



DIFFERENCES IN AIDS KNOWLEDGE AMONG SPANISH AND ENGLISH SPEAKERS BY SOCIOECONOMIC STATUS AND ABILITY TO SPEAK ENGLISH

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ABSTRACT Previous studies have shown that Hispanics know less about acquired immunodeficiency syndrome (AIDS) than non-Hispanics, but few studies have examined the role of language or socioeconomic status. We used data from a 1998 population-based sample survey of New Jersey adults to compare levels of AIDS knowledge among English and Spanish speakers, taking into account educational attainment and ability to speak English. Spanish speakers, especially those who filled out the questionnaire in Spanish, knew less about AIDS transmission, although their general AIDS knowledge was comparable to English speakers with similar educational attainment. Differences between Hispanics who speak primarily English and those who speak primarily Spanish underscore the idea that linguistic and cultural barriers vary within a cultural group and should be taken into account in the design of AIDS education programs.

KEY WORDS Acquired Immunodeficiency Syndrome, Knowledge, Attitudes and Practices, Educational Attainment, Ethnic Groups, Hispanic Americans, Knowledge, Language, Practices.

INTRODUCTION

In 1997, the incidence of acquired immunodeficiency syndrome (AIDS) among Hispanics was nearly four times that of whites, and the gap continues to widen.¹ As Hispanics are projected to comprise one-quarter of the US population by the year 2050,² understanding the factors that affect AIDS knowledge and risk behaviors in these groups is critical. Previous studies have shown that AIDS

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knowledge is less among Hispanics than among others.³ Although lower socioeconomic status (SES) has been implicated partially for lower knowledge among Hispanics,^{4,5} language and ability to speak English may also be important. Because many Hispanics in the US either do not speak Spanish or are able to speak both Spanish and English well, it is not appropriate to equate *Hispanic origin* with *Spanish speaking*. In our sample, one-third of the Hispanics reported that they spoke English at home. Despite this distinction, few studies have investigated whether language per se is related to AIDS knowledge. One prominent exception is a recent national survey of Latinos conducted by the Kaiser Family Foundation,⁶ although the survey did not distinguish the effects of educational attainment from those of language.

Language can affect AIDS knowledge through either linguistic barriers or cultural differences. In the US, people who speak or read a language other than English may face linguistic barriers to accessing AIDS information, much of which is communicated in English.³ Some studies have demonstrated that Hispanics who primarily speak English have better health service coverage and better self-reported health.³ Different cultural beliefs and practices can affect willingness or ability to obtain AIDS information.^{4,7} For instance, many Spanish speakers do not even perceive themselves at risk for AIDS.^{3,8}

Data from a 1998 population-based sample survey of New Jersey adults were used to compare levels of AIDS knowledge among English and Spanish speakers, taking into account differences in educational attainment and ability to speak English. In 1998, New Jersey had the fifth highest AIDS prevalence rate in the country.⁹ Because New Jersey is more diverse ethnically and has a higher share of immigrants than many states, its substantial Spanish-speaking population provides a useful setting for the study of language differences in AIDS knowledge. Our analysis also lays the groundwork for studies of cultural and linguistic barriers that hinder learning about AIDS and other health conditions.

DATA COLLECTION

Data were collected from New Jersey adults in the fall of 1998 using a questionnaire adapted from the 1992 National Health Interview Survey, Supplement on AIDS Knowledge and Attitudes.¹⁰ Respondents were selected using quota sampling to obtain a sample that was representative of the state as a whole in terms of age, gender, and race. The study protocol was approved by the Committee on Human Subjects at Rutgers University, New Brunswick, New Jersey.

Data were collected by Rutgers University public health students, who distributed a consent letter and questionnaire to prospective subjects in public locations

throughout New Jersey. No incentives were offered to prospective respondents, although the consent letter emphasized that their participation would be valuable because it would contribute to the understanding of patterns of AIDS knowledge among adults like them. After reading a consent letter available in both English and Spanish, respondents filled out a two-page, self-administered questionnaire in their choice of English or Spanish. The consent letter reassured prospective respondents that their responses would be kept completely confidential, and names were not collected on the questionnaire. Survey documents were translated into Spanish and then reverse translated by a different researcher into English. Because the questionnaire was in written form, the sample likely under-represents persons who do not read well. Comparison with 1990 census data revealed that, compared to all New Jersey adults, our sample over-represented racial minorities and persons with more than a high school education.

