

Will Teens Go Red? Low Cardiovascular Disease Awareness Among Young Women

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Background—The American Heart Association Go Red for Women campaign has improved awareness of cardiovascular disease (CVD) among adult women aged 25 years and older. Little is known about awareness among younger women.

Methods and Results—We assessed awareness of CVD and prevention efforts among 331 young women aged 15 to 24 years using the American Heart Association National Women's Health Study survey. We compared responses from this cohort to the 2012 American Heart Association online survey of 1227 women aged 25 years and older. Only 33 (10.0%) young women correctly identified CVD as the leading cause of death in women. This was significantly lower than awareness among all adult women in 2012 (785 [64.0%]) and among women aged 25 to 34 years (90 of 168 [53.6%]) ($P < 0.01$ for both). Many young women in the current study (144 [43.5%]) said they were not at all informed about CVD; most worried little (130 [39.2%]) or not at all (126 [38%]) about CVD. Young women did report engaging in behaviors known to reduce risk of CVD, although not considering oneself at risk was cited as the number one barrier to engaging in prevention behaviors.

Conclusions—Young women are largely unaware of CVD as the leading cause of death for women. Given that most young women are not worried about CVD and their 10-year risk for CVD events is low, campaigns to promote heart-healthy behaviors among younger women should underscore the benefits of these preventive behaviors to current health in addition to reductions in lifetime risk of CVD. (*J Am Heart Assoc.* 2019;8:e011195. DOI: 10.1161/JAHA.118.011195.)

Key Words: cardiovascular disease prevention • cardiovascular disease risk factors • primary prevention • women • young

Cardiovascular disease (CVD) remains the number one cause of death for American women.¹ Since 1997, the American Heart Association (AHA) has surveyed adult women aged 25 years and older triennially about heart disease prevalence, risk factors, and preventive behaviors.² Awareness of CVD has improved over the past 15 years among women, due in part to the AHA's Go Red for Women media communications campaign. However, awareness among younger women has consistently lagged behind that of older

women. Forty-one percent of women aged 25 to 34 were unaware that CVD is the number one cause of mortality in women at the last published assessment in 2012.² Younger women were also the most likely age group to report that their doctor had never discussed CVD prevention with them (94%) and to report that they did not think they were at risk for CVD (14%).²

There is clear evidence that traditional CVD risk factors, including elevated blood pressure, blood cholesterol, and blood glucose, have their origins in childhood and adolescence.^{3–5} In 2010 the AHA set the goal of improving the cardiovascular health of all Americans by 20% by 2020⁶ and recognized the importance of improving the cardiovascular health of youth to this goal.⁷ Cardiovascular health is defined as the simultaneous presence of 4 ideal cardiovascular behaviors (nonsmoking, normal body mass index, healthy diet, and adequate physical activity) and 3 ideal cardiovascular factors (normal blood pressure, blood cholesterol, and blood glucose without the use of medications). While 41% of adolescent girls have at least 5 cardiovascular health metrics, only 20% of adult women do,¹ demonstrating that the transition to young adulthood is a key time for the loss of cardiovascular health. Furthermore, while almost all young adults have a low 10-year risk of CVD, up to 50% have a

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Accompanying Data S1 are available at <https://www.ahajournals.org/doi/suppl/10.1161/JAHA.118.011195>

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Clinical Perspective

What Is New?

- Women aged 15 to 24 years have low short-term but high lifetime risk for cardiovascular disease, including heart disease and stroke.
- Only 10% of women surveyed in this age group recognized that heart disease is the number one killer of women.
- Young women preferred to learn about heart disease from their doctor, but few had spoken to a doctor about heart disease prevention.

What Are the Clinical Implications?

- Physicians should educate young women on their lifetime risk for cardiovascular disease using a developmentally appropriate approach that emphasizes issues that matter to them, including emotional health in addition to physical health.

high lifetime risk of CVD due to obesity, tobacco use, and nonideal diet and exercise patterns along with borderline levels of the traditional CVD risk factors.^{8,9} Experts agree that the most efficacious way to improve the cardiovascular health of Americans and reduce the lifetime risk of CVD is to focus on the primordial prevention of CVD risk factors before they ever occur, thus increasing the number of children and adolescents who retain their cardiovascular health into adulthood.^{10,11} However, little is understood about how best to inform young women about their lifetime risk for CVD or to motivate them to adopt and maintain cardiovascular health-promoting behaviors. We aimed to assess awareness of CVD, CVD risk factors, and preventive behaviors proven to improve cardiovascular health among young women aged 15 to 24 years and compare their responses to women aged 25 years and older.

Methods

The data that support the findings of this study are available from the corresponding author upon reasonable request. All English- and Spanish-speaking patients aged 15 to 24 years who self-identified as female in the electronic medical record, and were visiting an urban academic medical center or a community health center between September 2017 and January 2018 were eligible to enroll in the study. Research assistants approached patients to complete the anonymous survey on an iPad with the goal to reach the estimated sample size of 220 (based on the power to detect a difference in heart disease awareness and preventive actions to reduce the risk of heart disease from the published adult data²). Ultimately, 331 patients provided informed consent to participate and

were included in the study; 7 participants elected to complete the survey in Spanish. The institutional Office of Research Investigation approved this study.

We used the previously published AHA Women's Health Study survey with permission from Karen Robb (see acknowledgments). Pilot testing with youth from the hospital's teen advisory board led to the slight modification of a few questions and addition of questions related to young women's health (Data S1). Effort was made to maintain as much as possible the same survey questions to allow us to appropriately compare adolescent/young adult (AYA) responses to those of the adult cohort. We calculated participants' body mass index (BMI) from self-reported height and weight as kg/m²; we classified individuals as overweight if the BMI was ≥85th% and <95th% for age (if under 20 years) or if the BMI was ≥25 and <30 kg/m² (if 20 years of age and older), and as obese if the BMI was ≥95th% for age (if under 20 years) or if the BMI was ≥30 kg/m² (if aged 20 years and older). Participants were asked to select a racial category; based on the race data distribution, we then classified participants as black, white, or other (which included participants who self-identified as from another race or as more than 1 race). Participants were also asked whether they self-identified as Hispanic regardless of other racial categories chosen.

We obtained original data with permission from the AHA for 1227 women aged 25 years and older who were surveyed by Harris Poll Online between August 28 and October 5, 2012; see Mosca et al² for details regarding participant recruitment and survey administration. Our study focused mainly on comparisons with the entire AHA cohort; we also include additional comparisons to the subcohort of those aged 25 to 34 years (n=168). We primarily report statistical comparisons between groups without adjustment for confounders using the nonparametric Wilcoxon rank sum test. We developed multivariate (and, when appropriate, multinomial) logistic regression models to assess the associations between participant responses in the AYA cohort and various independent variables that could potentially confound these associations, including race, ethnicity, age, family income, and education level. A contrast matrix was constructed to model race, using white as the reference category (white versus black and white versus other). Ethnicity was modeled as a binary variable. We assumed a statistical significance level of 0.05 for all analyses and conducted analyses using the software package Matlab (Mathworks, Inc). Reported frequencies in the text and figures are based on the entire AYA and AHA cohorts. Missing data for individual questions are reported in the figures and tables.

