



Published in final edited form as:

HIV Clin Trials. 2011 ; 12(1): 37–47. doi:10.1310/hct1201-37.

Belief in AIDS Origin Conspiracy Theory and Willingness to Participate in Biomedical Research Studies: Findings in Whites, Blacks, and Hispanics in Seven Cities Across Two Surveys

Stefanie L. Russell¹, Ralph V. Katz¹, Min Qi Wang², Ryan Lee³, B. Lee Green⁴, Nancy R. Kressin^{5,6}, and Cristina Claudio⁷

¹Department of Epidemiology and Health Promotion, New York University, College of Dentistry, New York, New York, USA

²Department of Public and Community Health, University of Maryland, College Park, Maryland, USA

³New York University, College of Dentistry, New York, New York, USA

⁴Office of Institutional Diversity, H. Lee Moffitt Cancer Center & Research Institute, Tampa, Florida, USA

⁵Center for Health Quality, Outcomes & Economic Research, Department of Veterans Affairs, Bedford VA, Bedford, Massachusetts, USA

⁶Department of General Internal Medicine, Boston University School of Medicine, Boston, Massachusetts, USA

⁷Community Dentistry Section, School of Dentistry, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico

Abstract

Purpose—The purpose of this study was to determine whether a belief in the AIDS origin conspiracy theory is related to likelihood or fear of participation in research studies.

Methods—The Tuskegee Legacy Project Questionnaire was administered via random-digit-dialed telephone interview to black, white, and Hispanic participants in 4 cities in 1999 and 2000 (n = 1,133) and in 3 cities in 2003 (n = 1,162).

Results—In 1999, 27.8% of blacks, 23.6% of Hispanics, and 8% of whites ($P < .001$) reported that it was “very or somewhat likely” that AIDS is “the result of a government plan to intentionally kill a certain group of people by genocide.” In 2003, 34.1% of blacks, 21.9% of Hispanics, and 8.4% of whites ($P < .001$) reported the same.

Conclusions—Whereas blacks and Hispanics were more than 3 times more likely than whites to believe in this AIDS origin conspiracy theory, holding this belief was not associated with a decreased likelihood of participation in, or increased fear of participation in, biomedical research.

Keywords

AIDS; biomedical research; conspiracy theory; health disparities; HIV; research participation

Despite the 1994 US government legislation that mandated inclusion of racial and ethnic minorities in all nationally funded biomedical research studies, minority groups remain underrepresented.¹ Reasons for this disparity that have been previously examined with varying results include fear of participation in biomedical research,^{2,3} mistrust in doctors/scientists, mistrust in the US government,⁴ perceived racism,⁵ lack of awareness and/or knowledge of the availability of clinical trials,^{3,6} and knowledge of past research abuses, including the US Public Health Service (USPHS)-Tuskegee Syphilis Study.^{2,7-12}

An additional, underexplored potential explanation for the lack of participation in biomedical research by racial and ethnic minorities in the United States may be a belief in conspiracy theories, specifically regarding the origin of AIDS and the role of government in the HIV epidemic, which have been shown to be held by a substantial proportion of persons in these minority groups.¹³ Although AIDS conspiracy beliefs have been shown to be associated with health-damaging behaviors, including inconsistent condom usage and greater numbers of sexual partners,^{14,15} and despite persistent reported racial/ethnic disparity in biomedical research participation^{4,16-18} and the documented popularity of conspiracy theories regarding the origins of AIDS in minority populations,^{13-15,19-30} to date only one study has examined the relationship between belief in conspiracy theories of the origin of AIDS and willingness to participate in biomedical research studies.³¹ In this study, the relationship of misconceptions about HIV and HIV vaccines to willingness to participate in HIV vaccine research trials was investigated among a group of 220 community college students in Atlanta, Georgia. Racial minority students were more likely than white students to believe that “the AIDS epidemic was caused by a government conspiracy.” Belief in this statement was unrelated to willingness to participate in research. However, it was unclear whether results varied by race/ethnicity. Also, belief in AIDS origin conspiracy was not analyzed separately from other “AIDS misconception” questions, but as part of a scale. It is uncertain to what extent the results of this previous study might be applicable to the broader question of willingness to participate in biomedical research studies in general, or to other populations, given the narrow sampling framework (ie, the inclusion of only white, African American, and Asian college students) and the lack of demographic information provided about the participants of this study (eg, age, socioeconomic status).

The goals of the present analyses were as follows: (1) to examine and compare the proportion of blacks, whites, and Hispanic participants in 2 large, multicity population-based cohorts who believe that the origin of AIDS is a government conspiracy (“AIDS origin conspiracy theory”); (2) to determine which demographic factors within each group are related to belief in AIDS origin conspiracy theory; and (3) to evaluate whether belief in AIDS origin conspiracy theory is related to an expressed fear of participation and/or a decreased likelihood of participation in biomedical research within each racial/ethnic group. We hypothesized that blacks and Hispanics would be more likely to report a belief in AIDS origin conspiracy theory, compared with non-Hispanic whites, and that believing in AIDS origin conspiracy would be related to fear of participation and likelihood of participation in biomedical research studies, regardless of racial/ethnic identification.

