

Comparisons of Cholesterol Screening Participants and Non-participants in a University Setting

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Abstract

The purpose of this study was to compare volunteer health screening participants to a randomly selected group of university employees. All benefits-eligible faculty and staff (9,291 employees) of a large southern university were invited to participate in worksite health screening. Screened employees were compared to a random sample of university employees in order to examine the bias associated with volunteering for screening. Differences were found between participants and non-participants, which could have implications for worksite health policy.

Introduction

As interest in worksite health promotion has steadily increased, screening has frequently been mentioned as a health promotion activity (Perryman & Beerman, 1997) traditionally identifying participants who are at a high-risk for life threatening diseases (Chenoweth, 1998). Worksites have attempted to reach employees who might otherwise not attend health screenings, but typically only recruit a small percentage their workforce (Kingery, 1996; Goetzl, et. al., 1998). Community screenings have also grown in popularity and can be located in shopping centers, community centers, malls or other community locations. Screenings offer opportunities for both primary prevention through detection of risk factors, and secondary prevention (McBride et al., 1998).

Public health professional have become more increasingly concerned that individuals who participate in health screening activities are both demographically different and more health conscious than non-participants (Hyman, Paradis and Pradis, 1992; Perryman & Beerman 1997). Early studies have suggested that participants tend to be more educated, more affluent and are more interested in their health than nonparticipants (Zavela, David, and Cottrell, 1988). These studies also suggest that nonparticipants consistently have poorer overall health (Farrell, Kohl, and Bogdannffy, 1989; Stange, Strogatz, and Schoenback, 1991). Naumburg, Franks, Bell, Gold, Engerman (1993) found that minorities were less likely to have attended a health screening program than whites after controlling for age, gender, insurance status, socioeconomic status, number of visits and other cardiovascular risk factors. Secondarily they found several factors associated with reduced likelihood of a health testing participant having a previous screening

result: Under 45 years of age, having less than 12 years of education, having an income of less than \$10,000, not having insurance, not having visited a physician in the previous year, and practicing three or more high-risk cardiovascular behaviors. Fisher, Guinan, Burke, Karp and Richards (1990) found that participants in mall-based testing were older, more likely to be female, and more likely to be nonsmokers.

Hyman, Paradis, and Flora (1992) conducted a study to determine if worksite cholesterol screening reaches those who are already aware of their cholesterol and interested in lifestyle modification. A random sample (n=138) was compared to screening participants (n=1,583) in various demographic and cholesterol variables. It was discovered that nonparticipants were more like to be male and smokers, more likely to exercise and have had a prior cholesterol check. Their conclusion suggest that cholesterol screening reaches those people already aware of their cholesterol, but can reach some people who have not had a previous measurement. Perryman and Beerman (1997) found no significant differences between participants and non-participants on age, gender, and self-reported cholesterol values. Significant differences were found in body fat levels, with participants having higher levels than non-participants.

Evaluations in noncoporate settings, especially those involving college and university staff and faculty have been rare. The perceived homogeneity of university employees may be a factor in the deficient number of studies. Few of the existing studies have compared participants and nonparticipants in worksite health promotion and screening programs (Perryman & Beerman, 1997). Therefore, the purpose of this study was to identify any differences, if they exist, between cholesterol screening participants and nonparticipants in a university setting.

Procedures

All benefits-eligible faculty and staff (9,291 employees) of a large southern university (Texas A&M University) were invited to participate in worksite health screening. An announcement and a registration form were distributed with employee paychecks. The employee was informed that the University partially subsidized the cost of the health assessments but that the employee would contribute \$10 toward the cost at the time of screening. Approximately 15 employees were scheduled for each screening date. Walk-ins were allowed at the health assessment site as space allowed. Following screening, an extensive review of the participants' results was conducted with a health educator. The results of the cholesterol assessment were discussed with the participant to assure that they understood their test results and to encourage them to seek diagnostic screening if necessary. Approval for the human subjects was obtained from the Institutional Review Board at Texas A&M University.

The health assessment team consisted of an assessment coordinator (masters-level health promoter), a phlebotomist, a computer operator, between one and two health education or kinesiology interns, and a student worker with a health related background. Competency of employees was considered paramount for success and all team members received four weeks of pre-service training in their respective tasks and were tested to assure proficiency prior to performing screenings in the field.