Results

Demographic and selected clinical characteristics of young AYA women participating in the survey are listed in Table. A

Table. Demographic Characteristics of Current AYA Study Participants and 2012 AHA Participants

	2017 AYA Participants (N=331) N (%)	2012 AHA Participants (N=1227) N (%)
Age, y		
15–17	91 (27.5)	...
18–21	140 (42.3)	...
22–24	69 (20.8)	...
25–34	...	168 (13.7)
35–44	...	192 (15.6)
45–54	...	257 (21.0)
55–64	...	330 (26.9)
>65	...	280 (22.8)
Missing	31 (9.4)	23 (0.9)
Race/Ethnicity		
Black	68 (42.0)	202 (16.5)
White	57 (35.2)	672 (54.8)
Other	37 (22.8)	153 (12.5)
Hispanic	123 (37.2)	200 (16.3)
Missing	46 (13.9)	0
Household income		
\$<35 000	105 (31.7)	417 (34.0)
\$35 000 to <50 000	14 (4.2)	190 (15.5)
\$50 000 to <75 000	17 (5.1)	236 (19.2)
\$≥75 000	38 (11.5)	318 (25.9)
Don't know/missing	157 (47.5)	66 (5.4)
Health insurance status		
Yes	301 (90.9)	1060 (86.4)
No	1 (0.3)	167 (13.6)
Missing	29 (8.8)	0
Personal medical history		
Overweight/obesity	85 (25.7)	71 (42.3)
Depression	107 (32.3)	249 (20.3)
Smoking	23 (7.0)	159 (13.0)
Family history of heart disease	62 (18.7)	405 (33.0)
High blood pressure	23 (9.0)	407 (33.2)
High cholesterol	17 (5.1)	391 (31.9)
Diabetes mellitus/ pre-diabetes mellitus	17 (5.1)/22 (6.7)	152 (12.4)
Missing	52 (15.7)	185 (15.1)

All personal medical history variables were self-reported. Classification of overweight/obesity in the Adolescent/Young Adult (AYA) sample was based on pediatric (if aged <20 years) and adult (if aged ≥20 years) Centers for Disease Control and Prevention body mass index thresholds using self-reported height and weight for the AYA sample. Classification of overweight/obesity in the American Heart Association (AHA) sample was based on self-report of being ≥20 lb over one's ideal weight for height. Personal history of heart disease was considered present if the participant noted any history of a heart attack or stroke.

greater proportion of the AYA sample identified as Hispanic, black, or other race/ethnicity (248, 74.9%), compared with the adult (AHA) sample where the majority identified as non-Hispanic white (672, 54.8%). AYA participants were more likely to have health insurance and less likely to have a personal medical history of common heart disease risk factors compared with the adult sample. Median BMI for the AYA sample was 25.0 (interquartile range, 10.8); 48 (14.5%) were overweight and 72 (21.8%) were obese. Weight status of the AYA sample overall was statistically similar to that seen in women aged 25 to 34 years in the AHA cohort ($P=0.11$), where the median was BMI 24.0 (interquartile range, 10.2), and 26 (15.5%) were overweight and 45 (26.8%) obese. However, the BMI for black women aged 25 to 34 years in the AHA cohort was significantly higher (median BMI, 31.0; interquartile range, 14.8) than for black participants in the AYA cohort (median BMI, 25.3; interquartile range, 10.9; $P=0.03$).

Awareness of Heart Disease and Competing Health Priorities

Only 33 (10.0%) AYA participants identified heart disease as a *leading cause of death for women of all ages*, compared with 62 (18.7%) who identified breast cancer and 73 (22.1%) who identified cancer in general. This was significantly lower than the proportion of women in the full AHA cohort who identified heart disease as the leading cause of death (785 [64.0%]; $P<0.01$), and lower than the next age group of women aged 25 to 34 years in the AHA cohort (90 [53.6%]; $P<0.01$). The distribution of identified causes of death is summarized in Figure 1A for the AYA cohort and Figure 1B for the AHA cohort of women aged 25 years and older. In multivariate models adjusting for age, education level, and family income, AYA women of other/mixed race were less likely than white women to identify heart disease as the leading cause of death (adjusted odds ratio, 0.51; CI, 0.28–0.94). No other racial, ethnic, family income, or education differences in identifying heart disease as the leading cause of death were found in the AYA sample ($P\geq 0.12$).

Only 16 participants in the AYA cohort (4.8%) identified heart disease as a *major health problem facing women of all ages*, and only 3 (0.9%) identified it as such for women aged 15 to 24. Breast cancer, cancer in general, sexual health, and mood disorders were identified as major health problems for women of all ages by 69 (20.9%), 32 (9.7%), 66 (19.9%), and 66 (19%) of AYA women, respectively. In contrast, a significantly higher number of women in the full AHA cohort (280 [22.8%]; $P<0.01$), as well as a significantly higher number of women aged 25 to 34 in the AHA cohort (30 [17.9%]; $P<0.01$) identified heart disease as a major health problem. The

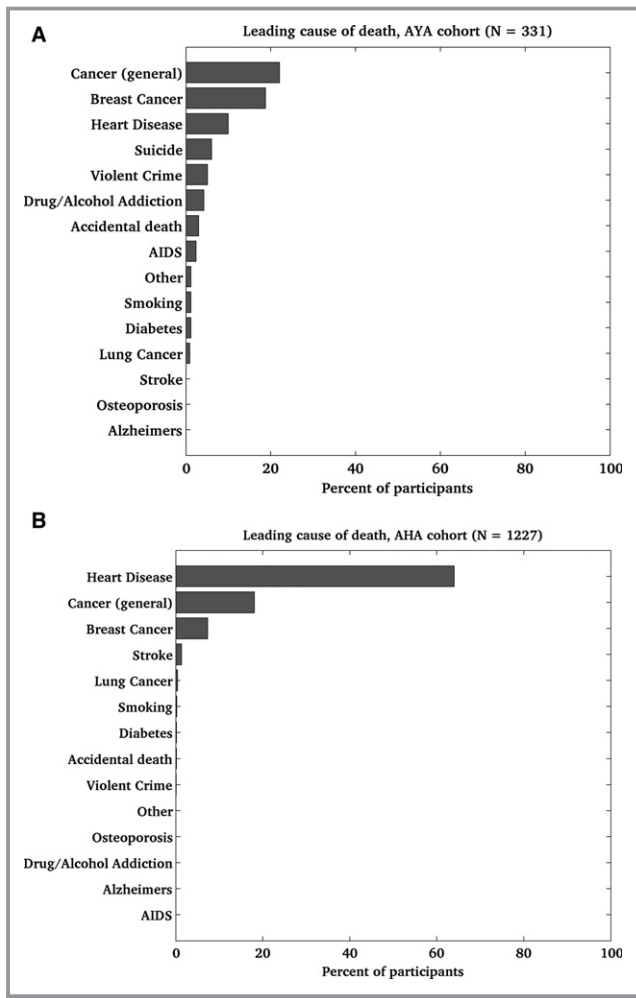


Figure 1. Leading causes of death for women of all ages as reported by adolescent/young women (AYA) aged 15 to 24 years (A) and women aged 25 years and older in the American Heart Association (AHA) cohort (B). Seventy-nine (23.9%) women in the AYA cohort and 32 (2.6%) women in the AHA cohort did not provide a response to this question.