METHODS

The data for this report were obtained by the repeated use of the Tuskegee Legacy Project (TLP) Questionnaire administered in 2 separate random-digit-dialed (RDD) telephone surveys conducted in a rigorous and similar fashion in 1999 and 2000 in 4 US cities and in 2003 in 3 US cities. The 60-item, 25-minute-long TLP survey was developed via pilot studies conducted from 1994 to 1997 by a multidisciplinary, multi-university research team, and its design, including the rationale for the selection of questions and cities, has been described previously.² Questions were initially drawn from other studies, and the survey was

extensively piloted with members of the target population and refined over time.² In late 1999 and early 2000, the TLP Questionnaire was administered by the Survey Research Unit of the University of Alabama to targeted populations of noninstitutionalized self-reported blacks, whites, or Hispanics (of either race) aged 18 years or older living in households with working telephones in Birmingham, Alabama; Tuskegee, Alabama; Hartford, Connecticut; and San Antonio, Texas. The RDD sample of households used a simple random sample in each of the cities and was partially screened for nonworking or business numbers. The goal was to achieve the completion of 25-minute telephone interviews with 900 adults in the following groups: (1) 300 blacks (100 in Hartford; 100 in Birmingham; 100 in Tuskegee); (2) 400 whites (100 in Hartford; 100 in Birmingham; 100 in Tuskegee; 100 in San Antonio); (3) 100 Hispanics of Puerto Rican descent (Hartford); and (4) 100 Hispanics of Mexican-American descent (San Antonio). The primary sampling unit for the calling area was the Central Office Code, the 3-digit telephone exchange used for local calling areas, that provided a concise area for geographic exposure and increased the likelihood of contacting “households” through RDD.

In 2003, the TLP Questionnaire was administered by ORC Macro, a US-based international opinion research corporation. The survey sample for this study was drawn from the total noninstitutionalized adult populations of persons over the age of 18 residing in telephone-equipped dwelling units in New York, New York; Baltimore, Maryland; and San Juan, Puerto Rico. Each of the 3 sites was sampled independently, with a target number of 900 completed interviews overall and the following specific race/ethnic groups targets within each city: 300 blacks (150 in New York City, 150 in Baltimore); 300 whites (150 in New York City, 150 in Baltimore), and 300 Hispanics (150 Puerto Rican Hispanics in San Juan, 150 in New York City). The initial sample allocation across strata (within site) was based on expected yields computed using exchange incidence data. The yield of minority interviews by strata was monitored, and the mix of sample across race/ethnic strata in each replicate was adjusted, based on actual data.

Experienced, trained interviewers conducted the survey using full computer-assisted telephone interview (CATI) technology; they were supervised at all times and were randomly electronically monitored for both surveys. The 1999 and 2000 4-city TLP survey study was approved by the institutional review boards of the University of Connecticut and New York University; the 2003 3-city TLP survey study was approved by the institutional review board of New York University. Details regarding the administration of the 1999 and the 2003 TLP surveys, including rationale for selection of the cities, have been previously published.^{2,8}

Measures

The TLP Questionnaire addresses a range of issues related to the recruitment of minorities into biomedical studies, specifically, whether minorities are more reluctant to participate in biomedical research studies and, if so, why. A question in the TLP specifically explored the belief that the US government created the human immunodeficiency virus in a laboratory in order to selectively kill a specific group of people (“How likely is it that AIDS is the result of a government plan to intentionally kill a certain group of people by genocide?”). This question occurred two-thirds of the way through the questionnaire (question 42 out of 60) and was prefaced with the statement, “AIDS has killed many people in the United States and throughout the world.” Possible categorical responses to each question include “very likely,” “somewhat likely,” “don’t know or not sure,” “somewhat unlikely,” or “very unlikely.” We grouped persons who answered “very likely” or “somewhat likely” together and considered them to be “believers” in the statement and grouped those who responded “very unlikely” or “somewhat unlikely” together as “nonbelievers.” In addition, although we examined the distribution by race/ethnicity and gender of those who answered “don’t know or not sure,”

we excluded these persons from further analysis (by coding these respondents as “missing”) because we considered them to be neither true believers nor true non-believers. However, because we considered arguments that this group might “act like” either believers or nonbelievers, we tested this assumption by grouping those who stated “don’t know or not sure” first with the believers and then with the nonbelievers in order to analyze whether our recategorization appreciably changed the analysis outcome.

To measure 2 constructs, “likelihood of participation” and “fear of participation,” 2 scales were created from multiple, related questions using standard psychometric analysis techniques. Both scales, the Likelihood of Participation (LOP) scale and the Guinea Pig Fear Factor (GPF) scale, were standardized and measured on a continuous scale of 0 to 100, with a score of 0 indicating the lowest willingness to participate and the lowest fear of participation and 100 indicating the greatest willingness to participate and the greatest fear of participation in biomedical research studies. Details regarding the properties of these scales have been previously described.²

We calculated age using date of birth, and categorized age as 19 to 34 years old, 35 to 49 years old, or 50 years old or older. We classified education as less than high school graduate, high school alone or with some college, or college graduate and/or postgraduate degree. We categorized income as less than \$20,000 a year, equal to or greater than \$20,000 but less than \$75,000 a year, or greater than or equal to \$75,000. To acknowledge and account for cultural differences between the cities (ie, above and beyond simple demographic differences of respondents), the variable of “city” was included as a separate covariate in all multivariate analyses (Hartford, Birmingham, Tuskegee, or San Antonio for the survey conducted in 1999 and 2000 and New York, Baltimore, or San Juan in 2003).

