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### Permalink

<https://escholarship.org/uc/item/12v3m3p9>

### Journal

Journal of the Association of Nurses in AIDS Care, 26(4)

### ISSN

1055-3290

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### Publication Date

2015-07-01

### DOI

10.1016/j.jana.2014.12.006

Peer reviewed

## **Knowledge, Self-efficacy, and Self-perceived Risk for Cardiovascular Disease among Asians Living With HIV: The Influence of HIV Stigma and Acculturation**

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### **Abstract**

Cardiovascular disease (CVD) and acute coronary syndrome (ACS) have become major health concerns for people living with HIV (PLWH) as life expectancy has increased with antiretroviral therapy. Studies suggest that motivation to seek health care is associated with knowledge, self-efficacy to engage in the health care system, and self-perceived risks for CVD and ACS. Using cross-sectional data collected from 67 un-/under-insured Asian PLWH in California, we explored the levels of knowledge about CVD, self-efficacy for recognizing ACS symptoms and seeking health care, and self-perceived risk for CVD and ACS, and how HIV stigmatization and acculturation predict these three constructs. Our sample had limited knowledge and low self-perceived risk but had high self-efficacy. Stigmatization was negatively correlated with self-efficacy ( $p = .004$ ) and acculturation was a positive predictor of knowledge ( $p = .013$ ). Economically vulnerable Asian PLWH need culturally appropriate interventions to improve their knowledge and self-perceived risks for CVD and ACS.

**Key Words:** acute coronary syndrome, Asians, cardiovascular disease, health care inequality, HIV, stigma

The advent of combination antiretroviral therapy (ART) has dramatically decreased HIV-related mortality and increased the life expectancy of people living with HIV (PLWH; Palella et al., 2006). Today, PLWH have a near-normal life expectancy on ART, but they often live with multiple complex comorbid conditions (Samji et al., 2013; Smith et al., 2014). Currently, as many as 71% of PLWH die from non-HIV-related complications, and one of the leading causes of non-HIV-related death is cardiovascular disease (CVD), in particular, acute coronary syndrome (ACS; Boccara, 2010; Smith et al., 2014).

Research has shown that PLWH may be at high risk for ACS. One study reported that PLWH have a 50% higher risk of ACS in comparison with uninfected people (Freiberg et al., 2013). Other studies found that PLWH are more likely to have at least one of the traditional risk factors for ACS, which include smoking, older age, hypertension, diabetes, and dyslipidemia (Malvestutto & Aberg, 2010). The chronic inflammatory response to HIV infection also increases the risk of ACS by causing chronic inflammation of the arteries and veins, which can result in the accumulation of more trapped plaque (Malvestutto & Aberg, 2010). In addition, adverse metabolic effects of ART increase the risk of ACS by changing lipid levels, by inducing insulin resistance or diabetes mellitus, and by impairing fibrinolysis (Bavinger et al., 2013; Malvestutto & Aberg, 2010).

Rapid recognition of ACS symptoms and prompt medical care are critical to minimize morbidity and mortality (Asseburg et al., 2007). Survival rates associated with reperfusion therapy (standard of care for ACS symptoms) initiated within 60 minutes of symptom onset are as much as 50% higher than those associated with reperfusion therapy initiated after 60 minutes (Moser et al., 2006).

The Information-Motivation-Behavioral Skills model suggests that knowledge, self-efficacy, and self-perceived risk may greatly influence the likelihood that an individual will promptly recognize ACS symptoms and seek medical treatment (Rajabiun et al., 2008). In other words, in order to seek medical care promptly, it is important that individuals (a) know the risks of CVD and signs and symptoms of ACS (knowledge or information), (b) are confident and proactive in accessing care when they experience ACS signs or symptoms (self-efficacy or behavioral skills), and (c) are aware of their risks (self-perceived risk or motivation). Currently, however, little is known about knowledge, self-efficacy, and self-perceived risk for CVD and ACS as they pertain to PLWH.

In the general population, knowledge regarding ACS symptoms and treatment decreases prehospital delay to seek care for ACS symptoms (McKinley et al., 2009). Other studies found that ACS knowledge was independently correlated with confidence in accessing care when experiencing ACS symptoms, response to the symptoms, and self-perceived risk for ACS (Dracup et al., 2008; O'Brien, O'Donnell, McKee, Mooney, & Moser, 2013). Individuals who are knowledgeable about ACS are more likely to accurately perceive their risk status, and an awareness of personal risk may shorten delay time in seeking care for ACS symptoms (Dracup et al., 2008). Conversely, low ACS knowledge, low self-efficacy in accessing ACS care, and low self-perceived risk for ACS can delay seeking care during ACS.

