ORIGINAL RESEARCH

Cardiopulmonary Resuscitation Training Disparities in the United States

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***Background*—**Bystander cardiopulmonary resuscitation (CPR) is associated with increased survival from cardiac arrest, yet bystander CPR rates are low in many communities. The overall prevalence of CPR training in the United States and associated individual-level disparities are unknown. We sought to measure the national prevalence of CPR training and hypothesized that older age and lower socioeconomic status would be independently associated with a lower likelihood of CPR training.

***Methods and Results*—**We administered a cross-sectional telephone survey to a nationally representative adult sample. We assessed the demographics of individuals trained in CPR within 2 years (currently trained) and those who had been trained in CPR at some point in time (ever trained). The association of CPR training and demographic variables were tested using survey weighted logistic regression. Between September 2015 and November 2015, 9022 individuals completed the survey; 18% reported being currently trained in CPR, and 65% reported training at some point previously. For each year of increased age, the likelihood of being currently CPR trained or ever trained decreased (currently trained: odds ratio, 0.98; 95% CI, 0.97–0.99; $P<0.01$; ever trained: OR, 0.99; 95% CI, 0.98–0.99; $P=0.04$). Furthermore, there was a greater then 4-fold difference in odds of being currently CPR trained from the 30–39 to 70–79 year old age groups (95% CI, 0.10–0.23). Factors associated with a lower likelihood of CPR training were lesser educational attainment and lower household income ($P<0.01$ for each of these variables).

***Conclusions*—**A minority of respondents reported current training in CPR. Older age, lesser education, and lower income were associated with reduced likelihood of CPR training. These findings illustrate important gaps in US CPR education and suggest the need to develop tailored CPR training efforts to address this variability. **(*J Am Heart Assoc*. 2017;6:e006124. DOI: 10.1161/JAHA.117.006124.)**

Key Words: cardiopulmonary resuscitation • education • education surveillance • educational campaigns • sudden cardiac arrest

The prompt delivery of bystander cardiopulmonary resuscitation (B-CPR) increases the probability of survival from sudden cardiac arrest (SCA) by over 2-fold, yet less than one third of SCA victims receive B-CPR in the United States.[1–5] Recent work has demonstrated an association between increased public CPR training and B-CPR delivery.[3,6,7] Despite growing efforts to promote CPR education of the public, little is known regarding the national prevalence of CPR training or the association of training status with individual-level demographic characteristics.

A recent investigation sought to quantify national CPR training activity by measuring the distribution of CPR

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Accompanying Data S1 and Tables S1, S2 are available at http://jaha.ahajournals.org/content/6/5/e006124/DC1/embed/inline-supplementary-material-1.pdf

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Clinical Perpective

What is New?

- In a cross-sectional, nationally representative survey completed by 9022 adults, 18% reported being currently trained in CPR, whereas older age was associated with a lower likelihood of CPR training.
- Furthermore, higher socioeconomic status was associated with a higher probability of CPR education.

What are the Clinical Implications?

- These findings highlight important disparities in CPR education across the United States and suggest the need to develop future targeted bystander CFR training efforts tailored to specific populations.

certification cards and found that 2.4% of the adult US population received CPR education within a 1-year period through certification programs.[8] Although this study provided an initial estimate of CPR training incidence, there were important limitations to the investigation, including the lack of individual-level trainee demographic data and the prevalence of previous training. Understanding demographic associations with training prevalence could aid with targeted CPR training initiatives to maximize CPR education efforts.

We implemented a telephone-based, prospective, nationally representative survey to determine CPR training prevalence and its relationship with demographic variables and previous training experiences. We hypothesized that increased age and lower socioeconomic status (SES), independently, would be associated with a lower likelihood of CPR training.

Methods

Study Design and Population

This cross-sectional investigation was designed to estimate the association between individual-level demographic variation and CPR training status. From September 2015 to November 2015, survey data were collected by random digit dial telephone methodology in collaboration with an established social sciences research organization (SSRS, Media, PA). Participants were queried as part of an ongoing omnibus survey, through both landline and mobile telephone modalities. Results from the omnibus survey have been used in previous peer-reviewed biomedical investigations.[9–11]

Individuals in the United States ages 18 and older were eligible to be survey respondents. After determining eligibility, participants were given a series of questions designed to assess individual-level demographic characteristics and CPR training status. The study protocol was deemed exempt by the University of Pennsylvania Institutional Review Board (Philadelphia, PA).