Statistical Analysis

We analyzed each survey separately and then compared the findings of the 2 surveys. Because of the complex design of the 2003 3-city study, it was necessary to develop sampling weights for analysis of these data. Data from this survey were weighted separately in 3 stages, which yielded a set of analytical weights that were included in the analysis of these survey data to avoid biased estimates. We compared these estimates with analyses without using weights and report whether these estimates changed the results substantially. We tested whether effects were modified by including interaction terms for race/ethnicity with age (older than 35 vs 35 or younger), gender, education, and income in our analysis.

We first examined, descriptively, demographic characteristics of the respondents in each survey by race/ethnic group (using analysis of variance [ANOVA] and chi-square tests) and then explored, for each survey, how the distribution of responses to the question “Is AIDS the result of a government plan to intentionally kill a certain group of people by genocide?” varied by race/ethnic category (white, black, Hispanic). We then evaluated, for each survey, whether a belief in this statement was related to age, gender, education, income, or geographic location within each racial/ethnic category, using Student *t* tests (for age) and chi-square or Fisher exact tests (for gender, education, income, and geographic location). We then conducted logistic regression analyses in which we included only those who responded “likely” (ie, “believers,” very or somewhat) and “unlikely” (ie, “nonbelievers,” very and somewhat) to examine whether the belief that “AIDS is the result of a government plan to intentionally kill a certain group of people by genocide” was related to race/ethnicity, controlling for differences between the race/ethnic groups in demographics when these variables were found to vary.

To compare the relationship between belief in AIDS origin conspiracy theory and fear of participation (as measured by the GPF scale) and likelihood of participation (as measured

by the LOP scale), we used linear regression to determine whether the dependent variables, GPF and LOP, were related to the belief that “AIDS is the result of a government plan to intentionally kill a certain group of people by genocide” (dichotomized as yes/no) after first confirming that GPF and LOP were normally distributed. For each racial/ethnic category, we created a full model with demographic factors (age, gender, education, income, and geographic location) as the independent variables and predictors of the 2 dependent variables, LOP and GPF, setting the removal value at 0.10.

RESULTS

Study Sample

For both surveys, the original targeted enrollment goals were met or exceeded in each city with the exception of the Puerto Rican group in the 1999 and 2000 survey. Response rates were 70% for Birmingham, 65% for Tuskegee, 49% for Hartford, and 50% for San Antonio in 1999 and 2000, and 52% for San Juan, 51% for Baltimore, and 44% for New York City in 2003. Overall survey completion rates exceeded 90% in 1999 and 2000 and 82% in 2003. The overall final study sample for the 1999 and 2000 survey consisted of 353 blacks, 623 whites, and 157 Hispanics (116 Mexican and 41 Puerto Rican participants were grouped together as Hispanics; total $n = 1,133$), and the 2003 survey included 356 blacks, 493 whites, and 313 Puerto Rican Hispanics (total $n = 1,162$).

Demographic characteristics of the overall final study samples for each survey are shown in Table 1. Hispanic participants were younger than blacks and whites (ANOVA, $P < .001$) in each survey. In the 1999 survey, Hispanics were less likely to be men, compared with whites and blacks ($\chi^2 = 7.0$, $P = .03$); in the 2003 survey, there were no differences in gender distribution of the groups (in both the weighted and unweighted analysis). In both surveys, whites reported higher levels of education (1999: $\chi^2 = 65.6$, $P < .001$; 2003: $\chi^2 = 38.0$, $P < .001$) and higher incomes (1999: $\chi^2 = 80.7$, $P < .001$; 2003: $\chi^2 = 69.4$, $P < .001$) compared with blacks and Hispanics (both in the weighted and unweighted analyses).

Belief in AIDS Origin Conspiracy Theory

The distribution by race/ethnicity of responses in each survey to the question of whether AIDS was “the result of a government plan to intentionally kill a certain group of people by genocide” is shown in Figure 1. Patterns of responses by race/ethnic group to the AIDS origin conspiracy question were consistent across surveys. Compared with whites, in the 1999 survey, roughly 3 times as many blacks and Hispanics reported that it was “very or somewhat likely” that AIDS is “the result of a government plan to intentionally kill a certain group of people by genocide” (27.8% of blacks, 23.6% Hispanics vs 8% of whites; $\chi^2 = 80.6$, $P < .001$). In the 2003 survey, roughly 4 times as many blacks and almost 3 times as many Hispanics compared with whites (34.1% of blacks, 21.9% of Hispanics vs 8.4% whites; $\chi^2 = 80.6$, $P < .001$) reported that it was “very or somewhat likely” that AIDS is “the result of a government plan to intentionally kill a certain group of people by genocide.” In the 2003 survey weighted analysis, 4.1% of whites, 5.6% of Puerto Rican Hispanics, and 9.5% of blacks reported belief in AIDS origin conspiracy theory (Rao-Scott $\chi^2 = 61.3$, $P < .001$).

