



Medical cost analysis of a school district worksite wellness program

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ABSTRACT

Objective: To evaluate whether participation in a worksite wellness program differs by age and sex and is associated with frequency and average cost of medical claims. **Methods:** Healthcare cost data were available for school district employees during the academic years ending in 2009 through 2014. The wellness program was available in the later 3 years. The frequency and the average cost of medical claims were compared between the 3 years prior to and the 3 years during the wellness program. **Results:** Wellness program participation increased from 65.6% 2011–2012 to 79.7% 2012–2013. The increase occurred within age-groups and for males and females. The average age of program participants was significantly lower in 2011–2012 (48.2 vs. 49.4, $p = 0.0099$), but similar in the next 2 academic years. Participation in at least one behavior change campaign in each year was 52.1%, 53.7%, and 73.7% of all wellness program participants, respectively. Female employees were significantly more likely to complete one or more behavior change campaigns in each year of the wellness program ($p < 0.0001$). The percentage of employees filing at least one claim per time period was higher for those in the wellness program ($p < 0.0001$), but average medical claims payments were lower for those in the wellness program. After subtracting program costs, the cost savings from the wellness program was \$3,612,402. The benefit-to-cost ratio was 3.6. **Conclusion:** Participation in the wellness program resulted in lower average medical claim costs than non-participation but number of claims were higher in program participants.

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Introduction

The cost of insurance premiums and employee medical claims costs have increased in recent years and are at an all-time high (The Henry J. Kaiser Family Foundation, 2014). According to the Kaiser Family Foundation and Health Research & Educational Trust, the average cost of health insurance premiums for a family of 4 has increased by 69% in the last 10 years (to \$16,834) with employee contributions increasing by 81% (Trust, K. F. F. and H. R. E., 2014). Additionally, in the Western United States among companies consisting of 200 or more employees, premiums and worker contributions among employees covered by employer-sponsored coverage increased from \$2194 in 1999 to \$6353 in 2014 (The Henry J. Kaiser Family Foundation, 2014). In an attempt to curb rising costs, many employers are adopting worksite health promotion programs (Allen, 2015; Caloyeras et al., 2014; Liu et al., 2013; Merrill, 2013; LeCheminant and Merrill, 2012; Henke et al., 2011). Several studies have identified medical cost savings resulting from employee-based health promotion programs (Maeng et al., 2013; Merrill et al., 2011; Patel et al., 2011; Patel et al., 2010; Naydeck

et al., 2008; Aldana et al., 2005; Serxner et al., 2003; Serxner et al., 2001; Aldana, 2001). Reducing health care costs is not the only rationale for worksite wellness programs, but they can help employees be more responsible for their lifestyle choices, promote better general health, improve employee productivity, reduce absences and illness, shift the healthcare paradigm from treatment to prevention, improve productivity, increase employee job satisfaction, increase retention, increase morale, and so on (Chen et al., 2015; CDC, 2014; Michaels and Greene, 2013; Niessen et al., 2012; Witt et al., 2013).

Nevertheless, the effectiveness of worksite wellness programs has been questioned (Felter et al., 2013; Frakt, 2014; Mattke and Liu, 2015), particularly for their ability to produce a financial return on investment (Baxter et al., 2014). In a systematic review of 33 methodologically rigorous peer-reviewed U.S. wellness program reports, the authors found evidence for positive effects on diet, smoking, alcohol use, exercise, physiologic markers, and health care costs but limited evidence for absenteeism and mental health (Mattke et al., 2012). A recent review of the financial return on investment associated with worksite health promotion programs showed that the quality of the study design was important; the return on investment ranged from 0.26 (high-quality study designs) to 2.32 (low-quality study designs) (Baxter et al., 2014). Notably, Baxter et al. also reported that the 12 randomized controlled trials included in this study produced, on average, a negative financial return on investment (Baxter et al., 2014). Other

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published studies have reported similar unfavorable findings (Rongen et al., 2013).