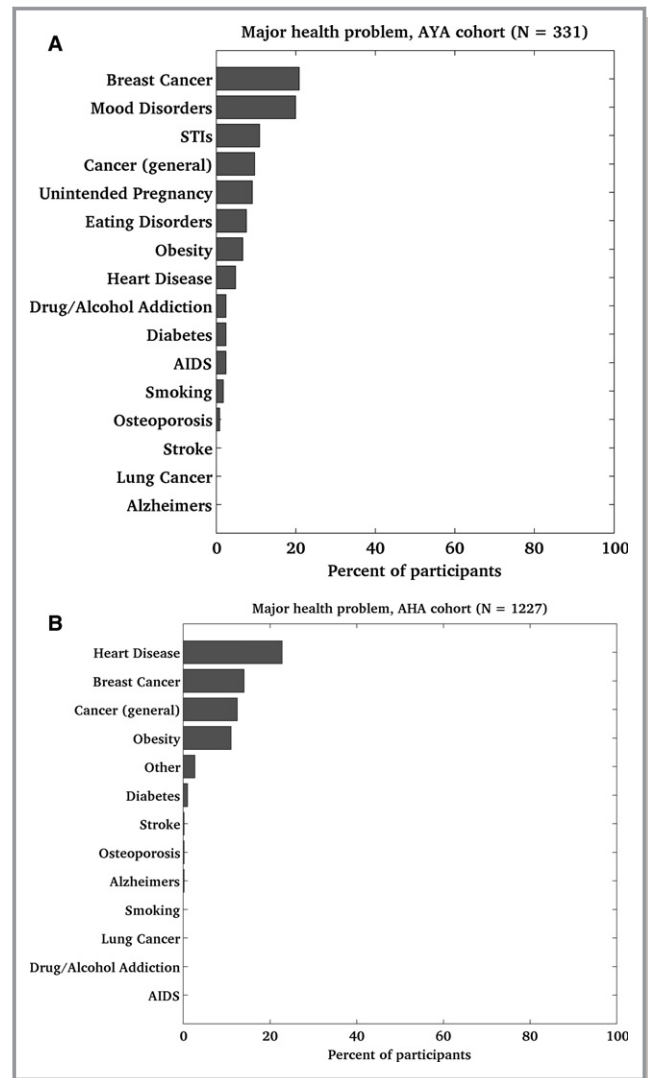


Figure 2. Leading health problem for women of all ages as reported by adolescent/young women (AYA) aged 15 to 24 years (A) and women aged 25 years and older in the American Heart Association (AHA) cohort (B). Two (0.6%) women in the AYA cohort and 469 (38.2%) women in the AHA cohort did not provide a response to this question. STIs indicates sexually transmitted infections.

complete distribution of major health problems for women is summarized in Figure 2A for the AYA cohort and Figure 2B for the AHA cohort of women aged 25 years and older. In multivariate models adjusting for race, ethnicity, family income, or education differences, no significant demographic differences were found in identification of major health problems in the AYA sample ($P \geq 0.33$).

The top 4 causes of death for women aged 15 to 24 years identified by the AYA participants were suicide (91 [27.5%]), drug addiction (77 [23.3%]), accidental death (27 [8.2%]), and violent crime (24 [7.3%]).

Mood disorders were the number one health problem identified for women aged 15 to 24 years, with 59 (17.8%) participants choosing this option; an additional 27 (8.2%) identified eating disorders and 19 (5.7%) identified drugs/alcoholism as major public health issues facing this young age

group. The full distribution of identified causes of death and major health problems for women aged 15 to 24 are summarized in Figure 3A and 3B for the AYA cohort. No significant race, ethnicity, family income, or education differences were found in multivariate models ($P \geq 0.48$). These questions were not asked of the women aged 25 years and older in the AHA cohort.

Awareness of Heart Disease Risk Factors and Sources of Heart Health Information

Despite 272 (82.2%) AYA women reporting having seen a healthcare professional on a regular basis, only 64 (19.3%)

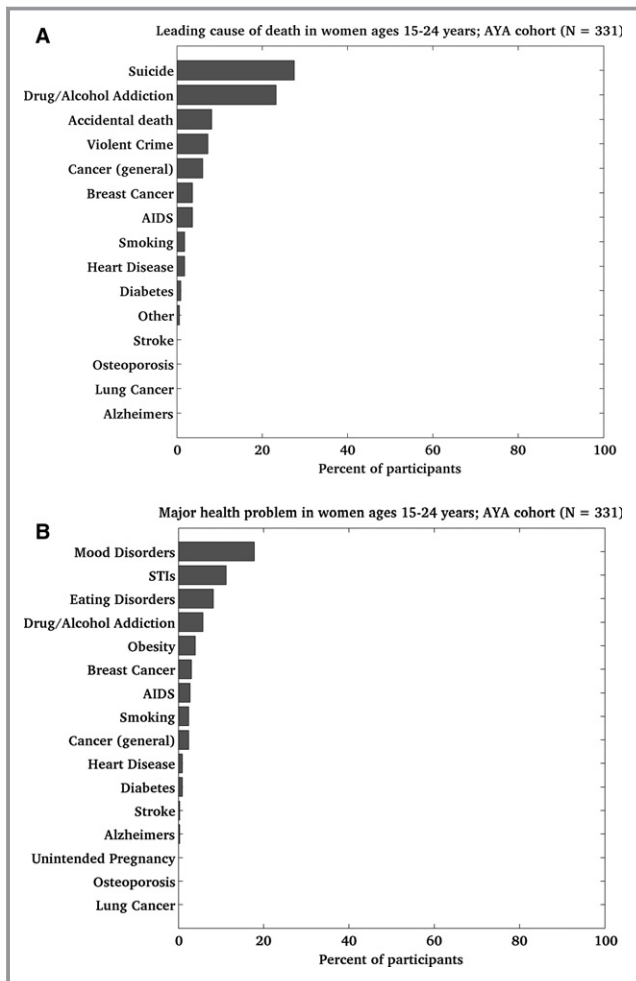


Figure 3. Leading cause of death for women aged 15 to 24 years (A) and leading health problem for women aged 15 to 24 years (B) as reported by adolescent/young (AYA) women aged 15 to 24 years. Fifty (15.1%) AYA women did not provide a response for leading cause of death in their age group, and 133 (40.2%) did not provide a response for leading health problem in their age group. STIs indicates sexually transmitted infections.

had discussed heart disease with their provider in the past 6 months. Participants identified 3 major reasons for not speaking to health professionals about heart disease, including the healthcare professional not bringing it up (111 [33.5%]), participants not feeling the need to discuss it (99 [29.9%]), and not feeling they are at higher risk for heart disease than others (70 [21.1%]). Relatively few young women identified being overweight ($n=38$ [11.5%]) or smoking (28 [8.5%]) as very common reasons for avoiding or delaying going to their doctor.

When asked specifically about causes of heart disease, the majority of AYA participants identified family history as a major cause (252 [76.1%]), followed by high blood pressure (240 [72.5%]), obesity (235 [71.0%]), high cholesterol (218 [65.9%]), stress (180 [54.4%]), and diabetes mellitus (157 [47.4%]). This

suggests that young women have adequate awareness of heart disease risk factors. However, only 35 (10.6%) of AYA women felt that they were well informed about heart disease, compared with 35 (20.8%) women aged 25 to 34 years and 345 (28.1%) women overall in the AHA cohort. A substantial number of AYA participants (141 [42.6%]) said that they would like to be informed about heart disease by their physician.

