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# Prescription Claims According to Wellness Program Participation for an Insurance Company in the United States

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## Abstract

**Objective:** To identify the number and total cost of prescription claims for a US insurance company by wellness program participation, baseline health, age, and sex.

**Methods:** This is a retrospective analysis of 2250 individuals continuously employed from 2014 through 2016.

**Results:** In 2014, ages ranged from 22 to 85 (M = 48.7, SD = 11.2), with 71.5% women. Program participation was 20.8% in 2014, 12% in 2015, and 27.5% in 2016, 37.2% overall. Participation was inversely related to age and greater in women (41.4% vs. 25.7%). Employees in the best and worst health at baseline went on to earn the fewest number of wellness participation points. The percent of employees filing one or more pharmacy claim was 79.9% in 2014, 82.4% in 2015, and 83.1% in 2016. Those filing a pharmacy claim were significantly older and more likely women. Number of claims and total cost of claims increased with increasing baseline medical costs. Change in the number of claims and the total cost of claims is positive, increasingly so with poorer baseline medical costs. Age, sex, and wellness program points earned are not significant in the models.

**Conclusion:** Wellness program participation decreases with age, is higher in women, and is greatest among those with moderate baseline medical costs. Number and cost of pharmacy claims is not associated with program participation. Change in number and cost of pharmacy claims is not associated with program participation.

**Keywords:** Biometric Screening; Health Risk Assessment; Pharmacy Claims; Worksite Wellness Program

## Acronyms

| | | |
|---|---|---|
| MCSIG | : | Municipalities, Colleges, Schools Insurance Group |
| M | : | Mean |
| SD | : | Standard Deviation |
| Pr | : | Probability |
| CI | : | Confidence Interval |

## Introduction

Worksite wellness programs are employer-sponsored plans that aim to promote greater personal responsibility for lifestyle choices, identify where health behavior change is needed, prevent future health problems, help patients manage existing health problems, decrease absenteeism, improve job satisfaction and productivity, and reduce total healthcare costs [1-7]. In anticipation of their effectiveness, these programs are being offered in an increasing number of organizations across the United States [8]. The 2016 Employer Health Benefits Survey found that 83% of large firms (200 or more employees) in this country offer wellness programs in weight management, smoking cessation, or behavior/lifestyle coaching, with 43% offering financial incentives for employee participation [9]. In addition, 59% provide health risk assessment and 53% offer biometric screening [9].

A recent study assessed the number and total cost of medical claims for employees of the Municipalities, Colleges, Schools Insurance Group by participation status in a comprehensive incentive-based wellness program [10]. The wellness program covered three years and involved several evidence-based lifestyle activities to help workers maintain or achieve good health. The study found that wellness program participation was associated

with fewer medical claims and lower total cost of those claims. However, the study did not assess pharmaceutical claims.

Health risk assessment and biometric screening are commonly incorporated into worksite wellness programs. They are useful in providing information for preventing and managing health problems. In some cases, this information may identify the need for prescription medication. In the United States, about 14% of overall healthcare spending consists of prescription medications [11]. Examples where medication is used to manage health risks and prevent more serious conditions include bronchodilators, steroids, and anti-inflammatories to help manage asthma [12]; nonsteroidal anti-Inflammatory drugs, steroids, analgesics, and immunosuppressive drugs to help manage arthritis [13]; antihypertensive medication (or statins) to help prevent cardiovascular disease [14-16]; multivitamins or folic acid to help prevent congenital abnormalities [17] and aspirin and non-steroidal anti-inflammatory to help prevent colorectal cancer [18]. As worksite wellness programs attempt to help employees manage health risks and prevent long-term chronic disease and disability, successful efforts to improve lifestyle behaviors may allow employees with more moderate health risks to reduce or discontinue the need for prescription medications over time.

The purpose of the current study was to extend previous research by assessing the number and total cost of pharmacy medication claims for the employees of an insurance company in the United States according to wellness program participation, baseline medical costs, age, and sex.