However, it has been noted that some programs have better success than others, likely depending on the extent that best practices are utilized (Goetzel et al., 2014). Based on a systematic review of the literature, Kaspin et al. (2013) suggested that characteristics of successful health promotion programs often include (1) a corporate culture of wellness; (2) supportive company leadership; (3) participation-friendly corporate policy and physical environment; (4) programs adapted to employee needs; (5) community health organizations provided support, education, and treatment; (6) utilized technology to facilitate health risk assessments and health education; and (7) decreased health risks and lower healthcare costs. Nevertheless, it appears that additional research is needed to better understand the effectiveness of worksite health promotion, particularly when comprehensive programs are implemented.

Since the 2011–2012 academic year, the district has utilized a wellness program provided by WellSteps, LLC. The program incorporated known practices thought to improve the health of employees, including several of the components of a successful program noted in the review cited above (Kaspin et al., 2013). The aim of the program was to improve employee health behaviors, lower elevated health risks, prevent chronic diseases, and consequently, curb increasing healthcare costs. Previous research has assessed health behaviors and outcomes in the district (LeCheminant et al., 2015; Merrill and Sloan, 2014). The district program is unique in that it was applied over 3 years to a multi-site school district with the majority of the employees being teachers. Little evidence is currently available showing the effect of the wellness program on healthcare costs over time for this population.

The purpose of the current study was to extend previous research by evaluating the extent participation in the worksite wellness program was associated with frequency and average cost of submitted medical claims. Participation in the wellness program was also assessed by age and sex, and the association between wellness program participation and the primary outcome measures were adjusted for these variables. We hypothesized that wellness program participation would differ according to age and sex, and that it would be associated with the frequency and average cost of submitted medical claims, after adjusting for age and sex.

Methods

A retrospective cohort design was used that involved existing wellness program participation status and healthcare claims data. Previous research has assessed the same employee population in terms of the effectiveness of the wellness program on decreasing health risks (LeCheminant et al., 2015; Merrill and Sloan, 2014). Each academic year employees were invited to complete a personal health assessment (PHA), biometric screening, and selected behavior change campaigns. The PHA and biometric screening were generally completed in the fall, and the behavior change campaigns were offered throughout the year.

Participants were employed by the district. The school district included 6 high schools, 8 junior high schools, and 31 elementary schools. Only eligible employees for healthcare coverage were included in the current study. While data for this study cover the academic years 2008–2009 through 2013–2014, the wellness program was offered in the academic years 2011–2012, 2012–2013, and 2013–2014. The study was approved by the Institutional Review Board at Brigham Young University (IRB E1 5259).

Data on healthcare medical claims costs were also used in this study. The district is fully insured with a retained-retention agreement that makes the plan act very much like a self-funded health plan. Each month the district pays a health insurance premium for the cost of medical care and a small premium for reinsurance of catastrophic claims. High cost (catastrophic) claims above \$250,000 are reinsured by a stop loss policy and are not paid for by the school district. Therefore,

any annual per person claims above \$250,000 are capped at \$250,000. The annual medical claims data, as well as the biometric screening, PHA, and WellSteps campaign data reflect the academic calendar.

Wellness program

Enrollment in the wellness program was voluntary. The overall program included the following components: administrative planning, evaluation, culture change and communication strategy analysis, screenings for biometric measures, and health campaigns focused on changing behavior (LeCheminant et al., 2015; Merrill and Sloan, 2014).

The biometric screenings (BMI, blood pressure, cholesterol, and glucose) were available to all employees at no cost to them. Participants had the option to be screened on location and have a health nurse review the results, or receive screening and review of results through their family physician.

The 36-question PHA was written at a 6th-grade level, available to all employees, and assessed nutrition, physical activity, health status, life-satisfaction, sleep quality, smoking, demographics, productivity, absenteeism, and job satisfaction outcomes. The survey questions were based on the 2006 Behavioral Risk Factor Surveillance System (BRFSS) survey (Centers for Disease Control and Prevention, 2006), combined with several nutrition questions from another validated instrument (Block et al., 1990). Upon completion, employee PHA data were used to generate behavior specific health scores. For each behavior and each biometric category, a letter grade (A–E) was assigned based on established risk categories. Hence, a summary health report card was generated for each employee. High grades were recognized and individuals were given ideas on how to maintain corresponding behaviors. Low grades were flagged and used to create individualized programs for change. Poor health behaviors and elevated risks were also used to create achievable goals that each person can choose to pursue. The summary health report card was reviewed with the employee by a nurse or physician in order to evaluate and improve the employee's health.

