The Value of Biometric Screening in an Employer Population

INTRODUCTION

Healthways provides a biometric screening program that provides an accurate assessment of individual health risk based on biometric measurements from a blood screen and brief physical examination. Program members also complete a health risk assessment (HRA) questionnaire that provides information about perceptions of physical health, health history and lifestyle. The biometric assessment is a critical component of the program since comparisons of self-reported and biometric data indicate that program participants are largely unaware of their actual health status.

Health risks in the employee population are associated with substantial financial burden to employers. Compared to low-risk individuals, employees with medium or high health risk levels are far more expensive with respect to medical claims, pharmacy claims and time away from work[1]. Additionally, health risks affect on-the-job productivity and the costs attributed to these productivity losses are substantial[2]. Data from screening participants supports the link between absence from work and level of health risk. When the self-reported absences from 89,989 HRA responses were linked with the total scores of these participants, it was evident that better scores were associated with fewer absences. Members with healthy scores (>70) reported an average of two or fewer absences per year.

Self-Reported Absences	Average Score
0	72.5
1 to 2	71.3
3 to 5	68.4
6 +	66.3

By educating individuals about their true level of health risk and by elucidating their specific risk factors, the biometric screening empowers program members to make lifestyle changes that can reduce the likelihood of developing medical conditions or prevent the worsening of existing chronic disease. The aim of this study was to determine the level of health risk among a large population of participants and to determine whether this level of risk declines after participation in the program.

STUDY DESIGN

Quantitative biometric and self-reported data were collected from 23,061 individuals who completed two consecutive annual screenings of 13 biometrics and health risk assessment (HRA) questionnaires. The study population included participants from 63 employers, diverse with respect to size and industry. The population was 58.0% female, had an average age of 43.4 years, and included employees and, in some cases, spouses.

Individual biometric scores were assigned to specified ranges of biometric values with the sum of the scores from all evaluated biometrics equaling the total score for each participant. The total score has a range of 0 to 100, with 100 being the best possible score and a score of 70 or below being considered “at risk.” Individual biometric values were also categorically assigned as “at risk” or “not at risk.” Changes in health risks were measured through comparison of total scores or risk levels from the time of the first assessment (baseline) to the time of the second assessment following one year of the program (year 1).

RISK DEFINITIONS

	TOTAL SCORE	INDIVIDUAL BIOMETRIC
at risk	70 or below	outside of healthy range
not at risk	71 or above	within healthy range

[1] Yen et al. Financial costs due to excess health risks among active employees of a utility company. J Occup Environ Med. 2006;48: 896–905.

[2] Burton et al. The association between health risk change and presenteeism change. J Occup Environ Med. 2006;48:252–263.

RESULTS

Participants Improved in Multiple Biometric Values

TABLE 1: IMPROVEMENT IN BIOMETRIC VALUES FOR MEASURED RISKS

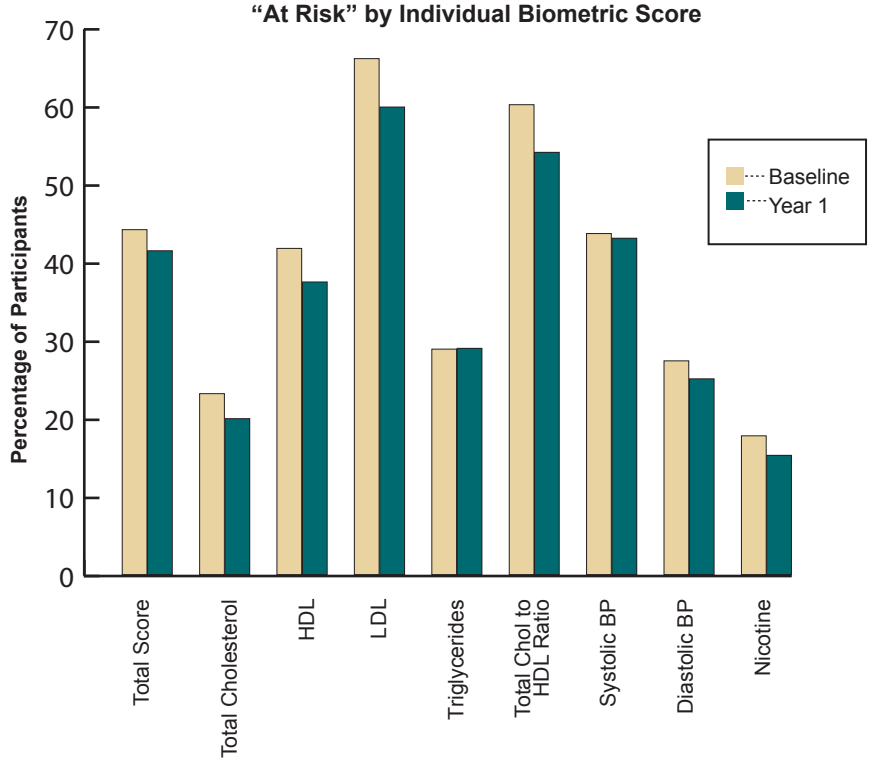
Improvement in Biometric Values (Baseline to Year 1)	N	Percentage of Participants
1 or more	22,765	98.7%
2 or more	21,708	94.1%
3 or more	19,588	84.9%
4 or more	16,252	70.5%
5 or more	12,134	52.6%
6 or more	7,803	33.8%
7 or more	3,965	17.2%
8 or more	1,477	6.4%
9 or more	330	1.4%