Survey Questionnaire Development

Questions were developed and extensively pilot tested among adult laypersons by study personnel (A.L.B., M.L., B.S.A.). The wording was designed to capture an individual's training status (Table S1). Once finalized, the questions were introduced on a regional health survey in southeastern Pennsylvania. Responses from this regional survey were used to establish CPR training content and construct validity. Data from this regional survey in Pennsylvania have been presented elsewhere.[12]

Demographic data, such as age, race, education, and income, were measured using the survey research company's validated demographic questionnaire.

Survey Methodology

The survey approach was designed to represent the adult US population by a stratified random digit dial sample of landline residential as well as mobile telephone numbers. Telephone numbers were computer generated and loaded into online sample files accessed directly by the computer-assisted telephone interviewing system by well-established survey methods.[9,11] Area code-specific quotas were also set to ensure adequate geographical representation, and interviews were conducted in either English or Spanish to ensure representation of the Spanish-speaking population. Survey weights, accounting for selection bias and nonresponse bias by household, telephone, and key demographics such as age, race, sex, and education, were used to provide nationally representative estimates of the adult population 18 years of age and older (Data S1).

Variable Definitions

We defined an individual who is CPR trained as anyone who had reported receiving a CPR certification card, or was trained by a noncertification CPR educational program, similar to the methodology of Anderson et al.[8] We queried individuals if they reported receiving CPR training within the past 2 years, 3 to 5 years, 6 to 10 years, or greater than 10 years. We defined those who were currently trained as anyone who reported receiving training in the past 2 years (compliant with current CPR certification standards) and defined those who were ever trained as anyone who reported receiving CPR training at any point in time (Table S1).

We captured respondent's age, race/ethnicity, sex, education, and income. Because SES is a multidimensional construct and not well defined by a single unit of measure, we

used education and income variables to characterize SES, consistent with previous work.[13,14]

Descriptive Comparison of Training and SCA Data

B-CPR rates are lower in the private residential environment compared with the public setting.[1] Spouses (generally of comparable ages) may be the first responders to SCA events in these environments. Age distribution from the CPR training survey was descriptively compared with that of SCA clinical events in a portion of the United States during a similar time period (2011–2015), using data from the Resuscitation Outcomes Consortium (ROC). ROC is an NIH-funded clinical trial network focused on prehospital SCA and severe traumatic injury. Since 2006, ROC has collected data from 10 municipal regions in the United States and Canada. ROC trials have been published previously, including more-detailed descriptions of data collection elements and data registry infrastructure.[1,15,16]

Statistical Analysis

Data were analyzed using a statistical software package (STATA 14 with the svy suite of commands; StataCorp LP, College Station, TX). The data set was missing 17% of the covariates of interest; we analyzed differences in the covariates by missingness (Table S2) and assessed the final model using complete-case analysis. As a sensitivity analysis, we used multiple imputation to impute the missing covariates of interest. The estimates from the imputed data sets were similar to the observed data set (data not shown). Given that there may be additional bias among those who are missing income, we compared those with missing income to those with nonmissing income values. These data were similar to those shown in Table S2 (data not shown).

Using survey weights, we estimated the national prevalence of CPR training and associated demographic differences with descriptive statistics. As a continuation of the investigation, using survey-weighted logistic regression modeling, we analyzed whether there were differences between CPR training prevalence by age, education, and income. We explored this association with CPR training status using the data in a binary (yes/no CPR training) fashion and defined CPR training as currently trained (within previous 2 years) and ever trained (without time boundary). Age was examined continuously (increasing in years) and categorically (by age deciles). Individuals indicated their highest education level achieved and were either categorized as less than high school educated, high school graduate, some college, graduate of college, or graduate school or more. Total household income categories included less than $15 000, $15 000 to $29 999, $30 000 to $49 999, $50 000 to $74 999, $75 000 to $99 999, and $100 000 or more. The association of age, education, income, sex, race, and geographical division with CPR training was assessed in a univariate analysis with admission into the larger model based on a *P* value of less than 0.15. The final regression model included age, education, income, sex, and race. The geographical variable, division, was modeled and tested as a fixed effect in the final regression equation. We ran the prective margins of age, education, and income.

