Factors Affecting Healthy Eating and Physical Activity Behaviors Among Multiethnic Blue- and White-collar Workers: A Case Study of One Healthcare Institution

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Abstract

Worksite health promotion programs can reduce prevalence of chronic disease among employees, but little research has been done to discern whether they meet the needs and incorporate the preferences of workers of different occupational types. The objective of this study is to examine differences in influences to healthy eating and physical activity and preferences for programs among multiethnic blue- and white-collar workers in Hawai'i. A total of 57 employees from a major health care corporation in Hawai'i participated. A mixed-methods approach was employed, in which findings from focus groups with white-collar workers (WCW) (n=18) were used to inform development of a questionnaire with closed and open-ended items for use with blue-collar workers (BCW) (n=39), whose jobs did not provide adequate time to participate in focus groups. Focus groups with WCW revealed that onsite availability of healthy food and fitness opportunities provided the most support for healthy eating and physical activity at work; work demands, easy access to unhealthy foods, and lack of onsite fitness opportunities were barriers; and lifestyle management was a topic of substantial interest. BCW cited the ability to bring home lunch and their (physically active) jobs as being supportive of healthy behaviors; not having enough time to eat and personal illness/injury were barriers; and chronic disease topics were of greatest interest. Knowing differences in influences to healthy eating and physical activity, as well as preferences for worksite wellness programming, among BCW and WCW, is important when planning and implementing worksite health promotion programs.

Introduction

Studies suggest that blue-collar workers (BCW), as defined by the US Department of Labor, are more likely than white-collar workers (WCW) to have risk factors for chronic disease.[1-10] Factors related to these health risk behaviors have been attributed to the demographic characteristics of BCW (eg, low education level, being an ethnic minority) and the nature of blue-collar jobs (resulting in burnout, stress, and job dissatisfaction), and subsequent increased risk of myocardial infarction and depression.[11-16]

Characteristics of white-collar jobs can also contribute to adverse health outcomes among WCW. WCW have more sedentary jobs than BCW.[17,18] Additionally, white-collar jobs, though less physically demanding than blue-collar jobs, tend to be more psychologically demanding.[19] Low physical activity levels and high psychological stress are two risk factors for obesity, and obesity is also a risk factor for chronic disease.[20,21]

Studies in Europe have estimated that 30% of total mortality and 30% of total loss of disability-adjusted life years can be prevented through workplace health promotion and protection activities.[22] While not much can be done to change the characteristics of blue- and white-collar jobs, providing appropriate and adequate health education and care opportunities, through worksite health promotion programs, may help to alleviate the health burden that these jobs entail.

In developing wellness programs in worksites with both WCW and BCW, it is important to first learn what factors are related to the likelihood of practicing healthy eating and physical activity behaviors at work and how to meet the differing needs and interests of both. Thus, the purpose of this study was to examine supports and barriers to healthy eating and physical activity and preferences for programs among WCW and BCW in Hawai'i.

Methods

The setting for this 2011 study was a major health care corporation in Hawai'i, which employs about 5,100 individuals statewide. The research utilized a mixed-methods approach, which included focus groups with WCW and a survey of BCW.[23] This method was chosen when it became apparent that the jobs held by the BCW would not allow them enough time to participate in a traditional focus group, as they were allotted only 20 minutes of work time to participate in the study. Thus, the findings from the WCW focus groups were used to inform the development of a survey for BCW. The same incentives were provided to all participants. This study was approved by the University of Hawai'i Institutional Review Board and the Queen's Medical Center Research & Institutional Review Committee.

Focus Group Questions

The study framework was informed by a previous study on policy development and environmental changes to promote physical activity, done by Sallis, et al,[24] which was expanded to include healthy eating. The framework addressed three areas: (1) availability and access; (2) desired education, programs, and incentives; and (3) acceptable measures of determining positive health changes that were addressed by nine focus group questions: (1) What things in your work environment support you in making healthy eating choices?; (2) What things in your work environment hinder you in making healthy eating choices?; (3) What things in your work environment support you in being physically active?; (4) What things in your work environment hinder you in being physically active?; (5) What educational programs could be held at the worksite to promote healthier eating and getting regular exercise?; (6) What other kinds of programs could be held at the worksite to promote healthier eating and getting regular exercise?; (7) What incentives might help you to make healthier choices?; (8) What kinds of things can we measure to see if employees are getting healthier?; and, (9) What kinds of things could we measure to see if the worksite is becoming healthier? The focus group methods and

questions were tested in a previous worksite study by Leslie, et al,[25] where they were found to be acceptable with a mixed-ethnic population in Hawai'i, and useful in obtaining information for planning future worksite wellness programs.

