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Use of voter registration records to recruit a representative sample

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Abstract

Research samples are not often compared to broader community samples to evaluate their representativeness, a critical factor in determining the generalizability of study findings. This study evaluated the use of voter-registration records for recruiting a representative sample of community-dwelling, older, and overweight participants for research on improving measures of diet and physical activity. County voter-registration records were used to identify individuals between 45 and 75 years of age and living in the two cities closest to the research lab. The data were collected from July, 2007 through November, 2008. Prospective participants were mailed an introductory letter and opt-out postcard, and received a follow-up recruitment phone call in which they underwent further screening if interested in participating. The representativeness of the final voter-recruited sample ($N=191$) was evaluated by comparisons of demographic variables with Behavioral Risk Factor Surveillance System (BRFSS) data at the county and state levels. The voter-recruited sample was only partially comparable to that of the BRFSS sample, with expected differences in variables related to race/ethnicity, the proportion of women, employment status, and educational attainment. Voter-registration records are a relatively low-cost (\$75 per participant) method of recruiting a community sample that avoids some biases of other recruitment methods, but may not achieve a fully representative sample.

Keywords

Research recruitment; Voter registration; Reach; Sample representativeness

Increased attention to implementation and dissemination of evidence-based practices has focused the research community on issues of external validity such as sample representativeness and population reach. Despite the importance of these issues, relatively few studies have reported on the representativeness or reach of recruitment efforts in research studies (Glasgow et al. 2004). The RE-AIM framework of Reach, Effectiveness, Adoption, Implementation, and Maintenance (Glasgow et al. 1999) has been widely used to enhance reporting on such research to practice issues (Glasgow et al. 2006; Klesges et al. 2005). This paper is focused on the “reach” component of the RE-AIM model, with three primary goals: (1) reporting the response and participation rates of people recruited from vote-registration records, (2) examining the representativeness of these participants, and (3) presenting the cost-effectiveness of this method of recruitment.

Reports on recruitment methods and the representativeness of participants are useful in several ways (Froelicher and Lorig 2002). They provide information on initial response and participation rates that can be expected with different methods, and on the representativeness of the samples achieved by a particular method, which is important for determining the generalizability and relevance of findings (Glasgow et al. 1991; Rowland et al. 2004; Toobert et al. 2002; Toobert et al. 2010). In this paper, “response rate” is defined as the number of those successfully reached and informed about a study, prior to determining whether they are eligible or choose to participate. “Participation rate” is defined as “the percentage of those who are both informed about the program and eligible to take part, and who complete enrollment activities” (Glasgow et al. 1991). “Cost-effectiveness” for this paper is defined as the cost per successfully recruited eligible study participant. Given that most studies do not report each of the above elements, comparisons across studies are difficult.

Public voter-registration records have been used as a way to recruit population-based samples in a variety of health-related studies in the U.S. (Cosgrove et al. 1999; Dorman et al. 2000; Katula et al. 2007; Rowland et al. 2004; Unson et al. 2005; Winters et al. 2000). One advantage of using voter-registration records is that investigators may calculate an initial response rate; advertising for study participants does not allow sampling from a known population. An added advantage of using voter-registration lists as a sampling frame is that the records are publicly available and do not violate confidentiality, in contrast with clinical registries and health-care financing rolls. With voter-registration records, it is also possible to target particular populations by age. Recruiting by random-digit dialing results in many non-eligible calls as well as many business and non-working numbers. Community advertisements must be seen by the intended audience and require active participation.

Past research has compared response rates, participation rates, and cost effectiveness of voter records as a source of names and addresses compared to driver licensee lists or other recruitment methods, such as random-digit dialing or community advertisements. Mass mailings typically yield a 3–5% initial response rate (Messer et al. 2006). In one study utilizing voter records, a mass mailing, and phone calls to recruit adults ages 65–74 for a walking program, Jancey et al. (2006) reported a participation rate of 13.6%, at a cost of \$30 Australian per participant (no response rate was reported). In a study that compared participation rate and cost effectiveness of various recruitment methods, including direct mail using addresses obtained from voter-registration lists and commercial databases, as well as community advertisements and referrals, direct mailing was the most effective strategy for recruiting adults ages 70–89 (Katula et al. 2007). After multiple eligibility tests, including an in-person medical screening, the participation rate was 99%, and cost per participant was estimated at \$439, which did not include personnel costs (Katula et al. 2007). Potential participants had to call in for a telephone screening, so investigators were unable to calculate the response rate.

