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Use and Disclosure of Complementary Health Approaches (CHA) in U.S. Adults With Cardiovascular Disease

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Abstract

Current evidence indicates that the use of Complementary Health Approaches (CHA) is common among people with cardiovascular disease (CVD) and can come with both benefits and risks. Yet disclosure of CHA use to physicians is not uniformly high. The aim of the current study was to assess the prevalence and patterns of CHA use and disclosure among people with CVD in a nationally representative US sample, using the 2012 NHIS data. Use of specific CHA modalities, and the predictors and reasons for non-disclosure were examined. The 2012 National Health Interview Survey, a nationally representative sample of adults 18+ was used and 12,364 individuals who reported being diagnosed with CVD were analysed using weighted bivariate and logistic regression. Analyses revealed that 34.75% of those with CVD had used CHA in the previous year. Women, those with higher education and income, who had functional limitations, greater mental distress, and healthier lifestyles were significantly more likely to use CHA. Non-vitamin, non-mineral (NVNM) supplements was the most prevalent CHA used (19.22%). Rates of non-disclosure were highest among younger and better educated CHA users. Among those with CVD who did not disclose CHA use to their physician (33.67%), 45.51% said the reason was because physician did not ask; only 8.75% said the reason was because they were not using CHA at the time. In conclusion, over a third of people with CVD used CHA in the previous year, and NVNM were the most commonly used modality. Findings underscore the importance of provider-initiated communication about CHA use in CVD patients to minimize the potentially harmful consequences of non-disclosure.

KEY WORDS: Complementary health approaches; non-disclosure; cardiovascular disease

Complementary Health Approaches (CHA) consist of a diverse set of healing approaches of differing practices, health systems, and products that are not generally considered part of conventional medicine. CHA is an increasingly popular health-care option among cardiac patients [1], with the prevalence of CHA use reported to be as high as 61 percent when used in general, and 82 percent when used specifically to treat cardiovascular disease (CVD) [2]. Yet disclosure of CHA use to physicians is not uniformly high [2]. Non-disclosure of CHA poses some potential risks because non-vitamin, non-mineral and herbal products, one of the most commonly used groups of CHA among cardiac patients [3,4], can interact with medications or have adverse effects on the cardiovascular or haemostatic system [5]. For example, herbal products such St. John's Wort decrease serum digoxin concentration, whereas Hawthorn increases the effects of digoxin [4]. Products such as Ma-huang (a.k.a. ephedra) can increase heart rate and blood pressure [5], and result in adverse cardiovascular effects such as stroke and myocardial infarction [1]. Full disclosure of CHA use, whether for CVD or other health issues, is crucial to minimise patient harm. The purpose of the current study was to assess the prevalence and patterns of CHA use and disclosure among people with CVD in a nationally representative US sample, as well as the reasons for non-disclosure, using the 2012 National Health Interview Survey (NHIS) data containing the most recent CHA information.

METHODS

The NHIS 2012, the most recent NHIS survey, was the source of the data used for these analyses. The NHIS is an ongoing, cross-sectional household interview survey of the US civilian, non-institutionalized population and uses a multistage area probability design [6]. Every five years an Adult Alternative Medicine supplement is administered to a randomly selected adult age 18 or over in the household (Sample Adult Core) (n = 34,525). In 2012, the Sample Adult Core

response rate was 79.7% [6]. For this analysis, the sample included all adults who completed the Alternative Medicine Supplement and stated they were diagnosed with a heart condition. Following earlier research that used the 2002 NHIS to investigate CVD and CHA users (11), we created a composite measure of CVD that included individuals in the NHIS who said they had ever been diagnosed by a physician for having: 1) hypertension; 2) coronary heart disease; 3) angina; 4) heart attack; or 5) any other kind of heart disease. Based on these criteria, the final analytic sample size was 12,364. The study was exempt from human subjects and from the university's institutional review board because the data are de-identified and publicly available.