BCW Survey

A survey was developed for BCW to reflect the nine focus group questions and used response options derived from findings from the focus groups with WCW. Opportunity was provided for other write-in responses to the questions. This allowed a comparison of themes generated from the WCW groups with results from the BCW survey. Providing response options was useful given the short time BCW had available to respond to each question.

Background Questionnaire

Each participant (both BCW and WCW) was asked to anonymously complete a background questionnaire, adapted from Leslie, et al,[25] which solicited demographic and other information: age, gender, ethnic group most identified with, highest amount of schooling completed, job title, number of years in current job position, current self-reported weight and height, perceived weight status (underweight, need to lose 10-20 pounds, need to lose 20 or more pounds, or just right), and perceived level of exercise (just right, need to increase, or too high). Additional questions regarding self-reported personal and family history of and risk for chronic diseases were included, in order to examine other differences in health characteristics of BCW and WCW.

Recruitment of WCW and BCW Participants

Participants, for both the BCW survey and WCW focus groups, were deemed eligible if they were 18 years or older and were an active employee of the organization.

WCW participants were recruited by a letter and accompanying recruitment flyer, which was electronically sent from the IT department via the company's listserve a single time. Interested employees contacted the project coordinator directly. A total of 18, of the 3,863 WCW on the listserve (<1%), participated in the four focus groups; 17 completed the survey.

BCW participants were solicited by their managers (n=4, company wide), as the BCW did not have access to email. Managers of BCW, who were interested in having their employees participate (n=1), contacted the project coordinator. A total of 39 (17%) of the agency's BCW (n=227) participated in the survey.

WCW Focus Group Methods

The four WCW focus group sessions were held onsite and lasted approximately 70 minutes each. The same facilitator, trained in focus group facilitation, conducted all four focus group sessions. Participants provided their responses to each of the focus group questions described earlier. Discussion was digitally recorded, with the main ideas recorded on Power Point and projected on a wall screen viewable to all participants, to ensure that responses were accurately recorded. Participants completed the background survey prior to the start of the focus groups.

BCW Survey Methods

A hard copy of the survey was provided to the BCW participants, onsite, during a regularly scheduled staff meeting. The project coordinator read each question and then allowed time for participants to write their answers. Participants completed their background questionnaire and survey separately and anonymously.

Data Analysis

Focus group recordings were transcribed, transcriptions were coded, and common themes were extracted using QSR NVivo 9. Following methods for constant comparative analysis, themes were examined, compared, and assigned into the following categories: (1) supports; (2) barriers; (3) ideas for programming; (4) incentives; and (5) acceptable evaluation methods.[26,27] Themes within each category were reexamined and compared, and recategorized (if determined to be appropriate), and irrelevant or extraneous information was taken out. These themes became response options for the nine questions in the BCW survey.

Frequencies of responses from the BCW survey and the background questionnaire were manually generated. None of the BCW wrote in additional responses, so no original BCW themes were generated. Self-reported weights and heights were used to calculate participant's Body Mass Index (BMI), which was categorized using the US BMI classification.[28]

Results

Demographic and Health Characteristics of WCW and BCW

Although 57 employees participated in the study, demographic and health data were only provided by 54 participants; two questionnaires were largely incomplete (both BCW) and one was not completed at all (from WCW). Since not every respondent answered every question, slight differences in total number of responses by question are seen (Table 1).

A majority of BCW were female (77%), Filipino (89%), 50-69 years old (64%), and had a high school education or less (54%). The majority of WCW was also female (76%), but they were younger (71% were 40-59 years old), and had a 4-year college degree or higher (83%). The most common ethnicity of WCW was White (38%), followed by Japanese and Filipino (tied at 19%).

Slightly fewer BCW than WCW were classified as overweight or obese (47% vs 53%). BMI categorical distributions were more likely to concur with self-rated weight status among BCW than among WCW, with 76% of WCW saying that they needed to lose 10+ pounds when in fact only 53% were overweight/obese by BMI.

High blood pressure (38%) and high cholesterol (27%) were the most common health conditions reported by BCW; high blood pressure (29%), high cholesterol (12%), and obesity (12%) were the most commonly reported among WCW. Family history of chronic disease and risk factors for chronic disease were reported more frequently among WCW than BCW.