This analysis included information from the 460 adults who reported that they spoke either English or Spanish at home.* We compared three groups: (1) 408 respondents who spoke English at home (of whom 23 were of Hispanic origin), (2) 32 respondents who reported speaking Spanish at home, but who filled out the questionnaire in English [abbreviated "Spanish (E)"], and (3) 20 respondents who reported speaking Spanish at home and who filled out the questionnaire in Spanish [abbreviated "Spanish (S)"]. Respondents who chose to fill out the questionnaire in Spanish were assumed to have a poorer ability to speak English than Spanish speakers who filled out the questionnaire in English. Census figures show that approximately one-third of Spanish speakers in New Jersey speak English "not well" or "not at all."¹¹

Demographic information included age, gender, race/Hispanic origin, educational attainment, and language spoken at home. General AIDS knowledge was measured by 7 questions about the characteristics of the disease, its symptoms, and the availability of preventive and curative interventions (Table I). AIDS transmission knowledge was measured by 10 questions (Table II)—4 that concerned true transmission routes and 6 that concerned ways the disease is unlikely to be transmitted (casual contact). Educational attainment was classified as less than high school (low SES), exact high school, and more than high school (high SES).

*Of the overall sample of 566, 65 persons (11.5%) did not answer the question about language spoken at home, and these people were omitted from the analysis. An additional 41 persons spoke a language other than English or Spanish. Because the questionnaire was not translated into any of those languages, speakers of other languages were not included in this analysis.

TABLE I Percentage of Respondents Answering General AIDS Knowledge Questions Correctly, by Language Spoken at Home and Ability to Speak English, New Jersey, 1998

General AIDS Question*	Language Spoken at Home/ Language Used on Questionnaire			Chi Square	(P)
	English/ English	Spanish/ English	Spanish/ Spanish		
Heard AIDS called HIV? (Y)	94.3	93.8	90.0	0.9	.63
AIDS reduces body's natural protection (T)	93.1	87.5	65.0	20.2	.000
There is no cure for AIDS at present (T)	91.4	84.4	40.0	50.9	.000
AIDS is an infectious disease (T)	88.0	78.1	80.0	3.4	.18
Someone with AIDS can look and feel OK (T)	89.0	78.1	55.0	21.3	.000
Vaccine available to prevent AIDS? (F)	81.6	75.0	65.0	4.0	.14
Someone can have the AIDS virus but not have the disease AIDS (T)	74.8	56.3	50.0	10.3	.006
Mean percentage of questions correct†	87.5	79.0	63.6	20.5	.000

*Correct answer to the question is shown in parentheses. Y = yes; T = true; F = false.

†Test for difference based on analysis of variance. Reported statistic is the *F* statistic with 2 degrees of freedom.

TABLE II Percentage of Respondents Answering AIDS Transmission Questions Correctly, by Language Spoken at Home and Ability to Speak English, New Jersey, 1998

Mode of Transmission	Language Spoken at Home/ Language Used on Questionnaire			Chi Square	(P)
	English/ English	Spanish/ English	Spanish/ Spanish		
Likely modes of transmission					
Sexual intercourse with an infected person	93.6	87.5	95.0	1.9	.39
Sharing needles for intravenous drug use	92.4	90.6	65.0	17.6	.000
Pregnant mother to baby	89.5	75.0	80.0	7.2	.03
Blood transfusion from infected person	87.5	81.3	60.0	12.5	.002
Mean percentage of "likely" questions correct*	91.7	83.6	75.0	8.3	.000
Unlikely modes of transmission					
Working near someone with the AIDS virus	81.6	75.0	35.0	25.4	.000
Using public toilets	66.4	53.1	30.0	12.7	.002
Eating in a restaurant where the cook has AIDS	61.3	50.0	35.0	3.7	.04
Being coughed or sneezed on	57.8	50.0	25.0	8.8	.01
Sharing plates, cups, or utensils	56.4	46.9	25.0	8.3	.02
From an infected medical provider	35.0	34.4	25.0	0.8	.65
Mean percentage of "unlikely" questions correct*	59.8	51.6	29.2	8.2	.000
Mean percentage of questions correct*	72.1	64.4	47.5	11.7	.000

*Test for difference based on analysis of variance. Reported statistic is the *F* statistic with 2 degrees of freedom.