Measures

The primary outcome was use of any type of CHA in the past 12 months. Adults were first asked if they had ever used any of over 20 types of specific CHA modalities (e.g., acupuncture, massage, yoga, meditation, natural products, and so on), and if they responded affirmatively, were then asked if it was used in the past 12 months. Any mention of CHA was coded as a "yes." The final variable was coded as a dichotomy. In addition, we also reported on use of the top 10 types of specific CHA modalities. Among individuals with CVD who were recent CHA users, we also examined prevalence of non-disclosure of CHA use to their conventional health care provider (almost entirely physicians, over 96%) and the reasons mentioned for not disclosing.

Gender was coded as a dichotomy. Age was coded ordinally (18-29, 30-49, 50-64, 65+), as was education ($\leq$ high school, some college, baccalaureate or higher), and income ($\leq$ \$34,999, \$35,000-49,999, \$50,000-74,999, \$75,000-99,000, and $\geq$\$100,000). Race and ethnicity were based on self-report with any mention of being Hispanic/Latino given priority (Hispanic, Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Asian, Other). Marital status was coded

categorically (married, cohabitating, divorced/separated/widowed, never married). Current health status was operationalized as having any functional limitation (yes, no), mental distress as measured by the Kessler K6 scale [7] (yes, no), and a healthy behavior index that was a composite score of the total number of healthy behaviors out of four (not smoking, little or moderate alcohol consumption, normal BMI, and adequate physical activity).

Univariate descriptive statistics and bivariate associations between each covariate and any type of CHA use were computed. Design-based *F* tests were employed for bivariate analysis. Logistic regression was used for multivariate analyses and adjusted odds ratios (AORs) and 95% confidence intervals (CI) are presented. All analyses were weighted using the individual sampling weights to account for complex sample design. Analyses were conducted with Stata statistical software version 13.1 [8].

RESULTS

Over three-quarters of adults with CVD were 50 and older; about three-quarters were White, followed by Black, Hispanic/Latino, Asian, and other races (see Table 1). The vast majority were born in the US. They tended to be of lower socioeconomic status (SES) with the majority completing high school or less and in the lowest income category. Most were either currently married or divorced, separated, or widowed. Over half reported at least some functional limitation but less than 5 percent scored higher on the K6 scale. Over one-third reported less than two healthy behaviors. They were less likely to be Hispanic/Latino, foreign born, be college graduates, or have higher incomes, or to be cohabiting, divorced/widowed. Last, they were more likely to be never married, have functional limitations, higher K6 score, and less likely to engage in a greater number of healthy behaviors (See Supplemental Table 1.)

Overall, just over a third of individuals with CVD used CHA in the past year (Table 1).

At the bivariate level, there were significant differences between those who used CHA versus those who did not except for functional limitations and mental distress. CHA use was higher among females, younger adults, Asians, Whites, and other races, among those who were US born, and had higher SES. CHA was highest among cohabiting and married adults and incrementally increased as the number of healthy behaviors increased. In additional multivariate analysis that included the full NHIS sample, individuals with CVD had significantly higher odds of CHA use compared to those without heart problems (AOR = 1.14, 95% CI: 1.06, 1.23), net of demographics, health conditions, and health behaviors (see Supplemental Table 2).

Women had higher odds of use than men, and those who were 65+ had lower odds than the youngest age group (Table 1). Compared to Whites, Hispanics and Blacks had lower odds of use. Both higher levels of education and higher incomes were associated with greater odds of use. Compared to married persons, those who were divorced had higher odds. Those with functional limitations or greater mental distress had higher odds of use as did individuals who engaged in greater numbers of health behaviors.

With respect to the specific types of CHA modalities used by adults with CVD, over half took multivitamins/mineral tablets (Table 2). Almost 1 in 5 used non-vitamin, non-mineral (NVNM) and herbal products, followed by chiropractic/osteopathic manipulation, massage, mind-body techniques, and relaxation techniques. The remaining modalities were less commonly used. Except for NVNM and chiropractic, there were significant gender differences in use. Additional logistic regression analyses for each of the top 5 modalities (e.g., multivitamin, natural products, chiropractic, massage, and mind-body) revealed that, regardless of modality, users were more likely to be white, have higher levels of education and income, have functional limitations, and greater numbers of health behaviors (results available from authors).

