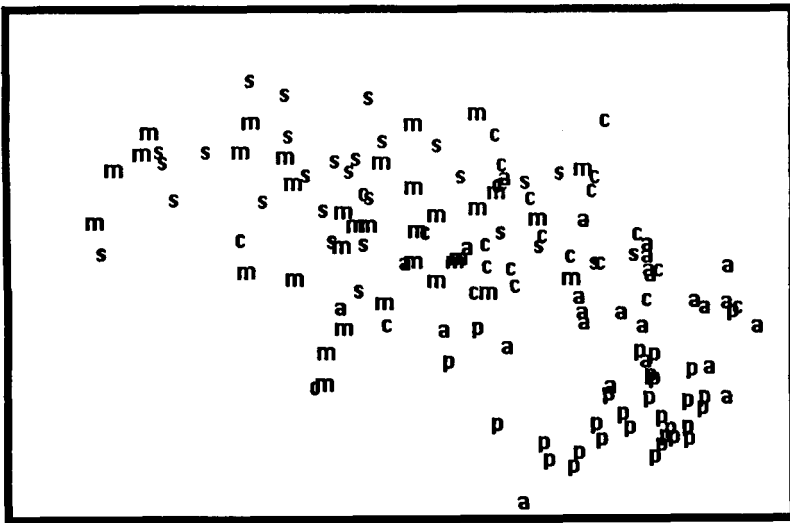


FIGURE 2

Visual representation of respondents' agreement on cervical cancer rankings. (Note: p = Physicians; a = Anglos, c = Chicanas, m = Mexican immigrants, s = Salvadoran immigrants. The figure displays the spatial configuration of the risk factor rankings obtained by plotting the first and second principal components. Because the purpose of the figure is to display the relationship of the points to each other and not to the x and y axes, it does not contain labels of the axes. Each letter represents the rankings of one respondent. The closer the letters appear, the more the respondents agreed about the risk factor rankings.)

Anglo women's rankings had a relatively low correlation ($r = .42$). It is interesting to note that Chicanas' rankings were more highly correlated with Anglo women's rankings for cervical cancer than for breast cancer. Chicanas' rankings and physicians' rankings also have a relatively low correlation ($r = .44$).

Anglo women. Anglo women exhibited a high degree of agreement (mean score = .69, s.d. = .15) and a single cultural model (ratio = 5.9 to 1). Anglo women were closer to physicians (Pearson's $r = .75$) in their perceptions of cervical cancer risks than Latinas. Both Anglo women and physicians gave high rankings to the same factors; however, the Anglo respondents ranked heredity number one, whereas physicians ranked it lower.

Physicians. Physicians had a high level of agreement (mean competency score = .79) and shared a single cultural model of cervical cancer risks (ratio = 12.1 to 1). The items they ranked high were those found in the biomedical literature: sexually transmitted diseases, multiple sexual partners, beginning sexual relations at a young age, contact with a male who has acquired an infection, lack of medical attention, smoking cigarettes, and heredity, in that order.

In sum, we found that Chicanas, Anglo women, and physicians each agreed upon a model of risk factors for cervical cancer. Mexican and Salvadoran women, however, agreed less on the relative importance of risk factors for cervical cancer than they did for breast cancer. What they did believe had a low correlation with the Anglo women's and physicians' beliefs, but not as low as their beliefs about breast cancer risk factors. In essence, we found that for both breast and cervical cancers, many of the risk factors Latinas believed were most important were viewed by the physicians and Anglo women as unimportant, and vice-versa.

Structure and Meaning in Models of Cancer Risk Factors

The research presented here sought to examine both structure and meaning in beliefs about breast and cervical cancer risk factors. We have revealed the complexity of women's beliefs and their variations from biomedical perspectives. Variation in these beliefs were influenced by interviewees' birth place (immigrant vs. U.S.-born), ethnicity (Latina vs. Anglo women), and expertise (experts vs. lay people). Latinas in general share many beliefs about breast and cervical cancer risk factors, but U.S.-born Chicanas also shared beliefs found among Anglo women. These findings suggest that we must be cautious when speaking of a generalizable Latina model.