Preventive Health Behaviors, Barriers, and Facilitators

Almost 85% of the of AYA participants (280 [84.6%]) reported at least one preventive heart health behavior, such as getting physical exercise, getting adequate sleep, and reducing sugar intake (see Figure 4 for the full distribution of reported behaviors). The most common reasons for such actions were to improve their health (237 [71.6%]), live longer (207 [62.5%]), feel better (205 [61.9%]), and avoid taking medications (130 [39.3%]). Similarly, >90% of the AHA participants (1108 [90.3%]) reported preventive actions, and the adult women reported the same top 4 reasons as the young women for doing so. Over one third of young women were encouraged to take action by their healthcare provider (113 [34.1%]) and almost half of them were encouraged to by a family member (151 [45.6%]). There was no statistically significant association in the AYA cohort between identifying heart disease as a major cause of death for all women or a major health problem and any preventive action ($P \geq 0.2$ and $P \geq 0.74$, respectively).

The most common personal barrier cited by AYA women for not taking preventive action was that they did not perceive themselves at risk for heart disease (130 [39.3%]), followed by stress (108 [32.6%]), lack of knowledge of what to do (67 [20.2%]), and lack of confidence (65 [19.6%]). Compared with older women, AYA women were more likely to report lack of risk for heart disease, stress, lack of confidence, fear of change, depression, and confusion (including not knowing what to do) as major factors in not taking any action compared with older women ($P \leq 0.01$) but less likely to report lack of money/insurance coverage as a major barrier. More than 70% of AYA participants (241 [72.8%]) felt that access to healthier foods (including better fruits and vegetables) would facilitate a heart-healthy lifestyle. Slightly more than half of young women surveyed felt that greater access to public recreational facilities and policies requiring restaurants to post nutrition information for menu items would lead to healthier lifestyles (191 [57.7%]) and 177 [53.5%], respectively).

Discussion

In this study of adolescent and young adult women presenting for clinical care in the northeastern United States, we found

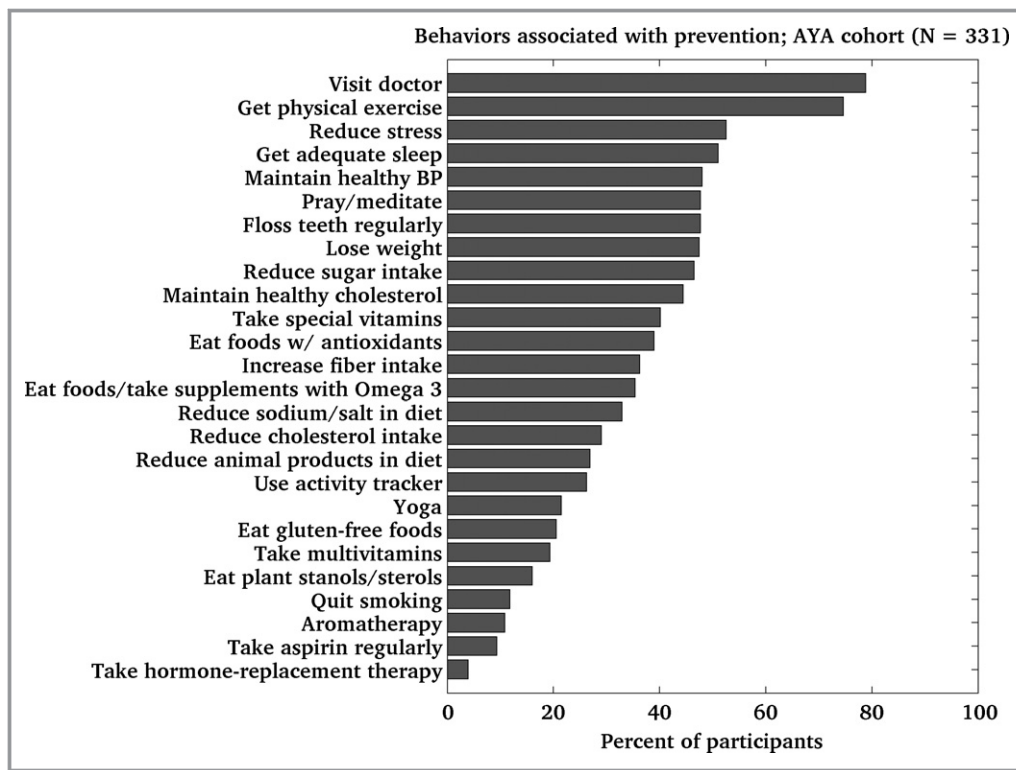


Figure 4. Preventive actions taken in the past year by adolescent and young adult (AYA) women aged 15 to 24 years.

very low awareness of heart disease risk. Only 1 in 10 young women in our sample cited heart disease as the leading cause of death in women, and <5% believed that heart disease was the leading health problem for women. This was substantially lower than rates of awareness seen in adult women even just 1 decade older in the national adult sample. Adolescent and young adult women were much more likely to cite breast cancer or cancer in general as the leading causes of death in women, and to cite mood disorders, eating disorders, and sexually transmitted infections as the leading health problems for both women of all ages and women in their specific age group.

That adolescent and young adult women cite mood disorders, eating disorders, and sexually transmitted infections as leading health problems is not surprising, as each of these conditions has a peak onset in adolescent and young adulthood.¹² Furthermore, the percentage of total deaths attributed to unintentional injuries, suicide, and homicide for women aged 15 to 19 years and 20 to 24 years were 40.1% and 44.1%, 16.7% and 11.6%, and 8.8% and 7.7%, respectively, in 2016,¹³ demonstrating that young women in our study have excellent awareness of the health issues facing their age group in the short term. However, as noted in the introduction, the lifetime risk of CVD is high in many young women even though their short-term risk for CVD is very low.⁹ Adolescents have been shown in some research studies to

have difficulty projecting out far into the future,¹⁴ which may partially explain why subjects in our sample endorsed the prevalent adolescent conditions of mood disorders and sexual health concerns as the most common health problems for women of all ages. Importantly, young women in our study were still much more likely to cite cancer over heart disease as a leading health problem for all women and women their age, despite the low rates of cancer in young people¹⁵ and the rising incidence of myocardial infarction in women under age 55.¹⁶ The recent increase in stroke incidence among young adults¹⁷ is also cause for alarm and presents evidence of the need for immediate improvement of both heart disease awareness and preventive health behaviors among young women.

Heart disease affects 1 of every 3 women in the United States,¹ and breast cancer affects 1 of every 9.¹⁵ Despite this disparity in incidence, women may be less apt to talk openly about heart disease and stroke with younger members of their families or communities because the effects of heart disease treatments relative to cancer therapies may be less visible. In addition, cancer awareness campaigns may have been more successful at reaching teens through professional sports and cosmetics advertising¹⁸ or antitobacco campaigns¹⁹ targeted at adolescents. Textual analyses of media representation of women's breast cancer and heart disease confirm that not only is breast cancer more frequently reported on, but breast

cancer reporting also contains more personal testimonies,²⁰ which may skew young women's perceptions of the 2 diseases.