We examined the age distribution of SCA victims; we calculated the mean age and standard deviation. Further, we modelled the association of age and the likelihood of receiving B-CPR delivery in a full analysis, and stratified by public and private environments. In the multivariate logistic regression model, we included site, age, race, sex, time of event, witness status, and emergency medical services response time.

Results

CPR Training Prevalence

From September 2015 to November 2015, 9022 individuals completed the survey, with data weighted to represent the adult US population (based on the US Census American Community Survey 2014, reflecting a US adult population [aged 18 years or older] of 245 201 076[17]); 4497 interviews were completed through mobile telephones and 4525 were completed by landlines. Of those eligible, 17% declined to conduct the survey, 29% halted participation partially through the interview process, and 44% of the phone calls went to voicemail or an answering machine, whereas 10% completed the entire interview (n=9022). Of those surveyed and weighted to represent the entire US adult population, 18% of respondants were currently trained in CPR, 65% were trained at some point previously (ever trained), and 35% had never been trained. Population characteristics are detailed in Table 1. The mean age of all the surveyed population was 48 (95% CI, 47–49) years, and 51% of the population were female. Of all participants, 65% were white, 12% were black, and 15% were Hispanic/Latino; 30% were high school graduates, and 15% had a household income of less then $15 000 a year.

Demographic Characteristics Associated With Training

Of those who were currently trained, increased age was associated with a lower likelihood of being currently CPR trained (odds ratio for each year of increased age, 0.98; 95% CI, 0.97–0.99; $P<0.01$; Table 2). When age was examined categorically by increased decades (global *P* value, 0.04), those who were aged 70 to 79 years were 0.15 (95% CI, 0.10–0.23) times less likely to be being currently trained ($P<0.01$) and those aged 60 to 69 years old were 0.29 (95%

Table 1. Demographics of 9022 Participants Surveyed Weighted to be Representative of the US National Population 2015

	All Participants	Currently Trained	Ever Trained	Never Trained
Mean age (95% CI), y	48 (95% CI: 47–49)	42 (95% CI: 41–43)	48 (95% CI: 47–49)	48 (95% CI: 46–51)
Race, %				
White	65	65	71	55
Black	12	13	11	12
Hispanic/Latino	15	13	11	24
Other	8	9	7	9
Sex, %				
Female	51	56	52	50
Male	49	44	48	50
Highest education, %				
Less than high school	11	4	7	20
High school graduate	30	22	26	38
Some college	27	32	30	22
Graduated college	20	26	23	13
Graduate school or more	12	16	14	7
Household income, %				
Less than $15 000	15	10	11	24
$15 000 to $29 999	20	14	17	27
$30 000 to $49 999	19	19	19	18
$50 000 to $74 999	16	19	18	13
$75 000 to $99 999	12	14	14	8
$100 000 or more	18	24	21	10

Survey sample n=9022, but weighted to estimate the US population. Missing variable: age-447, race-186, education-53, income-1625.

CI, 0.20–0.42) times less likely to be currently trained compared with 18 to 29 year olds ($P<0.01$; Table 2; Figure 1). There were differences in education-level and likelihood of current CPR training ($P<0.02$). Specifically, those who were graduate school educated or more had a 3.36 (95% CI, 1.60–7.09) increased likelihood of being currently CPR trained compared with those who had less than a high school education ($P<0.01$). Furthermore, there were differences in income level and likelihood of current CPR training ($P=0.03$; Figure 2). There was a significant difference in the global distribution of race and current CPR training ($P=0.03$), but the individual differences from whites, the reference group, were not significant. Sex was not associated with likelihood of current CPR training (P=nonsignificant; Table 2).