Details of the WellSteps campaigns are presented in Table 1. Each campaign typically lasted about 5 weeks and covered topics related to health, such as diet, physical activity, weight loss, posture and balance, and health maintenance. Three to five campaigns were available to employees each year.

Benefits-based incentive plan requirements

Program participation was promoted using incentives. In the academic year ending in 2012, employees who completed the PHA and biometric screening had a \$20 lower copay on doctor's office visits and their deductible was \$350 versus \$700. In the academic year ending in 2013, employees who completed the PHA and biometric screening had up to a \$20 lower copay on doctor's office visits, their deductible was \$350 versus \$700, and they also received a \$40 monthly premium discount. In the academic year ending in 2014, the same incentives were applied, but now employees needed to complete the PHA, biometric screening, and one or more WellSteps campaign, or submit a form that had options such as a community fitness event, proof of gym membership attendance, meeting with a dietician, completing a course to quit smoking, or any class where the focus was to improve health or relieve stress. In this study, completion of the wellness program in any given year means the participant completed the PHA and biometric screening. The behavior change campaigns were optional.

Statistical techniques

Analyses were based on 4133 eligible employees of the district during the academic years ending in 2009 through 2014. Of this number, 2438 (59.0%) were employed continuously over these 6 years. Data were analyzed using the statistical software package PC-SAS (version 9.4; SAS Institute, Inc., 2014) and Microsoft® EXCEL 2013.

Table 1
Worksite wellness program campaigns.