The proportion of persons who responded “don’t know or not sure” to this question was greater in the 2003 TLP survey (range, 14.1% to 32.2%) compared with the 1999 TLP survey (range, 6.1% to 12.2%). However, we chose the more conservative analysis of excluding this group from further analyses in both surveys, because including this group in the group of “believers” or in the group of “nonbelievers” did not reveal consistent demographic or other patterns regarding this group of persons, and we hypothesized that

those who responded “don’t know/not sure” were not committed to either side (ie, believing or not believing in AIDS origin conspiracy theory).

When controlling for differences in age, gender, education, income, and geographic location, we found that, compared with whites, blacks and Hispanics were still much more likely to report belief in AIDS origin conspiracy theory (1999: blacks, adjusted odds ratio (OR) 3.1; 95% CI, 2.2–4.2; Hispanics adjusted OR 3.2; 95% CI, 1.9–5.3; 2003: blacks adjusted OR 7.4; 95% CI, 4.8–11.4; Hispanics adjusted OR 3.3; 95% CI, 1.9–5.7). We found no evidence of effect modification as no interaction terms were significant in our analysis.

Demographic Characteristics and Belief in Conspiracy Theory

The relationships between demographic factors (age, gender, education, income, and geographic location) and belief in AIDS origin conspiracy theory (based on response to the question on intentional killing and genocide) within each racial/ethnic group are shown in Table 2. Gender and age were not related to being a believer in any racial/ethnic subgroup in either survey. In general, lower education and lower income levels were related to a belief in AIDS origin conspiracy within each racial/ethnic group, with the exception of income in Hispanics and education in blacks in the 1999 survey. Geographic location was not related to being a believer in any racial/ethnic with the exception of Puerto Rican Hispanics in the 2003 survey, where those living in New York were more likely to express belief in AIDS origin conspiracy theory. These results were confirmed by the weighted analysis in the 2003 survey.

Relationship of Belief in AIDS Origin Conspiracy Theory, Likelihood of Participation, and Fear of Participation

We found no significant associations in whites, blacks, or Hispanics between belief in AIDS origin conspiracy theory and GPF or LOP in either the 1999 or the 2003 TLP surveys (including the weighted analysis for the 2003 survey). We did identify a consistent relationship (ie, a significant association in both 1999 and 2003) between belief in AIDS origin conspiracy theory and an increased fear of participation in biomedical research (as measured by GPF score) among whites when we adjusted for income and education (Table 3); this was confirmed by the weighted 2003 analysis. No consistent relationships were found within the black or Hispanic groups in adjusted analyses.

DISCUSSION

We found across 2 large surveys spaced 3 to 4 years apart that blacks and Hispanics were more likely than whites to report a belief in AIDS origin conspiracy theory. However, we found that for the racial/ethnic minority groups, holding such a belief was not associated with an expressed decreased likelihood of participation in, or an expressed increased fear of participation in, biomedical research. The results of this investigation concur with many other reports that have demonstrated that AIDS conspiracy beliefs are more commonly held by blacks than by whites in the United States,^{13–15,19–28,30} and they add to the growing literature that these beliefs are likely more common in other minority racial/ethnic groups, including Hispanics. A 1990 poll by *The New York Times* reported that 29% of blacks but only 13% of whites in New York City agreed with the statement “the virus which causes AIDS was deliberately created in a laboratory in order to infect Black people.”³⁰ Herek reported that twice as many blacks as whites felt the government “is not telling the whole story about AIDS”²⁸ and reported that 5 times as many blacks as whites agreed with the statement “the government is using AIDS to kill off minority groups.”²⁷ Thomas showed that anywhere from 15% to 35% of respondents agreed with the statement “I believe AIDS is a form of genocide against the Black race,”²⁹ and Goertzel reported that 31% of blacks in

Philadelphia area believed that “the government deliberately spread the AIDS virus in the black community.”²⁶ Klonoff reported that 26.5% of blacks agreed with the statement that “HIV/AIDS is a man-made virus that the federal government made to kill and wipe out Black people,”²⁴ and a group of studies by Bogart reported that 70% of blacks agreed with the statement “a lot of information about AIDS is being held back from the public,” 50% with the statement that “HIV is a manmade virus,” and 26% with the statement “AIDS is a form of genocide against African Americans.”^{14,15} More recent studies confirm that AIDS conspiracy beliefs continue to be persistent in the black community.^{13,19–21,31} To date, only 4 studies measuring the prevalence of AIDS conspiracy theories have included data on Hispanics, the fastest growing minority group in the United States and one that is, like blacks, disproportionately affected by AIDS/HIV.^{13,21–22,26} An attempt to identify barriers to participation in clinical trials among Hispanics is important, given the disparities in HIV rates by ethnicity and their underrepresentation in biomedical research, including HIV vaccine trials.³³ Our finding that AIDS origin conspiracy theory belief is more common among Hispanics compared with whites concurs with 3 of these studies.^{13,22,26}