PLWH knowledge of, health-seeking behaviors for, and self-perceived risk of ACS are greatly influenced by acculturation and HIV stigma. For example, immigrants who have low Western identification may have lower English-language proficiency and may, therefore, have limited knowledge, self-efficacy, and self-perceived risk (Sanderson, 2013). The influence of HIV stigma on PLWH knowledge, self-efficacy, and self-perceived risk—not exclusively regarding ACS but regarding health in general—are also well documented (Cahill & Valadéz, 2013; Sumari-de Boer, Sprangers, Prins, & Nieuwkerk, 2012). However, no study to date has investigated the potential influences of acculturation and HIV stigma on knowledge, self-efficacy, and self-perceived risk for CVD and ACS in PLWH who are members of racial minority groups.

One major minority group, Asians, accounted for only 2% of people newly diagnosed with HIV and 1% of the total number of PLWH in the United States in 2010 (Centers for Disease Control and Prevention, 2014), but might be at risk for CVD and ACS because they lack the knowledge, self-efficacy, and self-perceived risk that may prevent them from accessing and using preventive services. Acculturation and HIV stigma may also play major roles in the knowledge levels, self-efficacy, and self-perceived risk for CVD and ACS given their saliency for Asian PLWH in general (Clough, Lee, & Chae, 2013). Because no research to date has explored the intersection of these psychosocial factors as they relate to CVD and ACS among Asian PLWH, the purposes of this study were to (a) assess Asian PLWH knowledge concerning CVD and ACS, self-efficacy for seeking health care, and self-perceived risk of having ACS, and (b) explore how acculturation and HIV stigma predicts knowledge, self-efficacy, and self-perceived risk in urban Asian PLWH.

## **Methods**

### **Design: Sample, Setting, and Data Collection**

As part of a larger study to adapt and validate an HIV stigma scale for Asian PLWH, we conducted a cross-sectional study to investigate knowledge, self-efficacy, and self-perceived risk regarding CVD and ACS in a sample of Asian PLWH studied from November 2012 to June 2013. The study was approved by the Institution on Human Research at the University of California, San Francisco prior to subject enrollment. Participant recruitment was conducted in an HIV-care community organization that provided HIV-related programs including HIV health care for uninsured and under-insured Asian PLWH in San Francisco. Potential participants were recruited via flyers, clinician referrals, and announcements to peer support groups at the organization, and were screened for eligibility in person. Inclusion criteria for our study were self-identification as infected with HIV, racial self-identification as Asian, age 18 years or older, and ability to speak and read English. Eighty-eight PLWH were screened, and 67 were found eligible for the study. After participants provided written consent, they were asked to complete paper-and-pencil questionnaires at the organization facility in the presence of a researcher.

### **Measures**

Six measures in addition to sociodemographic characteristics and family and medical history questions were used in this study. Cronbach's alpha was calculated as necessary to determine internal reliability. Values of  $\alpha = 0.70-0.95$  were considered acceptable (Nunnally & Bernstein, 1994).

### *Sociodemographic characteristics and medical and family history*

Sociodemographic characteristics included gender, age, ethnic subgroup, level of education, annual household income, and HIV exposure category. Medical and family history included indication of whether participants had self-reported hypertension, self-reported dyslipidemia, or family history of heart attack.

### *Self-rated general health*

Participants were asked to rate their current health status with the question: How would you rate your health status?, which was measured on a 7-point Likert scale with responses ranging from 1 (very poor) to 7 (excellent; Eriksson, Undén, & Elofsson, 2001).

### *Stigma scale for Asian PLWH*

Participants were asked to respond to 13 items on the Stigma Scale for Asian PLWH, a culturally adapted shortened version of the Berger Stigma scale, which measures stigma felt by PLWH (Kamitani, 2013). Response choices were 1 (strongly disagree), 2 (disagree), 3 (agree), and 4 (strongly agree). Total scores were calculated by summing the item scores and ranged from 13 (low stigma) to 52 (high stigma). Example items are: I have lost friends by telling them I have HIV and most people with HIV are rejected when others find out. Cronbach's alpha on the Stigma Scale for Asian PLWH in this sample was 0.92.