In a comparison of advertising vs. random-digit dialing to obtain healthy young adult research participants, Sorocco et al. (2006) found that random-digit dialing cost significantly more than advertising when examining participation rate, \$2,272 compared to \$72 per participant, not including personnel costs. Random-digit dialing also yielded a less-representative sample. In their study, recruitment via random-digit dialing resulted in a response rate of 9.2% and a participation rate of 4% (11 of 296 eligible completed the study; Sorocco et al. 2006). Another study of older adults recruited by mass mailing followed by a home visit reported a participation rate of 12.3%, and each participant cost approximately \$84 to recruit (Stevens et al. 2008).

Recruitment using voter records produces higher recruitment rates and appears to cost less compared to some other methods, but the representativeness of these samples is often not reported. In one notable exception, older participants recruited via voter records by Jancey et al. (2006) were more likely to be female, were more highly educated, and weighed more compared to the state average. Ganguli, Lytle, Reynolds, and Dodge (1998) found that the use of voter records to recruit a series of age-stratified random subsamples of potential participants 65 years and older for a survey-based health study proved more labor intensive than a widely advertised call for volunteers, but resulted in a more representative sub-sample.

The purpose of the present paper is to build on the current literature by reporting on the response rate, participation rate, cost effectiveness, and representativeness of a sample recruited using voter-registration records for a food portion estimation survey. For purposes of comparison, rates of successful calls for two recent trials using different recruitment methods are presented. And, key demographic characteristics of the voter-recruited sample were compared with those of Lane County and Oregon residents who participated in the Behavioral Risk Factor Surveillance System (BRFSS) aggregated over 2004–2007 (Centers for Disease Control and Prevention 2007). The BRFSS is an annual cross-sectional random-digit dialed telephone survey conducted in each U.S. state, in collaboration with and supervised by the Centers for Disease Control and Prevention. It is a representative, self-report survey of English- or Spanish-speaking adults (18 years or older) in non-institutional households with telephones. The standardized survey covers preventive health practices and risk behaviors, and is used by health departments to track demographic trends in health-related behaviors and chronic illnesses, and to address emerging health issues. The BRFSS and the voter-recruited sample would not be expected to be fully comparable, since recruitment methods and inclusion criteria differed, yet the BRFSS sample is considered to be representative, and offered the best dataset available for the purpose. The U.S. Census dataset for the region contained too few variables in common with the present study to make useful comparisons.

Hypotheses were as follows: (a) representativeness of the voter-recruited sample would be compromised by some common biases (e.g., greater participation by females in dietary studies), (b) the voter-recruited sample would contain higher proportions of Latinos (due to additional efforts to target this group) and retired people (due to their greater availability and flexibility in scheduling study visits), and (c) voter-registration records would be a low-cost and efficient way to recruit a community sample of overweight men and women aged 45–75.

Methods

Study overview

Eligible participants for the study were scheduled for three assessments, each 2 weeks apart. At the baseline visit, participants completed a survey and provided personal information. At the second and third visits, participants completed the study's computerized assessment of diet and physical activity, as well as the paper-and-pencil versions upon which the computer program was based. The diet and physical activity measures were the National Cancer Institute's revised Fruit and Vegetable Scan (Thompson et al. 2002), the Block Fat Screener (Block et al. 1989), and the Community Healthy Activities Model Program for Seniors (CHAMPS) Physical Activity Questionnaire (Stewart et al. 2001).

Participants

This study sought to recruit 200 overweight or obese adults aged 45–75 years over a 17-month period (July, 2007 through November, 2008). Inclusion criteria were: being between ages 45 and 75, self-reported height and weight (body mass index; BMI) of 25 kg/m² or higher, ability to walk, ability to read English, and having a telephone.

Recruitment procedures

A list (costing \$73) was obtained of 89,742 voters registered in Lane County, Oregon, USA, where the study was conducted. The Lane County Elections office generally adheres to the Oregon state statutes for specific purging requirements (i.e., registrants failing to vote in two federal elections are subject to inactivation, then cancellation). To obtain the final sampling pool, voters were selected who lived in the two cities closest to the research lab, and voters were removed who were younger than 45 and older than 75 years of age, or who did not list a telephone number. The final list contained 34,282 potential participants, of whom 2,352 were randomly selected to be contacted. In order to increase ethnic diversity in the voter-recruited sample and improve the sample reach, researchers scanned the list for Spanish surnames in an effort to oversample Latinos. Thus, additional potential Latino participants were added, for a total of 2,569 potential participants in the final sampling pool.