Similar demographic associations were noted between those who had ever received training compared to those who never received CPR training. Of those who were ever trained, increased age was associated with CPR training (OR for each year of increased age, 0.99; 95% CI, 0.98–0.99; $P=0.04$). When age was examined categorically (global P value, 0.04), those who were aged 80 years or older were 0.34 (95% CI, 0.22–0.52) times less likely to be ever CPR trained compared with those who were 18 to 29 years old ($P<0.01$); those who were aged 70 to 79 years were 0.58 (95% CI, 0.43–0.77) times less likely to be ever trained ($P<0.01$) and those aged 60 to 69 years were 0.86 (95% CI, 0.71–1.05) times less likely to be ever trained compared with 18 to 30 year olds (P=nonsignificant; Table 2).

Descriptive Comparision of Age of Training and B-CPR Delivery

Among those who were currently trained, the mean age was 42 (95% CI, 41–43), whereas the mean age of those ever trained was 46 (95% CI, 47–49), compared with 48 (95% CI, 6–51) of those never trained. In contrast, the mean age of SCA victims in the US population within the ROC cohort was 63.8±19.8 (Figure 3). Furthermore, we examined the association of B-CPR delivery during SCA events by victim age and found a statistically significant association of decreased B-CPR delivery with increased age with events that occurred in the home environment (Figure 4), in a fashion that mirrored

Table 2. ORs (95% CI) of the Likelihood of Individuals Being Currently CPR Trained or Ever Trained by Individual Demographics n=6854

	Currently Trained	Global *P* Value	*P* Value	Ever Trained	Global *P* Value	*P* Value
Age (95% CI), y		0.04			0.04	
18 to 29 (reference)	…			…		
30 to 39	0.75 (95% CI: 0.61–0.93)		0.02	1.15 (95% CI: 1:01–1.30)		0.04
40 to 49	0.63 (95% CI: 0.52–0.75)		<0.01	1.37 (95% CI: 1.10–1:70)		0.01
50 to 59	0.56 (95% CI: 0.43–0.73)		<0.01	1.27 (95% CI: 1.05–1.54)		0.02
60 to 69	0.29 (95% CI: 0.20–0.42)		<0.01	0.86 (95% CI: 0.71–1.05)		0.12
70 to 79	0.15 (95% CI: 0.10–0.23)		<0.01	0.58 (95% CI: 0.43–0.77)		<0.01
80 and older	0.05 (95% CI: 0.01–0.20)		<0.01	0.34 (95% CI: 0.22–0.52)		<0.01
Race, OR (95% CI)		0.03			<0.01	
White (reference)	…			…		
Black	1.33 (95% CI: 0.84–2.10)		0.19	0.92 (95% CI: 0.78–1.08)		0.25
Hispanic/Latino	0.88 (95% CI: 0.67–1.14)		0.29	0.44 (95% CI: 0.37–0.52)		<0.01
Other	1.16 (95% CI: 0.88–1.53)		0.25	0.71 (95% CI: 0.52–0.95)		0.03
Female, OR (95% CI)	1.34 (95% CI: 0.98–1.83)	0.06		1.16 (95% CI: 0.93–1.43)	0.16	
Highest education, %		0.02			<0.01	
Less than high school (reference)	…			…		
High school graduate	1.85 (95% CI: 1.35–2.54)		<0.01	1.63 (95% CI: 1.33–1.99)		<0.01
Some college	3.11 (95% CI: 1.89–5.10)		<0.01	2.72 (95% CI: 2.20–3.37)		<0.01
Graduated college	3.24 (95% CI: 1.96–5.36)		<0.01	2.98 (95% CI: 2.40–3.70)		<0.01
Graduate school or more	3.36 (95% CI: 1.60–7.09)		<0.01	3.29 (95% CI: 2.54–4.27)		<0.01
Household income, %		0.03			<0.01	
Less than $15 000 (reference)	…			…		
$15 000 to $29 999	0.94 (95% CI: 0.64–1.39)		0.73	1.25 (95% CI: 0.99–1.57)		0.06
$30 000 to $49 999	1.36 (95% CI: 1.06–1.75)		0.02	1.62 (95% CI: 1.34–1.95)		<0.01
$50 000 to $74 999	1.55 (95% CI: 1.19–2.02)		0.01	2.02 (95% CI: 1.62–2.53)		<0.01
$75 000 to $99 999	1.72 (95% CI: 1.38–2.16)		<0.01	2.32 (95% CI: 1.49–3.59)		<0.01
$100 000 or more	1.88 (95% CI: 1.26–2.81)		<0.01	2.55 (95% CI: 1.67–3.88)		<0.01

Missing variables shown in Table 1. CPR indicates cardiopulmonary resuscitation; OR, odds ratios.

the age-dependant nature of CPR training demonstrated in our survey work. This association of decreased B-CPR with victim age was not found among SCA events in the public setting.