### *Abbreviated Suinn-Lew Asian Self-Identity Acculturation Scale*

The abbreviated Suinn-Lew Asian Self-Identity Acculturation Scale was used to measure acculturation; it contains 19 multiple-choice questions in six categories: language, identity, friendship choice, behavior, generation-geographic history, and attitude (Suinn, Ahuna, & Khoo, 1992). Multiple-choice question responses were formatted on a 5-point Likert scale. The values for all 19 items were summed for total scores, which ranged from 19 (low acculturation/high Asian identification) to 95 (high acculturation/high Western identification; Suinn et al., 1992). Cronbach's alpha on the scale in this population was 0.93.

### *Knowledge about CVD and ACS and self-perceived risk for ACS*

Knowledge of CVD and ACS and self-perceived risk for ACS were assessed using modified versions of the Knowledge Scale and Self-Perceived Risk Scale that were developed by the Dracup group (Dracup et al., 2008). The Knowledge Scale contained six items with trichotomous answer choices (true, false, or don't know). If the participant chose the response don't know, the item was considered to be answered incorrectly (Dracup et al., 2008). Scores were summed and divided by the total number of questions ( $n = 6$ ) to calculate an overall score. Overall knowledge assessments ranged from 0 (minimally knowledgeable) to 6 (highly knowledgeable). Cronbach's alpha on the Knowledge Scale in this study sample was 0.80.

Participants' self-perceived risk for ACS was assessed with two questions regarding the self-perceived likelihood of having a heart attack (a) within the next 5 years, and (b) during their lifetime (Dracup et al., 2008). Responses on a 5-point Likert scale scored from 1 (much less likely) to 5 (much more likely). Overall self-perceived risk was calculated by summing response scores to these two items; self-perceived risk assessments ranged from 2 (low self-perceived risk) to 10 (high self-perceived risk).

### *Self-efficacy for seeking health care*

Riegel and colleagues (2007) developed the 33-item ACS Response Index as a tool for rapid assessment of patient knowledge, attitudes, and beliefs regarding heart attack and response. In our study, four questions that ascertained self-efficacy for recognizing ACS symptoms and seeking health care were developed by modifying attitude questions in the ACS Response Index (Riegel et al., 2007). The modified scale had two items that tested symptom recognition and two items that assessed confidence to seek medical attention for a heart attack. These four items were measured using a 4-point Likert scale from 1 (not sure) to 4 (very sure), and overall self-efficacy was calculated by summing scores for all four items: scores ranged from 4 (low self-efficacy) to 16 (high self-efficacy). Cronbach's alpha in this study population was 0.80.

### **Data Analysis**

All analyses used IBM SPSS Statistics v.19 for Windows (IBM, Armonk, NY). Descriptive statistics were computed to describe sample characteristics, medical history, and family history. Means and standard deviations (SD) were calculated for self-rated general health, HIV stigma, and acculturation.

Mean scores were calculated for Knowledge, Self-Efficacy, and Self-Perceived Risk scales. The percentages of correct answers for each question on the Knowledge scale and each response on both Self-Efficacy and Self-Perceived Risk scale were also determined.

To ascertain the associations between acculturation and HIV stigma (independent variables) and knowledge, self-efficacy, and self-perceived risk (outcome variables), multiple linear regression analyses were conducted while controlling for potential confounders. Potential confounders were identified by assessing associations between outcomes and participant characteristics (sociodemographic characteristics, medical and family history, and self-rated general health), using Pearson correlation or point bi-serial correlations. A p-value of .05 or less (two-tailed) was considered statistically significant.

### **Results**

#### **Sample Characteristics**

Sociodemographic characteristics, medical and family history, self-rated general health, HIV stigma, and acculturation scores are presented in Table 1. The majority of participants were men (77.6%), did not complete college (77.6%), had less than \$20,000 annual household income (62.7%), and reported men who have sex with men as an HIV exposure category (79.1%). The sample's mean age was 44.4 years (SD  $\pm$  9.5). The most common ethnic subgroup was Filipino (43.3%), followed by Vietnamese (10.3%) and Chinese (9.0%). The prevalences of self-reported high blood pressure, high total cholesterol, and low high-density lipoprotein were 37.3%, 29.9%, and 20.9%, respectively. About 18% reported that their mother or sister had a heart attack before age 65 years, and 9.0% reported that their father or brother had a heart attack before age 55 years. Nearly a quarter of the participants did not know if they had been told about high total cholesterol. Approximately half of the participants did not know if they had been told that they had low high-density lipoprotein.