About one-third did not disclose their use of CHA to their physician (Table 3). Among those who did not disclose, the most common reason stated was that the provider did not ask. Slightly over 1 in 5 provided no reason for non-disclosure, followed by users' beliefs that their provider did not need to know. Less than ten percent did not disclose because they were not using CHA at the time they saw their provider, and very few noted perceptions of negative reactions from their physicians as a reason for non-disclosure.

The logistic regression of CHA users who did not disclose to their physicians found that compared to the youngest adults with CVD, those who were the oldest had significantly lower odds of non-disclosure of their CHA use, as did those who were foreign-born, and those who had functional limitations (Table 4). In contrast, those with the highest level of education or who were cohabiting or never married (versus married) had higher odds of non-disclosure.

DISCUSSION

In this analysis of the 2012 NHIS data, a nationally representative sample of Americans, over a third of people with CVD reported using CHA in the previous year. Rates of use were higher among those in the highest income categories, and those with a bachelor's degree using CHA. The demographic predictors of CHA use were consistent with research with the general population [9,10], with women, and adults who were younger, White, and who had higher SES, functional limitations, and mental distress more likely to use CHA. Non-vitamin, non-mineral natural products were used by about a fifth of those with CVD, and rates of non-disclosure of CHA use to physicians was reported by about a third of adults, with rates highest among younger age groups and those with higher education levels. Importantly, not being asked by their physician was the most commonly reported reason for non-disclosure.

The current findings parallel previous results from the 2002 NHIS with respect to rates of

CHA use and the popularity of non-vitamin, non-mineral supplements and herbal products among people with CVD [11], and thus their potential risk. In the US herbal medications do not require approval or testing for their safety or effectiveness for certain conditions as they fall under a category of dietary supplements within the FDA [12]. Both herbal products and non-vitamin, non-mineral supplements are perceived as being natural and therefore safe [13], contributing further to potential misuse among CVD patients.

In the current analysis, the rate of disclosure of CHA use to health-care providers among those with CVD was greater than the disclosure rate noted in the 2002 NHIS [11], and was similar to the rate found among the general population [14]. Although the lower rate of non-disclosure in 2012 compared to 2002 is promising, when considered in light of the high rates of CHA use in certain groups and the reasons for non-disclosure, the current findings highlight the importance of physicians asking their CVD patients about CHA use. The most reported reason for not disclosing CHA use was because the provider did not ask, which is consistent with the main reason for non-disclosure in the general population [14]. Ostensibly, this reflects issues in physician-initiated communications regarding CHA use, and underscores the need for physicians to ask about the details of CHA modalities used by their patients.

Aside from high use of herbal and supplement use, CVD patients also used other CHA modalities such as massage, mind-body practices, and relaxation techniques. These CHA are known to be useful for reducing stress [15,16], which in turn can have beneficial downstream effects with respect to cardiac health [17,18]. Nonetheless, the timing of initiating discussion about CHA is an important consideration. Evidence indicates that people may begin CHA use after experiencing myocardial infarction (MI). In one study of CVD patients from 24 US sites, a third reported initiating use of CHA within the year after experiencing MI, with mind-body therapies,

and biological therapies as the most commonly adopted CHA modalities [19]. Given this, initiating discussion about CHA use upon intake, and following up regarding any changes in CHA use over time may be the best strategy to minimise potential issues associated with non-disclosure, such as harmful interactions [4] or reduced adherence to CVD medication [20].