METHODS

Differences across groups on each of the AIDS knowledge questions were compared using the chi-square statistic. Differences in mean knowledge scores were assessed using the *t* test for difference in means.

RESULTS

In our sample, 38% of Spanish speakers chose the Spanish questionnaire. Consistent with national figures,¹² we found substantial socioeconomic disadvantage among both Spanish-speaking groups, particularly the Spanish (S) respondents. Fewer than 7% of English speakers in our sample had not completed high school, compared to nearly 20% of Spanish (E) and 42% of Spanish (S) speakers. Conversely, more than two-thirds of English speakers had at least some college, versus about half of Spanish (E) and one-tenth of Spanish (S) speakers. There were no statistically significant differences in the gender distribution or mean age for the three language groups (not shown).

With the exception of the question about whether "someone can have the AIDS virus but not the disease AIDS," most respondents answered each of the general AIDS knowledge questions correctly (Table I). For example, more than 90% of respondents in each of the three language groups had heard AIDS called HIV (human immunodeficiency virus). However, only 65% of the Spanish (S) group knew that AIDS reduces the body's natural protection against disease, compared to more than 90% of English speakers and nearly as many Spanish (E) respondents ($P < .01$). Other topics that showed large and statistically significant knowledge deficits among Spanish (S) respondents included that "someone with the AIDS virus can look and feel OK," that "there is no cure for AIDS at the present," and that "someone can have the AIDS virus and not have the disease AIDS" (all $P < .01$).

Overall and within each educational attainment group, English speakers had the highest general AIDS knowledge scores (Fig. 1). Spanish (E) respondents scored higher than Spanish (S) respondents. English speakers answered an average of 88% of the general AIDS knowledge questions correctly, compared to 79% and 64% among Spanish (E) and Spanish (S) respondents, respectively. The difference between English speakers and each of the Spanish-speaking groups was significant at $P < .05$, while the difference between the two Spanish-speaking groups was significant at $P < .10$.

Within each language group, general AIDS knowledge increased with education. Among Spanish (E) respondents, for example, mean scores increased from 67% among persons who had not completed high school, to 71% among high

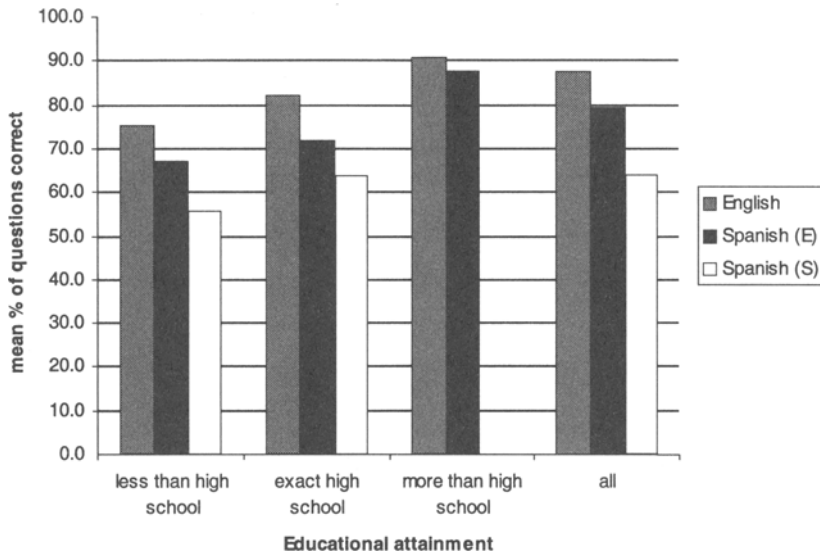


FIGURE 1 Mean percentage of general AIDS questions correct, by educational attainment and language, New Jersey adults, 1998.

school graduates, to 87% among those with at least some college. When all language groups are considered together, differences in general AIDS knowledge across levels of education are highly significant statistically ($P < .01$). Due to the small sample size within many of the language/educational attainment groups, differences are not significant statistically; however, they are consistent with the overall patterns by language and educational attainment.