The 2,569 voters who met basic eligibility criteria were mailed letters containing general information about the study and a stamped, self-addressed postcard to return to decline further contact. Between 30 and 200 letters were mailed each week, and a project recruiter followed up with a scripted phone call within 2 weeks. One recruiter was responsible for all calls. The number of letters mailed weekly was adjusted depending on the number of participants needed. Returned postcards as well as returned will-call letters were tracked, and voters who declined or did not receive the initial letter were removed from the calling list. Potential study participants were told that the purpose of the research was to create a user-friendly computer program to measure eating habits and physical activity in adults, and they were told they would receive \$50 as compensation for their time at the end of the study. The research protocol was approved by the Oregon Research Institute institutional review board, and all participants gave written informed consent.

Measures

In the initial telephone screening, the recruiter obtained potential participants' age, height, and weight. Additional demographic characteristics were collected at the first appointment, including highest level of education achieved, employment status, income, marital status, race/ ethnicity, health status, and smoking status.

From the BRFSS 2004–2007 dataset, data were randomly selected for 191 Oregon residents and for 191 Lane County, Oregon residents to compare to the 191 study participants. The BRFSS cases included only those with BMI greater than 25 kg/m² and aged 45–75. The BRFSS data were compared with study participant data on the following variables: gender, self-reported height and weight (BMI), education level, income, marital status, ethnicity/ race, self-reported general health, and current smoking. Some measures were not equivalent across samples, as most of the voter-recruited samples' demographic information was collected via a paper-and-pencil survey in the lab, compared to telephone interviews for the BRFSS.

Statistical analyses

Body Mass Index was calculated as kg/m². Descriptive statistics were computed for all variables to understand the nature of the data. None of the variables was skewed, and therefore no transformations were required. In order to assist readers in directly comparing

the results from the current study with that for the BRFSS 2004–2007 dataset (collected in both Lane County, Oregon and in the state of Oregon), effect sizes (Cohen's d), defined as mean/SD) were calculated on all participation information scores. We followed Cohen's conventions when interpreting effect sizes, with 0.2 as small, 0.5 as medium, and 0.8 as large.

All statistical analyses were conducted using 216 SPSS for UNIX (release 6.1, SPSS Inc., 217 Chicago, IL, USA) and Statistical Analysis Software (version 9.2, 2009, SAS Institute Inc., Cary, NC, USA).

Results

Figure 1 summarizes the steps by which mailing 2,569 letters to people on the voter-registration list resulted in 191 participants completing the study.

Of the 312 opt-out postcards returned, reasons given were most often “not interested” and/or did not have time (345/442; 78%; since people often checked more than one reason, 442 reasons were given on the 312 postcards returned). Other reasons for nonparticipation were personal or family illness (7%) and no longer living in the area (3.8%).

After removing 312 (12.1%) people returning decliner postcards and 193 (7.5%) people whose will-call letters were returned, the project recruiter attempted 2,076 telephone calls. Of these, 1,728 (83.2%) were unsuccessful due to unanswered calls, declined calls, or outdated phone number information. The recruiter called each operational phone number up to 10 times. A total of 337 (16.2%) people were screened for eligibility. Of those reached by phone, 30% did not meet inclusion criteria. The most common causes of ineligibility were having a BMI that was too low ($n = 67$ out of 102 ineligible; 66%), not being in the targeted age range ($n = 10$, 10%), and having problems walking ($n = 9$, 9%).

Of those eligible, about 97% agreed to participate. The recruitment rate gradually declined over the course of the 17-month recruitment period, primarily because telephone numbers in the database became outdated. No seasonal variation for recruitment was observed. Mailings to voters with Spanish names had an initial response rate of 12.8%, close to the overall initial response rate of 13.1%. From voter-registration lists, 227 participants were recruited; of these, 32 did not complete their first appointment and four discontinued participation after the first appointment. There were no significant differences between first assessment completers vs. non-completers in self-reported height and weight, BMI, age, or gender. Of the 227 people who agreed to participate, 207 completed their first study appointment and 202 completed all three study appointments. Eleven participants who were recruited via word of mouth were removed from the dataset for the present analyses. Thus, the final voter-recruited sample was $N = 191$.