We used the same methodology and the same wording in 1999 and 2000 and in 2003, and we found that results across the 2 surveys were similar, although the proportion of blacks reporting agreement with our AIDS conspiracy statement was slightly higher in the more recent survey (34.1% vs 27.8% in the earlier survey). We also found that a higher proportion of persons of any racial/ethnic category reported that they were “not quite sure” in 2003 compared with 1999 and 2000 and that the adjusted odds ratios for belief in AIDS origin conspiracy theories were twice as high for blacks as for whites in 2003 versus 1999. Differences in these rates may be related to the fact that the cities sampled were different or may be due to a true secular trend, which could be related to events occurring after the first but before the second survey (eg, the September 11th attacks of 2001) or to the government administration (ie, the election of George W. Bush following Bill Clinton’s term as president). The latter may have caused some in the black community, who are statistically more likely to be members of the Democratic Party, to feel a greater disenfranchisement from the US government.

Although other surveys have found that conspiracy theory beliefs are more common in men, we failed to identify statistically significant gender differences within any racial/ethnic group. However, this study is likely to have limited power to identify differences between genders that were not large. Regarding issues of education and income, our results concur with other reports that show that lower income and education are related to belief in AIDS origin conspiracy theory.^{14,15} Because we adjusted for differences in education and income among the racial/ethnic groups, we are confident that the increase in belief in AIDS origin conspiracy theory is likely related to racial/ethnic categorization and not to differences in income, education, or other factors between groups.

To date, despite the fact that “minorities, over-represented in the HIV epidemic are underrepresented in HIV clinical trials,”³⁴ only one other study has investigated whether belief in AIDS conspiracy theories is related to participation in biomedical research.³¹ This investigation, which explored racial/ethnic differences in knowledge of and willingness to participate in HIV vaccine trials, was a cross-sectional survey of a convenience sample of 220 students attending a community college in Atlanta, Georgia. Students were asked a series of questions regarding beliefs of AIDS, including “the AIDS epidemic was caused by a government conspiracy.” Willingness to participate in an HIV vaccine trial was measured by asking respondents the following question: “After a researcher told me the details of an HIV vaccine clinical trial, I would enroll in one.” In that study, 25% of blacks versus 12% of whites stated that AIDS was caused by a government conspiracy; willingness to participate in an HIV vaccine clinical trial did not differ by race and was not associated with belief that

AIDS was caused by a government conspiracy. Our survey results are remarkably similar despite the difference in sampling methods used. Even though we also identified a widespread belief that AIDS is “the result of a government plan to intentionally kill a certain group of people by genocide,” the expressed likelihood of participation and fear of participation were not consistently associated with belief in AIDS origin conspiracy theory in blacks; in whites, only the expressed likelihood of participation was related to this belief. That earlier study, however, did not include Hispanics and included respondents drawn from a narrow segment of the population (community college students in a southern American city).

We found that among whites, the belief that AIDS is “the result of a government plan to intentionally kill a certain group of people by genocide” was directly related to fear of participation in biomedical research. Again, it is possible that because in each survey more participants were white, we had greater power to sense an effect of belief in AIDS origin conspiracy theory. The overall goal of the TLP, however, was to determine whether there is a greater reluctance to participate in biomedical studies among minorities as compared with whites and, if so, to explore the factors that might account for that observed difference. Attainment of this goal is critical to ensure that the findings from biomedical studies provide health data on the diverse populations of the United States, to assist biomedical researchers in achieving compliance with current 1994 National Institutes of Health (NIH) Guidelines for the Inclusion of Women and Minorities in Clinical Studies, and to provide empirical suggestions for intervention studies on enlisting minorities into biomedical studies including clinical trials.

Identification of barriers to recruitment of racial and ethnic minorities is an essential step in creating greater ethnic/racial balance in biomedical research studies. It appears that the belief that AIDS origin conspiracy theory is widely held among racial and ethnic minority groups, but this belief does not, according to our results, appear to be related to self-reported willingness to participate in biomedical research in these population subgroups. Indeed, we found such a relationship in whites but not in either of the 2 minority groups. Although this study had greater power to detect differences among whites because of a greater number of white participants in both the 1999 and the 2003 TLP surveys, differences in the GPFF and LOP scales among blacks and Hispanics were small and unlikely to be of clinical significance. Indeed, major advantages of this survey were its focus on comparisons among racial/ethnic groups and, along with its carefully worded and extensively tested questionnaire, its sampling methodology and large sample size.

As in any telephone survey, we are unable to make conclusions about persons who chose not to respond. It is possible that those who did not respond to our questionnaire were no different from those who responded. However, it is possible that response bias may have an effect on our absolute numbers, for example, the proportion in each group might have been lower or higher than reported. However, we believe it is unlikely that persons from various racial/ethnic groups would have refused differentially to take part in the study, and therefore we believe the effect of nonresponse bias in the interpretation of the degree of differences across the groups is of only minor concern.

CONCLUSIONS

We found that blacks and Hispanics were more than 3 times as likely as whites to be believers in this AIDS origin conspiracy theory but that holding such a belief was not associated with a decreased likelihood of participation in, or increased fear of participation in, biomedical research.