Generally, respondents were more likely to understand the ways AIDS *can* be transmitted than ways AIDS *cannot* be transmitted (Table II). More than 85% of all respondents indicated that sexual intercourse, intravenous needles, blood transfusions, and materno-fetal transmission were high risk (top of Table II). Although all language groups scored high on the question about transmission via sexual intercourse, for the other three likely transmission modes, incorrect answers were more common among Spanish speakers, especially for Spanish (S) respondents ($P < .05$). For example, only two-thirds of the Spanish (E) group knew that the AIDS virus is very likely to be spread via shared intravenous drug needles, compared to more than 90% of Spanish (E) respondents.

Responses to questions about transmission via casual contact were more troubling (bottom of Table II), with fewer than two-thirds of respondents answering most questions correctly. Most striking was the widespread misconception about

transmission from a medical provider: Only one-third knew that such spread is unlikely. Differences across language groups were sizable and statistically significant for all but the medical provider question. For many questions, Spanish (S) respondents were only half as likely to answer correctly as their English-speaking counterparts. Deficits among Spanish speakers who completed the questionnaire in English were smaller and often not statistically significant.

Knowledge of likely modes of transmission differed very little across language groups within each education attainment level except for "exact high school" (Fig. 2a). For the casual contact questions (Fig. 2b), in contrast, differences across language groups persisted even within educational attainment groups. Among those with only a high school diploma, English speakers scored 49% of questions correct on average, compared to 38% and 26% among Spanish (E) and Spanish (S) respondents, respectively.

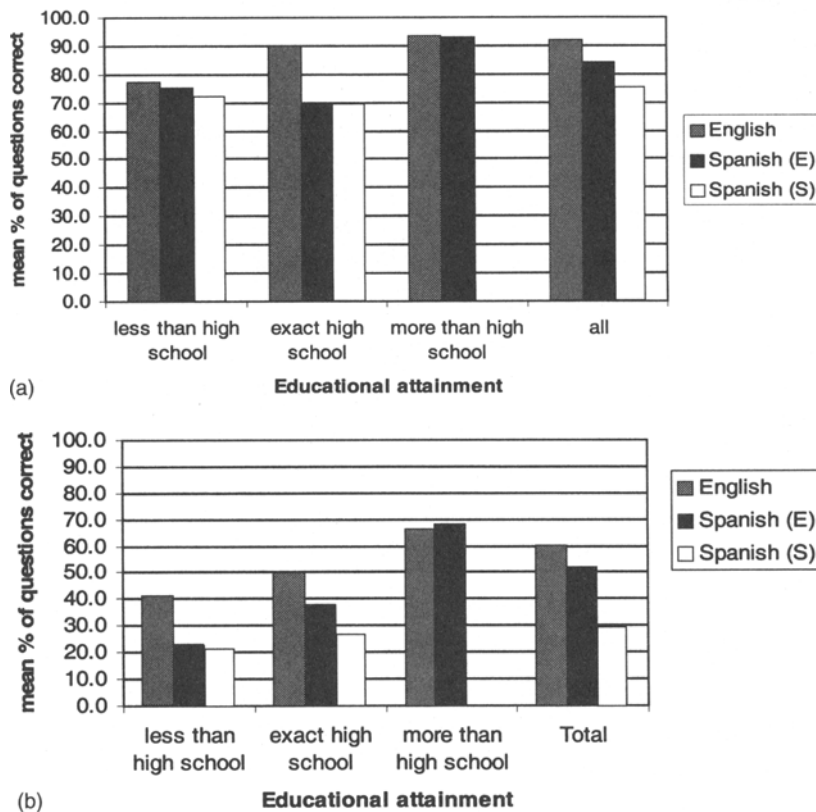


FIGURE 2 (a) Mean percentage of questions on *likely* modes of AIDS transmission correct, by educational attainment and language, New Jersey adults, 1998. (b) Mean percentage of questions on *unlikely* modes of AIDS transmission correct, by educational attainment and language, New Jersey adults, 1998.