Campaign	Time offered	What you get	What you do
Food Makeover	9/29/2014–11/2/2014	You receive regular educational and motivational messages during the program as we walk you through the process of helping your family eat healthier food.	You learn which of the foods currently in your house are healthy and which ones are not by watching a brief video. Once you complete the video, you will take an inventory of the food in your home. You also learn shopping secrets that help you know what to buy and how to save money doing it. Finally, we will ask you to choose and prepare one meal from our library of healthy, simple, and tasty recipes.
Move It Coast to Coast	3/31/2014–5/18/2014	You get weekly motivational messages as you participate in your favorite form of exercise and “move it” across the United States. Move It Coast to Coast is a team-based campaign.	Like the “Move It!” campaign, Move It Coast to Coast is designed to encourage physical activity via peer support and friendly competition. Groups within a company, race across the country by engaging in physical activity. Once a week, you will log your time spent in physical activity and your minutes will translate to miles traveled by your team. You get more miles added to your total for vigorous activity versus moderate activity. This campaign has an interactive map with highlighted landmarks across the country. You can see how your team is doing, how far you have to go to your next landmark, and how close you are to the finish line!
Sugar Busters	1/27/2014–3/2/2014	You will receive regular educational and motivational messages as you learn how to reduce the sugar in your diet and satisfy your sweet tooth without going overboard!	You will watch a few short videos that will help you recognize the many forms of sugar. You learn how to avoid hidden sugar. You will be invited to replace sugary breakfasts and desserts with healthier options, to apply “sugar busting” substitutions, to prepare a healthy recipe, and to hide or throw out a high-sugar food.
Overcome Overeating	11/18/2013–12/22/2013	You will receive information from a national expert about how people overcome overeating.	While participating in the Overcome Overeating campaign, you will view several brief videos about strategies that people have used to overcome overeating. You will be given a worksheet to help you identify the foods, cues, and situations that influence eating. Your weekly tasks will be simple, but will help you apply what you have learned. At the end of the campaign, you will have learned and applied strategies to overcome overeating.
Posture Perfect	9/30/2013–11/10/2013	You will receive weekly educational messages and tips to put into action as you develop a healthy posture for everyday activities!	During each week of the Posture Perfect campaign, you will learn how to avoid injury and support your back and neck. First, you will inventory your workspace for stressors. Then you will learn how to properly sit and stand. You will finish up by mastering correct lifting techniques as well as learn some everyday stretches.
Balance It All	4/15/2013–5/26/2013	You will receive weekly tips and new skills to help you balance your work and family life.	You will watch a short video about priorities then take “the Big Rock” assessment. You will learn about to plan around priorities, how to say “No,” how to schedule time for yourself, and how to delegate.
Biggest Loser for Life	1/28/2013–3/17/2013	You will learn the secrets to weight loss used by those who have lost weight and kept it off!	This campaign is not really about weight loss, it is about helping you apply the behavioral secrets of those who have lost weight and kept it off. Each week, you will receive information about a different behavior. You will keep track of all these simple behaviors each week. When you complete this campaign, you will be the Biggest Winner for Life!
Maintain Don't Gain	11/14/2011–12/26/2011 and 11/19/2012–1/6/2013	You receive educational and motivational messages, holiday recipes, and holiday snack substitutes as you try to maintain your weight from mid-November to early January.	You will weigh in and record your weight once each week between mid-November and the first week of January. You can use your own scale as long as you use the same scale every time. You should weigh in each week on the same day, at the same time, wearing basically the same clothes.
Fast Food Guide	10/8/2012–11/11/2012	You get a free book that will help you learn how to eat healthier whenever you walk into a fast food restaurant.	During the first week, you will read a few pages in The Stop and Go Fast Food Nutrition Guide and answer some simple questions. During the second week, you get to take the book to lunch and use it to help you make a healthy food choice. During the third week, you get the chance to “be the guide.” We will give you some food descriptions with nutrition information. You get to decide whether each food is healthy, not healthy or somewhere in between. During the fourth week, you get to share the book with a friend, family member or co-worker.
Good Fat, Bad Fat	6/4/2012–7/8/2012	A “Good Fat, Bad Fat” fridge magnet to remind you to choose healthier forms of fat.	The Good Fat, Bad Fat campaign will help you get rid of the fats in your home that aren't as healthy for you. Each week you will learn about a different aspect of fats in food. You will be given healthy recipes so you can make meals and desserts using healthy fat substitutions. You will be challenged to make a few simple changes in your eating habits and to let us know how you did. By the end of the campaign, you will have replaced the bad fats with healthier fats!
Culprit and the Cure	1/23/2012–3/25/2012	The most amazing book ever written on the importance of healthy living. It is based on the best available science and is very easy to read.	It's pretty simple. You read two short chapters in The Culprit and The Cure each week for the first seven weeks. You also apply simple lifestyle principles. After reading each short chapter, you will answer a few questions. If you don't know the answer, we help you. During week eight, there is a surprise activity that will make you feel really great. Our goal is to make sure you understand the information. We want to help you succeed.
Move It	4/9/2012–5/27/2012	You will receive regular educational and motivational messages during the program as you participate in your favorite form of movement.	This campaign is designed to encourage physical activity by inspiring peer support and by creating a little friendly competition. Groups within a company, such as sites or departments, can compete against each other to win the coveted WellSteps Trophy. There are four simple steps. First, choose a few forms of physical activity that you like such as jogging or biking. Second, choose one or more people to be part of your Move It! team. Your team members can be physically active with you, but group activity is not required. Third, after choosing your team, plan one or more blocks of 30 min for physical activity into your weekly schedule. Finally, Move It! as much as possible each week for six weeks and hopefully longer! Once a week, you will log your time spent in physical activity.

Table 2
Eligible employees by sex, age, and continuous employment.

Academic year	Eligible employees				Eligible employees employed all 6 years			
	No.	Females %	Age Mean	Standard deviation	No.	Females %	Age Mean	Standard deviation
2008–2009	3118	73.3	47.6	10.9	2438	73.7	46.6	10.2
2009–2010	3089	73.4	48.2	11.0	2438	73.7	47.6	10.2
2010–2011	3094	73.5	48.9	11.0	2438	73.7	48.6	10.2
2011–2012	3269	73.4	49.2	11.1	2438	73.7	49.6	10.2
2012–2013	3202	73.1	49.0	11.4	2438	73.7	50.6	10.2
2013–2014	3283	72.9	49.0	11.5	2438	73.7	51.6	10.2

Means, standard deviations, and percentages characterize the data. Medical costs were adjusted for medical cost inflation using Tom's Inflation Calculator's's (2015). Average dollar (\$) payment per eligible employee was derived and presented according to wellness program participant status by year. The yearly payment for the nonwellness participants was also adjusted for the same distribution of age and sex as the wellness participants. A number of claims filed were compared between wellness and nonwellness program participants using the chi-square statistic. Average annual \$ payment per eligible employees was compared between wellness and nonwellness program participants using the *t* statistic. Statistical significant was based on the 0.05 level of significance.

