

## **Beliefs about AIDS in five Latin and Anglo-American populations: the role of the biomedical model**

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**ABSTRACT** *This paper focuses on variability in beliefs about AIDS among Latin Americans, as compared with middle class Americans. Four geographically dispersed groups of Latin Americans were chosen for study as well as a middle class, largely Anglo-American population. Coherent sets of beliefs were found at each site, and despite tremendous variability among the five populations, beliefs were remarkably similar across sites. The biomedical model is widely shared, and the critical variable in the extent to which it is understood is community prevalence of AIDS.*

### **Introduction**

This paper focuses on variability in beliefs about AIDS among Latin Americans, as compared with middle class Anglo-Americans. Four geographically dispersed groups of Latin Americans were chosen for study: Guatemalans in Guatemala; Mexicans in Guadalajara, Mexico; persons of Mexican descent in Edinburg, Texas (on the Texas-Mexican border); and Puerto Ricans in Hartford, Connecticut. In addition, a 'control' population of middle class, largely Anglo-Americans living in Tampa, Florida was studied. The groups chosen for study thus differ in ethnic background and geographic location, as well as prevalence of AIDS within each population.

Comparative studies of beliefs about illness are a useful way of testing key assumptions of medical anthropology. The focus of much research in this field

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TABLE I. Prevalence of AIDS per 100,000 in the populations under study.

Population	Cumulative cases	1994 rate
Guatemala	711 (through 12/1995)	1.1
Mexico	26,660 (through 9/1995)	4.4
Texas	33,002 (through 6/1995)	32.4
Connecticut	6461 (through 6/1995)	39.8
Florida	48,138 (through 6/1995)	56.5

Sources: Leon, 1996; CDC, 1995

has been on the elucidation of the extent to which socio-cultural variables influence beliefs about illnesses. The approach taken in this study of comparing beliefs in groups that differ greatly in many of these variables makes it possible to discern exactly what role these types of variables play in accounting for distribution of beliefs about illness, and in the case of AIDS, the extent of misinformation.

## Background

AIDS was chosen for study for a number of reasons. First, it is a relatively new illness, now only in its second decade of existence as a public health threat. Most of the information about AIDS has been disseminated by public health authorities, and the basic messages have been quite similar. On this basis, it could be hypothesized that beliefs about causes, symptoms, and treatments of this illness would be quite similar in all of the five populations studied.

On the other hand, experience with the disease (prevalence) varies greatly across geographic regions (Table 1), as do the socio-demographic characteristics of the populations. Although the picture is changing as a result of new treatments, AIDS is usually fatal, with no curative treatment. As such, many of those afflicted have sought a wide variety of alternatives to biomedical therapies in the hopes that something might prove effective. Therefore, it could be hypothesized that there may be a variety of home remedies for the treatment of AIDS, as is the case for diabetes, particularly in Latin American cultures which have strong folk healing traditions. For example, Rivera (1990) found that while neither Mexican folk healers (*curanderos*) nor owners of *botanicas* (folk remedy stores) in the United States felt that they could cure AIDS, two of the three *curanderos* interviewed in Mexico did feel that they could cure AIDS using herbal remedies.

It is often assumed that the beliefs of middle class Anglo-Americans about most aspects of health and illness are more similar to those of health care providers than are the beliefs of minority and immigrant populations. However, in a study of understanding of the domain of mental health and illness, Baer

(1996) found that the beliefs of middle class suburbanites were more similar to those of Mexican-American migrant farmworkers than they were to those of mental health professionals. But in relation to AIDS, a number of studies have found that Hispanic/Latino participants are less knowledgeable about HIV/AIDS than are Anglo- or, frequently, African-American participants (DiClemente *et al.*, 1988; Aruffo *et al.*, 1991, 1993; Nyamathi *et al.*, 1993; Flaskerud & Nyamathi, 1989; Sonenstein *et al.*, 1989; LeBlanc, 1993; Amaro, 1991) and are more likely to have misconceptions about casual transmission and degree of sexual risk (DiClemente *et al.*, 1988; Aruffo *et al.*, 1991; Nyamathi *et al.*, 1993; LeBlanc, 1993; Peruga & Celentano, 1993; Snyder & Rouse, 1992; Amaro, 1991).