## Methods

Analyses are based on employee data from the Municipalities, Colleges, Schools Insurance Group (MCSIG). Data include pharmacy claims and worksite wellness program participation data for the years 2014, 2015, and 2016. Total medical cost data for 2014 is also included in the study. A file of eligible employees was combined with annual medical claims and wellness program participation data. Study approval was obtained from the institutional review board at Brigham Young University (IRB E1 5259).

### Wellness Program

Since 1994, MCSIG has provided an evidence-based wellness program to its employees. This program offers selected lifestyle activities to help employees maintain good health and serve as healthy role models. Participation in the program was voluntary and recorded program-related data were confidential. The primary component of the program involved annual participation in 28 health actions, which were incentivized by cash rewards. The reward point system is shown in Table 1. Completing an online health assessment and health screening were both required in order to receive a financial reward. Medals were earned each year according to number of points received (Platinum [12+ points], Gold [10-11], Silver [9], Bronze [8], No medal [<8]). The medals provided additional recognition to employees achieving higher levels of wellness participation.

| $500=12+ points, $300=10 points, $200=9 points, $100=8 points | |
|---|---|
| **Health Action** | **Points** |
| Online health assessment | 1 required |
| Health screening results (from a MCSIG health screening or lab results from your doctor) | 1 required |
| Annual flu vaccination (mist or injection) | 1 |
| Blood pressure (<130/80) | 1 |
| Cholesterol ratio (<4.5) | 1 |
| Glucose (<100 fasting or <140 non-fasting) | 1 |
| Health weight (<30 Body Mass Index or attend an approved health weight program) | 1 |
| Tobacco-free | 1 |
| Routine physical exam by M.D. or D.O. | 1 |
| Exercise challenge (10/10 week x 150 min/week) | 1 |
| Community health event (Big Sur Marathon, 3K Mud Run, Zumbathon, etc.) | 1-3 |
| Eat right for life or 10,000 steps program | 1 |
| Quizzes at Wellsteps (2 for 1 point) | 1-2 |
| Health education classes | 1-2 |
| MCSIG special spring event | 1 |
| Personal wellness plan | 1 |
| Wellness Ambassador and/or Wellness Employee of the Quarter | 1-2 |
| ID fraud protection - Anthem Blue Cross “All Clear” registration | 1 |
| Healthcare cost transparency - Castlight registration and 1 search per year | 1 |
| Bi-weekly health challenge (2 for 1 point) | 1-2 |
| Personal exercise log | 1 |
| Anthem Blue Cross care for chronic conditions (asthma, diabetes, etc.). | 1 |
| Total | 28 |

**Table 1:** Healthy Reward Point Distribution and Financial Incentive.

In addition to the Healthy Reward annual cash incentives for participating in up to 28 health actions (hereafter called wellness program), several other wellness products and activities were available to employees: monthly Livin' Well electronic newsletter; online health assessment survey and web portal (Well Steps) with reward tracking; health screenings (onsite) for cholesterol, glucose, blood pressure and BMI; influenza vaccinations (onsite); pedometer-based walking programs; health challenges (6-10 weeks) for stress reduction, exercise, gratitude, ecology and nutrition; fitness center discounts; spring team event (e.g., Human Foosball Tournament, Team Obstacle Course, Broomball Tournament, etc.); local health education class discounts (Yoga, Smoking Cessation, Meditation, etc.); mindful eating (non-diet) approach reimbursement (50%); wellness ambassadors at each work site; Anthem Blue Cross Chronic Condition Program graduation reward ($200); wellness advisory committee; and healthy work culture & policy development.

### Statistical Techniques

The study population was described using counts, means, percentages and change scores. Mean number of pharmacy claims and total costs of medication were derived for each study year and presented according to age and sex. A wellness participation variable was created, reflecting 3 levels of participation points earned during 2014-2016: 0-5, 6-10, and 11+. A baseline health variable was created, based on medical costs in 2014. This variable was divided into 5 quintiles.