Results

The health promotion program screened 15% (n=1400) of benefits-eligible faculty and staff at Texas A&M University. The sample for this study was reduced to 2.9% (n=270) of the benefits-eligible faculty and staff after eliminating those participants who did not have both a capillary and venous blood cholesterol measurement. Screened employees were compared to a random sample of university employees who gave permission for their health claims to be released (n=587) in order to examine the bias associated with volunteering for screening (Table I). Calculation of an ANOVA revealed participants tended to be older (M=47.0, SD=9.57, p<.01) when compared to the control group (M=40.4, SD=14.37), and earned more annually (M=\$50,054, SD=\$28,417, p<.001) when compared to the control group (M=\$30,009, SD=\$14,204). Calculation of a chi-square revealed significant differences between participants and the control group with more participants having a college

degree (85.9%, Chi-Square=75.227, p<.0001), with most being male (68.5%, Chi-Square=12.546, p<.001) and white (91.9%, Chi-Square=30.159, p<.0001).

Table 1. Demographic Sample Bias Associated with Volunteerism to Worksite Health Screening, and Venipuncture Cholesterol Measurement.

Venipuncture Cholesterol Measurement	Random Sample of University Employees (n=587)	Study Volunteers to Venipuncture (n=270)
Age: Mean/SD (Years)*	40.4 / 10.07	47.0 / 9.75
Salary: Mean/SD (Dollars)**	\$30,009/ \$14,204	\$50,054/ \$28,417
Possession of Bachelors Degree (%)***	51.3	85.9
Gender**		
Male (%)	53.7	68.5
Female (%)	46.3	31.5
Race/ Ethnicity***		
White	78.7	91.9
Black	10.5	0.7
Hispanic	7.5	3.7
Other	3.3	3.7
* p<.01 ** p<.001 *** p<.0001		

Discussion

Screenings offered to employees for low-cost venous cholesterol measurement differentially drew older, higher salaried, more educated employees, particularly white males. This was consistent with the literature, that older males are at higher risk for cardiovascular

disease and generally may attend screenings more readily (Guinn, 1992; Lowe, et al., 1998).

Older males may have been more generally aware of their higher risk, and may have differentially sought screening in keeping with their awareness. Also, an older population may have more concern for their health in regard to heart disease and may attempt to enhance their awareness through various physiological screening programs like that of cholesterol screening. With a more highly educated population from which to recruit, typically a more informed and concerned person will attend health screenings. This may explain why a more highly educated group of employees attended this screening.

Another factor as to why a seemingly biased portion of the workforce sought cholesterol screening may lie in the fact that higher salaried employees may have more discretionary income. Higher salaried employees may have more financial security allowing arbitrary decisions about financial matters. More financially secure employees may be capable of financial planning including portions allocated to preventive health. As supported by the literature (Kingery, 1996), most people who seek preventive health services are willing to pay for preventive health care, which some consider an expensive means of utilizing health care dollars, especially when they are not sick. When these more highly educated and informed individuals find a less expensive means of attaining cardiovascular information, as with this screening, they may see the "deal" that the health promotion program offers and attain cholesterol information at a relatively inexpensive price.

Higher salaried employees who attended worksite screening may have had more release time from work to facilitate access to screening. In a university setting, higher salaried employees tend to come from faculty and managerial positions, which lend themselves to more flexible working hours. The flexible working hours can create an atmosphere that allows more access to screening programs that occur on the university campus. As with faculty and managerial positions, they may have more access to various avenues of communication that may not reach other staff members. These forms of communication could include electronic mail (e-mail), faculty mailboxes, or faculty staff meetings at the beginning of semesters that may enable faculty and managerial employees to be more informed of program offerings.

In attempting to increase the awareness and need for a health promotion program, the president of Texas

A&M University actively recruited departmental managers to forward the idea of a screening program in their respective departments. Managers may attempt to foster an environment that promotes awareness of health parameters such as cholesterol. Typically managers, in an attempt to promote such activities, will participate in the program themselves, utilizing a modeling behavior to increase employee participation in their respective departments. This modeling behavior in theory may increase the participation of the managers (higher salaried), but may fall short of its intended goal of increasing departmental participation, skewing the demographics even more than anticipated. Many managers may not effectively pass along the uniqueness or utility of the program to the workers in their areas, and may be the only ones to participate in the program due to poor communication skills.