Discussion

In a nationally representative telephone survey, we found that the overall prevalence of current CPR training was 18%, whereas 65% of the population identified being trained at some point in their lifetime. We identified an independent association between both older age and lower SES with a decreased likelihood of CPR training. To our knowledge, this is the first study to estimate the national CPR training prevalence within the US population.

Age and CPR Training Status

Our work found a striking association with older age and decreased likelihood of CPR training. This is especially important given that the mean age of SCA victims in the United States is ≈64 years of age. Previous studies have demonstrated that B-CPR rates are lower in the private residential environment compared with the public setting.[1,18] It is possible that spouses (generally of comparable ages) may be the first responders to SCA events in these environments. Whereas our findings suggest that many older individuals have been trained at some point, the prevalence of current training in the highest-risk population is very low. Furthermore, our findings suggest that a victims chance of receiving B-CPR in

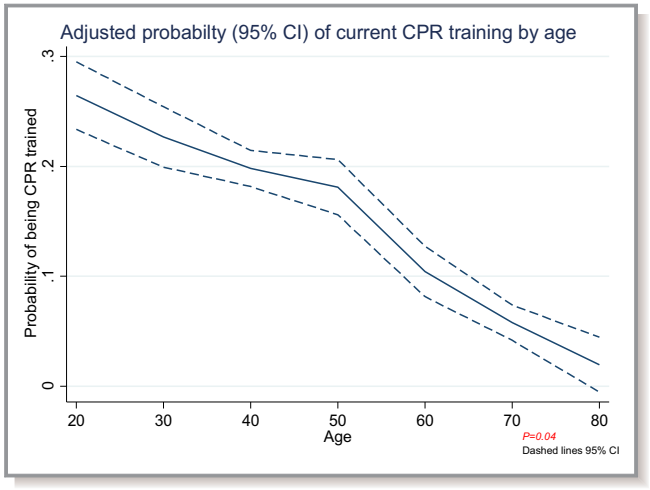

Figure 1. Adjusted probability of current CPR training by age with 95% CIs. CPR indicates cardiopulmonary resuscitation.

the home environment decreases by age, further affirming the need to consider targeted training in the older population. It may be the spouses or close loved ones of older individuals who are most likely to need to act during SCA events in the home environment. Future initiatives should consider targeted methods to train this population, which may be at higher risk of witnessing SCA events, especially in the home setting where few others may be available to provide prompt care.

SES and CPR Training Status

Previous studies have suggested an association with SES and B-CPR delivery.[19–22] Specifically, a recent study found that individuals living in low-income black neighborhoods were much less likely to receive B-CPR compared with the national population (odds ratio, 0.49; 95% CI, 0.41–0.58).[23] Additionally, the work of Anderson et al demonstrated aggregate

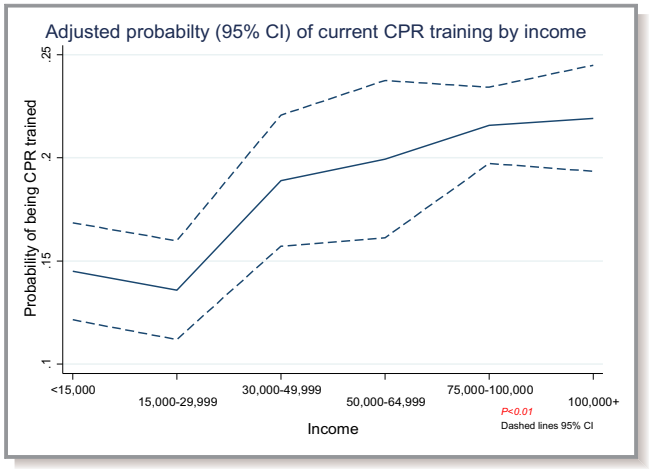

Figure 2. Adjusted probability of current CPR training by income with 95% CIs. CPR indicates cardiopulmonary resuscitation.

