JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY
© 2014 BY THE AMERICAN COLLEGE OF CARDIOLOGY FOUNDATION
PUBLISHED BY ELSEVIER INC.

VOL. 64, NO. 17, 2014
ISSN 0735-1097/$36.00
http://dx.doi.org/10.1016/j.jacc.2014.07.981

Healthy Lifestyle and Decreasing Risk of Heart Failure in Women

The Women's Health Initiative Observational Study

Golareh Agha, PhD,* Eric B. Loucks, PhD,† Lesley F. Tinker, PhD,‡ Molly E. Waring, PhD,§ Dominique S. Michaud, ScD,† Randi E. Foraker, PhD,‖ Wenjun Li, PhD,¶ Lisa W. Martin, MD,# Philip Greenland, MD,** JoAnn E. Manson, MD, DrPH,†† Charles B. Eaton, MD†‡‡

ABSTRACT

BACKGROUND The impact of a healthy lifestyle on risk of heart failure (HF) is not well known.

OBJECTIVES The objectives of this study were to evaluate the effect of a combination of lifestyle factors on incident HF and to further investigate whether weighting each lifestyle factor has additional impact.

METHODS Participants were 84,537 post-menopausal women from the WHI (Women's Health Initiative) observational study, free of self-reported HF at baseline. A healthy lifestyle score (HL score) was created wherein women received 1 point for each healthy criterion met: high-scoring Alternative Healthy Eating Index, physically active, healthy body mass index, and currently not smoking. A weighted score (wHL score) was also created in which each lifestyle factor was weighted according to its independent magnitude of effect on HF. The incidence of hospitalized HF was determined by trained adjudicators using standardized methodology.

RESULTS There were 1,826 HF cases over a mean follow-up of 11 years. HL score was strongly associated with risk of HF (multivariable-adjusted hazard ratio [HR] [95% confidence interval (CI)] 0.49 [95% CI: 0.38 to 0.62], 0.36 [95% CI: 0.28 to 0.46], 0.24 [95% CI: 0.19 to 0.31], and 0.23 [95% CI: 0.17 to 0.30] for HL score of 1, 2, 3, and 4 vs. 0, respectively). The HL score and wHL score were similarly associated with HF risk (HR: 0.46 [95% CI: 0.41 to 0.52] for HL score; HR: 0.48 [95% CI: 0.42 to 0.55] for wHL score, comparing the highest tertile to the lowest). The HL score was also strongly associated with HF risk among women without antecedent coronary heart disease, diabetes, or hypertension.

CONCLUSIONS An increasingly healthy lifestyle was associated with decreasing HF risk among post-menopausal women, even in the absence of antecedent coronary heart disease, hypertension, and diabetes. Weighting the lifestyle factors had minimal impact. (J Am Coll Cardiol 2014;64:1777–85) © 2014 by the American College of Cardiology Foundation.

From the *Department of Environmental Health, Harvard School of Public Health, Boston, Massachusetts; †Department of Epidemiology, School of Public Health, Brown University, Providence, Rhode Island; ‡Fred Hutchinson Cancer Research Center, Seattle, Washington; §Division of Epidemiology of Chronic Diseases and Vulnerable Populations, Department of Quantitative Health Sciences, University of Massachusetts Medical School, Worcester, Massachusetts; ‖Ohio State University, College of Public Health, Columbus, Ohio; ¶Division of Preventive and Behavioral Medicine, Department of Medicine, University of Massachusetts Medical School, Worcester, Massachusetts; #George Washington University School of Medicine and Health Sciences, Washington, DC; **Northwestern University Feinberg School of Medicine, Chicago, Illinois; ††Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts; and the ‡‡Department of Family Medicine, Alpert Medical School of Brown University, Providence, Rhode Island. The Women's Health Initiative program is funded by the National Heart, Lung, and Blood Institute, National Institutes of Health, US Department of Health and Human Services through contracts HHSN268201100046C, HHSN268201100001C, HHSN268201100002C, HHSN268201100003C, HHSN268201100004C, and HHSN271201100004C. Support for Dr. Waring was provided by National Institutes of Health grants KL2TR000160 and U01HL105268. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

Listen to this manuscript's audio summary by *JACC* Editor-in-Chief Dr. Valentin Fuster.

You can also listen to this issue's audio summary by *JACC* Editor-in-Chief Dr. Valentin Fuster.

Manuscript received February 19, 2014; revised manuscript received June 28, 2014, accepted July 8, 2014.