Notably, not viewing oneself as being at risk for heart disease was a top barrier to engaging in preventive health behaviors for both the AYA women in our sample and women in the adult sample. Healthcare providers were identified as an important source of information by both cohorts, but few of the AYA women and few of the women aged <35 years in the AHA cohort had spoken to a physician about their heart disease risk. This lack of communication about heart health may be attributable to low perceived short-term risk for CVD by both patients and providers. It may also be the result of competing priorities such as unintentional injuries, mental health concerns, and sexual health issues in this age group. Other common barriers to preventive actions, including not knowing what to do and lack of confidence in one's ability to change behavior, could also be addressed in the physician's office. Efforts to improve heart disease awareness and screening for heart disease risk factors in younger women must include targeted education and quality improvement efforts with healthcare providers most likely to treat this age group,²¹ including obstetricians and gynecologists, family physicians, nurse practitioners, college health providers, and pediatricians.

The young women in our sample also identified stress as a common barrier to engaging in preventive action. This, coupled with the finding that mood disorders are the number one health concern among young women, indicates that future campaigns aiming to increase heart-healthy behaviors among adolescents may benefit from highlighting the ameliorating effects of healthy diet, exercise, and tobacco cessation on mood. Furthermore, many AYA women in our sample cited a desire to feel better, improve their health, and live longer as internal motivations to engaging in preventive behaviors, so messages targeted toward these motivations should be incorporated in future heart disease prevention campaigns.

Our study has several important limitations. First, although sufficiently large for the purposes of our study, our sample size is relatively small. Future nationally representative samples with more participants may be conducted to validate our findings. Given the anonymous nature of our survey, we are unable to report data on the physician-verified healthcare problems, family history, or frequency of healthcare visits for our participants and unable to calculate individual lifetime risk for CVD; 10-year risk estimation is not recommended for participant under age 40 years.²² Additional limitations to our study include the difference in sampling time (2012 versus 2017), strategy, and scope from the AHA sample. Our participants were more racially and ethnically diverse than the AHA sample, and one of the clinical sites for recruitment held subspecialty clinics for treating eating disorders and obesity, although participants being seen in these specific clinics were

not eligible for recruitment. Participants in both samples completed the survey online; in the adult sample, participants gave a free response to the questions about leading cause of death and leading health problem; in the current study, participants were presented a list from which to choose the answer for these questions. The AHA sample is nationally representative, and our participants were drawn from 2 clinical sites in the northeastern United States in a state with high rates of health insurance coverage and healthcare utilization. Our sample, therefore, likely represents a healthier population than the nationally representative adult sample, if anything, making the low rates of heart disease awareness in the AYA sample even more concerning. In addition, survey weights were applied to account for the chance of inclusion in the sample in the original AHA analysis, and as we did not apply survey weights to the adult data in this analysis, our findings differ slightly from those published by Mosca and colleagues in 2013.

Conclusion

Adolescence and early young adulthood are an important time in the life course for the prevention of heart disease. Although women in this age group have a low short-term risk for CVD, they often have a high lifetime risk of CVD, and CVD remains the number one cause of mortality for American women. CVD risk factors begin to accumulate early in life, and promotion of cardiovascular health and heart disease awareness among young people is essential to reducing the burden of CVD worldwide. Future studies should explore effective strategies for linking heart health promotion with issues that matter to young women—especially emotional health—as well as health communication channels most likely to reach women in this age group. A multifaceted approach that partners with young people to improve health curricula in schools, train physicians who provide care for this age group, and engage youth in the community and online will be necessary to tackle the low awareness in young women of the importance heart disease as a lifelong health concern.

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Disclosures

None.

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SUPPLEMENTAL MATERIAL

Data S1.

**FUTURE survey adapted from the American Heart Association Women & Heart Disease
Women's Health Study**

Q59. Which recruitment cite is this survey being taken at?

1= Academic Medical Center

2= Community Health Center

Q1. Thank you for your interest in this study. You must be between 15-24 years of age in order to participate in this study.

Participation in this study is completely voluntary. Please be aware that if you agree to participate, you are free to skip questions that you do not wish to answer and you are free to withdraw at any time without penalty.

The study should take **less than 20 minutes** to complete, and all information we collect will be completely anonymous. You will be assigned a number at random and your data will be recorded by this number, not by your name. Responses cannot be linked back to you and sensitive responses cannot be acted upon. We recommend that you speak with your treating provider today, in clinic, if the content of this survey concerns you. .

By selecting "Yes, I agree to participate in this study," I acknowledge that I have read the above statement, that I am between 15-24 years old, that I may withdraw from the study at any time without penalty, and that I consent to participate in this study.

By selecting "No, I do not agree to participate in this study," I acknowledge that I have read the above statement and I do not consent to participate in this study.

- Yes, I agree to participate in this study**
 - No, I do not agree to participate in this study**
-

Thank you for participating in this survey about women's health.

Section 1: Women's Health

Q3. What do you think is the **ONE** greatest **health problem** facing **women of all ages** today?

1. AIDS
2. Alzheimer's

3. Breast cancer
4. Cancer (general)
5. Diabetes
6. Drug addiction/Alcoholism
7. Heart disease/Heart attack
8. Lung cancer
9. Obesity
10. Osteoporosis
11. Smoking
12. Stroke
13. Mood disorders (depression/anxiety)
14. Eating disorders
15. STIs (sexually transmitted infections)
16. Unintended Pregnancy

Q5. As far as you know, what is the leading cause of **death** for **women of all ages**?

1. Accidental death
2. AIDS
3. Alzheimer's
4. Breast cancer
5. Cancer (general)
6. Diabetes
7. Drug addiction/Alcoholism
8. Heart disease/Heart attack
9. Lung cancer
10. Osteoporosis
11. Smoking
12. Stroke
13. Violent crime
14. Suicide
15. Other: (specify) _____
16. Don't know
17. Refused

Q6. As far as you know, what is the leading cause of **death** for women **ages 15-24**?

1. Accidental death
2. AIDS
3. Alzheimer's
4. Breast cancer
5. Cancer (general)
6. Diabetes
7. Drug addiction/Alcoholism
8. Heart disease/Heart attack
9. Lung cancer
10. Osteoporosis

11. Smoking
12. Stroke
13. Violent crime
14. Suicide
15. Other: (specify) _____
16. Don't know
17. Refused

Q61. What do you think is the ONE greatest health problem facing women ages 15-24?

1. AIDS
2. Alzheimer's
3. Breast cancer
4. Cancer (general)
5. Diabetes
6. Drug addiction/Alcoholism
7. Heart disease/Heart attack
8. Lung cancer
9. Obesity
10. Osteoporosis
11. Smoking
12. Stroke
13. Mood disorders (depression/anxiety)
14. Eating disorders
15. STIs (sexually transmitted infections)
16. Unintended Pregnancy

Q4. Please tell me the extent to which your worry about getting each of the following health conditions. Do you worry a lot about this, worry a little, or do you not worry at all about it?

1 = Not at all

2 = A little

3 = Worry a lot

1. Cancer
2. Heart disease or heart attack
3. AIDS
4. Breast Cancer
5. Lung Cancer
6. Smoking

7. Drug addiction or alcoholism
 8. Violent Crime
 9. Stroke
 10. Alzheimer's
 11. Diabetes
 12. Osteoporosis
 13. Mood disorders (depression/anxiety)
 14. Eating disorders
 15. STIs (sexually transmitted infections)
 16. Unintended Pregnancy
 17. Obesity
-

Section 2: Awareness of Heart Disease

Q8. Our next several questions are about heart disease, which includes heart attack and angina (chest pain due to a decrease in blood flow to the heart).