Nearly a quarter (22.4%) of the participants stated that their health was excellent. Mean self-rated general health status was 4.9 (SD  $\pm$  1.7), with responses ranging from 1 to 7. The mean of the Stigma Scale for Asian PLWH was 32.8 (SD  $\pm$  9.0), with responses ranging from 13 to 52; and the mean for the abbreviated Suinn-Lew Asian self-Identity Acculturation Scale was 53.5 (SD  $\pm$  15.5), with responses ranging from 19 to 95.

### **Knowledge, Self-Efficacy, and Self-Perceived Risk for CVD and ACS**

Table 2 shows participant knowledge, self-efficacy, and self-perceived risk for CVD and ACS. The mean of the overall knowledge scale was 2.3 (SD  $\pm$  1.8). Regarding individual items, fewer than one-third of study participants knew that CVD is a leading cause of death in the United States. Approximately 40% correctly endorsed the statement that “Almost all heart attacks in women occur in people over age 65 or in men occur in people over age 55.” Only about a quarter of participants knew that being a certain racial group could be a CVD risk factor. More than half of participants correctly answered items that symptoms of heart attacks can be mild and can take days to develop, and that hospitals had drugs that can reduce damage caused by a heart attack.

The mean overall Self-Efficacy Score was 9.6 (SD  $\pm$  3.6). About 16% of participants indicated that they were very sure that they could recognize the signs and symptoms of heart attack themselves. Moreover, 10.4% of participants were very sure that they could tell the difference between the signs or symptoms of heart attack and other medical problems. Nearly 40% of participants said they were very sure that they could call an ambulance or dial 911 if they thought they were having a heart attack; 37.3% said that they were very sure they could get to an emergency room within 60 minutes of symptom onset.

The mean of Self-Perceived Risk for ACS was 4.9 (SD  $\pm$  2.2). Notably, 26.9% of participants believed they were much less likely to have a heart attack in the next 5 years than were individuals in the general population. Only 3.0% of participants indicated their risk of a heart attack was much greater than that of the general population. In terms of lifetime risk, 23.9% of participants believed that, during their lifetimes, they were much less likely to have a heart attack than were others of their age. Only 4.5% of participants believed that the likelihood of having a heart attack in their lifetime was much greater than that of others in their age group in the general population.

### **Bivariate Correlations between Demographics, Knowledge, Self-Efficacy, Self-Perceived Risk, HIV Stigma, and Acculturation**

Knowledge was significantly and positively correlated with education ( $r = 0.29$ ,  $p = .02$ ; Table 3). Gender was significantly correlated with self-efficacy such that men had higher self-efficacy than women/transwomen ( $r = -0.28$ ,  $p = .02$ ). Age was positively correlated ( $r = 0.43$ ,  $p < .0005$ ) and self-rated general health was negatively correlated ( $r = -0.29$ ,  $p = .02$ ) with self-perceived risk. HIV stigma was negatively correlated with self-efficacy ( $r = -0.43$ ,  $p < .0005$ ), and acculturation was positively correlated with knowledge ( $r = 0.36$ ,  $p = .002$ ) and self-efficacy ( $r = 0.29$ ,  $p = .019$ ).

### **Multiple Linear Regression Coefficients for Knowledge, Self-Efficacy, and Self-Perceived Risk Associated With HIV Stigma and Acculturation**

Table 4 shows results of multiple linear regression analyses. About 17% of knowledge of CVD and ACS can be explained by HIV stigma, acculturation, and education ( $p = .007$ ). Acculturation is an independent positive predictor of knowledge regarding CVD and ACS even when controlling for education ( $B$  [95% confidence interval (CI)] = 0.037 [0.008–0.066],  $p = .013$ ).