Acknowledgments

This study was supported within the New York University Oral Cancer RAAHP (Research on Adolescent and Adult Health Promotion) Center, a National Institute of Dental and Craniofacial Research/National Institutes of Health Oral Health Disparities grant (U54 DE014257).

References

1. Swanson MS, Ward AJ. Recruiting minorities into clinical trials: toward a participant-friendly system. *J Natl Cancer Inst.* 1995; 87(23):1747–1759. [PubMed: 7473831]
2. Katz RV, et al. The Tuskegee Legacy Project: willingness of minorities to participate in biomedical research. *J Health Care Poor Underserved.* 2006; 17(4):698–715. [PubMed: 17242525]
3. Sullivan PS, McNaghten AD, Begley E, Hutchinson A, Cargill VA. Enrollment of racial/ethnic minorities and women with HIV in clinical research studies of HIV medicines. *J Natl Med Assoc.* 2007; 99(3):242–250. [PubMed: 17393948]
4. Corbie-Smith GM, Thomas SB, Williams MV, et al. Attitudes and beliefs of African Americans toward participation in medical research. *J Gen Intern Med.* 1999; 14:537–546. [PubMed: 10491242]
5. Shavers-Hornaday VL, Lynch CF. Why are African Americans under-represented in medical research studies? Impediments to participation. *Ethnic Health.* 1997; 2:31–45.
6. Fouad MN, Corbie-Smith G, Curb D, et al. Special populations recruitment for the Women's Health Initiative: successes and limitations. *Control Clin Trial.* 2004; 25:335–352.
7. Washington, H. *Medical Apartheid: The Dark History of Medical Experimentation on Black Americans from Colonial Times to the Present.* New York: Doubleday; 2007.
8. Katz RV, Green BL, Kressin NR, Claudio C, Wang MQ, Russell SL. Willingness of minorities to participate in biomedical studies: confirmatory findings from a follow-up study using the Tuskegee Legacy Project Questionnaire. *J Natl Med Assoc.* 2007; 99(9):1050–1062.
9. Bates BR, Harris TM. The Tuskegee Study of untreated syphilis and public perceptions of biomedical research: a focus group study. *J Natl Med Assoc.* 2004; 96(8):1051–1064. [PubMed: 15303410]
10. Freimuth VS, Quinn SC, Thomas SB, et al. African Americans' views on research and the Tuskegee Syphilis Study. *Soc Sci Med.* 2001; 52:245–253.
11. Shavers VL, Lynch CF, Burmeister LF. Knowledge of the Tuskegee Study and its impact on willingness to participate in medical research studies. *J Natl Med Assoc.* 2000; 92(12):563–572. [PubMed: 11202759]
12. Green BL, Maisiak R, Wang MQ. Participation in health education, health promotion, and health research by African Americans: effects of the Tuskegee Syphilis Experiment. *J Health Educ.* 1997; 28(4):196–201.
13. Ross MW, Essien EJ, Torres I. Conspiracy beliefs about the origin of AIDS in four racial/ethnic groups. *J Acquir Immune Defic Syndr.* 2006; 41:342–344. [PubMed: 16540935]
14. Bogart LM, Thorburn S. Are AIDS conspiracy beliefs a barrier to HIV prevention among African Americans? *J Acquir Immune Defic Syndr.* 2005; 38:213–218. [PubMed: 15671808]
15. Bogart LM, Bird ST. Exploring the relationship of conspiracy beliefs about AIDS to general behaviors and attitudes among African-American adults. *J Natl Med Assoc.* 2003; 95(11):1057–1065. [PubMed: 14651372]
16. Murthy VH, Krumholz HM, Gross CP. Participation in cancer clinical trials: race-, sex-, and age-based disparities. *JAMA.* 2004; 291(22):2720–2726. [PubMed: 15187053]
17. Gifford AL, Cunningham WE, Heslin KC. Participation in research and access to experimental treatments by HIV-infected patients. *New Engl J Med.* 2002; 346:1373–1382. [PubMed: 11986412]
18. Sengupta S, Strauss RP, DeVellis R, et al. Factors affecting African-American participation in AIDS research. *J Acquir Immune Defic Syndr.* 2000; 24(3):275–284. [PubMed: 10969353]