Results

The number of employees in any given time period ranged from 3089 to 3283 (Table 2). Approximately 73.3% of employees were female and the mean age increased 2.9% over the study period. The number of employees who were employed all 6 years was 2438. Approximately 73.7% of these employees were female.

The percentage that completed the PHA, biometric screening, and one or more behavior change campaigns increased each academic year (Table 3). Participation in one or more behavior change campaigns in each time period reflected 52.1%, 53.7%, and 73.7% of all wellness plan participants, respectively. In 2011–2012, age was significantly lower for those involved in the wellness program (48.2 vs. 49.4, $p = 0.0099$), but not in the next two academic years. The increase in wellness participation over the three academic years occurred in each age-group (Fig. 1). Wellness program participation was similar between males and females in each time period. The greatest level of participation was among employees aged 40–49 years. Similar results were seen for PHA, biometric screening, and behavior change campaign participation, except female employees were significantly ($p < 0.0001$) more likely to complete one or more behavior change campaigns each year (37.8% vs. 24.4% in 2011–2012, 43.1% vs. 29.7% in 2012–2013, 62.9% vs. 47.2% in 2013–2014).

For employees in the wellness program that filed a claim, the median payment was \$795.2 in 2011–2012, \$800.2 in 2012–2013, and \$753.4 in 2013–2014. Corresponding median payments for those not in the wellness program were \$824.2, \$832.4, and \$816.8. The percentage of employees filing at least one claim per time period was higher for those in the wellness program (Table 4). However, average medical claims payments were significantly lower each of the 3 years for those in the wellness program (*t* statistic $p = 0.0348, 0.0064, 0.0244,$

respectively). The total reduction in total payments was calculated by taking the difference between the total dollar payment assuming that everyone had the same age and sex distributions as those not in the incentive wellness program and the total dollar payment in Table 4 and then summing the differences over the three academic years, which yielded \$5,025,138. The total cost of the wellness program over the three academic years was \$1,412,736. Hence, the cost savings from the wellness program was \$3,612,402. The benefit-to-cost ratio was 3.6.

The remaining results apply to 2438 individuals who were continuously employed over the 6-year study period. Among these individuals, there were 277 (11.4%) who did not participate in the wellness program any of the years, 114 (4.7%) who participated once, 181 (7.4%) who participated twice, and 1866 (76.5%) who participated all 3 years. With respect to the behavior change campaigns, which are optional in the wellness program, there were 763 (31.3%) who did not participate in the campaigns in any of these years, 591 (24.2%) who participated in the campaigns (1 or more) campaigns 1 year, 298 (12.2%) who participated in the campaigns 2 years, and 786 (32.2%) who participated in the campaigns all 3 years.

Of those employees continuously employed throughout the 6-year study, average medical claims payments are shown according to wellness program and behavior change campaign participation (Fig. 2). For those who participated in the wellness program one or more years during its offering (2011–2012, 2012–2013, 2013–2014), their average medical claims payments increased 3.9% over the prior 3-year period (2008–2009, 2009–2010, 2010–2011). For those who did not participate in the wellness program, their average medical claims payments increased 16.2%. For those who participated in the behavior change campaigns one or more years during their offering, their average medical claims payments increased 4.8%. For those who did not participate in any of the behavior change campaigns, their average medical claims payments increased 27.5%.

Discussion

Participation in the wellness program increased over the three academic years they were offered and likely reflects the increased requirements and incentives associated with the program. Wellness program participation was highest among 40–49 year olds; however, there was no difference in the percentage of males and females in the program, although more females than males participated in the optional behavior change campaigns.

The primary aim of this study was to examine the association between participation in the wellness program and medical claims

Table 3
Level of participation in the wellness program by academic year.