The findings from the current study should be considered in light of several limitations and strengths. Participants were only asked about whether or not they disclosed CHA, and not about the type of CHA that was disclosed, or whether CHA was being used for CVD or other medical issues. Therefore, it is unknown whether the rates of disclosure were higher or lower for more concerning CHA modalities, such as herbal and natural supplements, or for other forms of CHA which may be beneficial for managing stress. It is also unclear if disclosure was patient initiated or provider initiated, although not being asked by the provider about CHA use as a main reason for non-disclosure indicates that providers may have initiated these conversations. Further work is needed to improve understanding of how disclosure may vary across CHA modalities and communication scenarios. Despite these limitations, the use of a large nationally representative sample of people with CVD who use CHA is a clear strength of the study that supports the robustness and generalizability of the findings.

In conclusion, in a large nationally representative US sample we found that over a third of people with CVD used CHA in the previous year, and that non-vitamin, non-mineral supplements and herbal products were one of the most commonly used CHA modalities. Rates of non-disclosure, though lower than those found in the 2002 NHIS, remaining concerning, and were highest among younger and better educated CHA users. The main reason for non-disclosure was not being asked by the health-care provider, underscoring the importance of provider-initiated communication about CHA use in CVD patients.

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References

1. Valli G, Giardina E-GV. Benefits, adverse effects and drug interactionsof herbal therapies with cardiovascular effects. *J Am Coll Cardiol* 2002;39:1083-1095.

2. Grant SJ, Bin YS, Kiat H, Chang DH-T. The use of complementary and alternative medicine by people with cardiovascular disease: a systematic review. *BMC Pub Health* 2012;12:1-9.

3. Bahall M. Complementary and alternative medicine usage among cardiac patients: a descriptive study. *BMC Complement Altern Med* 2015;15:1-8.

4. Rabito MJ, Kaye AD. Complementary and alternative medicine and cardiovascular disease: An evidence-based review. *Evid Based Complement Alternat Med* 2013:1-8.

5. Tachjian A, Maria V, Jahangir A. Use of Herbal Products and Potential Interactions in Patients With Cardiovascular Diseases. *J Am Coll Cardiol* 2010;55:515-525.

6. Statistics NCfH. Data file documentation, National Health Interview Survey, 2012. In: Statistics NCfH, ed. Hyattsville, MD: Centers for Disease Control and Prevention, 2013.

7. Kessler RC, Andrews G, Colpe LJ, Hiripi E, Mroczek DK, Normand SLT, Walters EE, Zaslavsky AM. Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychol Med* 2002;32:959-976.

8. StataCorp. Survey Data Reference Manual. College Station, TX: Stata Press, 2011.

9. Sirois FM, Riess H, Upchurch DM. Implicit Reasons for Disclosure of the Use of Complementary Health Approaches (CHA): a Consumer Commitment Perspective. *Ann Behav Med* 2017;51:764-774.

10. Clarke TC, Black LI, Stussman BJ, Barnes PM, Nahin RL. Trends in the Use of Complementary Health Approaches Among Adults: United States, 2002–2012: National Health Statistics Report, 2015.

11. Yeh GY, Davis RB, Phillips RS. Use of complementary therapies in patients with cardiovascular disease. *Am J Cardiol* 2006;98:673-680.

12. Liperoti R, Vetrano DL, Bernabei R, Onder G. Herbal medications in cardiovascular medicine. *J Am Coll Cardiol* 2017;69:1188-1199.

13. Nichol J, Thompson EA, Shaw A. Beliefs, Decision-Making, and Dialogue About Complementary and Alternative Medicine (CAM) Within Families Using CAM: A Qualitative Study. *J Altern Complement Med* 2011;17:117-125.

14. Jou J, Johnson P. Nondisclosure of complementary and alternative medicine use to primary care physicians: Findings from the 2012 national health interview survey. *JAMA Intern Med* 2016;176:545-546.

15. Goyal M, Singh S, Sibinga ES, et al. Meditation programs for psychological stress and well-being: A systematic review and meta-analysis. *JAMA Intern Med* 2014;174:357-368.

16. Sharma M. Yoga as an Alternative and Complementary Approach for Stress Management. *J Evid Based Complementary Altern Med* 2014;19:59-67.