Our findings suggest that two general cultural models of cancer risk factors can be found among our interviewees. Mexicans, Salvadorans, and, to some extent, Chicanas discussed breast and cervical cancer risk factors with a Latina immigrant model in mind. On the other hand, physicians, Anglo women, and, to some extent, Chicanas operated on the basis of the biomedical model, although Anglo women and Chicanas did so less consistently than the physicians. Chicanas and Anglo women also included beliefs about breast and cervical cancer risk factors that would not have been acceptable to the physicians. The relatively elevated position of heredity, high stress, and environmental pollution in the Anglo respondents' model of breast and cervical cancer risk factors reflects the attention these factors have received in the popular media and culture. Heredity, high stress, and environmental

pollution have become important members of American popular culture's pantheon of pervasive health risks for many diseases, including cancers of various types.

Examining views about both breast and cervical cancer risk factors leads to important observations that would not have been as apparent had we examined these cancers separately. We found that Latinas expressed similar themes when explaining the possible risk factors for both breast and cervical cancer. Latinas, like people in the United States in general, appear to have generalized beliefs about cancer risks that are applicable to various cancers, with some modifications. For example, Latinas considered physical trauma/stress and behavioral/lifestyle choices as influencing both breast and cervical cancers.

In addition to these two general themes, interviewees also cited other risk factors. They wove together various possible causes of cancer that might affect women under certain circumstances. In short, their perceptions of cancer risks were complex and multifactorial.

A second advantage to including both breast and cervical cancer in the analysis is that it shows how general themes are applied to specific diseases. Interviewees emphasized different aspects of physical stress and trauma or behavioral and lifestyle risks for each disease. For example, specific instances of physical stress and trauma vary depending upon the area of the woman's body Latinas are discussing. The prevalence of moralistic observations also varied. Moral connotations to behavior were much more prevalent in the Latinas' discussions of cervical cancer than of breast cancer. This may be due to the cervical area of the body's connection with sexual intercourse.

Many women in all the groups we examined believed that behavior and lifestyle choices influenced health and raised the risk of breast and cervical cancers. The analysis revealed, however, that Latinas, especially Latina immigrants, and Anglo women expressed a different set of concerns and emphasized different behavioral and lifestyle risks. Anglo women emphasized proper diet and nutrition, whereas Latinas emphasized the implications of behaviors perceived as non-normative and morally questionable.

By examining these cancers together, we also were able to observe a regular pattern in the structure of differences in how interviewees viewed (ranked) the relative importance of breast and cervical cancer risk factors. As Figures 1 and 2 show, Mexican and Salvadoran immigrants' rankings of the possible risk factors for both breast and cervical cancers differed in the extreme from the rankings of physicians. Chicanas and Anglo women's rankings placed them in intermediate positions in both figures. Finding a similar pattern in the structure of agreement (or disagreement) for both cancers suggests that Latinas, especially immigrants, think in fundamentally different ways than Anglo women and physicians about these cancers and their potential risk factors.

We also found that Mexican and Salvadoran women had greater consensus on breast cancer rankings than on cervical cancer rankings. An hypothesis to explain this difference is that breasts are observable, and from the time they are young, women receive from mothers, aunts, and others recommendations for care of their breasts, including conventional wisdom about cancer prevention, much of it precautions against the physical risks discussed above. The cervix is not directly observable and does not receive the same level of general discussions about

preventive care as do breasts. Being able to see and feel breasts provides physical reinforcement for discussions of breast cancer risks in a way not found with cervical cancer. Breast cancer, therefore, is more likely than cervical cancer to have an integrated cultural model of risk factors that is articulated among females even from an early age.

Because the cervix and problems related to it are not observable, a cultural model of risk factors does not necessarily emerge as easily. Information about cervical cancer that might crystallize into a generally held cultural model of risk factors appears to be acquired after sexually maturity and with experience in seeking medical help, such as that which occurs when a woman seeks prenatal care or after a cervix-related problem develops. In other words, compared with breast cancer knowledge, information that might be acquired about cervical cancer is as likely to come from health experts as from a general information pool. Obtaining some information, typically partial and incomplete information, on cervical cancer from health practitioners does not mean, however, that biomedical information is absorbed directly into the model of cervical risk perceptions. The information must be considered and interpreted by the patient and then, perhaps, fit into her model.

The analysis also provided many instances in which to observe the biculturalism of U.S.-born Chicanas. Chicanas consistently expressed views reflective of both Mexican immigrants and Anglo women. This finding reflects Chicanas' life-long experience with U.S. society and at the same time their exposure to beliefs found in Mexican culture. Importantly, Chicanas' views did not appear to exist in a schizophrenic union, but appeared to be integrated into a coherent view of the world, or at least a coherent and integrated view of risk factors for breast and cervical cancers.