HIV stigma, acculturation, and gender explained 24.6% of the variance in self-efficacy for seeking health care ( $p < .0005$ ). HIV stigma was an independent predictor of self-efficacy for seeking health care even when controlling for gender ( $B$  [95% CI] =  $-0.139$  [ $-0.231$  to  $-0.046$ ],  $p = .004$ ). When gender was controlled for, acculturation was no longer independently associated with self-efficacy ( $B$  [95% CI] = 0.033 [ $-0.021$  to 0.086],  $p = .224$ ).

Finally, HIV stigma, acculturation, age, and self-rated general health account for 25.5% of the variance in self-perceived risk ( $p = .001$ ). Neither HIV stigma nor acculturation was an independent predictor of self-perceived risk for ACS when controlling for age and self-rated general health.

### **Discussion**

We found that economically vulnerable Asian PLWH had limited knowledge of CVD and ACS, high self-efficacy for seeking health care, and low self-perceived risk for ACS. In addition, acculturation independently predicted knowledge while HIV stigma independently predicted self-efficacy.

Asian PLWH's limited knowledge of CVD and ACS found in our study is troubling. Our findings are contrary to those of a study by Cioe (2012), which tested a general population of PLWH's knowledge about CVD in Rhode Island. Cioe (2012) reported that a large percentage (76%) of the participants were knowledgeable about risks of CVD. This high level of knowledge might have been the result of local public health campaigns concerning PLWH's risks for CVD (Cioe, 2012). In contrast, the participants in our study had limited knowledge even though public health campaigns about heart disease (including ACS and CVD) were conducted in the vicinity of the community clinic. Our study revealed that acculturation was independently associated with knowledge even when the covariate, in this case, level of education, was controlled for. People with low levels of acculturation are likely to have limited English language proficiency; accordingly, they may have had low health literacy and might have been unable to fully understand the messages presented in a public health heart disease awareness campaign (Sanderson, 2013). Our findings indicated that, in order to reduce the heart disease-related knowledge gap among Asian PLWH, interventions needed to be culturally and health literacy-appropriate for this subpopulation.

We found a low self-perceived risk for future ACS in our study sample. This finding is congruent with that of Homko and colleagues (2008), who studied medically underserved people at high risk of CVD and living in either rural or urban areas. The authors found that economically vulnerable racial minorities who lived in urban areas had low self-perceived risk even though they had higher risk for CVD (Homko et al., 2008). Another study, conducted by Dracup and colleagues (2008),

specifically examined self-perceived risk among individuals in a sample from the population of people with histories of heart disease. Although the majority of participants were Caucasian (91%), and only 3.5% of participants were Asian and Pacific Islanders, Dracup and colleagues (2008) found that their study participants had low self-perceived risk even though their risk for ACS was high. Furthermore, the percentage of our study participants who believed that their risk for ACS was about the same as or less than that of the others in the general population was approximately twice the percentage reported by Dracup and colleagues (2008). Our finding of low self-perceived risk was problematic because Asian PLWH with low self-perceived risk may not modify their lifestyles to reduce ACS risk factors or seek care (Choi, Rankin, Stewart, & Oka, 2008).

Our study found that HIV stigma predicted self-efficacy. Even after controlling for gender, HIV stigma was negatively correlated with self-efficacy for seeking health care. Other studies also found that HIV stigma was significantly and negatively correlated with health-seeking behaviors and adherence to HIV care, such as mental health care and self-administration of antiretroviral medications (Cahill & Valadéz, 2013; Sumari-de Boer et al., 2012).

Another concerning finding was that the majority of study participants were living below 200% of the federal poverty level (U.S. Department of Health & Human Services, 2013). Being alert to ACS symptoms and seeking medical care rapidly may not be a top priority for Asian PLWH living in poverty. They may be worried about the basic needs of daily living (e.g., food, housing) or may be experiencing challenges (e.g., substance abuse, onset of HIV illness, HIV stigma, limited English language proficiency), to focus on some future occurrence of ACS. Behavior modification strategies for decreasing risk of CVD (e.g., healthy food education or counting daily steps) may not work for Asian PLWH because they have more immediate priorities. CVD risk reduction interventions should consider the economic circumstances of the populations for which they are designed.