Knowledge gaps in Hispanic/Latino populations are of particular concern given that while Hispanics account for only 9% of the US population, they account for 17% of AIDS cases nationally (Carrillo & Uranga-McKane, 1994). Particularly hard hit have been the largely Puerto Rican populations in the cities of the northeast, as well as in Puerto Rico itself (Amaro, 1991).

This study, then, considered three main questions:

1. Are there coherent consistent beliefs within each of the five samples, and are the beliefs similar or different across samples?
2. How biomedically 'correct' are the beliefs in each population, and to what extent can middle class Anglo-Americans be considered closer to the biomedical model in their beliefs about this illness than the Latino samples?
3. What are the implications of the findings for AIDS education programs?

## Methods

### *Setting*

Data were collected in three US and two international locales. In the United States, people were interviewed in the Mexican-American community of Edinburg, Texas, the mainland Puerto Rican community in Hartford, Connecticut, and a middle class non-Ladino community in Tampa, Florida. In two other countries, people were interviewed in the rural Latino community of Esquintla, Guatemala, and in urban Mexico (Guadalajara). A multi-stage random sampling design was employed to ensure representative samples in each community, for a total of approximately 40 adults at each site. The inclusion/exclusion criteria were that the respondent be an adult, know of the illness, in Edinburg self-identify as being of Mexican descent, and in Connecticut, self-identify as being of Puerto Rican descent. Interviews were conducted by local research assistants from each community in dialects appropriate to the community. In Texas and Connecticut, interviews were conducted in English, Spanish, or a combination according to the preference of the informant. In Tampa, interviews were conducted by graduate students as part of a class project (co-authors TL, JN, RP, BR, JR, SM, VM).

The Mexican-American interviews were conducted in Edinburg, Texas,

which is located in the lower Rio Grande Valley. Edinburg is within 15 miles of the US–Mexico border, and there is a great deal of movement back and forth across the border. Eighty per cent of the residents of the area are Mexican–American.

Hartford, Connecticut is a medium sized city in the northeast of the United States. About one third of its population is Hispanic, and 47% of the children in the public school system are Hispanic. Interviews were conducted in the two census tracts which house the majority of the Puerto Rican population.

The Guatemalan interviews were conducted among Spanish-speaking Ladinos in rural towns on the Pacific Coastal Plain in the Department of Esquintla. The area is agricultural; principal crops are cotton and sugar cane.

The Mexican interviews were administered in Guadalajara, a modern industrial city with a population of approximately 3 million people. Residents of Guadalajara are from both rural and urban backgrounds and are predominantly mestizo. The interviewing took place in three neighborhoods, one middle class, one working class, and one poor; all interviewees were Spanish-speaking mestizos.

Tampa is a medium sized city in west central Florida. Unlike many other areas of Florida, the economy is not based on tourism or retirees; a major contributor to Tampa's economy is its large port. Interviews were conducted in two census tracts in the northern part of the city, selected because of their middle class income levels (household incomes of approximately \$30,000 per year).

### *Instrument development*

Questionnaires were developed from initial key informant interviews at each of the four Latino sites. Qualitative data were gathered on the perceived causes, symptoms, and treatment of AIDS using open-ended interviews and free-listing techniques (Weller & Romney, 1988). On the basis of these data (using responses mentioned by at least 10% of the sample), as well as a range of symptoms from the Cornell Medical Index (Brodman *et al.*, 1949; Finkler, 1981), and the anthropological literature, a questionnaire was developed. The wording of the items was balanced so that approximately half were positive and half were negative. The questionnaire contained 124 yes/no questions: 40 pertaining to causes of AIDS, 60 to symptoms and 24 to treatments. The questionnaire also included basic demographic data on the respondent, as well as questions about experiences with the illness. The questionnaire was translated into the dialect of Spanish or English spoken at each particular site.<sup>a</sup>

Qualitative data were not collected in Tampa and used to construct the questionnaire. Thus, there may be additional beliefs about the causes, symptoms, and treatments of AIDS seen in this population which were not reflected in the formal questionnaire. Nevertheless, the Tampa sample is useful to see similarities and differences between that population and the other four groups.