ABBREVIATIONS AND ACRONYMS

AHEI = Alternative Healthy Eating Index

BMI = body mass index

CHD = coronary heart disease

CI = confidence interval

HF = heart failure

HL score = healthy lifestyle score

HR = hazard ratio

PAR = population attributable risk

wHL score = weighted healthy lifestyle score

Heart failure (HF) is a major public health concern, characterized by a high prevalence, poor clinical outcomes, and significant healthcare costs (1). HF primary prevention through lifestyle approaches may be more effective and less costly than secondary or tertiary prevention efforts. A healthy lifestyle, often characterized by a combination of prudent diet, regular exercise, healthy weight, and not smoking, is related to a lower risk of atherosclerotic cardiovascular diseases, such as coronary heart disease (CHD) (2) and stroke (3). Few studies, however, have focused on a healthy lifestyle in relation to HF. Healthy lifestyle factors were individually and collectively associated with a lower risk of HF among white males in the Physician's Health Study I (4) and among men and women from a large and homogenous Finnish sample (5).

SEE PAGE 1786

Post-menopausal women and African Americans experience a greater burden of HF (6–8), and they are predicted to make up a greater proportion of future HF cases in the United States (9,10). Therefore, examination of the impact of a healthy lifestyle on HF risk in these groups is of particular interest. In addition, it has been proposed that the association of healthy lifestyle factors with HF risk may largely be accounted for by the development of interim CHD (4,11), as well as interim hypertension and diabetes (11–13). However, we were particularly interested in whether an association between healthy lifestyle and HF risk would be present among women without development of any of these conditions before HF development. For example, HF in women is less associated with CHD than in men (14); thus, other mechanisms are of interest. Lastly, most prior studies investigating a combination of lifestyle factors weighted each lifestyle factor equally (2–5,15). This approach assumes that each lifestyle factor has the same magnitude of effect on the outcome, and this may lead to misclassification when lifestyle factors are combined.

Accordingly, we examined whether a healthy lifestyle, as captured by a combination of high dietary quality, physical activity, healthy body mass index (BMI), and not currently smoking, is associated with risk of HF in a diverse prospective cohort of post-menopausal women from the WHI (Women's Health Initiative) observational study, and we further assessed the additional impact of weighting each lifestyle factor according to its independent magnitude of effect on HF. We further examined the association of healthy lifestyle with HF in women with versus without antecedent CHD, in African American versus non-Hispanic white women, and among women without antecedent CHD, hypertension, or diabetes.

METHODS

STUDY SAMPLE. The WHI observational study recruited women from 40 U.S. clinical centers from 1993 to 1998. The WHI observational study comprised a sample of post-menopausal women (ages 50 to 79 years at baseline) who were in overall good health and were either unwilling or ineligible to be WHI clinical trial participants (16–18). This study was approved by each center's institutional review board, and the subjects provided informed consent. Women were excluded from the current analyses if they reported a history of HF at baseline (n = 897); were missing information on lifestyle factors (n = 3,110); had energy intake <600 or >5,000 kcal/day (n = 3,571); or were underweight (BMI ≤ 18.5 kg/m^2) at baseline (because of the potential for preclinical disease; n = 1,050). Those excluded were more likely ($p < 0.05$) to be nonwhite, from the South, and divorced, separated, or widowed; to have a history of hypertension or CHD at baseline; and to have lower levels of education.

MEASURES. We considered 4 lifestyle variables: Diet quality as measured by the Alternative Healthy Eating Index (AHEI), physical activity, BMI, and smoking. Data used to generate the AHEI were derived from the semiquantitative WHI food frequency questionnaire (19). The AHEI is a composite numerical measure of dietary quality, based on foods and nutrients predictive of chronic disease risk (20,21) and consisting of 11 dietary components, with each scored based on a 10-point scale (0 points, least healthy; 10 points, most healthy) (12). Women also reported on their physical activity. For analyses, physical activity was categorized as inactive (e.g., no report of moderate or vigorous physical activity); somewhat active (i.e., less active than recommendations [22]: <150 min/week of moderate physical activity, or <75 min/week of vigorous physical activity, or equivalent combination); and active (e.g., meeting physical activity recommendations [22]: ≥150 min of moderate physical activity per week or ≥75 min of vigorous physical activity or an equivalent combination). Smoking status was categorized as a current, former, or never smoker. BMI was calculated from weight and height measures obtained at clinical examinations with a calibrated stadiometer and categorized as normal weight (18.5 ≤ BMI <25 kg/m^2), overweight (25 ≤ BMI ≤30 kg/m^2), and obese (BMI >30 kg/m^2).

Download English Version:

https://daneshyari.com/en/article/2944178

Download Persian Version:

https://daneshyari.com/article/2944178

Daneshyari.com