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EDITORIAL COMMENT

Achieving Optimal Cardiovascular Health

A Way to Help Prevent Cancer?*

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The construct of cardiovascular health (CVH) was introduced by the American Heart Association in 2010 as a global strategy to promote CVH and to prevent the onset of cardiovascular disease (CVD) and stroke.[1] The Life's Simple 7 metrics, which include health behaviors and factors, have been used to measure and monitor ideal CVH, defined as the presence of ideal health behaviors (nonsmoking, body mass index <25 kg/m^2, physical activity at goal levels, and pursuit of a diet consistent with current guideline recommendations) and ideal health factors (untreated total cholesterol <200 mg/dL, untreated blood pressure <120/80 mm Hg, and fasting blood glucose <100 mg/dL).[1] Research studies have unequivocally shown that attaining ideal or optimal CVH is associated with a lower incidence of CVD and stroke.[2] In addition, a more favorable CVH profile is associated with a lower incidence of noncardiovascular diseases such as cancer.[3,4] This is not surprising, as CVD and cancer have shared risk factors and similar biological pathways. Therefore, preventing the onset of CVD risk factors would help curtail the rising burden of cancer.

In this issue of *JACC: CardioOncology*, Van Sloten et al[5] add to the literature by evaluating the association of baseline and change in CVH with incident cancer. The investigators analyzed data from the GAZEL Cohort Study, a prospective cohort study that recruited 20,625 employees of the national electric and gas company in France. A CVH score ranging from 0 to 14 points was created at baseline from the Life's Simple 7 metrics and categorized as low (0-7 points), moderate (8-11 points), and high (12-14 points). Incident cancer was defined using the 9th and 10th versions of the International Classification of Diseases. The primary outcome was incident cancer at any site, while secondary outcomes were the most common site-specific cancers such as female breast cancer, prostate cancer, lung cancer, colon cancer, and other cancers. For the association between baseline CVH and incident cancer, Van Sloten et al[5] analyzed data from 13,933 study participants. After a median follow-up period of 24.8 years, 14.4% of participants were diagnosed with incident cancer at any site. The investigators found that for every 1-point increase in the baseline CVH score, there was a 9% decrease in incident cancer at any site after adjusting for age, sex, education, and occupation (0.91 [95% CI: 0.88-0.93]). Additionally, compared with low CVH scores, moderate and high CVH scores were associated with 21% and 42% decrease in incident cancer at any site (0.79 [95% CI: 0.71-0.89] and 0.58 [95% CI: 0.45-0.74]), respectively. A similar pattern of association was observed for lung cancer and other cancers. Of note, these findings are corroborated by the results of prior research that examined the association between CVH and incident cancer[3,4] and further reinforce the usefulness of primordial prevention of CVD risk factors to reduce the incidence of cancer. However, these prior studies assessed CVH scores only at baseline and did not have information on how the change in the CVH scores over time affects cancer incidence. Van Sloten et al[5] included this additional analysis in their study. Seven categories of change in CVH score were created from an analysis of 9,558 study participants with

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available data: low-low, low-moderate/high, moderate-low, moderate-moderate, moderate-high, high-moderate/low and high-high. After a median follow-up of 18 years participants in the moderate-high category had a 38% decrease in incident cancer at any site compared with participants in the low-low category (0.62 [95% CI: 0.45-0.87]). However, a similar decrease was observed for participants whose scores were in the high-moderate/low (0.64 [95% CI: 0.44-0.92]), moderate-moderate (0.75 [95% CI: 0.64-0.88]), and high-high (0.45 [95% CI: 0.27-0.77]) categories.

A major limitation of this study, which the investigators acknowledge, is the external validity of the findings because of the relatively homogeneous study population. However, prior research using baseline CVH scores conducted among a more diverse population[3,4] supports the findings of Van Sloten et al.[5] Nonetheless, additional research in heterogenous populations may be required to examine how changes in CVH scores affect cancer incidence so that the findings are more generalizable. Recently, the American Heart Association introduced the Life's Essential 8 metrics,[1] which include a metric for sleep and a revised definition of the Life's Simple 7 metrics. With this update, future research should investigate how the revised definition of CVH would affect cancer risk.

As the global population ages, along with the increasing prevalence of risk factors, cancer incidence is expected to rise.[6] In 2018, approximately 17 million new cases of cancer were diagnosed globally, with 9.5 million cancer deaths.[6] These numbers are projected to increase to 27.5 million new cases and 16.3 million cancer deaths by 2040.[6] Therefore, it is a public health priority to develop effective strategies for cancer prevention and control to reduce the socioeconomic burden of cancer. With current evidence suggesting an inverse association between a favorable CVH profile and cancer incidence, the general public should be provided with educational resources on the importance of attaining and preserving optimal CVH throughout the life course. Similarly, advocacy efforts such as the creation of mass media campaigns to promote healthy behaviors and the implementation of policies that regulate tobacco and nicotine products should continue at the local, state, and federal levels to improve CVH in the general population.[1] Additionally, in clinical practice, health technology such as apps and wearable devices could be used to collect data on the Life's Essential 8 metrics.[1] These data could be utilized to assess the CVH of patients and to track changes in CVH over time.[1] As a supplement to guideline-recommended cancer screening tools, information on patients' CVH could assist clinicians in risk prediction and may help initiate tailored behavioral changes in patients.[1]

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