Several limitations of the study must be recognized. First, due to the fact of convenience sampling of Asian PLWH who had ability to speak and read in English, our study findings may be generalizable to only English-speaking Asian PLWH. Future comparative studies are needed in low socioeconomic populations from diverse racial/ethnic groups. Second, although several potential confounding factors (such as age, gender, and education) were controlled, there might be other confounding variables (such as weight, tobacco use, and eating habits). Third, this study had a small sample size. Related to sample size, we needed to combine transwomen and women into one category while recognizing the vast differences between the two groups in relation to health concerns. When we analyzed the data for women and transwomen separately, we found no significant differences between the two subgroups in relation to outcomes or predictors. Thus, we felt comfortable combining these subgroups. Future studies with more study participants, including an adequate number of transgender persons, are necessary. Last, this study was conducted at a community clinic for uninsured or under-insured Asian PLWH and did not have much variation in sample characteristics, especially in annual income. The distribution of income was insufficient to explore the relationship between income and the study outcomes in our sample.

## **Conclusions**

As the life expectancy in PLWH is extended, non-HIV-related chronic conditions gain prominence as contributors to mortality; early recognition of symptoms of ACS and rapid decisions to seek medical attention are essential for decreasing PLWH's mortality rates. While several studies have examined knowledge, self-efficacy, and self-perceived risk for CVD and ACS among at-risk populations, relatively few studies have examined these phenomena in relation to PLWH. To our knowledge, this is the first study that has examined these phenomena or the influence of acculturation and HIV stigmatization in relation to economically vulnerable Asian PLWH.

Notably, we found that our sample had extremely limited knowledge, high self-efficacy, and low self-perceived risk for CVD and ACS. Asian PLWH with poor knowledge but positive self-efficacy may overestimate the ability to recognize ACS symptoms and take action to receive life-saving health care. Low self-perceived risk of ACS in this population may translate into behavior that could add to the risk for CVD. Furthermore, knowledge level and self-efficacy toward CVD and ACS may be influenced by HIV stigma or acculturation.

Our study reveals an important need for assessment and effective interventions to reduce CVD and ACS in Asian PLWH. Health care providers, including nurses who work with Asian PLWH, need to recognize that acculturation and HIV stigma may play a role in accessing health care and must deliver culturally appropriate and health-literate services to enhance the health and well-being of this vulnerable population.

## **Key Considerations**

- Health care providers should know the importance of assessing Asian people living with HIV's (PLWH's) knowledge, self-efficacy, and self-perceived risk of the risk for cardiovascular disease (CVD) and acute coronary syndrome (ACS).
- Asian PLWH with incorrect knowledge and low self-perceived risk for CVD and ACS may not modify their lifestyles to reduce risk factors or seek care. Health care providers need to correct misunderstandings and address misperceptions.
- CVD- and ACS-related knowledge, self-efficacy, and self-perceived risk education interventions should be culturally and health literacy-appropriate for Asian PLWH.
- CVD risk reduction interventions should consider the life priorities and the economic circumstances in the population for which they are designed.

## **Disclosure**

The authors report no real or perceived vested interests that relate to this article that could be construed as a conflict of interest.

## **Acknowledgments**

Funding was provided by the University of California, San Francisco Century Club Funds and the University of California, San Francisco graduate Student Research Award. We also thank study participants and the Asian and Pacific Islander Wellness Center for generously helping us in this study.

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Table 1. Sociodemographic, Medical/Family History, General Health, Stigma, and Acculturation (N= 67)

	<i>% (n), Mean ± SD</i>
Sociodemographic	
Gender	
Men	77.6 (52)
Women/transwomen <sup>a</sup>	22.4 (15)
Age	44.4 ± 9.5
Ethnic subgroup	
Filipino	43.3 (29)
Vietnamese	10.3 (7)
Chinese	9.0 (6)
Japanese	7.5 (5)
Others	29.9 (20)
Education	
Less than high school	14.9 (10)
Completed high school	23.9 (16)
Completed some college work, but did not finish	38.8 (26)
Completed college	16.4 (11)
Completed graduate school	6.0 (4)
Annual household income	
≤\$20,000	62.7 (42)
\$20,001–40,000	19.4 (13)
\$40,001–75,000	6.0 (4)
Don't know/Decline to state	12.0 (8)
HIV exposure category	
Men who have sex with men	79.1 (53)
Intravenous drug use	12.0 (8)
Heterosexual contact	1.5 (1)
Other/unknown	7.5 (5)
Medical/Family History (self-reported)	
Hypertension <sup>b</sup>	37.3 (25)
Total cholesterol ≥ 200 mg/dL <sup>c</sup>	29.9 (20)
HDL ≤ 40 mg/dL (men) or ≤ 50 mg/dL (women/transwomen) <sup>d</sup>	20.9 (14)
Mother/sister had heart attack before age 65 <sup>e</sup>	17.9 (12)
Father/brother had a heart attack before age 55 <sup>f</sup>	9.0 (6)
Self-rated general health <sup>g</sup>	4.9 ± 1.7
HIV stigma scale for Asian PLWH <sup>h</sup>	32.8 ± 9.0
Abbreviated SL-AISA <sup>i</sup>	53.5 ± 15.5