Finally, our findings also have implications for physician-patient communication. Turner (1987) has suggested the existence of a "competence gap" in biomedical knowledge that impedes effective communication between physicians and their patients. Our findings suggest that nonphysician interviewees may have ranked some risk factors low because of a basic lack of biomedical knowledge. But our interviewees also have definite beliefs about behaviors that, in their view, constitute possible risk factors for breast and cervical cancers. These beliefs may derive from a multitude of sources: popular media, conversations with health practitioners, and a generalizable set of culturally based health beliefs. For the women in our study, cancer risk factors were often entangled in the moral, gender, and material contexts of their lives. These contextually based risk factors were paramount for Mexican and Salvadoran immigrants, for whom biomedical information may not have been readily available. These findings suggest that for effective communication between health practitioners and patients, it is important to understand not only patients' knowledge of biomedical risk factors but also the risk factors they derive from their particular cultural background. Moreover, this may be as true for Anglo women, who varied in important ways from physicians, as it is for Latinas.

Conclusion

This research is meant to contribute to an anthropology of biomedically defined diseases. As societies increasingly consist of people who cross political

and cultural borders, anthropological research on intracultural and intercultural variations such as those presented here becomes crucial. Immigrants can, as we found, perceive the causes for diseases such as breast and cervical cancer in ways that are fundamentally contradictory to natives and physicians in the same area. Even when there is agreement on specific risk factors, such as the risk posed by multiple sexual partners, the underlying logic for the belief can differ. For Latino immigrants, multiple sexual partners resonated with moral concerns, whereas for physicians it raised the probability of infection by sexually transmitted diseases.

Women with radically different views of risk factors for cancer are not necessarily presenting random, idiosyncratic misconceptions. They can form an integrated set of agreed upon beliefs, as was the case among Mexican and Salvadoran women and their views of breast cancer risk factors. Moreover, people in multicultural settings can integrate beliefs from various sources. Chicanas agreed on a coherent model of risk factors for both breast and cervical cancer even though they were including beliefs common to both Mexican and Anglo women.

These findings were possible because we examined both what the women said (qualitative data) and their responses to the systematic data collection technique of ranking (quantitative data). Combining analytical methods in this way is a significant difference from earlier work, which has tended to focus on either qualitative or quantitative data. What our findings may mean for the practice of medicine and use of medical services requires further research. We hope, however, that our methods and findings will contribute to anthropological research on diseases in culturally complex settings.

NOTES

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1. "Latino" and "Latina" are used here rather than "Hispanics." Our usage reflects our own bias because "Latino" is a term widely used on the West Coast. A benefit of this usage is that the term "Latina" is feminine and refers to a woman of Latin American ancestry. "Latina" is less cumbersome than "Hispanic women."

2. In a study of Mexican women's health behavior, McClain (1977) found that both modern-oriented and traditionally oriented women conceptualize disease etiologies and disease processes in traditional cognitive models, even though modern-oriented women participate fully in modern medical systems. This suggests that behavioral change proceeds faster than cognitive change; in this case the discrepancy was attributed to modern medical practitioners' not discussing disease etiology with their clients.

3. Between 1980 and 1990, the Latino population grew by 53 percent, whereas the total U.S. population grew by 9.8 percent (U.S. Bureau of the Census 1989:2; 1991b:1-2).

4. According to Muir et al. (1987), Latinas in Los Angeles had a cervical cancer rate of 18.5 per 100,000 women per year, compared with 14.1 for African American women and 8.2 for Anglo women. The cumulative risk over a lifetime for Latinas was 1.9, compared with 1.4 for African American women and 0.8 for Anglo women.

5. The mean competency for breast cancer rankings with all groups included was .40, s.d. = .23, ratio = 1.2 to 1, with negative competency values.
6. The first and second principal components account for 70 percent of the variation in the data, a high percentage for this type of analysis.
7. The mean competency for cervical cancer rankings with all groups included was .45, s.d. = .26, ratio = 2.4 to 1, with negative competency values.
8. Mexicans' mean competency on cervical cancer risk factor rankings was .39, s.d. = .18, ratio = 1.6 to 1. For Salvadorans, it was a mean competency of .49, s.d. = .20, ratio = 2.8 to 1.

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