### Data analysis

Responses to the 124 questions about AIDS beliefs were aggregated and analyzed using consensus analysis (Romney *et al.*, 1986; Batchelder & Romney, 1988). This analytic procedure accomplishes three things. It determines whether the responses of a group of individuals indicate a 'consensus' in beliefs. It thus establishes whether or not a sufficient degree of homogeneity in responses is present that would enable the researcher to talk about a single set of shared 'cultural beliefs.' The analysis is somewhat analogous to factor analysis of people. In factor analysis, items on a questionnaire are grouped on the basis of an underlying structure; in consensus analysis, individuals in a sample are grouped based on their responses. If all of the individuals are 'factored' into one group (i.e. have similar answers and hence there is a single factor structure), then the consensus model may be used. The consensus model is only appropriate for high concordance data (Weller & Mann, 1997).

Consensus analysis also estimates individual respondents' level of cultural knowledge. Cultural 'competence' scores are a function of the degree of agreement among individuals and are found by 'factoring' a matrix of person-by-person agreement coefficients. We used covariance rather than the corrected proportion of matches as an indicator of agreement because of its relative insensitivity to response bias (Weller & Mann, 1997). Competency scores range from zero to one, inclusive, and may be interpreted as the proportion of items that an individual knows or shares with the normative cultural beliefs (as assessed by the questionnaire items).

Finally, consensus analysis estimates the culturally 'correct' answers to the questionnaire, and provides a probabilistic confidence level in the classification of each (Borgatti, 1990). Responses are 'weighted' by the competence scores to obtain a Bayesian posterior probability that the answer is 'true/yes' or 'false/no.' The cumulative probability, multiplied across informants and their responses, results in the confidence level for each item. With a simple majority decision (e.g. a binomial test on a sample of 40), items with a 60%/40% or more extreme would be classified as 'yes' or 'no.' The remaining items would not be significantly different from 50/50 and thus would not be classified. The consensus model is more powerful than a majority binomial test because it uses the entire response pattern across items and individuals and it is able to determine the cultural classification of many items that would be 'unclassified' by the latter test. For our analysis, we used a stringent confidence level ( $p > 0.999$ ).

### Results

Demographic data on the populations studied are shown in Table II; there is tremendous diversity among the populations, and wide variation in personal experience with AIDS. Such variation does not suggest a great deal of intercultural agreement on the causes, symptoms, and treatments of AIDS; however, this was not the case.

TABLE II. Sample demographics.

	Guatemala	Mexico	Texas	Connecticut	Tampa
Sample size	40	39	41	33	40
Female (%)	85	100	100	52	100
Age (yrs)	38.5	40.1	38.6	36.7	53.8
Total no. children	2.9	4.8	2.2	3.0	2.1
Household size	5.4	4.9	3.7	3.3	2.7
Education (yrs)	1.3	6.7	10.3	9.8	12.4
Knows someone with AIDS (%)	13	13	41	67	34
Family member with AIDS (%)	0	8	17	18	3
Informant has/had AIDS (%)	0	5	5	6	0

The data fit the consensus model for each sample, and concordance in beliefs about AIDS was highest at the three sites within the USA. A ratio of the first to second eigenvalue of a least 3:1 is used as an indicator of good fit; all ratios exceeded 6:1, except for the Guatemalan sample (3.5:1). A detailed analysis and comparison of the four Latino samples (Trotter *et al.*, 1999) found a high degree of shared beliefs within and between the samples. The proportion of shared beliefs (the average cultural competency) was 0.48 for the Guatemalan sample, 0.55 in the Mexican sample, 0.62 in the Texas sample, 0.72 in the Connecticut sample; and 0.55 with all four Latino samples combined. This report focuses on the new sample of middle class Anglo-Americans and primarily compares their beliefs with those of the Latino North American samples. The level of shared beliefs in the Tampa sample was 0.64 and 0.56 for all five sites combined. The data thus indicate the presence of one cultural model of AIDS, with beliefs shared across the five groups.