Q7. Based on what you know, what are the major causes of heart disease? Please select all that apply

Q7_1. A family history of heart disease

1=Yes

2=No

Q7_2. Aging

1=Yes

2=No

Q7_3. Being overweight

1=Yes

2=No

Q7_4. Diabetes

1=Yes

2=No

Q7_5. Drinking alcohol

1=Yes

2=No

Q7_6. High blood pressure

1=Yes

2=No

Q7_7. High cholesterol

1=Yes

2=No

Q7_8. High triglycerides

1=Yes

2=No

Q7_9. Low levels of estrogen

1=Yes

2=No

Q7_10. Menopause

1=Yes

2=No

Q7_11. Not exercising

1=Yes

2=No

Q7_12. Smoking

1=Yes

2=No

Q7_13. Stress

1=Yes

2=No

Q7_14. Stroke

1=Yes

2=No

Q7_15. Your racial heritage

1=Yes

2=No

Q7_16. None of the above

1=Yes

2=No

Q10. In the past 12 months, where have you seen, heard, or read about women and heart disease?

Q10_1. In a magazine

1=Yes

2=No

Q10_2. On the radio

1=Yes

2=No

Q10_3. On TV

1=Yes

2=No

Q10_4. Information in a brochure

1=Yes

2=No

Q10_5. Provided by a physician, nurse, or other healthcare professional

1=Yes

2=No

Q10_6. In a newspaper

1=Yes

2=No

Q10_7. On the Internet or World Wide Web

1=Yes

2=No

Q10_8. On social media

1=Yes

2=No

Q10_9. From a friend or relative

1=Yes

2=No

Q10_10. Library

1=Yes

2=No

Q10_11. Other

1=Yes

2=No

Q10_12. Did not see, hear or read anything

1=Yes

2=No

Q10_13. Don't know

1=Yes

2=No

Q10_14. Refuse to answer

1=Yes

2=No

Q11. Have you used any of the following internet sources to learn more about women and heart disease in the last 12 months? Please select all that apply.

Q11_1. News websites such as CNN.com, NYTimes.com, Univision. Co, Telemundo.com, etc.

1=Yes

2=No

Q11_2. Medical information websites such as WebMD.com, Mayoclinic.com, etc.

1=Yes

2=No

Q11_3. Internet portals such as MSN.com

1=Yes

2=No

Q11_4. Search engines such as Google.com, Yahoo.com, etc.

1=Yes

2=No

Q11_5. Government websites such as Medlineplus.gov, NIH.gov, CDC.gov, etc.

1=Yes

2=No

Q11_6. Magazine websites such as People, Oprah, Ebony, Cosmopolitan, Time, Seventeen, Teen Vogue, etc.

1=Yes

2=No

Q11_7. General information sites such as Wikipedia.org, About.com, etc.

1=Yes

2=No

Q11_8. Social networking sites such as Facebook, LinkedIn, Instagram, Tumblr, Twitter, Snapchat, etc.

1=Yes

2=No

Q11_9. Nonprofit health organization sites such as American Heart Association or National Women's Health Resource Center

1=Yes

2=No

Q11_10. Other websites: (please specify) _____

1=Yes

2=No

Q11_10_TEXT.

1=Yes

2=No

Q11_11. I have not used any internet sources to learn more about women and heart disease

1=Yes

2=No

Q12. How informed are you about heart disease in women? Would you say you are:

1. Very well informed
2. Well informed
3. Moderately informed
4. Not at all informed
5. Don't know

Q13. How would you like to be informed about heart disease in women?

1. News websites
2. Physician or other health care provider
3. Friend or family member
4. Social media
5. Magazine
6. Brochure
7. Billboard/subway ad
8. Television Commercial
9. Mobile apps

Q14. What would motivate you to become more informed about heart disease in women? Please select all that apply.

Q14_1. Friends

1=Yes

2=No

Q14_2. Family

1=Yes

2=No

Q14_3. Health professionals

1=Yes

2=No

Q14_4. Celebrity social media posts or videos

1=Yes

2=No

Q14_5. News articles

1=Yes

2=No

Q14_6. Advertisements

1=Yes

2=No

Q14_7. Other: (please specify) _____

1=Yes

2=No

Q14_7_TEXT

1=Yes

2=No

Q15. How informed are you about stroke or “brain attack” in women? Would you say you are:

1. Very well informed
2. Well informed
3. Moderately informed
4. Not at all informed
5. Don't know

Section 3: Behaviors Associated With Prevention

Q16. Have you done any of the following things to monitor or improve your health in the last year?

1= Yes

2=No

	Yes	No
1. Quitting smoking (if you have never smoked tobacco, answer "no")		
2. Getting physical exercise		
3. Taking special vitamins like E, C, or A		
4. Lose weight		
5. Reduce dietary cholesterol intake		
6. Reduce stress		
7. Take multivitamins with folic acid		
8. Take hormone-replacement therapy (NOT including birth control)		
9. Reduce sodium or salt in the diet		
10. Reduce animal products in your diet (such as meat, whole milk, butter and cream)		
11. Aromatherapy		
12. Take aspirin regularly		
13. Maintain a healthy blood pressure		
14. Maintain a healthy cholesterol level		
15. Eat foods or take supplements that contain Fish oil/Omega 3 fatty acids		
16. Increase fiber intake		
17. Eat foods containing antioxidants		
18. Eat Plant stanols and sterols (e.g., SmartBalance spread)		
19. Eat foods that are gluten free		
20. Floss my teeth regularly		
21. Pray or meditate		
22. Get adequate sleep		
23. A doctor's visit		
24. Reduce my sugar intake		
25. Yoga		
26. Use an activity tracker (e.g., Fit Bit)		

Q17. Thinking about the things **you** have done to improve **your own** health, please tell us if any of the following prompted you to take action.

1=Yes

2=No

	Yes	No
1. I saw, heard, or read information related to heart disease		
2. My health care professional encouraged me to take action		
3. A family member or relative encouraged me to take action		
4. A friend encouraged me to take action		
5. A family member/relative developed heart disease, got sick, or died		
6. A friend developed heart disease, got sick, or died		
7. I experienced symptoms that I thought were related to heart disease		
8. I wanted to feel better		
9. I wanted to avoid taking medications		
10. I wanted to improve my health		
11. I wanted to live longer		
12. I did it for my family		
13. I was encouraged to take action during an event or program at my community center		
14. I was encouraged to take action during an event or program at my church, synagogue, mosque, or religious center		
15. Something else		
Q15_15_TEXT		
16. I have not done anything to improve my health		

Q18. Thinking about the following activities, are you doing these more often, less often or about the same amount of time as you did one year ago?

1= More Often

2= Less Often

3= About the same amount of time

	More Often	Less Often	About the same amount of time
1. Getting at least 20-30 minutes of vigorous exercise daily where you are winded, that is you can still talk, but not sing			
2. Eating meals away from home at restaurants, fast food, quick serve, etc.			
3. Cooking meals at home with fresh			

ingredients			
4. Eating prepackaged boxed, refrigerated or frozen meals			
5. Drinking sugar-sweetened beverages (i.e., non-diet beverages)			

Q19. Which of the following are the biggest barriers preventing you from leading a heart healthy lifestyle? Please select all that apply.