Pharmaceutical and medical cost data were adjusted using Tom's Medical-Cost Inflation Calculator in order to make the yearly costs comparable to 2016 values [19]. Spearman Correlation Coefficients were used to evaluate significance of linear associations among skewed data (primarily number of pharmacy claims and total pharmacy costs). Median number of pharmacy claims and total pharmacy costs were evaluated for significance using median one-way analysis. Test statistics included the Chi-Square, t, and sign rank.

Multiple regression models were estimated and used to evaluate the level of association between number and total cost of pharmacy claims and age, sex, baseline medical costs, and wellness program participation. Two-sided tests of significance were based on the 0.05 level against a null hypothesis of no association. Data was evaluated using the statistical software package PC-SAS (SAS Institute Inc., SAS 9.4, Cary, NC, USA 2002-20012).

## Results

There were 2250 individuals continuously employed from 2014 through 2016. In 2014, ages ranged from 22 to 85 (M = 48.7, SD = 11.2), with 71.5% women. Mean age did not significantly differ between men and women. The percent of employees earning wellness program participation points by year and for all three years combined is shown in Table 2. Participants were 3.5 years younger than nonparticipants ($Pr > |t| < 0.0001$). Women were more likely than men to participate in the wellness program (41.4% vs. 25.7%, Chi-square $p < 0.0001$), or to receive a medal (27.8% vs. 14.6%, Chi-Square $p < 0.0001$).

| Year | No. | % |
|---|---|---|
| 2014 | 468 | 20.8 |
| 2015 | 270 | 12.0 |
| 2016 | 619 | 27.5 |
| Total | 837 | 37.2 |

**Table 2:** Employees Earning Wellness Program Participation Points by Year.

Estimated number of participation points in 2014-2016 is presented according to baseline medical costs, age, and sex in Table 3. Health is based on total cost of medical claims in 2014, presented in quintile groupings. Employees in the best and worst health at baseline went on to earn the fewest number of wellness participation points. The number of points earned decreased with age and was higher for women than men.

| Parameter | Estimate | Standard Error | Pr > \|t\| |
|---|---|---|---|
| Intercept | 9.26 | 0.94 | <.0001 |
| MC Q1 $0-$330 | 0.00 | . | . |
| MC Q2 $331-$911 | 1.70 | 0.62 | 0.0064 |
| MC Q3 $912-$1894 | 2.12 | 0.62 | 0.0007 |
| MC Q4 $1895-$4741 | 2.78 | 0.62 | <.0001 |
| MC Q5 $4742 | 0.94 | 0.62 | 0.1315 |
| Age | -0.10 | 0.02 | <.0001 |
| Women vs. Men | 2.78 | 0.44 | <.0001 |
| MC: Medical costs. Q1-Q5 represent 5 quintile groupings. | | | |

**Table 3:** Multiple regression model of the number of wellness participation points earned according to baseline medical costs, age, and sex.

The percent of employees filing one or more pharmacy claims was 79.9% in 2014, 82.4% in 2015, and 83.1% in 2016. Those who filed a pharmacy claim were significantly older: 4.9 years ($Pr > |t| < 0.0001$) in 2014, 3.4 years ($Pr > |t| < 0.0001$) in 2015, and 2.5 years ($Pr > |t| < 0.0001$) in 2016. After adjusting for age, women were more likely to file a pharmacy claim in 2014 (1.06 times, 95% CI 1.01-1.11), in 2015 (1.07 times, 95% CI 1.02-1.12), and in 2016 (1.04 times, 95% CI 0.99-1.08). After adjusting for both baseline medical costs and age, corresponding rate ratios were 1.04 (95% CI 0.99-1.09) in 2014, 1.06 (95% CI 1.02-1.11) in 2015, and 1.03 (95% CI 0.99-1.07) in 2016. There was no significant association between filing one or more pharmacy claims and wellness program participation in any of the years.