While the majority of the respondents were female, some males were also interviewed at some of the sites. No differences were found in male or female response patterns. In addition, given that a high degree of shared beliefs was found across great educational, income and geographical ranges, it is unlikely that any kind of significant 'female' bias exists for this area of cultural knowledge.

### *Causes of AIDS*

With regard to intercultural variation, of the 40 items on the questionnaire which dealt with the causes of AIDS, there was agreement across all five sites on 29 items—or 73% of the items. Omitting Guatemala, there was agreement across the other four sites on 34 items—or 85% of the items.

The themes or concepts agreed upon by the sites (omitting Guatemala) are summarized in Table III. Sexual transmission (multiple partners and prostitutes), unprotected sex (without a condom), tattoos, and contact with blood

products (transfusions, syringes) are all recognized as risk factors for AIDS. It is not thought to be caused by inheritance, hot-cold imbalances, lack of cleanliness, poor diet, folk illnesses, dirty air or impure water.

Even though the samples tended to agree, the questions with disagreement are also of interest. Only Guatemala answered 'yes' to the question of whether AIDS was inherited; this site also answered positively to the question "Can unborn children be infected with AIDS?" The general lack of secondary education and beyond in Guatemala may be a factor in these answers; health education messages about how an infected mother can pass the virus to her unborn child may be interpreted as evidence of the 'inheritance of the illness.' Similarly, all of the other sites agreed that AIDS was caused by a virus, but in Guatemala there was no clear majority response as to whether or not AIDS might be caused by a virus. An important factor in this pattern might be that the question assumes that the respondent knows what a virus is. Another question that did not have a preferred answer for the Guatemalan and Mexican samples concerned the sharing of utensils; lack of science education and familiarity with the germ theory of disease transmission may be reflected in these answers.

Guatemala was also the only site to answer in the affirmative to the question, "Can you get AIDS from a public bathroom?" This answer may be related to people's lack of experience with public bathrooms, due to their scarcity in Guatemala. A similar lack of experience with public swimming pools may be the reason that only Guatemala was unable to reach agreement on this question, while all of the other sites answered no. Only Guatemala answered no to the question of whether getting a tattoo can give you AIDS, possibly reflecting lack of experience with this process.

Only Mexico and Guatemala answered that AIDS could be contracted by donating blood to someone else. The explanation for this may be that up until quite recently in Mexico and Guatemala, the use of disposable syringes, etc. was not common. As such, if the equipment for donating blood had not been properly disinfected, it would have been possible to contract AIDS while donating blood.

The Puerto Ricans in Connecticut were the only group that answered yes to the question, "Is AIDS a disease of young people?", probably reflecting patterns of AIDS incidence in that population. Similarly, only Connecticut knew that household bleach would kill the AIDS virus in syringes/needles, again related to the high prevalence of cases in their community which are transmitted through intravenous (IV) drug use. The only group to feel that AIDS occurs mainly in men was Connecticut, also reflecting prevalence of the disease in that population. Guatemala's lack of agreement on this question may reflect the lack of experience with the disease. Neither the Texas and Guatemala samples reached agreement on the question of whether AIDS could be caused by using drugs, possibly due to the lack of experience of these populations with IV drugs.

### *Symptoms*

A rather different pattern was seen in regard to symptoms of AIDS. Of the 60

TABLE III. Themes agreed upon by Mexico, Texas, Tampa, and Connecticut regarding the risk factors for AIDS.