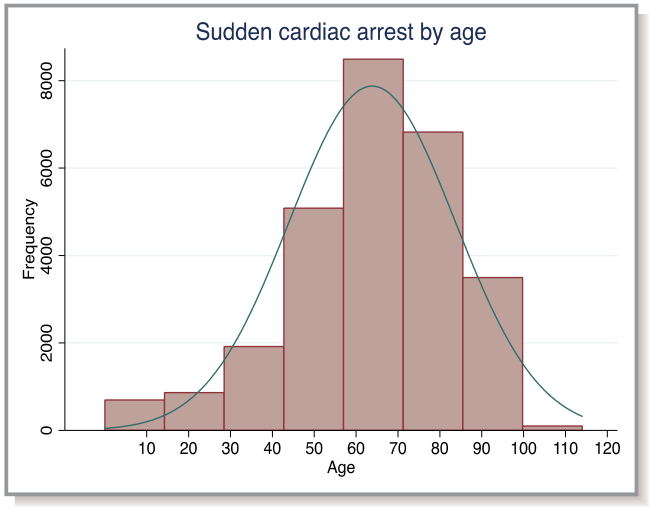

Figure 3. Histogram displaying the frequency of SCA events by victim age using data from the US Resuscitation Outcomes Consortium Epistry data registry (2011–2015).

geographical, racial, and SES disparities with B-CPR training.[8] The current work has confirmed and extended these findings, allowing for individual-level linkage of CPR training status with self-reported SES demographic data. We found an association with lower educational attainment and household income and decreased liklihoood of CPR training. Future training initiatives should address barriers that may prevent lower SES individuals from receiving CPR training.

Dispatch CPR as an Alternate to Broad CPR Training

Recent studies have highlighted the importance of dispatch-assisted CPR (D-CPR, also known as telephone CPR or

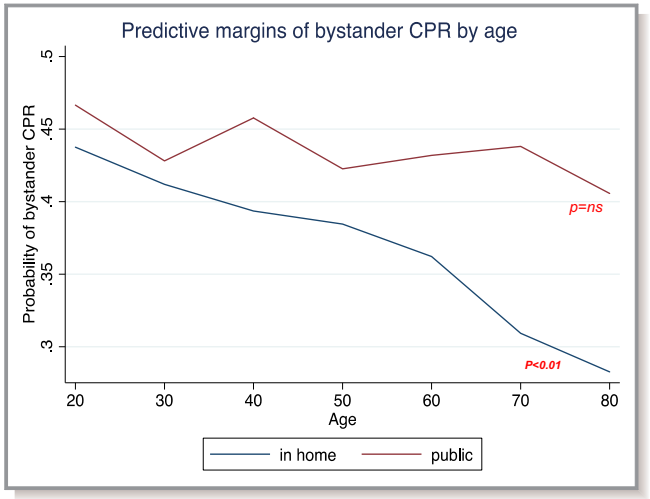

Figure 4. Adjusted probability of SCA victims receiving B-CPR by age stratified by events in the home and public environment. B-CPR indicates bystander cardiopulmonary resuscitation; CPR, cardiopulmonary resuscitation.

telecommunicator CPR) as another method to increase B-CPR delivery.[24–26] However, the relationship between D-CPR and CPR training is unknown; it is possible that CPR training improves the bystander response to D-CPR instructions, and that lack of CPR training may limit willingness to accept instructions from the dispatchers. In a recent investigation, even when D-CPR instructions were optimized, the change in the B-CPR rate was modest (61.8% before D-CPR and 66.8% after D-CPR bundled intervention; P=0.006),[27] suggesting the role of additional factors that affect the actual provision of CPR following dispatch instructions. Further studies will be required to assess the interplay between D-CPR, layperson CPR training, and actual delivery.