Table 1. Number and Percent of WCW Focus Group and BCW Survey Participants, By Sociodemographic Variables[a]						
	BCW (n=39)		**WCW (n=18)**		**Total (N=57)**	
	n	**%**	**n**	**%**	**n**	**%**
Age	n=36		n=17		n=53	
20-29	0	0	1	6	1	2
30-39	6	17	3	18	9	17
40-49	7	19	8	47	15	28
50-59	12	33	4	24	16	30
60-69	11	31	1	6	12	23
Gender	n=30		n=17		n=47	
Male	7	23	4	24	11	23
Female	23	77	13	76	36	77
Ethnicity	n=35		n=16		n=51	
Filipino	31	89	3	19	34	67
White	0	0	6	38	6	12
Japanese	0	0	3	19	3	6
Chinese	3	9	1	6	4	8
Native Hawaiian	0	0	2	13	2	4
Hispanic	0	0	1	6	1	2
Other	1	3	0	0	1	2
Educational Attainment	n=33		n=17		n=50	
Elementary	4	12	0	0	4	8
Some high school	6	18	0	0	6	12
High school/GED	8	24	0	0	8	16
Some college/tech	5	15	2	12	7	14
Tech school/2 yr degree	4	12	1	6	5	10
College grad/4 yr degree	4	12	4	24	8	16
Graduate or higher	2	6	10	59	12	24
Body Mass Index (BMI)	n=36		n=17		n=53	
<18.5 (underweight)	0	0	0	0	0	0
18.5-24.9 (normal weight)	19	53	8	47	27	51
25-29.9 (overweight)	13	36	6	35	19	36
>=30 (obese)	4	11	3	18	7	13
Self-rated Weight Status	n=36		n=17		n=53	
Underweight	2	6	0	0	2	4
Just right	19	53	4	24	23	43
Need to lose 10-20 pounds	14	39	7	41	21	40
Need to lose 20+ pounds	1	3	6	35	7	13
Self-rated Exercise Level	n=30		n=16		n=46	
Just right	14	47	1	6	15	33
Need to increase	15	50	15	94	30	65
Too high	1	3	0	0	1	2

[a]Blue-collar worker (BCW); white-collar worker (WCW); number of observations (n);
Contains differential n for each variable as not all questions were answered by respondents.

Table 2. Number of WCW Focus Groups and WCW Participants Addressing Themes Related To Healthy Behaviors at Work[a]

	# of groups addressing theme	# of people addressing theme
Supports to Healthy Eating		
Access to healthy food	4	8
Coworkers	3	4
Onsite nutrition information	4	5
Job characteristics & benefits	2	2
Supports to Physical Activity		
Coworker support	3	4
Access to fitness opportunities	3	7
Physical layout of facility	2	3
Job characteristics (involves active movement)	2	2
Supportive manager	1	1
Barriers to Healthy Eating		
Low access to healthy foods	4	9
Work demands	3	11
Coworkers	3	4
Barriers to Physical Activity		
Low/no access to fitness opportunities or equipment	3	8
Work demands	4	7
Job characteristics	1	2
Unsupportive manager	1	1
Wellness Programming		
Education on different disease and health topics	4	10
Health education materials	2	6
Employer-sponsored wellness activities	4	8
Employee-lead wellness activities and programs	2	2
Access to fitness opportunities and related programs	2	6
Having programs at different times throughout day	3	7
Incentives		
Freebies or discounted items	4	6
Points rewards system	4	9
Administrative role models	1	2
Worksite policy changes	2	7
Suggested Evaluation Measures		
Observations of the environment	4	9
Objective measures (weight, blood pressure, etc.)	4	7
Human resources data	3	5
Subjective measures	2	4

[a]White-collar worker (WCW). WCW responses based on total of 4 full-length focus groups done and 18 focus group participants.

WCW Focus Groups (Table 2)

Supports to Healthy Eating and Physical Activity

Access to healthy food, such as salad bars and vegetarian options in the cafeteria, healthy "grab and go" items at the onsite café, and the availability of kitchen appliances to store and prepare foods were reported to help WCW make healthier choices. Access to fitness opportunities (50% of WCW respondents), eg, having the ability to take the stairs and the availability of both employee-paid and free classes, eg, hula, aerobics, yoga (depending which motivated the employee more) were also helpful. Co-workers who practice healthy behaviors (eg, walk during lunch, take the stairs vs elevator, eat healthily) serve as role models for others (22%). Onsite posted nutrition information (28%), an active job (11%), and a supportive manager (6%) were also seen as helpful.

Barriers to Healthy Eating and Physical Activity

Work demands (61%) made it difficult for WCW to take a lunch break or to participate in health education activities. When time was available, WCW reported feeling too tired to participate. They reported selecting unhealthy foods due to convenience and because they are "more comforting than healthy foods." Having unhealthy food available—from fundraisers, vending machines, families, meetings, and the cafeteria—increased the likelihood of eating it (50%). Lack of onsite fitness facilities (44%), having coworkers who eat/bring unhealthy food (22%), short break time (job characteristics) (11%), and an unsupportive manager (6%) also served as barriers.