Caused by:	Not caused by:
Sexual relations; many sexual relationships	Inheritance (although unborn child can get it)
Virus	Hot-cold imbalance
Prostitutes	Uncleanliness: unclean house, air pollution
Sex without condom	Spoiled food, poor diet, too much alcohol, unboiled water
Blood transfusion	Being near or clothes of an infected person
Tattoo	<i>Susto, mal de ojo</i>
Monogamy; avoid sex outside home	Public bathrooms or swimming pool
Homosexuals and prostitutes more likely to have it	Parasites or mosquitoes
Avoid syringes used by another person	Kissing
Avoid contact with blood of someone with AIDS	Lying
Does not occur mainly in women (sites disagree about whether it occurs mainly in men)	



TABLE IV. Themes agreed and disagreed upon by Mexico, Texas, Tampa, and Connecticut regarding symptoms and treatments for AIDS.

Symptoms	Treatment
+ Weight loss	+ Medicine (or die sooner)
+ Fever	+ Doctor, hospital
+ Muscle and body aches	+ Rest
+ Weakness	- Alcohol rubs, Vicks
+ More susceptible to other illnesses	- Teas (manzanilla, Yerba buena)
- Red face, red inflamed eyes	- Cactus juice
- Frequent urination	- Aspirin
- Crying, worrying, crankiness	- Sedatives
- Crave sweet things	- Relaxing
- Runny nose	- Herbalists
- Blood pressure increase, heart beats faster	- Homeopathic treatments
- Bloated stomach, constipation	No cure (if you get it you will die)
- Back pain	
- Ankles swell, chest pain	
- Numbness, tingling	

+ = agreed to be a symptom/treatment

- = agreed **not** to be a symptom/treatment

questions on symptoms, there was agreement across all five sites on 18 (30%) of the items. Omitting Guatemala, there was agreement across the other four sites on 21 (35%) of the items (Table IV). There were only three symptoms that were agreed upon by all five sites as symptomatic of AIDS: weight loss, weakness, and increased susceptibility to getting other illnesses/infections. Additionally, four of the sites also agreed upon the symptoms of fever and muscle/body aches. Although few symptoms were reported by each sample, samples with higher levels of shared cultural knowledge (the US samples) tended to report more symptoms (Table V). This suggests that more symptoms are recognized with greater cultural knowledge about the disease.

### Treatments

The pattern for treatments is similar to the pattern seen for causes. Of the 24 items on treatments, there was agreement across all five sites on 15 (63%) of the items. Omitting Guatemala, there was agreement across the other four sites on 16 (67%) of the items (Table IV). The sites agreed that one should go to a doctor, rest, take medicine, or else they might die sooner.

On the questionnaire items for which there was not inter-group agreement (Table V), Tampa disagreed with both the other two US samples on several items. The Tampa sample reported that prayer and healthy foods would help AIDS; and all samples except the Tampa sample believed that people will live only a few years after contracting AIDS. The Tampa and Texas samples believed that a positive attitude would help AIDS, while the Connecticut sample

TABLE V. AIDS: areas of disagreement.

	Gua	Mex	Tex	Tpa	Con	
Causes	+	-	-	-	-	Inherited
	+	-	-	-	-	From public bathroom
	+	+	-	-	-	Donating blood
	-	-	-	-	+	Disease of young people
	-	-	-	-	+	Bleach kills virus
		+	+	+	+	Caused by a virus
		+		+	+	Caused by using drugs
		-	-	-	-	Public swimming pool
	-	-	-	-	+	Occurs mainly in men
					-	Sharing utensils
	-	+	+	+	+	Getting a tattoo
Symptoms	-	-		-	-	Disorientation
	-	-		-	-	Fainting
	-	-	-	+	+	Chest congestion
	-	-		+	+	Mucus
	-	-		+	+	Night sweats
	-	-		-	-	Convulsions
		+	+	+	+	Fever
			+	+	+	Stay in bed
	+	-		+	+	Sore genitals
		-	+	+	+	Boils
	-	-	+	+	+	Rash
	-	-	-	+	+	Sore throat
	-	-	-	-	+	TB
	-	-	+	+	+	Pneumonia
	-	-	+	+		Spots on skin
	-	-	-	+	+	White spots in mouth
		-	-	-	+	Nerves
	-	-	-	+	+	Cough up blood
	-	-	-	+	+	Cold won't go away
	-	-	+	+	+	Slow healing wounds
	-	-	-	+	-	Wheezing
	-	-	-	+	-	Gums bleed
	-	-	-		-	Blood in stool
	-	-	-		-	Hoarseness
	-	-	-		-	Stomachache
	+	-	-	+	-	Dark circles under eyes
	-	-		+	+	Diarrhea
	+	+		+	+	Paleness
	-	-	+	+	+	Fever and chills
	-	-		-	-	Itchy skin
	-			-		Hair loss
	-	-	+	+		Vomiting
+		+	+	+	Loss of appetite	
	+	+	+	+	Muscle aches	
-	-	+	+		Nausea	