Estimates of the number and total cost of pharmacy claims by baseline medical costs, age, sex, and wellness participation is presented for the combined years 2014-2016 in Table 4. Number of claims and total cost of claims increased with increasing baseline medical costs and older age. Nonparametric analyses provide consistent results, except sex now appears important. Specifically, the Spearman Correlation Coefficient between the number of pharmacy claims filed in 2014-2016 and baseline medical costs is 0.396 (Pr > |t| < 0.0001), age is 0.277 (Pr > |t| <0.0001), sex is 0.043 (Pr > |t| = 0.0422), and wellness participation points is -0.017 (Pr > |t| =0.420). The Spearman Correlation Coefficient between the total pharmacy cost in 2014-2016 and baseline medical costs is 0.359 (Pr > |t| < 0.0001), age is 0.280 (Pr > |t| < 0.0001), sex is 0.037 (Pr > |t| = 0.0804), and wellness participation points is 0.003 (Pr > |t| = 0.9024).

| | Number of Claims | | | Total Cost of Claims | | |
|---|---|---|---|---|---|---|
| **Parameter** | **Estimate** | **Standard Error** | **Pr>\|t\|** | **Estimate** | **Standard Error** | **Pr>\|t\|** |
| Intercept | -31.33 | 5.97 | <.0001 | -9809.45 | 2804.30 | 0.0005 |
| MC Q1 $0-$330 | 0.00 | . | . | 0.00 | . | . |
| MC Q2 $331-$911 | 14.47 | 3.85 | 0.0002 | 646.35 | 1805.68 | 0.7204 |
| MC Q3 $912-$1894 | 24.26 | 3.85 | <.0001 | 2348.45 | 1805.74 | 0.1935 |
| MC Q4 $1895-$4741 | 32.93 | 3.86 | <.0001 | 3195.57 | 1814.04 | 0.0783 |
| MC Q5 $4742 | 61.33 | 3.84 | <.0001 | 10612.29 | 1803.05 | <.0001 |
| Age | 1.27 | 0.11 | <.0001 | 282.07 | 51.45 | <.0001 |
| Women vs. Men | 2.42 | 2.71 | 0.3727 | 197.54 | 1272.56 | 0.8767 |
| Points 0-5 | 0.00 | . | . | 0.00 | . | . |
| Points 6-10 | 10.16 | 7.28 | 0.1629 | 1788.36 | 3415.54 | 0.6006 |
| Points 11 + | -5.29 | 2.94 | 0.0726 | -392.39 | 1382.13 | 0.7765 |

**Table 4:** Multiple regression models involving pharmacy claims according to baseline medical costs, age, sex and wellness participation points in 2014-2016.

We further assessed the association between number of pharmacy claims filed and wellness participation points within each year, adjusting for baseline medical costs, age, and sex (data not shown). There were no significant associations within each year. The analysis was repeated for total pharmacy cost and wellness participation points within each year, adjusting for baseline medical costs, age, and sex, wherein there were also no significant associations.

Mean change in the number of pharmacy claims filed from 2014 through 2016 was 3.2 (SD = 17.3, Pr > |t| < 0.0001). Mean change in the total cost of pharmacy claims from 2014 through 2016 was $459.6 (SD = $6722, Pr> |t| =0.0026). Change in pharmacy claims scores according to selected variables is presented in Table 5. Change in the number of claims and the total cost of claims is positive, increasingly so with poorer baseline medical costs. Age, sex, and wellness program points earned are not significant in the models. The median change in number of pharmacy claims from 2014 through 2016 was 1 (Pr >= |Signed Rank| < 0.0001). Median one-way analysis for change in the number of claims filed was significant for baseline medical costs (Pr>Chi-Square p < 0.0001), but not for age, sex, or wellness participation points. The median change in total cost of medication from 2014 through 2016 was 0 (Pr >= |Signed Rank| = 0.8587). Median one-way analysis for change in the total cost of medications was significant for baseline medical costs (Chi-Square p = 0.0001), but not for age, sex, or wellness participation points.