Representativeness

Table 1 compares the voter-recruited sample with Oregon and Lane County, Oregon residents (BRFSS data, 2004–2007) in the same age range. The voter-recruited sample had a statistically significantly higher self-reported height and weight (BMI) than the Lane County BRFSS, but not than the Oregon BRFSS. Compared to the Lane County and Oregon BRFSS samples, the voter-recruited sample included significantly more women (than Lane County BRFSS only) and more educated people, fewer unemployed and more retired individuals, and fewer smokers. The voter-recruited sample differed from the BRFSS samples on self-rated health; that is, compared to the BRFSS samples, the voter-recruited sample had a higher proportion rating their health as very good and a lower proportion rating their health as fair or poor. Effect sizes for comparisons between the current study and the Lane County,

Oregon BRFSS sample averaged .30, and ranged from small to medium ($d_s = 0.05\text{--}0.52$), with the largest effect size for education. The magnitude of effects were larger, averaging .55 ($d_s = 0.18\text{--}0.79$), for comparisons between the current study and the state of Oregon BRFSS samples, with the largest effect being for general health status.

The voter-recruited sample had greater representation from ethnic groups, reflecting the oversampling of Latinos, than the Oregon BRFSS sample. The voter-recruited sample did not differ significantly from the Lane County BRFSS sample in age, income, racial makeup, and marital status. The voter-recruited sample did not differ significantly from the Oregon BRFSS sample in age, proportion of females, or BMI. The same pattern of results was found for all variables except BMI, income, and marital status, when the voter-recruited sample was compared with all BRFSS data for Oregon ($N = \sim 22,700$) and Lane County ($N = \sim 2,311$).

Recruitment costs

Recruitment costs were principally composed of salaries to project staff, and included identifying potential subjects, assembling and mailing letters and postcards, telephoning potential participants (including unsuccessful calls), completing the telephone screening form, and scheduling baseline visits. The total cost of recruiting study participants for the Portion project was \$14,259, or approximately \$75 per assessed study participant.

Discussion

This study recruited a sample via voter-registration records for Lane County, Oregon, that differed in both expected and unexpected ways with BRFSS samples from Oregon and Lane County. The BRFSS and voter-recruited samples were compared on 11 variables that were similarly defined across the datasets. Age was the only variable on which the voter-recruited sample did not differ significantly from either the Lane County or the Oregon BRFSS samples. Education, employment, percent female, smoking status, race, Latino ethnicity, and self-rating of health in the voter-recruited sample were significantly different from the BRFSS Oregon or Lane County samples, or both. The largest effect sizes for these differences were for education in the Lane County sample, and for self-rating of health in the BRFSS Oregon sample. Income, racial makeup, and marital status in the voter-recruited sample were not significantly different from the Lane County BRFSS sample. In the case of self-reported BMI, there was a statistically significant difference between the Lane County BRFSS (but not Oregon BRFSS) and voter-recruited samples; however, the difference may not be considered clinically significant.

The voter-recruited sample contained more women and was more educated, as expected of people who would agree to participate in a research study on diet and physical activity, and who were registered to vote. As hypothesized, the voter-recruited sample also contained more Latinos, which was also expected given the oversampling of this ethnic group. The differences in employment status and marital status between the voter-recruited sample and the BRFSS samples are intriguing, and may reflect characteristics of people who vote and/or characteristics of people who agree to participate in a study. Because the study required visits during the workday, it is not surprising that greater percentages of retired people and homemakers were recruited in the voter-recruited sample. The study also recruited a smaller proportion of unemployed people than the BRFSS samples, suggesting that the unemployed (vs. retirees) are reluctant to commit to a month-long study that might conflict with workday activities, such as engaging in volunteer work or seeking future employment. The smaller proportion of divorced people in the voter-recruited sample relative to the BRFSS may reflect a greater sense of social obligation in this group. Unexpectedly, although similar to findings of Jancey et al. (2006) who also recruited an older population using voter records,

the voter-recruited sample had higher-than-average BMI than the Lane County BRFSS sample. In addition, study participants were more likely to report being in “very good” health than BRFSS samples. Post hoc, it is not surprising that people who agreed to participate in a study of diet and exercise were concerned with their health status; although the study was not an intervention, many participants wanted to be in the study to motivate lifestyle changes, including weight loss. Those in the voter-recruited sample were also significantly less likely to smoke, which may be influenced by the higher number of females and perhaps reflects a greater awareness of health issues among these volunteers.