Ideas for Employee Wellness Programs

The two most popular wellness topics among WCW were lifestyle management (55%), ie, learning how to integrate healthful changes into busy lives, and attention to ergonomics (55%) to help prevent injuries and make the work day more bearable and comfortable. More agency-sponsored "fun" health activities (eg, marathons, sports teams, health fairs, employee wellness services) were also of interest (44%). WCW indicated that having programs at different times throughout the day, to accommodate the range of schedules and varying work requirements, would make it more convenient to participate (39%). Health education and tools, in the form of tip sheets, quizzes, emails, posted on the company's intranet, and phone apps would serve as "reminders" to health and would help track goals (33%). Increased fitness opportunities and related programs were also of interest (33%).

Incentive Ideas

Having free items (eg, food, gift certificates) was an incentive for WCW to participate in health programs and practice healthy behaviors (33%). A points-rewards system, where employees who participate in health classes and practice healthy behaviors can accumulate points towards redeeming a prize, was also considered motivating (50%). Having

administrators as role models was inspiring and supportive to WCW (11%). Worksite policy changes, such as flexible working hours to participate in wellness activities, transferring sick leave to paid time off if employees stay sick-free for a specified period, and having the ability to have one's health insurance deductible reduced if they participated in healthy behaviors or remained healthy for a specified period of time were also desired (39%).

Acceptable Evaluation Measures
Visual signs of a more health-oriented worksite (50%), according to WCW, would include health signage and prompts throughout the worksite, happier and more excited employees, increased employee participation in health programs, more healthy food options and fitness supports (bike racks), and healthier administrators. Objective (clinical) assessments (39%), such as body weight and fat, clinical laboratory measures (eg, blood cholesterol, sugar, etc), and blood pressure, tracking of human resource data (eg, workplace injuries, sick days) (28%), and collecting subjective data (eg, focus groups, surveys) on self-reported behaviors (22%) would all be acceptable.

BCW Small Group Survey (Table 3, n=39)
Supports to Healthy Eating and Physical Activity Among BCW
About 50% of BCW respondents indicated that having food from home was supportive of healthy eating, followed by having nutrition information posted in the cafeteria (28%). BCW indicated that their jobs, most of which were physically active, were supportive of physical activity (44%). During break times, BCW preferred to engage in social interaction and rest from physical labor.

Barriers to Healthy Eating and Physical Activity Among BCW
Barriers to healthy behaviors at work, among BCW, were related to work policies and workplace injuries. Not having enough break time (47%) was the most common barrier to healthy eating, followed by job stress (31%). Personal illness or injury (33%) was the most common barrier to physical activity.

Ideas for Wellness Programming and Incentives Among BCW
BCW were most interested in learning about chronic diseases and their risks (eg, heart disease, cancer, diabetes, high blood pressure, 85%) and related topics (fat, cholesterol, portion sizes, 67%). Other programs of interest included exercise and stretching (67%) and recreational classes (dance and massage) (62%). Free fitness clothing and equipment (44%), gym memberships (39%), and food (33%) were identified as being the top motivators for practicing healthful behaviors.

Suggested Evaluation Measures Among BCW
When asked how employers could tell if the worksite was healthier, BCW recommended tracking clinical laboratory values and blood pressure (77%), increases in the number and types of health classes offered by the worksite (42%), and amount and type of healthy food choices available onsite (36%).

Discussion

Results from this study yielded four key implications for those seeking to improve employee's health through worksite health promotion programs. First, findings suggest that there are differences in influences on healthy eating and physical activity among BCW and WCW, suggesting that a "one-size-fits-all" approach when planning a worksite wellness programs is not going to meet the needs of all employees. One of the BCW managers provided an anecdotal observation, stating that BCW men and women bring home lunch almost daily and eat separately; men eat in the break rooms and women in the cafeteria. The BCW manager also stated that due to the BCW work schedules, educational classes are provided during their morning meetings. Having increased availability of healthy food and health classes onsite may be more helpful to WCW than BCW, since BCW do not buy their food onsite and they have a less flexible schedule. Providing education on what constitutes a healthy diet at locations where BCW congregate during breaks or at their regularly scheduled staff meetings may prove more beneficial to BCW. Underlying reasons for differences may include ethnic or cultural and educational differences between the groups, as well as differences in job-related activities.