Importance of Targeted CPR Training

Organizations such as the American Heart Association and American Red Cross have expended broad efforts to increase public CPR training, yet little is known as to which individuals should be targeted for training to maximize the public health benefit. The National Academy of Medicine (formerly the Institute of Medicine) has selected SCA, CPR delivery, and resuscitation outcomes as foci of a national report ("Strategies to Improve Cardiac Arrest Survival: A Time to Act"), underscoring the public health importance of this topic.[28] Specifically, the National Academy of Medicine report called for educating and engaging the public stating that "all can play a role in the effort to promote and facilitate CPR training."[28] Furthermore, scientific advisories and consensus statements from the American Heart Association have emphasized the importance of addressing barriers to CPR education.[29–32] Understanding individual-level disparities in CPR training status could help inform future targeted educational initiatives and increase rates of B-CPR delivery. Developing effective interventions based on our understanding of these relationships has the potential to greatly influence CPR education programs and inform future public health initiatives, to maximize the lay public response to SCA and improve survival.

The current work has limitations inherent in telephone survey methodology. Although our survey has a low response rate, it is similar to other nationally representative telephone surveys.[11,33] Investigations have demonstrated that lower response rates are not necessarily associated with increased nonresponse bias in public health surveys.[33,34] For example, Keeter et al compared the results of a 5-day survey fielding period (response rate of 36%) to the results from fielding the same survey for 8 weeks (response rate of 61%) and found no significant differences in the outcomes of interest between the 2 surveys.[34–36] Although this is a limitation of the methodology, the random digit dial approach is more cost-effective than mail or door-to-door surveys. Furthermore, we acknowledge that survey methodology is subject to both recall and social desirability bias. We are encouraged that our findings regarding CPR training prevalence are similar to that from our Health Household Survey implemented in southeastern Pennsylvania, which found an 18% prevalence of current CPR training and 61% prevalence of training overall.[12]

In conclusion, the national prevalence of those currently trained in CPR was low. Our data suggest that many individuals obtain CPR training at some point in time, but few maintain current training. Furthermore, older individuals are less likely to be CPR trained, and lower SES is also associated with a decreased likelihood of CPR training. These findings suggest the need for focused CPR training efforts to address these disparities and maximize public health benefit.

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Supplemental Material

Data S1.

The study was weighted to provide nationally representative and projectable estimates of the adult population 18 years of age and older. The weighting process takes into account the disproportionate probabilities of household and respondent selection due to the number of separate telephone landlines and cellphones answered by respondents and their households, as well as the probability associated with the random selection of an individual household member, following procedures noted in Buskirk and Best[1].

Following application of the appropriate weights, nonresponse is addressed via post-stratification, balancing by a number of key demographics: age (18-29; 30-49; 50-64; 65+) by gender, Census region (Northeast, North-Central, South, West) by gender, Education (less than high school, high school graduate, some college, four-year college or more); race/ethnicity (white non-Hispanic; Black non-Hispanic; Hispanic; Other non-Hispanic); marital status (married/not married), population density (divided into quintiles) and phone-usage (cell phone only, landline only, both). Data was specifically weighted to known adult-population parameters based on the 2015 March Supplement of the U.S. Census Bureau's Current Population Survey (CPS), and in the case of phone usage, the 2015 National Health Interview Survey. Post-stratification utilized a standard iterative proportional fitting ("raking") procedure whereby weights are adjusted iteratively until the root mean square error for the differences between the sample and the population parameters is 0 or near-zero.

[1]Buskirk, TD and Best, J. Venn diagrams, probability 101 and sampling weights computed for dual frame telephone RDD designs. *Section on survey research methods – JSM.* 2012; 3696-3710.

Table S1.

National CPR Survey

N=1000 in each Division
Census Division #1 : New England
Census Division #2 : Middle Atlantic
Census Division #3 : East North Central
Census Division #4 : West North Central
Census Division #5 : South Atlantic
Census Division #6 : East South Central
Census Division #7 : West South Central
Census Division #8 : Mountain
Census Division #9 : Pacific

The next few questions are related to cardiopulmonary (car-dee-o pull-ma-na-ree) resuscitation (recess-a-tay-shun) (CPR) training.