DISCUSSION AND CONCLUSIONS

An analysis of a population-based sample survey of New Jersey adults revealed substantial differences in AIDS knowledge between English and Spanish speakers, with particularly large knowledge deficits among persons who completed the questionnaire in Spanish. A poor understanding of AIDS and how it is transmitted was also shown among persons of low SES, regardless of race, ethnicity, or language spoken.⁵ Among people with a given level of education, there was little variation across language groups in understanding of the ways AIDS is most likely to be transmitted. By including Spanish-speaking persons, our analyses extend previous studies conducted in local areas,^{13,14} as well as at the national level.¹⁵ For example, Biddlecom and Hardy¹⁶ found that SES explained most of the variation in AIDS knowledge, both overall and among Hispanics. Although their data included Spanish speakers and the interview was offered in Spanish, they did not examine the role of language in AIDS knowledge.

Given the strong association between educational attainment and AIDS knowledge scores, it is likely that illiterate adults have even poorer AIDS knowledge than the respondents in our sample, for which the data were collected with a written questionnaire. We currently are conducting a telephone survey of Hispanic adults to gain a better understanding of AIDS knowledge among persons with varying levels of literacy.

Distinguishing among language subgroups of Hispanics reveals important differences in knowledge of facts related to the availability of a vaccine or cure for AIDS, as well as in recognition of likely modes of HIV transmission.⁶ It is also important to note that many persons who classify themselves as Hispanic do not report speaking Spanish at home. Hence, members of the Latino cultural group are found in all three of the language groups compared in our study. To define the groups at greatest risk from this disease more clearly, future data collection efforts should include questions on language preference and utilization in the surveillance of AIDS/HIV morbidity and mortality.

We found substantial differences in levels of AIDS knowledge not only between English and Spanish speakers, but also between Spanish speakers grouped by ability to speak English. Our findings concur with those of Marin and Marin,³ which suggest that Hispanics who were less acculturated to US culture were more likely to have misconceptions about transmission via casual contact. The poor knowledge among Spanish speakers of most ways AIDS can be transmitted—facts that are well understood by most other adults—underscores the importance of overcoming the linguistic and cultural barriers facing the Spanish-speaking population.⁷

Because the group of persons who filled out the Spanish version of the questionnaire (an indicator of poor ability to speak English) also had a much greater share of persons with low educational attainment, materials developed for this group not only should be prepared in Spanish, but also should be designed with simpler vocabulary and wording to increase the accessibility of information. Moreover, we showed that respondents who filled out the questionnaire in Spanish were far more likely than English speakers to express uncertainty about their own risk of having or acquiring AIDS (33% of Spanish speakers compared to 11% of English speakers). They were more likely to assess their own AIDS knowledge as "a little" or "none" (24% of Spanish speakers, 13% of English speakers). Other studies have shown that Hispanics express greater interest than other groups in obtaining more information about AIDS, including talking to children about HIV/AIDS, how to discuss sex with their partners, where to go for help if exposed to HIV, how to obtain HIV testing, and the proper use of condoms.⁶ Programs conducted by Spanish-speaking staff appear to be especially effective at reaching this group to minimize both linguistic and cultural barriers.⁴ The importance of culturally sensitive AIDS education programs has been demonstrated consistently in a range of ethnic groups, including African-Americans and Asians, as well as Hispanics.^{7,17,18} In our ongoing telephone survey of AIDS knowledge among Hispanic adults, we have incorporated items on Hispanic origin and ethnicity, language use in a variety of settings, occupation, and other dimensions of SES and cultural assimilation to identify better the most useful avenues for intervention to improve knowledge and reduce risk behaviors.

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