TABLE V. AIDS: areas of disagreement. (continued)

	Gua	Mex	Tex	Tpa	Con	
		-	-		-	Dry mouth
	+		-	+	-	Headache
		-	-	-	-	Inflamed eyes
	-	-		+	+	Cough
	-		-	+	-	Shortness of breath
		-	-	-	+	'Nerves'
	-	-	-	+	+	Persistent cold
	+		-	-	-	Yellow skin
Treatments						
		-		+	-	Healthy foods
			+	+	+	Stopping using drugs
		+	+		+	Hospital
		+	+	+	+	Rest
	-	-	+	+	-	Positive attitude
		-	-	+	+	Vitamins
	+	-	-	+	-	Prayer
		-	+	+	+	Medicines to help treat it
	+	+	+	-	+	Only will live a few years

did not. The Tampa and Connecticut samples also thought that vitamins would be helpful.

There were a number of questions asked about folk treatments for AIDS, including use of camomile tea, spearment tea, eucalyptus balm, cactus juice, and prayer. All sites answered no to these questions, with the exception of the question about prayer. Tampa and Guatemala were the only two sites that agreed on the value of prayer to treat AIDS. Tampa respondents were primarily Protestants; in Guatemala, the religions in the area sampled are both Protestant and Catholic. In contrast, Mexico and Texas populations are mostly Catholic; Evangelical Protestants may be more likely to feel that prayer is effective in the treatment of this type of illness. Belief in spiritualism among Puerto Ricans may be negated by the familiarity of this population with the realities of the prognosis for AIDS.

The biomedical perception of AIDS was noted in the responses to questions about appropriate providers for the treatment of AIDS. All sites agreed on the use of MDs; no sites felt that homeopathic healers or herbalists had anything to contribute in treating the disease. Opinion was divided on the use of hospitals, with Connecticut, Texas, and Mexico agreeing that they had value, while Tampa and Guatemala failed to reach agreement. In the latter case, this was probably due to the general lack of such facilities in much of Guatemala. Site-specific realities were most likely responsible for other patterns of response to biomedically oriented questions about treatments. For example, Mexico answered no, and Guatemala did not have a clear majority response about

medicines to treat AIDS, reflecting the differing reality in those two locations concerning the lack of availability of medical resources such as AZT.

#### *Comparisons with the biomedical model*

Given the respondents' perception of AIDS as being within the biomedical realm, the data were also analyzed in terms of the extent to which beliefs were concordant with the biomedical view of this illness. Biomedically 'correct' answers to 52 of the questions on the questionnaire were determined using the published literature (Thomas *et al.*, 1989; Marin & Marin, 1990; Gabel *et al.*, 1994; Institute of Medicine, 1986; Redfield & Burke, 1988; US Public Health Service, 1993). Table VI indicates that the greatest degree of disagreement with the biomedically identified causes, symptoms, and treatments of AIDS was seen in Mexico and Guatemala (50% incorrect); the least amount of disagreement was seen in Connecticut (8% incorrect). However, further analysis of the data indicates that most of the 'wrong' answers were concerning symptoms. With regard to AIDS causality, only Connecticut was completely biomedically correct on all questions. However, Tampa and Texas missed only those questions related to incidence in young people and men, as well as the question related to bleach as a disinfectant of needles and syringes. Mexico was in error on donating blood, as was Guatemala; however, their answers were correct for their situations. In addition to these questions, Guatemala was also 'wrong' on several questions related to lack of scientific knowledge and local situation (public bathrooms, viral cause, inheritance, and sharing utensils with a person with AIDS). In the treatment section, only Mexico and Guatemala answered any questions 'wrong'; in both cases, they were correct about the lack of availability of medicines for AIDS in their situations.