The study demonstrated that obtaining voter records for recruitment purposes was inexpensive and efficient. A list of 89,742 voters registered in Lane County was purchased at a cost of \$73, and yielded a final sampling pool of 34,282 potential participants. Sixteen percent of the 2,569 potential participants originally mailed a recruitment letter was successfully reached by telephone. Each eligible participant who agreed to participate cost approximately \$75 to recruit, including staff time, which compares favorably to other recruitment methods, particularly random-digit dialing, which cannot be targeted to households or to a specific age range and can be expensive (e.g., \$2,272 per participant; Sorocco et al. 2006). Recent studies of recruitment costs using direct mail and advertising range from \$30 Australian to \$439 American, and most estimates do not include staff time (Jancey et al. 2006; Katula et al. 2007; Sorocco et al. 2006; Stevens et al. 2008).

Given that almost 83% of the voter-recruited sample reported incomes of \$20,000 or more per year, the financial compensation of \$50 for participation was not high for a study of this intensity. Participants were more likely motivated by desires to contribute to science and to learn more about health issues related to eating and physical activity. If an intervention had been offered, participants would not have been offered a financial reward. BRFSS recruits were not compensated for completing the phone interview, but their time commitment was shorter and less intensive than for the study participants.

Recruitment rate comparisons with other studies

The rate of successful calls in this study was compared with two recent multiple-risk-factor diabetes intervention trials using different recruitment methods: the Mediterranean Lifestyle Program (Toobert et al. 2002) and the ¡Viva Bien! program (Toobert et al. 2010). In the Mediterranean Lifestyle Program, primary care physicians were first contacted and then patients were sent letters from their doctors before being telephoned to invite participation. In the ¡Viva Bien! program, electronic medical records and administrative databases were queried to obtain a list of potential study participants. Then, letters signed by the project’s physician were mailed to potential participants. Of the three recruitment methods, electronic medical records in ¡Viva Bien! yielded the highest rate (63%) of unanswered or unreturned phone calls, with voter registration next (53%), and the Mediterranean Lifestyle Program physician practice approach least (45%). Of the total number of letters mailed, rates of disconnected or non-working phones were highest for the Mediterranean Lifestyle Program project using physician practice lists (42%), followed by the voter-registration method (25%), and then ¡Viva Bien! electronic medical records (17%). In terms of declined telephone calls, the ¡Viva Bien! project had the highest rate (31%), followed by the voter-registration method (21%) and the Mediterranean Lifestyle Program physician practice method (7%). Thus the voter-registration recruitment method compared favorably with other methods, with moderate numbers of unanswered/unreturned phone calls, disconnected or nonworking phones, and declined telephone calls.

Strengths and limitations

The greatest limitation of the voter-registration recruitment method was restriction of the sampling pool to people who were registered to vote, and who had a permanent address and telephone. The rate of successful calls was influenced by the large number of out-of-date phone numbers in the voter registration database. The present study and the phone-based BRFSS shared a common requirement that participants have a phone. Another limitation is related to the difficulty in comparing the BRFSS and the voter-recruited sample, since recruitment methods, participant burden, and inclusion criteria differed. However, the BRFSS is designed to be a representative sample, thus providing an opportunity to compare the representativeness of a sample recruited via other means.

The study had several strengths. Publicly available voter-registration records were shown to be a relatively inexpensive and effective means of obtaining a large sampling pool. The list was large enough to permit adjustments in the recruitment rate depending on study needs and to oversample Latinos. Given the statistically significant differences in many variables across this study and the two BRFSS samples, the sample of 191 individuals recruited from voter-registration records may not have been representative of overweight adults in Lane County, Oregon, and in the state of Oregon. As far as we know, formulas do not exist for determining the exact number of variables by which study samples must equate in order to be declared representative. However, most differences in participant characteristics across the samples compared in this study were anticipated and/or were not clinically different even if statistically different.

