

A Comprehensive Approach to University Wellness Emphasizing Million Hearts® Demonstrates Improvement in Population Cardiovascular Risk

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ABSTRACT

Purpose: This study evaluated changes in university faculty and staff cardiovascular population risk over a three-year period after the implementation of the Million Hearts® initiative, which targets the ABCS for cardiac care (i.e., Appropriate aspirin therapy, Blood pressure control, Cholesterol management, and Smoking cessation), with an additional S for Stress reduction.

Methods: Using a longitudinal descriptive analysis of population cardiovascular health from 2012 to 2015, the Framingham Risk criteria for over 28,000 continuously-enrolled university faculty and staff were examined in a quality improvement initiative following the implementation of the Million Hearts® national initiative. Launched in 2011 by the Centers for Disease Control and Prevention and the Center for Medicaid Services within the Department of Health and Human Services, the initiative targets modifiable risk factors to prevent one million heart attacks and strokes by 2022.

Results: Faculty and staff with low-risk Framingham scores increased from 7.8 % to 14.1 % from 2012 to 2015.

Conclusion: Although this study was not a randomized controlled trial, findings support a comprehensive integrated approach to population health and wellness, emphasizing the ABCS of Million Hearts® with an added S for Stress reduction, can improve cardiovascular disease risk.

Submitted 28 August 2018: accepted 27 September 2018

Keywords: Cardiovascular risk, Framingham scores, population health, university

Cardiovascular disease (CVD) is the leading cause of morbidity and mortality for all races, ages, and both sexes (MEMBERS et al., 2017; Murphy, Xu, & Kochanek, 2013; World Health Organization, 2014). It is predicted that more than 45% of the U.S. population will develop CVD by 2035, with costs that will triple to 1.1 trillion dollars (Writing Group Members et al., 2012). Although CVD is the most costly chronic condition, it is largely preventable through healthy lifestyle behaviors (Teutsch, 2015).



In order to improve population cardiovascular health in the U.S., the Centers for Disease Control and Prevention (CDC) and Centers for Medicare and Medicaid Services (CMS) launched a national initiative in 2012 called Million Hearts[®] that focuses on modifying risk factors for CVD using the ABCS (Appropriate aspirin therapy, Blood pressure control, Cholesterol management, Smoking cessation; Frieden & Berwick, 2011). The Ohio State University (OSU) was the first university-wide partner of Million Hearts[®] and committed to intensifying its efforts in cardiovascular health promotion through CVD screenings and educational programming. A second S was added to the ABCs of Million Hearts[®] at OSU to emphasize the importance of Stress reduction in the prevention of CVD. Therefore, the purpose of this outcome evaluation study was to assess changes in faculty and staff cardiovascular risk over a three-year period, after implementation of the enhanced Million Hearts[®] programming.

METHODS

A comprehensive evidence-based quality improvement initiative, emphasizing cardiovascular health promotion, was implemented at OSU in 2012 with a goal of improving population health outcomes. The office of responsible research practices at OSU determined that institutional review board approval was not necessary as this study was categorized as a quality improvement project (Hockenberry, 2014).

Design

A repeated-treatment design was used in the present study (Shadish, Cook, & Campbell, 2002, p. 113-114). Instead of removing a treatment after multiple observations, one observation was taken each year in the three years following the commencement of the program. Our hypothesis was that the treatment would have a positive, additive impact on cardiovascular health across the observation period. All faculty and staff employed at the university were eligible to participate in the intervention components. Impact estimates were made by combining data from biometric and personal health assessments taken annually by faculty and staff (i.e., blood pressure, gender, HDL cholesterol, total cholesterol, and tobacco use) and diagnostic data on coronary artery disease and diabetes mellitus from the claims file of the third party administrator to the university's health plan. Annual sample sizes were dependent upon the number of employees covered by the university's health plan, the proportion of employees who took a biometric assessment and a health plan assessment, and the number of employees with claims. In 2013, the sample size was 32,179; in 2014, the sample size was 30,966; and, in 2015, the sample size was 31,418.

Setting and Sample

Ohio State is a large, public, land-grant university in the mid-west U.S., with over 65,000 students distributed across five campuses and approximately 31,000 full-time faculty and staff. The university houses an academic medical center with seven hospitals.

Annually, all faculty and staff are invited and encouraged to participate in university-supported biometric screenings, which includes the components highlighted in the ABCS. Both faculty and staff who are on the university health plan or not are able to participate in the biometric screening opportunity. The sample size includes continuously-enrolled faculty and staff members, 2012 - 2015.