CP-01. Have you ever attended training in cardiopulmonary (car-dee-o pull-ma-na-ree) resuscitation (recess-a-tay-shun) (CPR)? This might include attending a formal class, watching a training video, or learning via an in-person demonstration

1 Yes (SKIP TO CP-3)
2 No
3 I do not know what CPR is (SKIP TO CP-6)
8 (DO NOT READ) Don't know (SKIP TO CP-6)
9 (DO NOT READ) Refused (SKIP TO CP-6)

CP-02. What is the main reason you have not been trained in CPR? (DO NOT READ; ENTER ONE RESPONSE)

01 Concerns about physical ability to perform CPR
02 Cost of training
03 Fear of being sued
04 Fear of contracting an infectious disease
05 Fear of performing CPR
06 Lack of awareness of need for training
07 Lack of interest
08 Lack of training opportunities
97 Something else (SPECIFY)_____
98 (DO NOT READ) Don't know
99 (DO NOT READ) Refused

(IF CP-01=1)

CP-03. When did you last attend CPR training?
(READ LIST)

1 Within the past 2 years
2 2 to 5 years ago
3 5 to 10 years ago
4 More than 10 years ago
8 (DO NOT READ) Don't know
9 (DO NOT READ) Refused

(IF CP-01=1)

CP-04. CPR training can take many forms, and if requirements are met trainees can be certified. A CPR certification is usually given to you in the form of a card for your wallet that is valid for 1-2 years. Thinking about the last time you were trained, which statement about CPR do you most closely identify with?
(READ LIST)

1 I am CPR certified
2 I was previously CPR certified
3 I learned CPR but was not certified
0 (DO NOT READ) Something else (SPECIFY) _____
8 (DO NOT READ) Don't know
9 (DO NOT READ) Refused

(IF CP-01=1)

CP-05. In your current job, what kind of work do you do?
(DO NOT READ LIST)

01 Business owner
02 Clerical or office worker (e.g., typist, secretary, postal clerk, telephone operator, computer operator, bank clerk)
03 Healthcare professional (doctor, registered nurse, technician, etc)
04 Laborer (e.g., plumber's helper, construction worker, longshoreperson, garbage collector, other physical work)
05 Manager (e.g., store manager, sales manager, office manager)
06 Profession worker (e.g., lawyer, scientist, engineer, accountant, programmer, musician)
07 Salesperson
08 Semi-skilled worker (e.g., machine operator, assembly line worker, truck driver, Taxi driver, bus driver)
09 Service worker (e.g., police officer, fire fighter, waiter or waitress, maid, nurse's aide, attendant, hairstylist)
10 Skilled tradesperson (e.g., printer, baker, tailor, electrician, machinist, linesperson, plumber, carpenter, mechanic)
11 Teacher/Educator
97 Other (Specify)_____

98 (DO NOT READ) Don't know
99 (DO NOT READ) Refused

The next few questions are related to Automated External Defibrillators (De fib ril la tors) also referred to as AEDs.

CP-06. Have you ever had AED training?

1 Yes
2 No
3 I do not know what an AED is (SKIP TO NEXT INSERT)
8 (DO NOT READ) Don't know (SKIP TO NEXT INSERT)
9 (DO NOT READ) Refused (SKIP TO NEXT INSERT)

(ASK IF CP-06=1 or 2)

CP-07. Who do you think can use a publically available AED?
(READ LIST; ENTER ONE RESPONSE)

1 Anybody
2 Medical professionals only
3 Only individuals who have been trained in AED use
4 Other (SPECIFY)_____
8 (DO NOT READ) Don't know
9 (DO NOT READ) Refused

Table S2. Missing data by demographic variable.

	Complete Data N=7,474	Missing Data N=1,548	P-value
Age, (freq)			<0.01
18-29	1,161	209	
30-39	898	97	
40-49	997	115	
50-59	1505	225	
60-69	1429	261	
70-79	885	220	
80-89	450	123	
Race, (freq)			<0.01
White	5,240	1,071	
Black	807	133	
Hispanic/Latino	834	127	
Other	508	115	
Highest education, (freq)			<0.01
Less than high school	640	109	
High school graduate	2,161	396	
Some college	2,082	442	
Graduated college	1,550	368	
Graduate school or more	956	265	
Household income, (freq)			0.02
Less than $15,000	1,090	34	
$15,000-$30,000	1,455	53	
$30,000-$50,000	1,353	70	
$50,000-$75,000	1,129	54	
$75,000-$100,000	856	31	
$100,000 or more	1,203	69	
Sex, female (freq)	3,770	953	<0.01

*Age missing 447 variables, race missing 186, education missing 53 variables, income missing 1625 variables