#### **Discussion and conclusions**

The populations studied were very different from each other in terms of basic demographics and personal experience with AIDS. Nevertheless, there were shared beliefs about AIDS both within and between the five populations studied. Areas of disagreement were seen primarily in areas where the questions were inappropriate for the realities or understandings of people at a particular site and/or where local realities created a different answer for a question. This problem was greatest in Guatemala. This pattern suggests that research and educational materials be carefully adapted to site-specific conditions.

Agreement was highest on the causes of AIDS. With reference to the US samples, the Tampa and Texas samples were equally knowledgeable about causes, but were both less biomedically correct than Connecticut. Education programs need to be aware of this variation within the USA, which seems to be more related to community prevalence of AIDS than to standard demographic variables such as income, education, ethnic background, etc.

A different pattern was seen for symptoms. Although there was agreement

TABLE VI. Biomedically incorrect answers.

	(48/54) 8% incorrect CONN	(45/54) 13% incorrect TPA	(36/54) 31% incorrect TEX	(26/54) 50% incorrect MEX	(26/54) 50% incorrect GUATE
<i>Causes</i>					
Inherited					×
Public bathroom					×
Donate blood				×	×
Young people		×	×	×	×
Bleach kills virus in syringes/needles		×	×	×	×
From virus					×
Mostly in men		×	×	×	×
Utensils				×	×
<i>Symptoms</i>					
Disorientation	×	×	×	×	×
Night sweats			×	×	×
Convulsions/seizures	×	×	×	×	×
Boils				×	×
Fever					×
Stay in bed a lot				×	×
Sore genitals			×	×	
Rash				×	×
Sore throat			×	×	×
Tired eyes			×	×	
Diarrhea			×	×	×
TB with AIDS		×	×	×	×
Pneumonia				×	×
Fever and chills				×	×
Itchy skin	×	×	×	×	×
Spots on skin				×	×
Thrush			×	×	×
Headache	×		×	×	
Cough			×	×	×
Shortness of breath			×	×	×
<i>Treatments</i>					
Medicine for AIDS				×	×

within and between samples, there was a general lack of information among all groups as to the symptoms of AIDS. The beliefs of the Tampa sample tended to be more similar to those of Connecticut than to those of Texas. However, it is not clear to us the extent to which more education about symptoms is necessary for lay populations, with the important exception of those symptoms which may signal initial infection, and which should indicate that testing and safer sex precautions are warranted.

Treatments followed the trends observed for causes. Treatments other than biomedical ones were rejected; the primary perception of AIDS follows a largely biomedical model. However, for beliefs about treatments, Tampa differed from both Connecticut and Texas on a few items—the role of healthy foods and prayer. Tampa was the only site in the USA to feel that healthy foods and prayer were useful in the treatment of AIDS; Tampa was also the only US site to disagree with the question “Do people usually live only a couple of years after they get AIDS?” and to lack a clear majority response on the question “Must people with AIDS go to the hospital?” This pattern suggests that, for lay populations, there is little focus on alternative approaches to treatment of AIDS; this pattern may differ from that seen for populations who are diagnosed with HIV disease.

Essentially what we see is that all of the populations studied share a model of AIDS, and the model that they share is the biomedical model. However, this model is not equally well understood at all sites. The critical factor seems to be a function of community prevalence of AIDS; there were very few ‘cultural’ effects seen. The site with the most biomedically correct information was Connecticut, followed by Tampa, Texas, Mexico and Guatemala. Thus, correct information about AIDS was greatest in the population most affected by the illness; middle class Anglo-Americans are somewhat less knowledgeable and, with Guatemala, were the only groups to feel that prayer was an effective treatment for AIDS.