| | Change in Number of Claims | | | Change in Total Cost of Claims | | |
|---|---|---|---|---|---|---|
| **Parameter** | **Estimate** | **Standard Error** | **Pr>\|t\|** | **Estimate** | **Standard Error** | **Pr>\|t\|** |
| Intercept | 0.19 | 2.08 | 0.9291 | 525.62 | 820.44 | 0.5218 |
| MC Q1 $0-$330 | 0.00 | . | . | 0.00 | . | . |
| MC Q2 $331-$911 | 1.93 | 1.25 | 0.1233 | -85.64 | 492.22 | 0.8619 |

| | | | | | | |
|---|---|---|---|---|---|---|
| MC Q3 $912-$1894 | 3.70 | 1.24 | 0.003 | 1105.97 | 490.25 | 0.0242 |
| MC Q4 $1895-$4741 | 6.70 | 1.25 | <.0001 | 597.41 | 492.98 | 0.2257 |
| MC Q5 $4742 | 10.07 | 1.23 | <.0001 | 1642.60 | 484.63 | 0.0007 |
| Age | -0.03 | 0.04 | 0.4856 | -12.00 | 14.68 | 0.4139 |
| Women vs. Men | -0.26 | 0.87 | 0.7671 | -219.57 | 342.32 | 0.5213 |
| Points 0-5 | 0.00 | . | . | 0.00 | . | . |
| Points 6-10 | -0.97 | 2.45 | 0.694 | -855.51 | 967.08 | 0.3765 |
| Points 11 + | -0.91 | 0.94 | 0.3305 | -227.71 | 370.21 | 0.5386 |

**Table 5:** Multiple regression models involving change in pharmacy claims scores according to baseline medical costs, age, sex and wellness participation points in 2014-2016.

## Discussion

This study identified the mean number and total cost of pharmacy claims for an employer in the United States by wellness program participation, baseline medical costs, age, and sex. With respect to the wellness program in general, women were more likely than men to participate. Greater participation among women is consistent with other studies. In a study of 1500 Finnish adults, 18-65 years, women were more likely than men to seek health-related information, be aware of worldwide health conditions, and be more interested in how their purchases affect their health [20]. In a worksite wellness program offered to school district employees in the western United States, women were more likely than men to complete one or more health behavior change campaigns [21]. An assessment of a worksite wellness program at the University of Michigan also found that women were more likely than men to participate [22].

Younger employees were more likely to participate in the wellness program, which is consistent with another study [23]. Perhaps younger employees are more motivated by program incentives and/or the health challenge components of the program. The social opportunities associated with program participation may also be more attractive to younger employees.

Women were more likely than men to file a pharmacy claim. In a similar fashion, a study of 29.5 million adults receiving prescription medication by a pharmacy benefits manager in the United States found that 68% of women compared with 59% of men ($p < 0.001$) used one or more medications [24]. In addition, women used more different types of medications (5 vs. 3.7, $p < 0.001$) [24]. In a study conducted in Canada, pharmaceutical expenditure was 32% greater in women than men [25].

Health risk assessment and biometric screening were required for those who chose to earn participation points. These assessment tools are commonly incorporated into worksite wellness programs in order to help prevent and manage health problems. Although this information likely identified the need for prescription medication in some employees, this was not seen in our data. In addition, the hope is for the wellness program to lower of the need for healthcare. Although this was seen among these employees in terms of number and total cost of medical claims [10], we did not see this for number and total cost of pharmacy claims. It may be too soon to observe a decline in these variables because of participation in the wellness program.

This study may be biased because of self-selection into the wellness program. However, we attempted to minimize this bias by adjusting for baseline health using medical costs as a surrogate marker. Further, wellness program participation represented several activities. We did not have sufficient information to identify the independent contribution of each element of the program in lowering number and total cost of pharmacy claims. However, the effectiveness of the wellness program may be attributed to its being comprehensive, all-inclusive, and providing health risk appraisal and supportive physical environments, which characteristics are consistent with those recommended by the American Heart Association [26].

## Author Disclosure Statement

Dr. Merrill is a professor at Brigham Young University. He received a payment from the Municipalities, Colleges, Schools Insurance Group (MCSIG) to analyze the data presented in this manuscript. Dr. Merrill has no stock option agreement or long-term business connections with MCSIG, but conducted the current study as an independent researcher.

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