Q19_1. I don't perceive myself to be at risk for heart disease

1=Yes

2=No

Q19_2. I don't want to change my lifestyle

1=Yes

2=No

Q19_3. I don't think changing my behavior will reduce my risk of developing heart disease

1=Yes

2=No

Q19_4. I'm fearful of change

1=Yes

2=No

Q19_5. I'm not confident that I can successfully change my behavior

1=Yes

2=No

Q19_6. I am too stressed to do the things that need to be done

1=Yes

2=No

Q19_7. I am too depressed to do the things that need to be done

1=Yes

2=No

Q19_8. I am too ill/old to make changes

1=Yes

2=No

Q19_9. I don't have the money or insurance coverage to do what needs to be done

1=Yes

2=No

Q19_10. I have family obligations and other people to take care of

1=Yes

2=No

Q19_11. My family/ friends have told me that I don't need to change

1=Yes

2=No

Q19_12. I don't have the time to take care of myself

1=Yes

2=No

Q19_13. My health care professional doesn't think I need to worry about heart disease

1=Yes

2=No

Q19_14. My health care professional doesn't speak my language

1=Yes

2=No

Q19_15. I am confused by what I'm supposed to do to change my lifestyle

1=Yes

2=No

Q19_16. I feel the changes required are too complicated

1=Yes

2=No

Q19_17. I don't know what I should do

1=Yes

2=No

Q19_18. There is too much confusion in the media about what to do

1=Yes

2=No

Q19_19. My health care professional doesn't explain clearly what I should do

1=Yes

2=No

Q19_20. God or some higher power ultimately determines my health

1=Yes

2=No

Q19_21. Other: (please specify) _____

1=Yes

2=No

Q19_21_TEXT

1=Yes

2=No

Q19_22. None of these, I lead a heart healthy lifestyle

1=Yes

2=No

Q20. Do you have a health care professional who you see on a regular basis?

1. Yes

2. No

Q21. Have any of your health care providers ever discussed the following with you when discussing your health? Please select all that apply.

Q21_1. High blood pressure

1=Yes

2=No

Q21_2. Cholesterol

1=Yes

2=No

Q21_3. Family history of heart disease

1=Yes

2=No

Q21_4. Your risk for heart disease

1=Yes

2=No

Q21_5. Your risk for stroke

1=Yes

2=No

Q21_6. Weight

1=Yes

2=No

Q21_7. Stopping smoking

1=Yes

2=No

Q21_8. Appropriate heart healthy diet and nutrition

1=Yes

2=No

Q21_9. Exercise

1=Yes

2=No

Q21_10. None of these

1=Yes

2=No

Q22. When did you last speak with a health care professional about your risk of heart disease? Was it?

1. Within the past 6 months

2. More than 6 months ago but less than 1 year ago
3. More than 1 year ago but less than 2 years ago
4. More than 2 years ago
5. Never

Q23. Below is a list of reasons people have given for why they have not recently spoken with their health care professional about how to reduce their risk of heart disease. For each one, please tell us if it is a major reason, minor reason, or not a reason for why you have not spoken to your health care professional about reducing your risk of heart disease in the last year.

1= Major Reason

2= Minor Reason

3= Not a reason

	Major Reason	Minor Reason	Not a reason
1. My health care professional does not bring it up			
2. My health care professional seems too busy to discuss my risk of heart disease			
3. I don't know what to ask my health care professional or how to bring it up			
4. I don't feel the need to talk about heart disease with my health care professional			
5. I already know what to do about reducing my risk of heart disease			
6. I don't feel that I am at higher risk for heart disease than others			
7. Heart disease is so frightening. I'd rather not think about it			
8. Having problems with your heart is embarrassing—			

people often assume you are just not eating right or exercising			
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Q24. From your experience, how common is it for women to do each of the following?

1= Very Common

2= Somewhat common

3= Somewhat uncommon

4= Very Uncommon

	Very common	Somewhat common	Somewhat uncommon	Very uncommon	Refused
Delay meeting up with someone you haven't seen in a while until feeling you look better					
Delay going to the gym until getting back into shape					
Cancel or postpone scheduling a doctor's appointment until losing a few pounds					
Cancel or postpone scheduling a doctor's appointment until quitting smoking					

Q25. How helpful do you think each of the following would be in leading you to follow a more heart healthy lifestyle?

1. Very helpful
2. Somewhat helpful

3. Not very helpful
4. Not at all helpful
5. Don't know
6. Refuse

1. Access to more or better fruits, vegetables and other healthy foods
2. Greater access to indoor and outdoor public recreational facilities
3. Bans on trans fats in restaurants
4. Smoking bans
5. Stricter regulations on pollution
6. Requiring all restaurants to post nutrition information for menu items
7. Increased public safety in public recreation areas

Section 4: Respondents' General Health Section

Q26. In general, would you say your overall outlook on life is...?

1. Poor
2. Fair
3. Good
4. Very good
5. Excellent

Q27. Which of the following have the biggest impact on your overall outlook on life? Please select the top 2 or 3 things that have the greatest impact.

Q27_1. My ability to manage my school commitments

- 1=Yes
- 2=No

Q27_2. My ability to manage my work commitments

- 1=Yes
- 2=No

Q27_3. My ability to manage my family commitments

- 1=Yes
- 2=No

Q27_4. My physical health

1=Yes

2=No

Q27_5. My emotional health

1=Yes

2=No

Q27_6. The health of my family

1=Yes

2=No

Q27_7. Concerns about my financial stability

1=Yes

2=No

Q27_8. Concerns about not having enough time to do everything I need to do

1=Yes

2=No

Q27_9. Caring for children, young or old

1=Yes

2=No

Q27_10. Caring for a disabled or older adult family member

1=Yes

2=No

Q27_11. My spiritual life

1=Yes

2=No

Q27_12. My support system, like spouse, friends and family

1=Yes

2=No

Q28. Which of the following do you currently experience? Please select all that apply even if it is controlled or managed by medication.

Q28_1. High blood pressure

1=Yes

2=No

Q28_2. High cholesterol

1=Yes

2=No

Q28_3. Family history of heart disease or stroke

1=Yes

2=No

Q28_4. Family history of diabetes

1=Yes

2=No

Q28_5. Pre-Diabetes or “at risk for diabetes”

1=Yes

2=No

Q28_6. Diabetes

1=Yes

2=No

Q28_7. Smoking habit

1=Yes

2=No

Q28_8. Weigh 20 pounds or more over ideal for your height and build

1=Yes

2=No

Q28_79 Physical inactivity (i.e., exercising less than 20-30 minutes per day, 5 or more days of the week)

1=Yes

2=No

Q28_10. Depression

1=Yes

2=No

Q29. Please indicate how much you agree or disagree with the following statements.

1. Strongly disagree
2. Somewhat disagree
3. Somewhat agree
4. Strongly agree

1. I don't get enough sleep on a regular basis
2. I am taking care of my health
3. My health is a priority for me
4. I'm so busy taking care of everyone else, I don't take good care of myself
5. I usually follow recommended healthy eating habits (i.e., low sodium intake, low fat intake, eat fruits and vegetables, etc.)
6. When life gets busy, exercising is one of the first things I skip
7. My muscles and joints ache on a regular basis
8. I am concerned about my alcohol intake

Q30. In general, would you say you physical health is...