19. Zekeri AA, Habtermariam T, Tameru B, Ngawa D, Robnett V. Conspiracy beliefs about HIV/AIDS among HIV-positive patients in rural Alabama. *Psychol Rep.* 2009; 104(2):388–394. [PubMed: 19610466]
20. Bohnert AS, Latkin CA. HIV testing and conspiracy beliefs regarding the origins of HIV among African Americans. *AIDS Patient Care STDS.* 2009; 23(9):759–763. [PubMed: 19663716]
21. Clark A, Mayben JK, Hartman C, Kallen MA, Giordano TP. Conspiracy beliefs about HIV infection are common but are not associated with delayed diagnosis or adherence to care. *AIDS Patient Care STDS.* 2008; 22(9):753–759. [PubMed: 18754706]
22. Hutchinson AB, Begley EB, Sullivan P, Clark HA, Boyett BC, Kellerman SE. Conspiracy beliefs and trust in information about HIV/AIDS among minority men who have sex with men. *J Acquir Immune Defic Syndr.* 2007; 45(5):603–605. [PubMed: 17704688]
23. Bogart LM, Thorburn S. Relationship of African American's sociodemographic characteristics to belief in conspiracies about HIV/AIDS and birth control. *J Natl Med Assoc.* 2006; 98(7):1144–1150. [PubMed: 16895286]
24. Klonoff EA, Landrine H. Do blacks believe that AIDS is a government conspiracy against them? *Prev Med.* 1999; 28(5):451–457. [PubMed: 10329334]
25. Quinn SC. Belief in AIDS as a form of genocide: implications for HIV prevention programs for African Americans. *J Health Educ.* 1997; 28(6):S6–S11.
26. Goertzel T. Belief in conspiracy theories. *Political Psychol.* 1994; 15(4):731–742.
27. Herek GM, Capitanio JP. Conspiracies, contagion, and compassion: trust and public reactions to AIDS. *AIDS Educ Prev.* 1994; 6(4):365–375. [PubMed: 7986656]
28. Herek GM, Glunt EK. AIDS-related attitudes in the US: a preliminary conceptualization. *J Sex Res.* 1991; 28:99–123.
29. Thomas SB, Quinn SC. The burdens of race and history on black Americans' attitudes toward needle exchange policy to prevent HIV disease. *J Public Health Policy.* 1993; 14(3):320–347. [PubMed: 8254007]
30. DeParle, J. *New York Times.* Oct 29. 1990 Talk grows of government being out to get blacks.
31. Priddy FH, Cheng AC, Salazar LF, Frew PM. Racial and ethnic differences in knowledge and willingness to participate in HIV vaccine trials in an urban population in the Southeastern US. *Int J STD AIDS.* 2006; 17(2):99–102. [PubMed: 16464270]
32. Hall HI, Song R, Rhodes P, et al. Estimation of HIV incidence in the United States. *JAMA.* 2008; 300:520–529. [PubMed: 18677024]
33. Sobieszcyk ME, Xu G, Goodman K, Lucy D, Koblin BA. Engaging members of African American and Latino communities in preventive HIV vaccine trials. *J Acquir Immune Defic Syndr.* 2009; 51(2):194–201. [PubMed: 19504752]
34. Cargill VA, Stone VE. AIDS: a minority health issue. *Med Clin North Am.* 2005; 89(4):895–912. [PubMed: 15925655]

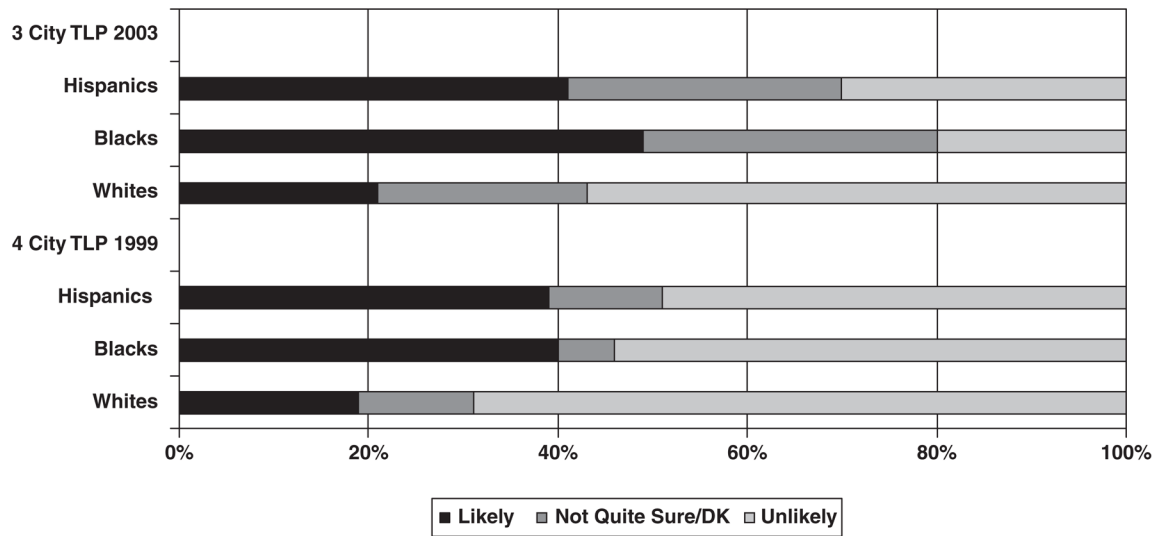


Figure 1. AIDS origin beliefs, by race/ethnicity, across 2 Tuskegee Legacy Project (TLP) Questionnaire surveys (1999 and 2003). DK = don't know.