17. Dimsdale JE. Psychological stress and cardiovascular disease. *J Am Coll Cardiol* 2008;51:1237-1246.

18. Rod NH, Grønbæk M, Schnohr P, Prescott E, Kristensen TS. Perceived stress as a risk factor for changes in health behaviour and cardiac risk profile: a longitudinal study. *J Intern Med* 2009;266:467-475.

19. Shafiq A, Jayaram N, Gosch KL, Spertus JA, Buchanan DM, Decker C, Kosiborod M, Arnold SV. The association between complementary and alternative medicine and health status following acute myocardial infarction. *Clin Cardiol* 2016;39:440-445.

20. Krousel-Wood MA, Muntner P, Joyce CJ, Islam T, Stanley E, Holt EW, Morisky DE, He J,

Webber LS. Adverse effects of complementary and alternative medicine on antihypertensive medication adherence: Findings from the Cohort Study of Medication Adherence Among Older Adults. *J Am Geriatr Soc* 2010;58:54-61.

Table 1. Demographic, health, and health behavior characteristics, prevalence of Complementary Health Approaches (CHA) use, and logistic regression results of CHA use, adults with cardiovascular diseases, National Health Interview Survey, 2012 (N = 12,364)

		CHA use	AOR	95% CI
Total	100.00%	34.75%	--	--
Sex				
Male	45.76%	32.26%***	1.00	--
Female	54.24%	36.85%	1.42	(1.29, 1.56)
Age (years)				
18-29 years old	5.20%	40.25%***	1.00	--
30-49 years old	19.50%	38.41%	0.92	(0.71, 1.18)
50-64 years old	33.61%	37.69%	0.85	(0.66, 1.09)
65+ years old	41.69%	29.91%	0.55	(0.45, 0.76)
Race/ethnicity				
NH-White	72.59%	37.90%***	1.00	--
Hispanic	8.84%	26.33%	0.71	(0.60, 0.84)
NH-Black	14.66%	23.11%	0.53	(0.47, 0.60)
NH-Asian	3.05%	39.31%	1.02	(0.79, 1.12)
NH-Other	0.86%	37.68%	1.06	(0.66, 1.71)
Nativity				
Born in US	88.52%	35.35%***	1.00	--
Foreign born	11.48%	30.17%	0.94	(0.79, 1.12)
Education attainment				
High school and less	45.41%	24.46%***	1.00	--
Some college	30.98%	39.26%	1.71	(1.53, 1.92)
College and above	23.60%	48.63%	2.27	(2.01, 2.57)
Annual family income				
$ 0-34,999	46.19%	27.48%***	1.00	--
$ 35,000-49,999	14.64%	35.43%	1.29	(1.12, 1.480
$ 50,000-74,999	16.11%	39.14%	1.35	(1.17, 1.57)
$ 75,000-99,000	9.11%	45.61%	1.68	(1.39, 2.02)
$ 100,000+	13.96%	45.97%	1.46	(1.229, 1.731)
Marital status				
Married	43.93%	36.54%***	1.00	--
Cohabiting	3.76%	39.99%	1.10	(0.94, 1.28)
Divorced/separated/ widowed	38.16%	31.72%	1.28	(1.02, 1.61)
Never married	14.15%	36.00%	1.05	(0.94, 1.17)
Functional limitation				
Limited	59.43%	35.48%	1.00	--
Not limited	40.57%	33.69%	1.49	(1.34, 1.65)
K6 scores				
0-12	95.15%	34.64%	1.00	--
13-24	4.85%	36.91%	1.28	(1.04, 1.57)
Healthy behavior index (continuous)			1.38	(1.29, 1.46)
Healthy behavior index				
0	4.71%	23.23%***	--	--
1	36.04%	28.01%	--	--
2	43.18%	36.44%	--	--
3	14.20%	47.98%	--	--
4	1.87%	60.91%	--	--

Notes: NH=Non-Hispanic. AOR = Adjusted odds ratio; CI = confidence interval; Weighted percentages and AOR. Bivariate results based on design-based F test. ***p<.001. See text for further detail.