1. Poor
2. Fair
3. Good
4. Very good
5. Excellent

Q31. In general would you say your emotional health is...

1. Poor
2. Fair
3. Good
4. Very good
5. Excellent

Q32. How often do each of the following statements describe you?

1. None of the time
2. Some of the time
3. Half of the time
4. Most of the time
5. All of the time

1. My friends and family are a significant drain on my emotional energy
2. I know how to successfully “recharge my battery” when I am feeling low on energy
3. I feel like I am “running on empty”
4. I take “me time” when I need to recharge my physical and emotional energy
5. My life is chaotic
6. I have too many responsibilities
7. I feel overwhelmed
8. I have so many things to do, I feel like I don’t do anything well
9. I feel good about my life
10. I feel blue or down
11. I feel as if I’m letting others down
12. I consider myself an optimist
13. I feel conflicted between my work and family responsibilities

Q33. How much do you think your overall outlook on life impacts the following?

1 = Not at all

2 = Some

3 = Very much

4 = A great deal

1. Your likelihood to develop a serious illness like heart disease

2. Your likelihood to successfully manage a serious illness like heart disease if you develop it

Classification data

Q35. These final questions are for classification purposes that will help us properly analyze responses to this survey.

Q36. Do you self-identify as:

1=Yes

2=No

1. Male

2. Female

3. Transgender male

4. Transgender female

5. Non-binary/Gender non-conforming

6. Agender

7. Other: (please specify) _____

Q36_7_TEXT

Q37. In what year were you born?

— — — —

Q46. Which of the following ranges represents your age?

1. 15-17

2. 18-21
3. 22-24

Q48. What is your current height?

__ feet __ inches

Q49. What is your current weight? If you do not know, please give your best estimate.

__ __ __ lbs

Q60. Have you ever had an appointment with a weight management specialist or cardiologist? Please select all that apply.

Q60_1= yes, I've had an appointment with a weight management specialist

1=Yes

2=No

Q60_2= yes, I've had an appointment with a cardiologist

1=Yes

2=No

Q60_3= No, I have not had an appointment with a weight management specialist or cardiologist.

1=Yes

2=No

Q39. Are you of Spanish or Hispanic origin, such as Latin American, Mexican, Puerto Rican, or Cuban?

1. Yes, of Hispanic origin
2. No, not of Hispanic origin
3. Decline to answer
4. Unknown

Q40. Do you consider yourself...?

Select all that apply...

1. White
2. Black
3. Asian or Pacific Islander
4. Native American or Alaskan Native
5. Mixed Race
6. Some other race
94. Decline to Answer

Q41. You indicated that you consider yourself of a mixed racial background. With which of the following racial groups do you most closely identify?

1. White
2. Black
3. Asian or Pacific Islander
4. Native American or Alaskan Native
5. Some other race
6. Hispanic
7. African American
8. First Nation/Native Canadian
9. South Asian
10. Chinese
11. Korean
12. Japanese
13. Other Southeast Asian
14. Filipino
15. Arab/West Asian
94. Decline to Answer

Q38. Which of the following best describes your employment status? [Check all that apply]

Q38_1. Employed full time

1=Yes

2=No

Q38_2. Employed part time

1=Yes

2=No

Q38_3. Self-employed

1=Yes

2=No

Q38_4. Not employed, but looking for work

1=Yes

2=No

Q38_5. Not employed and not looking for work

1=Yes

2=No

Q38_6. Not employed, unable to work due to a disability or illness

1=Yes

2=No

Q38_7. Retired

1=Yes

2=No

Q38_8. Student

1=Yes

2=No

Q38_9. Stay-at-home spouse or partner/Housewife/Husband

1=Yes

2=No

Next, I have a few more general questions.

Q43. Do you have children?

1. Yes

2. No

3. Currently pregnant with first child

Q44. Which of the following currently live in your household? Please select all that apply

Q44_1. Parents/in-laws

1=Yes

2=No

Q44_2. Siblings/in-laws

1=Yes

2=No

Q44_3. Grandparents/in-laws

1=Yes

2=No

Q44_4. Children under 18

1=Yes

2=No

Q44_5. Children over 18

1=Yes

2=No

Q44_6. Other relatives over 18

1=Yes

2=No

Q44_7. Other relative under 18

1=Yes

2=No

Q44_8. None of the above

1=Yes

2=No

Q45. Do you currently care for a disabled, chronically ill, or aging family member?

1. Yes

2. No

Q47. Which of the following types of health insurance, if any, do you currently have?

1. Health insurance provided by my employer or school
2. Health insurance through a family members employer or school
3. Private insurance coverage that you pay for out-of-pocket
4. Medicare
5. Medicaid or other public insurance (e.g. Mass Health)
6. Veteran's Affairs (VA)
7. Some other type of insurance
8. No insurance coverage
9. Don't know

Q50. How many women, 25 or over, live in your household?

Q51. What is the highest level of education you have completed or the highest degree you have received?

1. Less than high school
2. Completed some high school
3. Completed high school
4. Completed some college
5. Associates Degree
6. Completed College
7. Completed some graduate school
8. Completed graduate school

Q52. What is the highest level of education completed by your primary caregiver?

1. Less than high school
2. Completed some high school
3. Completed high school
4. Completed some college
5. Associates Degree
6. Completed College
7. Completed some graduate school
8. Completed graduate school
9. Unsure

Q53. Which of the following income categories best describes your total 2016 household income before taxes?

1. Less than \$15,000
2. \$15,000 to \$24,999
3. \$25,000 to \$34,999
4. \$35,000 to \$49,999
5. \$50,000 to \$74,999
6. \$75,000 to \$99,999
7. \$100,000 to \$124,999
8. \$125,000 to \$149,999
9. \$150,000 to \$199,999
10. \$200,000 to \$249,999
11. \$250,000 or more
12. I Don't Know

Hispanic respondents only

Q57. You indicated that you consider yourself Hispanic. From what country or region did you or your ancestors come? Please select all that apply.

Q57_1. Cuba

1=Yes

2=No

Q57_2. Mexico

1=Yes

2=No

Q57_3. Puerto Rico

1=Yes

2=No

Q57_4. Central or South America

1=Yes

2=No

Q57_5. Another country or region

1=Yes

2=No

Q58. If you indicated that your ancestors come from another country or region, from what country or region did you or your ancestors come? Please specify.

Q52. Which language do you usually speak at home?

1. Only Spanish
2. Spanish more than English
3. Spanish and English equally
4. English more than Spanish
5. Only English
6. Decline to answer

Q53. Would you say you can carry on a conversation in Spanish both understanding and speaking?

1. Not at all
2. Just a little
3. Pretty well
4. Very well

Q54. Would you say you can carry on a conversation in English both understanding and speaking?

1. Not at all
2. Just a little

3. Pretty well
4. Very well

Q55. Would you say you can read a newspaper or book in Spanish?

1. Not at all
2. Just a little
3. Pretty well
4. Very well

Q56. Would you say you can read a newspaper or book in English?

1. Not at all
2. Just a little
3. Pretty well
4. Very well