Conclusion

This report makes a unique contribution by comparing a voter-registration-recruited research sample with a broader community sample to assess representativeness. This type of comparison is rarely conducted in research, but is critically important for determining the generalizability of study findings. The vast majority of research has emphasized effectiveness and largely ignored other RE-AIM elements, such as “reach” (Belza et al. 2007). Comparisons of the voter-recruited sample to data from the BRFSS increases understanding about the extent to which the study attracted its intended audience. The ultimate goal is to reach those most in need and at highest risk—and to address the growing diversity of our aging population.

Unlike recruitment strategies (e.g., advertising) that require potential participants to proactively make the initial contact, the recruitment approach used in the present study is less likely to result in the bias associated with a highly motivated sample. By random selection of registered voters, project recruiters attempted to invite all members of the defined population to participate. An advantage of this recruitment method is that the initial response rates, participation rate, differences between participants and nonparticipants, and cost effectiveness may be readily calculated. In the present study, there were no significant differences between participants and decliners. However, any volunteer sample can be biased in some way, yet researchers rarely compare study samples with large community-based samples to test for representativeness. In this study, investigation of the differences between the random voter-recruited sample and the BRFSS samples from the same geographical location shed light on how well the study recruitment strategy worked and how generalizable the results may be.

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Fig. 1.
Study CONSORT diagram

Table 1

Characteristics (means, SDs, or percentages) of study participants compared to 2004–2007 Behavioral Risk Factor Surveillance System (BRFSS) Lane County, Oregon, and Oregon state respondents aged 45–75 years

	BRFSS comparison				
	Study Participants (N = 191)	Lane County (n = 191)	Sig. ^a Effect Size <i>d</i> ^b	Oregon (n = 191)	Sig. ^a Effect Size <i>d</i> ^b
Age	59.4 (8.09)	58.9 (7.88)	.52	59.8 (7.75)	.55
Female	70.7%	56.1%	< .001	63.0%	.11
Body mass index (kg/m ²)	31.59 (6.09)	29.91 (4.24)	< .001 <i>ES</i> = .32	31.30 (5.10)	.64
Education			< .001		< .001
Grade 0–8	1.0%	1.6%	<i>ES</i> = .54	2.6%	<i>ES</i> = .69
Grade 9–11	1.0%	4.8%		7.9%	
High school	14.7%	25.4%		27.5%	
Some college	36.1%	32.8%		32.8%	
College graduate	47.1%	35.4%		29.1%	
Employment			< .01		< .001
Student	0%	0%		1.0%	
Employed	46.6%	46.0%		37.6%	
Unemployed	4.8%	15.9%		20.6%	
Homemaker	7.9%	3.7%		6.9%	
Retired	40.7%	34.4%		33.9%	
Income			.55		< .05
< \$10,000	7.0%	4.5%		4.8%	<i>ES</i> = .18
\$10,000–\$19,999	10.2%	13.4%		16.4%	
\$20,000–\$49,999	44.9%	48.0%		54.0%	
\$50,000+	38.0%	34.2%		24.9%	
Marital status			.31		< .05
Married	61.3%	53.2%		47.1%	
Separated	1.6%	2.7%		3.1%	
Divorced	14.7%	22.3%		24.9%	
Widowed	8.9%	11.2%		14.8%	
Single	13.6%	10.7%		10.0%	

BRFSS comparison					
	Study Participants (N = 191)	Lane County (n = 191)	Sig. ^a Effect Size <i>d</i> ^b	Oregon (n = 191)	Sig. ^a Effect Size <i>d</i> ^b
Ethnicity			< .001		< .001
Latino	9.4%	0.5%		1.1%	
Not Latino	90.6%	99.5%		98.9%	
Race			.14		< .05
Am Ind/Alask Nat	4.2%	2.3%		2.6%	
Asian	0.5%	4.7%		0.5%	
Black/African Am	1.0%	0%		1.6%	
White	88.0%	93.0%		95.2%	
Other	6.2%	0%		0%	
General health status			< .05		< .001
Excellent	7.9%	17.5%		5.8%	<i>ES</i> = .79
Very good	42.9%	33.3%	<i>ES</i> = .05	14.8%	
Good	35.6%	32.3%		35.4%	
Fair	11.5%	13.8%		25.4%	
Poor	2.1%	3.2%		18.5%	
Current smoker	6.8%	29.1%	< .001	29.1%	< .001

^a *P* value from *t* test or chi-square test, as appropriate

^b Effect sizes (Cohen's *d*) are provided only for non-nominal variables with significant between-group differences (*P* < .05)