Note: HDL = high-density lipoprotein; PLWH = persons living with HIV infection.

a. Includes 8 transwomen.

b. 4.5% (*n* = 3) responded with *don't know*.

c. 22.4 (15) responded with *don't know*.

d. 47.8 (32) responded with *don't know*.

e. 9.0 (6) responded with *don't know*.

f. 10.4 (7) responded with *don't know*.

g. Possible range from 1 (very poor) to 7 (excellent).

h. Possible range from 13 (weaker stigma) to 52 (stronger stigma).

i. Possible range from 19 (Asian identification) to 95 (Western identification).

Table 2. Knowledge of Cardiovascular Disease and Acute Coronary Syndrome, Self-Efficacy Regarding Health Care Seeking, Self-Perceived Risk for Acute Coronary Syndrome (N= 67)

		Mean ± SD, % (n)
Overall knowledge score: mean <sup>a</sup>		2.3 ± 1.8
Individual knowledge items: proportion of response		
Lung cancer (for men)/breast cancer (women) is the number one cause of death.	Correct	29.9 (20)
Heart disease is the second leading of cause of death for men/women in the United States today. [Correct Response: False]	Incorrect	70.1 (47)
Almost all heart attacks in women occur in people over age 65 or in men occur in people over age 55. [Correct Response: False]	Correct	40.3 (27)
	Incorrect	59.7 (40)
The symptoms of a heart attack are always sudden and severe. [Correct Response: False]	Correct	28.4 (19)
	Incorrect	71.6 (48)
Caucasian men/women face a greater threat from heart disease than men/women of other races. [Correct Response: False]	Correct	26.9 (18)
	Incorrect	73.1 (49)
The symptoms of heart attack can be mild and can take days to develop. [Correct Response: True]	Correct	55.2 (37)
	Incorrect	44.8 (30)
Hospitals have drugs that reduce the damage done when a heart attack occurs. [Correct Response: True]	Correct	53.7 (36)
	Incorrect	46.3 (31)
Overall self-efficacy score: mean <sup>b</sup>		9.6 ± 3.6
Individual self-efficacy items: proportion of each answer choice		
How sure are you that you could recognize the signs and symptoms of a heart attack in yourself?	1: <i>not sure</i>	29.9 (20)
	2	34.3 (23)
	3	19.4 (13)
	4: <i>very sure</i>	16.4 (11)
How sure are you that you could tell the difference between the signs or symptoms of a heart attack and other medical problems?	1: <i>not sure</i>	35.8 (24)
	2	32.8 (22)
	3	20.9 (14)
	4: <i>very sure</i>	10.4 (7)
How sure are you that you could call an ambulance or dial 911 if you thought you were having a heart attack?	1: <i>not sure</i>	26.9 (18)
	2	23.9 (16)
	3	11.9 (8)
	4: <i>very sure</i>	37.3 (25)
How sure are you that you could get to an emergency room within 60 minutes after onset of your symptoms?	1: <i>not sure</i>	23.9 (16)
	2	22.4 (15)
	3	16.4 (11)
	4: <i>very sure</i>	37.3 (25)
Overall self-perceived risk score: mean <sup>c</sup>		4.9 ± 2.2
Individual self-perceived risk items: proportion of each answer choice		
Compared to other men/women your age, how likely do you think it is that you could have a heart attack in the next 5 years?	1: <i>much less likely</i>	26.9 (18)
	2: <i>somewhat less likely</i>	23.9 (16)
	3: <i>about the same</i>	31.3 (21)
	4: <i>somewhat more likely</i>	14.9 (10)
	5: <i>much more likely</i>	3.0 (2)
Compared to other men/women your age, how likely do you think it is that you could have a heart attack in your lifetime?	1: <i>much less likely</i>	23.9 (16)
	2: <i>somewhat less likely</i>	25.4 (17)
	3: <i>about the same</i>	32.8 (22)
	4: <i>somewhat more likely</i>	13.4 (9)
	5: <i>much more likely</i>	4.5 (3)

a. Possible range from 0 (minimally knowledgeable) to 6 (highly knowledgeable).

b. Possible range from 4 (low self-efficacy) to 16 (high self-efficacy).

c. Possible range from 2 (low self-perceived risk) to 10 (high self-perceived risk).