Measures: The Framingham Low-Risk Calculation

The Framingham study represents the most comprehensive effort to identify cardiovascular risks. The findings have been adopted by the American Heart Association, the Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure and the National Cholesterol Education Program. The particular model used in this study was derived from calculations by Wilson and colleagues (Wilson et al., 1998). This model is appropriate for predicting coronary heart disease in men and women aged 30 to 74. Persons at low risk for CVD are associated with the following criteria:

- Serum total cholesterol of 160 – 199 mg/dL
- HDL-Cholesterol \geq 45 mg/dL in men and \geq 55 mg/dL in women
- Blood pressure < 120 mm Hg systolic and < 80 mm Hg diastolic
- Non-smoker
- No prior claim for diabetes mellitus
- No prior claim for coronary artery disease

Intervention

In 2012, a new comprehensive and integrated strategy was implemented at OSU for faculty, staff and students, using the socio-ecological framework to guide its evidence-based intervention tactics, including the Million Hearts[®] screening and education initiative.⁸ Million Hearts[®] screenings include biometric and modifiable risk factor assessments, along with education, on reducing CVD risk with healthy lifestyle behaviors. The nurses who conduct the biometric screenings are educated on the Million Hearts components, so they can discuss the importance of the ABCS with employees receiving the screenings. Faculty and staff identified through the biometric screening event with hypertension/pre-hypertension and other CVD risk factors (e.g., high cholesterol, inadequate physical activity, poor nutrition practices) are targeted for intensive programming, such as health coaching. Employees are provided a sheet with available wellness resources after they complete the screening.

Analysis

Health data gathered by The Ohio State University Health Plan (OSUHP) included claims information, personal health assessment information, biometric health screening results, and healthcare provider office screening results. This data was transferred into the Truven Health Advantage Suite database to identify members for health care claims. Analysis was conducted in November and December of 2016 by examining cross-sections of annual data.

RESULTS

The estimates in Figure 1 indicate that the proportion of benefits-enrolled faculty and staff associated with low-risk Framingham scores as a proportion of all benefits-eligible employees who completed a personal health assessment and biometric screen annually increased from 2013 to 2015. Consistent with the study hypothesis, faculty and staff with low-risk Framingham scores increased monotonically across the observation period from 6.9 % (2,231/32,179) in 2013 to 12.7 % (3,996/31,418) in 2015.

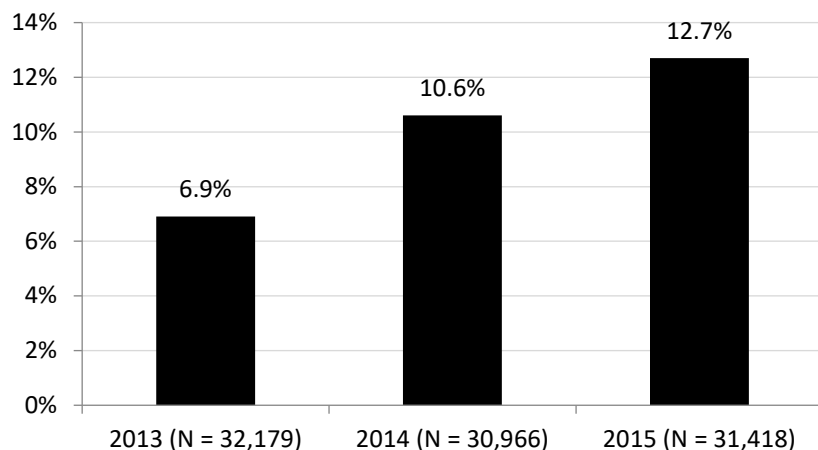


Figure 1. Proportion of benefits-enrolled faculty and staff with low-risk Framingham scores.

DISCUSSION & CONCLUSION

Findings from the present study indicate that improved outcomes in cardiovascular health occurred after the implementation of a comprehensive, integrated approach to wellness that targeted improvement of modifiable CVD risk factors through an emphasis on Million Hearts[®] with faculty and staff at a large public University. During this time, the university-supported wellness initiative, including the Chief Wellness Officer and her team, the employee wellness faculty and staff online platform, and the employer sponsored health plan, intensified its emphasis on cardiovascular health and mental health promotion, which complemented the Million Hearts intervention.

Cardiovascular disease can be prevented by modifying known risk factors. If cardiovascular risks improve in a population, the organization may begin to experience lower health care costs associated with CVD and poor healthy lifestyle behaviors. As a result of implementing a comprehensive and integrated multi-component strategic plan, Ohio State has been in a negative healthcare spend for faculty and staff health and well-being for the past two years in comparison to upward healthcare spend in many organizations throughout the nation. A comprehensive and integrated approach to wellness creates a culture of health and well-being that makes healthier lifestyle choices the easier choices, ultimately leading to healthier behaviors and lower health care costs because of the emphasis on prevention (Melnyk, Amaya, Szalacha & Hoying, 2016).

A major limitation of this study was that it was not a randomized controlled trial that used a control or comparison group, which poses major threats to internal validity. However, findings supported that a comprehensive integrated approach to health and wellness that emphasizes the ABCS of Million Hearts[®], with an added S for Stress reduction, can improve cardiovascular disease risk in a University population. Postsecondary institutions are an important worksite for health and wellness interventions, as approximately 21 million people attend and 4 million people work for private and public colleges and universities in the United States (Snyder, De Brey, & Dillow, 2016).

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