Our data thus agree with those of DiClemente *et al.* (1988), who found in surveys of adolescents across the US that correct responses increase with higher community prevalence of the disease. The findings of the present study do not support those of LeBlanc (1993), who suggested that populations of Hispanic origins have less knowledge about HIV/AIDS than other groups even though they are disproportionately affected by the pandemic. Some ethnic groups of Hispanic origins, such as Puerto Ricans, have greater knowledge than any other group we studied. And with the exception of the symptom ‘headache,’ any incorrect answers found in Connecticut were seen at the other sites (including the non-Hispanic population sampled in Tampa) as well. Similarly, misinformation at the Tampa site was shared with all of the other sites (with the exception of the largely biomedically correct Connecticut). Texas adds a few more incorrect answers and shares those with Mexico (and Guatemala). The same pattern is seen for Mexico and Guatemala.

We can conclude that there is a coherent set of beliefs at each site. Beliefs are remarkably similar across sites, with the greatest disagreement and lack of knowledge found in the area of symptoms. Ethnic variability is an important issue to be considered in health education about AIDS among Hispanics; specifics of the Mexican and Guatemalan situations were important in influencing perceptions, as was the differential experience with AIDS in the Connecticut sample. In addition, it cannot be assumed that middle class Anglo-Americans are necessarily closer to the biomedical model in their beliefs about AIDS than are members of other ethnic groups. Finally, it appears that

patterns of incorrect information are not randomly distributed across sites. With the exception of biomedically incorrect but country-specific items, any questions which were missed by the Connecticut sample were missed by all of the others as well, and clearly should be the focus of educational campaigns in all of these areas.

A combination of both targeted and general population educational efforts regarding AIDS would probably be most effective (Sumartojo *et al.*, 1997). Targeted educational efforts focus on individuals and groups at high risk for AIDS (men who have sex with men, prostitutes, IVDUs). A general educational effort, however, can reduce risk across a much larger population, resulting in a greater overall reduction of disease even though many individuals are at low risk. These data indicate that media coverage of AIDS, whether intentional or unintentional, have been moderately successful in educating diverse populations about AIDS. Even rural Guatemalans have heard of the disease and most are aware that it can be transmitted sexually or by contact with contaminated blood products. Furthermore, the predominant cultural beliefs across the five samples indicate that most know the disease is not spread by casual contact and that condoms offer some protection against sexual transmission. Although the risk factors are most widely recognized, it is less widely known that drug use (specifically, injecting drugs) is a risk factor and that common household bleach can be used to clean a drug user's syringe (or for that matter, any syringe—even those used for home or pharmacy injections). Even less well recognized are the signs and symptoms indicative of the disease. This latter point may be because of lack of familiarity with the disease itself (low community prevalence) or because of the variety of opportunistic diseases that can occur in an immunosuppressed individual. Overall, AIDS beliefs are shared across very diverse groups and are concordant with the biomedical model of the disease. Nevertheless, 'knowledge' levels about the disease differed among samples, indicating that general educational efforts are especially valuable in groups with low to moderate risk.

Finally, with respect to the importance of socio-cultural variables in explaining patterns of beliefs about illness, in the case of AIDS, these variables seem to be of little importance. The biomedical model is widely shared and the critical variable in the extent to which it is understood is the extent of direct experience of a population with AIDS. However, specifics of the lifestyle, economic situation, etc. of a population may be important in determining the extent to which certain aspects of that model will be shared and/or understood. Finally, it is critically important in research about illness beliefs to recognize ethnic differences within the standard categories used for census purposes; the label Hispanic is of little use in understanding distribution of beliefs and correct information about AIDS. In fact, in this case, such use serves to not only obscure critical differences in beliefs between Puerto Ricans and Mexican-Americans but also to de-emphasize the important basis of the similarities of understanding of AIDS shared by Anglo-Americans in Tampa and Mexican-Americans in Texas.

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## Notes

(a) A copy of the questionnaire (English and Spanish) is available from S. C. Weller. Most questionnaire items appear (in English) in Trotter *et al.* (1999).

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