Table 2. Rank order and prevalence of use of specific Complementary Health Approaches (CHA) modalities among recent users with cardiovascular diseases, National Health Interview Survey, 2012 (N = 12,364)

Rank	Type of CHA	Prevalence			
		Total	Male	Female	p-value
1	Multi-vitamin or multi-mineral supplement	55.78%	52.29%	58.72%	<0.0001
2	Non-vitamin, non-mineral or herbal supplement	19.92%	19.59%	20.20%	0.4958
3	Chiropractic or osteopathic manipulation	9.20%	8.88%	9.48%	0.3096
4	Massage	8.19%	6.52%	9.59%	<0.0001
5	Mind-body techniques: Yoga, Tai Chi or Qi Gong	6.49%	4.10%	8.50%	<0.0001
6	Relaxation techniques: Meditation, guided imagery or progressive relaxation	4.86%	4.15%	5.47%	0.0064
7	Special diet	3.09%	2.66%	3.45%	0.0294
8	Homeopathy	1.95%	1.41%%	2.40%	0.0017
9	Acupuncture	1.63%	0.31%	1.75%	<0.0001
10	Movement techniques: Feldenkrais, Pilates, Trager psychophysical integration, or Alexander technique	1.09%	1.09%	2.09%	0.0001

Notes: Weighted percentages. Bivariate analysis for design-based F-test. See text for further detail.

Table 3. Reasons for non-disclosure of Complementary Health Approaches (CHA) use to physician, adults with cardiovascular diseases, National Health Interview Survey, 2012 (N = 3,068)

	Reasons for not disclosing CHA use	
1	They didn't ask	45.51%
2	No reason provided	23.89%
3	Didn't think they needed to know	9.44%
4	Weren't using therapy at the time	8.75%
5	Didn't think they knew as much about therapy as you do	6.19%
6	They didn't give you enough time to tell them	5.52%
7	Concerned about a negative reaction	0.39%
8	They discouraged use of therapy in the past	0.20%
9	Worried they would discourage it	0.12%

Notes: Weighted percentages. See text for further detail.

Table 4. Logistic regression results of non-disclosure of Complementary Health Approaches (CHA) use to physician, adults with cardiovascular diseases, National Health Interview Survey, 2012 (N = 3,068)

	Non-Disclosure of CHA	
	AOR	**95% CI**
Sex		
Male	1.00	
Female	1.14	(0.93, 1.39)
Age (years)		
18-29 years old	1.00	
30-49 years old	0.72	(0.43, 1.22)
50-64 years old	0.64	(0.38, 1.06)
65+ years old	0.49	(0.29, 0.84)
Race/ethnicity		
NH-White	1.00	
Hispanic	1.29	(0.91, 1.81)
NH-Black	0.95	(0.71, 1.27)
NH-Asian	1.14	(0.70, 1.86)
NH-Other	1.59	(0.63, 4.02)
Nativity		
Born in US	1.00	
Foreign born	0.67	(0.46, 0.97)
Education attainment		
High school and less	1.00	
Some college	1.17	(0.92, 1.48)
College and above	1.28	(1.21, 1.69)
Annual family income		
$ 0-34,999	1.00	
$ 35,000-49,999	0.84	(0.63, 1.12)
$ 50,000-74,999	1.17	(0.87, 1.58)
$ 75,000-99,000	1.03	(0.74, 1.43)
$ 100,000+	1.06	(0.79, 1.41)
Marital status		
Married	1.00	
Cohabiting	1.47	(1.05, 2.06)
Divorced/separated/widowed	1.43	(0.89, 2.29)
Never married	1.26	(1.01, 1.56)
Functional limitation		
Not limited	1.00	
Limited	0.71	(0.58, 0.86)
K6 scores		
0-12	1.00	
13-24	1.05	(0.66, 1.66)
Healthy behavior index	1.07	(0.95, 1.20)

Notes: AOR = Adjusted odds ratio; CI = confidence interval; Weighted analysis. See text for further detail.