Second, demographic and health differences between occupational types were observed and must be taken into consideration to ensure that worksite wellness efforts, such as fitness activities and health education topics, are considerate of age and ethnicity.[29-31] Health education materials provided and health information presented should also be appropriate for reading and health literacy levels of participants.[32,33]

Third, venues to learn about health and worksite wellness offerings tend to differ between BCW and WCW employees. Spending time and money to deliver health information online may increase knowledge only among WCW, since BCW do not have the same online access. Establishing worksite policies related to flex-scheduling may also only serve to benefit WCW. Incorporating alternative working schedules that allow staggered shifts or a schedule that assigns employees to cover for other employees who take breaks for wellness activities may be more accommodating to BCW. Providing health information in agency newsletters and with paystubs will ensure equal accessibility of this information to all employees.

Lastly, gaining the support of both BCW and WCW managers/administrators is important in encouraging employee participation in worksite wellness activities. For BCW, this may be the sole means of BCW accessing worksite wellness offerings. Having administrators who model healthy behavior was motivating to WCW.

Limitations

The chief limitation of this study is the difference in data collection methods used with two different types of workers. While themes from WCW were based on insightful discussion and could be clarified by the researcher as needed, BCW responded only to a survey (albeit one that allowed write-in responses) designed from WCW data and had no opportunity

Table 3. Number and Percent of BCW Survey Participants that Indicated Factors Influencing Healthy Behaviors at Work[a]

	n	%
Supports to healthy eating		
Having food from home	18	50
Nutrition info posted in cafeteria	10	28
Nice place to eat lunch	7	19
Eating with coworkers	7	19
Healthy options at work	7	19
Coworkers who eat healthy	5	14
Foods coworkers bring	2	6
Barriers to healthy eating		
Not enough time to eat	17	47
Job stress	8	22
Unhealthy options at work	6	17
High work load/demand	4	11
Coworkers who eat unhealthy	2	6
Foods coworkers bring	2	6
Supports to physical activity		
Job characteristics (active job)	16	44
Coworkers who are active	7	19
Barriers to physical activity		
Personal illness/injury	12	33
Coworkers who are not active	7	19
Ideas for programming		
Educational topics		
Fat/cholesterol	19	53
Weight management	16	44
Stress	13	36
High blood pressure	12	33
Heart disease	8	22
Serving sizes/portions	7	19
Cancer	7	19
Diabetes	6	17
Other programs		
Exercise classes	23	64
Dance classes	13	36
Massage	11	31
Cooking classes	9	25
Workplace safety training	9	25
Fitness/weight loss contest	6	17
Stretching classes	3	8
Incentives		
Free fitness equipment	16	44
Free gym membership	14	39
Free food	11	31
Work-sponsored lunches	2	6
Suggested evaluation measures		
Employee measures		
Lab values (blood cholesterol, etc.)	15	42
Blood pressure	15	42
Sick days used	3	8
Worksite measures		
More health & fitness classes	15	42
Increased healthy food options	13	36
Employee attitudes	9	25
Less workplace injuries	9	25
Coworkers bringing healthy food	6	17

[a]BCW responses based on 1 small group survey done among 39 participants.

for discussion or clarification. Some key ideas of BCW may have been missed. Future studies striving to compare influences affecting healthy eating and physical activity between WCW and BCW should seek to utilize data collection methods that are more comparable.

Other limitations include: group bias and possible error in interpreting thoughts and ideas shared during the focus groups; survey bias, as response options were based on WCW responses and dependent on written (rather than oral) responses; possible response error, as all data were self-reported; researcher bias, as only one researcher collected and analyzed the data; and ethnic and educational differences between BCW and WCW, which may confound differences identified between these occupational groups. Findings may represent a select segment of WCW and BCW, due to the low response rate among them (<1% and 17%, respectively), which may possibly be attributed to feelings that their involvement in the study may take a substantial part of time in their already busy schedules or that the study purpose is of low personal salience.[34] However, as research has shown low participation rates are not necessarily indicative of substantial bias in a study, concerns about non-participation bias may be of minimal concern. As this study was conducted among workers from a single health care organization in Hawai'i, influences of health behaviors among BCW and WCW in this study cannot be generalized to workers in other settings.

Conclusion

This is the first study to investigate differences in influences to healthy eating and physical activity among understudied ethnic BCW and WCW in Hawai'i and one of few studies investigating the topic within the field of worksite health research. The differences in perspective of BCW and WCW should be considered when developing and planning worksite health promotion efforts, so as to develop a program applicable and appropriate for the workers involved.

Conflict of Interest

The authors report no conflict of interest.

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