The lack of discretionary income may cause the lesser-paid employees to prioritize their spending, with preventive health care typically being close to the bottom of the list. The lesser-paid employees in this study were predominately in the custodial and food service departments. These jobs tend to be task specific and may not allow "free" time in which other duties or programs can be pursued. Typically these types of jobs operate around a manager who has to allow the employees to leave their specific duties and worksites in order to participate in the screenings. Managers may not see the utility of the screening program, or may place a higher priority on the work that needs to be done in that area, and will not grant the necessary release time to participate in the cholesterol screening.

Food service and custodial employees in this group of study subjects typically stated they were not sick, and did not need to attend screening. The concept of disease prevention seemed to be less developed among this population of the workforce. They were also less likely to know about the screening since they did not have individual mailboxes and rarely utilized or had access to electronic mail, and the announcement, though addressed to them personally at their worksite address, may have not reached them. If the mailings reached them along with various memos and other mail, these mailings may have been overlooked or ignored.

Food service and custodial employees, when specifically recruited, may have felt the screening was a mandate from managers of their department and considered it a way in which they were able to control their future employment based on their level of health. Managers in these departments may have seen the importance of this screening, but communicated

ineffectively with their employees. By telling them of the screenings, but not specifically informing them it was on a volunteer basis, as well as not communicating to the employees that the screening would be conducted by people outside their departments, many custodial and food services employees felt threatened, and thought it could affect their employment status. Upon informing them that their managers would not receive their results, and were not the initiators of the program, they seemed more open to the idea of worksite screening and encouraged their coworkers to participate.

Cost was probably the largest factor, however, as earlier screening attempts had found that participation among employees with lower salaries increased when the cost was waived entirely. In an effort to increase lesser-paid employee enrollment, the initial \$10 fee was waived. It was a general concern that the employees may equate value with worth causing them to wrongly think the program did not have much to offer of value. In this particular study, after talking to some of the participants it was found, anecdotally, to be untrue.

Universities, on the average, tend to have more highly educated employees, which constitute larger portions of their employee base than a more traditional workforce. With a large percentage of employees possessing multiple degrees within the university setting, a larger portion of participants would have more education than volunteers in an otherwise mainstream workforce. This may explain why a more highly educated employee attended screening, there were just more highly educated employees at this worksite. Higher educated employees may tend to view health and information about their health as important and worthy of the extra time and money spent for cholesterol screening. Lower income employees tended to be more reactionary in nature rather than proactive concerning health issues. This factor probably had the greatest impact on the volunteers to screening skewing participation to a more educated group than the average employee.

To achieve better representation from this sector several barriers were removed for the 158 employees in service positions earning less than \$20,000 per year and having less than a high school education. The barriers addressed included the following: The usual \$10 fee for the screening was waived; meetings were held with supervisors at the highest levels to enlist their support and to assure that they understood the concept of "release time" to attend screenings; special letters of invitation were mailed directly to each employee; upon

receipt of a registration form from one of these workers a letter was mailed to their immediate supervisor explaining the program and enlisting their cooperation; questionnaires were translated into Spanish and an individual fluent in Spanish was present to assist employees with the assessments; and the assessments were held in the immediate work area of the employee. The elimination of barriers changed the demographic characteristics of the study subjects, but was not included in this sample.

Our study found that a more affluent, older and male participant was likely to attend cholesterol screening. This study also supports some of the earlier research suggesting a university worksite cholesterol screening program will reach a more healthier population. The finding that nonparticipants may in fact be less healthy has implications for health promotion programs. If the least healthy are not attending, these employees run the risk of not knowing their risk for disease, thereby negating the very reason for the screening in the first place, improving employee health in those who need it the most. Strategies to reach a 100% of the workforce may need to be created to reach the most at-risk employees. When attempting to draw conclusions or set policy based on worksite health promotion data, employers must acknowledge a selection bias in their data. Additional research is needed to identify strategies to reach underserved employees and recruit a less biased and more diverse portion of the workforce.

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