Biometric values measured at baseline and year 1 were compared for each individual to determine the cumulative number of improved biometrics. The number of individuals (N) who made improvements was then taken as a percentage of all study participants. Results of this analysis indicated that more than half of all study participants made a favorable change to at least 5 biometric values (Table 1).

Percentage of Members "At Risk" Decreased After One Year in the Program

The percentage of participants identified as "at risk" based on biometric evaluation decreased for both overall risk level (total score) and seven individual metrics including total cholesterol, high density lipoprotein (HDL), low density lipoprotein (LDL), the ratio of total cholesterol to HDL (predictive of cardiovascular disease risk), systolic and diastolic blood pressure (BP), and nicotine (indicative of tobacco use). The percent of members "at risk" for triglycerides remained stable, increasing by only 0.1% from baseline to year 1 (Figure 1). A separate analysis of change in risk level based on total scores revealed that 23.0% of members identified at baseline as "at risk" shifted into the "not at risk" group at the year 1 evaluation.

Figure 1: Percentage of Participants "At Risk" by Individual Biometric Score

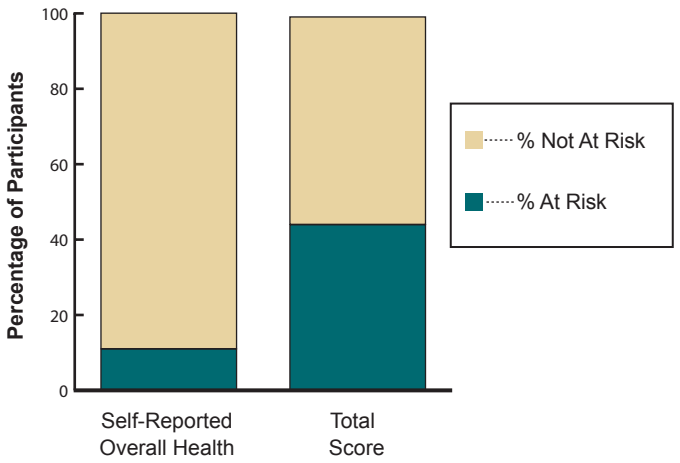


Self-Reported Health Status Underestimates Overall Risk Level

Self-reported health status was determined from HRA data at baseline assessment. Individuals who reported "fair" or "poor" overall health were categorized as "at risk" by self-report. Only 11.1% of the population fell into this category although scores from biometric evaluations indicated that 44.6% were actually "at risk" (Figure 2). In an analysis of those members with biometric scores of 70 or below, it was determined that 83.1% of this "at risk" group reported good to excellent health, suggesting that the population was largely unaware of their true health status at the time of program enrollment.

To determine whether participants accurately reported smoking status, self-reported HRA data and nicotine blood test results were compared across the study population. Results indicated that 18.3% of members with positive nicotine tests did not report themselves as smokers. Biometric testing results thus provide a more accurate estimate of the extent of tobacco-related health risk.

Figure 2: Participant Health Risk – Individual Biometric Score vs. Self-Reported



Conclusions

- **Biometric screening participants showed improvements in health risk status after only one year in the program.**
- **Specific risk factors reduced among program participants included cholesterol levels, blood pressure, and nicotine.**
- **Self-reported data underestimates actual level of risk in a population, emphasizing the importance of biometric analysis.**
- **Biometric testing provides a more accurate estimate of tobacco-related health risks.**

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