Table 3. Bivariate Correlations among Knowledge, Self-Efficacy, Self-Perceived Risk, Demographic Data, Medical and Family History, Stigma, and Acculturation (N= 67)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Knowledge <sup>a</sup>	.19	-.10	-.21	-.15	.29*	.05	-.20	-.09	-.19	-.18	-.08	-.06	-.04	.36**
2. Self-efficacy <sup>b</sup>	—	-.07	-.28*	.03	.14	-.05	-.02	.18	-.01	-.15	-.06	.21	-.43**	.29*
3. Self-perceived risk <sup>c</sup>	—	—	-.06	.43**	-.05	-.18	-.11	.11	0	.11	.14	-.29*	.10	-.15
4. Gender			—	-.09	-.30*	.08	.22	.05	.04	.06	.05	-.05	.19	-.14
5. Age				—	-.41**	-.23*	.26*	.24	.21	.13	.15	-.08	-.06	-.19
6. Education					—	-.02	-.39**	-.11	-.15	-.31*	-.20	.14	-.02	.31*
7. Income						—	.04	-.03	-.01	-.17	-.14	-.04	.16	-.03
8. Hypertension							—	.32**	.17	.45**	.35**	.02	.07	-.11
9. Dyslipidemia								—	.58**	.12	-.06	-.21	.13	-.20
10. HDL									—	.13	.08	-.14	.19	-.14
11. Mother/sister heart attack										—	.77**	-.15	.08	-.08
12. Father/brother heart attack											—	-.10	.06	.01
13. Self-rated general health												—	-.36**	.20
14. HIV stigma													—	-.33**
15. Acculturation														—

Note: HDL = high-density lipoprotein.

\**p*-value < .05; \*\**p*-value < .01.

a. Knowledge of cardiovascular disease (CVD) and acute coronary syndrome (ACS).

b. Self-efficacy regarding health care seeking.

c. Self-perceived risk for ACS.

Table 4. Multiple Linear Regression Coefficients for Knowledge, Self-Efficacy, and Self-Perceived Risk for CVD and ACS Associated With HIV Stigma and Acculturation (N= 67)

Dependent Variable	Source	R <sup>2</sup>	B	95% CI	R <sup>2</sup> -change	p-Value
Knowledge <sup>a</sup>	Overall	.172	—	—	—	.007**
	Intercept	—	-.952	-3.476 to 1.573	—	—
	HIV stigma	—	.014	-.033 to .062	.005	.549
	Acculturation	—	.037	.008 to -.066	.086	.013*
Self-efficacy <sup>c</sup>	Education <sup>b</sup>	—	.306	-.083 to .695	.032	.121
	Overall	.246	—	—	—	<.0005**
	Intercept	—	12.700	7.870 to 17.530	—	—
	HIV stigma	—	-.139	-.231 to -.046	.108	.004**
Self-perceived risk <sup>d</sup>	Acculturation	—	.033	-.021 to .086	.018	.224
	Gender <sup>b</sup>	—	-1.622	-3.516 to .273	.035	.092
	Overall	.255	—	—	—	.001**
	Intercept	—	2.140	-2.593 to 6.873	—	—
	HIV stigma	—	0.008	-.052 to -.068	<.01	.79
	Acculturation	—	-.002	-.035 to -.032	<.01	.92
Self-perceived risk <sup>d</sup>	Age <sup>b</sup>	—	.094	.042 to .146	.158	.001**
	Self-rated general health <sup>b</sup>	—	-.322	-.630 to -.014	.052	.041*

Note: \*p-value < .05, \*\*p-value < .01.

a. Knowledge of cardiovascular disease (CVD) and acute coronary syndrome (ACS).

b. Potential confounding variables. The multiple linear regressions were adjusted by including these variables in the model.

c. Self-efficacy regarding ACS.

d. Self-perceived risk for ACS.