Table 1Demographic characteristics of study subjects by survey and racial/ethnic group^a

| | 4-city TLP survey, 1999 and 2000 (n = 1,133) | | | 3-city TLP survey, 2003 (n = 1,162) | | |
|---|--|------------------------|---------------------|-------------------------------------|---------------------------------|---------------------|
| | Black 31.2% (n=353) | Hispanic 13.9% (n=157) | White 55.0% (n=623) | Black 31.2% (n=356) | Hispanic 13.9% (n=313) | White 55.0% (n=493) |
| Mean age, years (\pm SD) | 49.1 (\pm 16.5) | 41.6 (\pm 16.1) | 53.9 (\pm 17.0) | 47.1 (\pm 15.5) | 44.3 (\pm 15.8) ^a | 48.2 (\pm 17.1) |
| Gender, % men | 52.1% | 39.5% | 48.3% | 32.6% | 31.6% | 36.7% |
| Education | | | | | | |
| < High school graduate | 21.5% | 26.1% | 11.7% | 18.0% | 21.7% | 11.8% |
| High school graduate and/or some college | 60.4% | 64.3% | 51.1% | 53.7% | 40.9% | 42.0% |
| College graduate and/or postgraduate degree | 17.9% | 15.3% | 36.8% | 27.8% | 36.7% | 45.6% |
| Family income (yearly) | | | | | | |
| <\$19,999 | 40.2% | 36.9% | 18.5% | 31.5% | 38.7% | 18.1% |
| \$20,000 to 74,999 | 49.0% | 46.5% | 50.7% | 54.2% | 45.4% | 48.1% |
| \$75,000 | 4.8% | 5.1% | 17.7% | 8.1% | 7.3% | 20.5% |
| Geographic location | | | | | | |
| Hartford, CT | 36.0% | 23.6% | 35.6% | NA | NA | NA |
| Birmingham, AL | 29.5% | 0.6% | 16.9% | NA | NA | NA |
| Tuskegee, AL | 30.0% | 0.6% | 29.5% | NA | NA | NA |
| San Antonio, TX | 4.5% | 75.2% | 18.0% | NA | NA | NA |
| New York, NY | NA | NA | NA | 55.9% | 2.2% | 33.3% |
| Baltimore, MD | NA | NA | NA | 47.2% | 47.9% | 63.7% |
| San Juan, PR | NA | NA | NA | 2.2% | 49.8% | 3.0% |

Note: TLP = Tuskegee Legacy Project; NA = not applicable.

^a Values may not add to 100% because of small amounts (<5%) of missing data.

Table 2

Demographic predictors of belief that “AIDS is the result of a government plan to intentionally kill a certain group of people by genocide” held by whites, blacks, and Hispanics across 2 studies

| | 4-city TLP, 1999 and 2000 | | | 3-city TLP, 2003 | | |
|------------------------|---|--|---|--|---|---|
| | Blacks | Hispanics | Whites | Blacks | Hispanics | Whites |
| Age ^a | NS | NS | NS | NS | NS | NS |
| Gender ^b | NS | NS | NS | NS | NS | NS |
| Education ^b | NS | Lower education more likely to believe ($P = .06$) | Lower education more likely to believe ($P = .005$) | Lower education more likely to believe ($P = .09$) | Lower education more likely to believe ($P = .04$) | Lower education more likely to believe ($P = .001$) |
| Income ^b | Lower income more likely to believe, ($P = .001$) | NS | Lower income more likely to believe ($P = .02$) | Lower income more likely to believe ($P = .06$) | Lower income more likely to believe ($P = .03$) | Lower income more likely to believe ($P = .001$) |
| City ^b | NS | NS | NS | NS | Hispanics in NY more likely to believe ($P = .002$) | NS |

Note: TLP = Tuskegee Legacy Project; NS = nonsignificant.

^a ANOVA.

^b Chi-square test.

Relationship of belief in conspiracy theories and likelihood of participation and fear of participation in whites, blacks, and Hispanics across 2 studies^a

Table 3

| Outcome | 4-city TLP, 1999 and 2000 | | | 3-city TLP, 2003 | | |
|--------------------------------------|---------------------------|--------------|-------------------|-------------------|--------------|--------------|
| | Whites | Blacks | Hispanics | Whites | Blacks | Hispanics |
| Likelihood of participation | | | | | | |
| Age | NS | NS | NS | NS | -0.14 (.02) | NS |
| Gender | NS | NS | NS | NS | NS | NS |
| Education | NS | -0.17 (.006) | NS | NS | NS | -0.21 (.002) |
| Income | NS | -0.18 (.004) | NS | NS | NS | NS |
| City of residence | NS | NS | NS | NS | NS | 0.19 (.007) |
| Belief in conspiracy theories | 0.08 (.06) | NS | 0.19 (.03) | NS | NS | NS |
| Fear of participation | | | | | | |
| Age | NS | -0.16 (.005) | NS | | -0.21 (.001) | -0.14 (.005) |
| Gender | NS | 0.11 (.06) | NS | NS | NS | NS |
| Education | NS | NS | NS | -0.12 (.04) | NS | NS |
| Income | NS | NS | NS | -0.10 (.08) | NS | NS |
| City of residence | NS | NS | NS | NS | NS | NS |
| Belief in conspiracy theories | 0.09 (.04) | NS | NS | 0.13 (.02) | NS | NS |

Note: TLP = Tuskegee Legacy Project; NS = nonsignificant.

^a Values are given as standardized -coefficients (P value). Standardized regression coefficients were created using linear regression. Criteria for entry: probability of t=0.