Academic year	Number of eligible employees		Wellness program ^a	Personal health assessment	Biometric screening	Behavior change campaign ≥ 1
	No.	%	%	%	%	%
2011–2012	3269		65.6	65.6	65.6	34.2
2012–2013	3202		73.5	74.1	73.5	39.5
2013–2014	3283		79.7	79.7	81.1	58.7

^a Completed the PHA and biometric screening. The behavior change campaigns were optional.

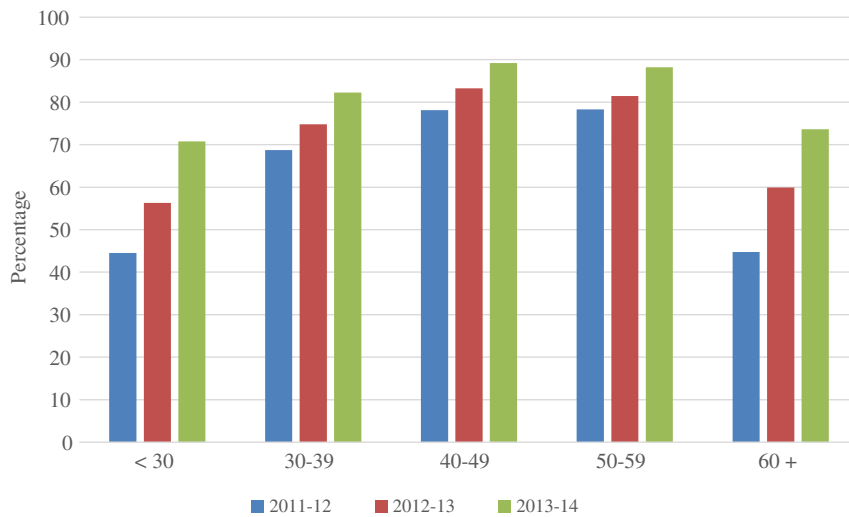


Fig. 1. Wellness participation according to age and academic year.

among the sample population. We note that among those that participated in the wellness program, the average medical claim cost was not reduced during the pre and post intervention periods. This may be due to the year-over-year increases in medical costs experienced across the United States (National Center for Health Statistics, 2015).

However, there was a difference in the change in medical claim costs between the participants and non-participants of the program. As noted above, the difference in medical claim costs between wellness participants and non-participants during the years the wellness program and behavior change campaign plans were offered was \$3,612,402, with a benefit-to-cost ratio of 3.6. Both participation in the wellness program or the wellness program with the optional behavior change campaigns resulted in lower average medical claim payments. Specifically, there was a 3.9% increase in average medical claims payments from pre to post periods for those participating in the wellness program while a 16.2% increase in average medical claims payments from pre to post periods for those not participating in the wellness program. Corresponding increases in the average medical claims payments for those also participating or not participating in the behavior change campaigns were 4.8% and 27.5%, respectively.

Importantly, those participating in the wellness program had a higher percentage of 1 or more medical claims per year than those who did not participate, even though the average cost of the claims was lower for those participating in the program. In other words, those in the program utilized the system more often but their specific claims did not tend to be as expensive as those not participating in the program. We do not know the exact reason for this. However, it may be that those on the wellness program had medical visits focused on

prevention while those not in the wellness program were more likely receiving treatment for illness.

These data and results are meaningful and unique to the population studied. The majority of the employees consists of teachers. Teachers provide an extremely valuable service to the children they teach and their families. However, recent evidence indicates that teachers experience similar risks for poor health behaviors as the students they teach, such as poor diet, prolonged sedentary time, and stress (Eaton et al., 2007; Woynarowska-Soldan and Tabak, 2013). There is also evidence that stress has increased in many teachers compared with previous years (MetLife, 2013). These indicators are likely associated with medical claims costs. The results of this study indicate that various components of worksite wellness programs, including incentives and behavior change campaigns, are associated with lower average medical costs. In theory, better health would be associated with lower medical claims and hopefully, better productivity and engagement in the classroom.

This study has certain strengths but also weaknesses. Strengths include a large sample size, the inclusion of medical claims data, a multi-site employee population, and a retrospective cohort design. However, the design is not a randomized controlled trial and there is a possibility of selection bias. As noted in the introduction, recent studies have indicated that stronger study designs (specifically, randomized controlled trials) do not always show a positive or robust return on investment while weaker study designs tend to show a stronger return on investment. In addition, this study is able to report medical claims (an important outcome but rarely reported in the literature) by participation in the wellness program. However, the claims data are not linked

Table 4

Employees filing claims and average payment per academic year according to participation status in the wellness program.