Supplemental Table 1. Logistic regression results of characteristics of individuals with cardiovascular diseases versus none, National Health Interview Survey, 2012 (N=33,594)

	AOR	95% CI
Sex		
Male	1.00	
Female	0.74	(0.69, 0.79)
Age (years)		
18-29 years old	1.00	
30-49 years old	2.21	(1.97, 2.49)
50-64 years old	6.05	(5.36, 6.82)
65+ years old	13.27	(11.58, 15.21)
Race/ethnicity		
NH-White	1.00	
Hispanic	0.85	(0.77, 0.95)
NH-Black	1.58	(1.45, 1.72)
NH-Asian	1.06	(0.92, 1.22)
NH-Other	1.31	(0.94, 1.83)
Nativity		
Born in US	1.00	
Foreign born	0.77	(0.71, 0.85)
Education attainment		
High school and less	1.00	
Some college	1.04	(0.96, 1.12)
College and above	0.85	(0.78, 0.94)
Annual family income		
$ 0-34,999	1.00	
$ 35,000-49,999	0.89	(0.82, 0.98)
$ 50,000-74,999	0.92	(0.83, 1.01)
$ 75,000-99,000	0.90	(0.80, 1.01)
$ 100,000+	0.87	(0.78, 0.98)
Marital status		
Married	1.00	
Cohabiting	0.90	(0.82, 0.99)
Divorced/separated/widowed	0.85	(0.74, 0.97)
Never married	1.09	(1.02, 1.17)
Functional limitation		
Not limited	1.00	
Limited	2.39	(2.25, 2.54)
K6 scores		
0-12	1.00	
13-24	1.68	(1.410 2.00)
Healthy behavior index	0.74	(0.72, 0.76)

Notes: AOR = Adjusted odds ratio; CI = confidence interval; Weighted analysis. See text for further detail.

Supplemental Table 2. Results of logistic regression of recent Complementary Health Approaches (CHA) use on cardiovascular disease (CVD) status controlling for socio-demographic characteristics and health conditions among American adults, National Health Interview Survey, 2012 (N=33,594, weighted)

	CHA use	
	AOR	**95% CI**
CVD status		
Without CVD	1.000	
With CVD	1.139	(1.058, 1.226)
Covariates		
Sex		
Male	1.000	
Female	1.499	(1.414, 1.588)
Age (years)		
18-29 years old	1.000	
30-49 years old	1.177	(1.079, 1.284)
50-64 years old	1.101	(0.989, 1.226)
65+ years old	0.737	(0.652, 0.834)
Race/ethnicity		
NH-White	1.000	
Hispanic	0.704	(0.637, 0.779)
NH-Black	0.487	(0.443, 0.534)
NH-Asian	1.046	(0.915, 1.195)
NH-Other	1.103	(0.822, 1.480)
Nativity		
Born in US	1.000	
Foreign born	0.808	(0.733, 0.891)
Education attainment		
High school and less	1.000	
Some college	1.797	(1.680, 1.923)
College and above	2.370	(2.197, 2.556)
Annual family income		
$ 0-34,999	1.000	
$ 35,000-49,999	1.208	(1.113, 1.311)
$ 50,000-74,999	1.302	(1.183, 1.432)
$ 75,000-99,000	1.385	(1.241, 1.546)
$ 100,000+	1.438	(1.302, 1.589)
Marital status		
Married	1.000	
Cohabiting	1.157	(1.069, 1.252)
Divorced/separated/widowed	1.181	(1.050, 1.328)
Never married	1.085	(1.006, 1.169)
Functional limitation		
Not limited	1.000	
Limited	1.692	(1.580, 1.812)
K6 scores		

0-12	1.000	
13-24	1.227	(1.049, 1.436)
Healthy behavior index	1.388	(1.343, 1.435)

Notes: AOR = Adjusted odds ratio; CI = confidence interval.