Academic year	Wellness program			No wellness program			No wellness program ^a			Total annual \$ payment	Total annual \$ payment ^b
	Number	Employees filing ≥ 1 claims, %	Average annual \$ payment per eligible employee	Number	Employees filing ≥ 1 claims, %	Average annual \$ payment per eligible employee	Employees filing ≥ 1 claims, %	Average annual \$ payment per eligible employee			
2011–2012	2218	91.0	3752.8	1051	68.2	3960.3	67.1	4094.9	12,484,324	13,244,792	
2012–2013	2391	91.2	3160.0	811	79.3	4822.1	76.7	4635.2	11,466,264	14,993,397	
2013–2014	2729	90.3	3153.4	554	72.0	3569.0	68.6	3423.7	10,582,863	11,320,400	

Note: The number of employees filing ≥ 1 claims per year was significantly greater (Chi-square $p < 0.0001$) for those in the wellness program compared with those not in the program. Average annual \$ payment per eligible employee was significantly lower each year for those in the wellness program compared with those not in the program (t statistic $p = 0.0348, 0.0064, 0.0244$, respectively).

^a Adjusted for the age and sex distribution of the incentive plan participants.

^b Based on the assumption that everyone had the same age and sex distributions as those not in the incentive plan.

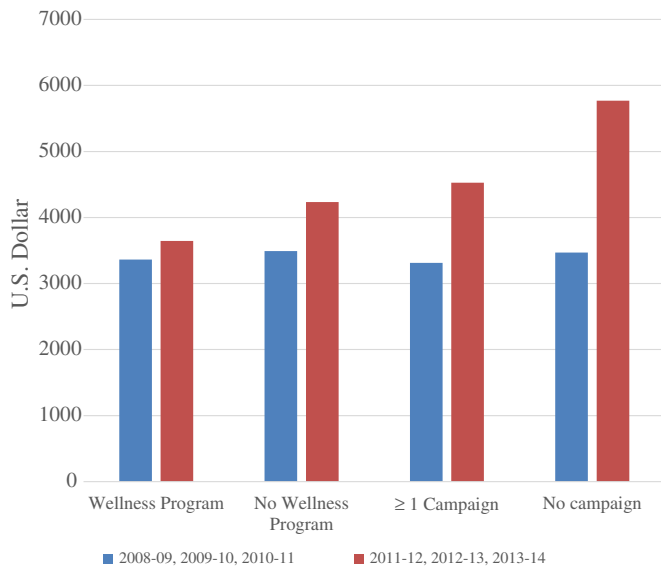


Fig. 2. Average medical claims payment.

specifically to health behaviors in this analysis. Therefore, we did not know specifically what was driving the lower increases in average medical claims costs in the participants versus non-participants of the wellness program. Although selection bias may exist, it is likely small since participation versus non-participation was similar between males and females, by age (except in 2011–2012 when participants were about a year younger, on average), and by average medical claims payments during the 3 years prior to the wellness program. The district may never be able to determine the exact cause for the health care savings, but that does not diminish the fact that its medical costs are much lower than other comparable worksites.

Lastly, we noted that the district carried a stop loss reinsurance plan that capped the medical cost of any one employee at \$250,000. Only a small number of claims exceeded this amount (1, 1, 4, 3, 2, and 1 in each of the academic years considered, respectively). Catastrophic claims can affect the group means, but in this case the district's liability is capped. Thus, the average medical claims costs reported in this study are accurate.

In conclusion, this study examined the relationship between a wellness program and medical claims in a population of school district employees. This study reveals that participation in the wellness program resulted in lower average medical claim costs than non-participation but number of claims were higher in program participants. According to the data, cost savings during the years the wellness program and behavior change campaign plans were offered a benefit-to-cost ratio of 3.6. Future research could link the extent to which specific components of a comprehensive worksite wellness program and which healthy behaviors are linked to a medical claims and costs.

Conflict of interest

The authors received honoraria from WellSteps, LLC, but they do not have a conflict of interest in the results.

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