

Adult survivors of childhood cancer often undertreated for cardiovascular risk factors

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Adults who survive childhood cancer have a higher risk of cardiovascular disease than the general population, yet they are 80% more likely to be undertreated for several cardiovascular risk factors: hypertension (also called high blood pressure), diabetes and high cholesterol, according to new research published today in the *Journal of the American Heart Association*.

Previous research has shown that due to their exposure to chemotherapy and/or radiation, [childhood cancer survivors](#) may face up to a five-fold increased risk of cardiovascular disease and death, compared to the [general population](#). Multiple studies have shown that most adult childhood [cancer](#) survivors report receiving only general medical care, not specific to their experience with cancer. Previous research also suggests that cancer survivors are not receiving recommended cardiovascular screenings in a timely manner due to limited awareness of future health complications by survivors and [health care professionals](#).

"These findings make underdiagnosis and undertreatment significant concerns for the estimated half a million childhood cancer survivors living in the United States," said lead study author Eric J. Chow, M.D., M.P.H., an associate professor in [clinical research](#) and public health sciences at the Fred Hutchinson Cancer Center in Seattle.

In this study, cardiovascular risk factor undertreatment was defined as being diagnosed with [high blood pressure](#), [high cholesterol](#) or diabetes yet still having higher-than-recommended levels of blood pressure, "bad" cholesterol, triglycerides or blood glucose. (No detail available about Type 1 or Type 2 diabetes diagnosis.)

Participants were recruited from the Childhood Cancer Survivor Study (CCSS), a large study that includes people who were diagnosed with cancer before age 21 between 1970 and 1999 at health care centers in the U.S. and Canada, and who survived at least five years. Between September 2017 and April 2020, researchers recruited from the pool of U.S.-based CCSS participants childhood cancer survivors who were at least 18 years old, free of [heart disease](#) or [heart failure](#), living within 50 miles of nine major U.S. metropolitan areas (Atlanta, Boston, Denver, Houston, Minneapolis, Philadelphia, Pittsburgh, Seattle and Columbus, Ohio). Those recruited were also taking part in a separate clinical trial testing the potential of a telehealth-care plan to improve cardiovascular

outcomes among long-term survivors of childhood cancer. Among this group, which was 85% white adults and 57% women, the most common types of cancer were leukemia, lymphoma and bone cancer.

Researchers measured blood pressure, lipids, glucose and hemoglobin A1c levels in nearly 600 adults (median age 37 years) an average of 28 years after cancer diagnosis and obtained similar data on a comparison group of nearly 350 same-age adults without a history of cancer. The analysis found:

- Cancer survivors were more likely than those without a history of cancer to have hypertension (18% vs. 11%, respectively), abnormal lipid levels (14% vs. 4.9%, respectively) and diabetes (6.5% vs. 3.2%, respectively).
- Participants in both groups had similar rates of underdiagnosed hypertension, high cholesterol and diabetes: 27.1% among cancer survivors and 26.1% among the comparison group. However, cancer survivors were 80% more likely to be undertreated for these conditions compared to their study counterparts.

"Serious heart disease is uncommon in young adults in the general population, which includes childhood cancer survivors, therefore, greater awareness of the significantly higher cardiovascular disease risk when there is a history of cancer is important," Chow said. "Raising awareness among primary care professionals as well as improving survivors' ability to self-manage their health may mitigate the increased risks. There are specialized heart disease risk calculators designed for cancer survivors, and those may be more accurate in predicting future cardiovascular disease risk than risk calculators designed for the general population."

The analysis also included the results of a self-reported questionnaire assessing medical history, such as cardiovascular health and treatment; diet, exercise and other lifestyle habits; and people's belief in the ability

to manage their own health.

Information on the comparison group of peers who had no history of childhood cancer came from the 2015-2016 National Health and Nutrition Examination Survey, in which participants had standardized health examinations and in-home interviews, comparable to the questionnaire taken by the cancer survivors.

Other findings include:

- The most underdiagnosed and undertreated cardiovascular disease risk factors among the cancer survivors were hypertension at 18.9% and lipid disorders at 16.3%.
- Among the cancer survivors, men were twice as likely to be underdiagnosed and undertreated for the cardiovascular disease risk factors; while survivors who were overweight or obese were 2-3 times more likely to be underdiagnosed and undertreated.
- Cancer survivors who had two or more unhealthy lifestyle factors, such as physical inactivity and low consumption of fruits and vegetables, were twice as likely to be undertreated than the comparison group.

The study also found that [childhood cancer](#) survivors who reported higher self-efficacy—a stronger belief in their ability to manage their own health—had 50% lower odds of undertreatment for the cardiovascular disease risk factors studied. "That perhaps is not surprising, yet it suggests that efforts to help survivors learn how to take greater ownership of their health conditions may help to improve longer term outcomes," Chow said. "This has been shown in patients with other chronic health conditions outside of cancer as well."

Among the study's limitations are the potential for measurement error and misclassification among the [cancer survivors](#) and comparison group

because of one-time health assessments.

More information: Underdiagnosis and Undertreatment of Modifiable Cardiovascular Risk Factors Among Survivors of Childhood Cancer, *Journal of the American Heart Association* (2022). [DOI: 10.1161/JAHA.121.024735](https://doi.org/10.1161/JAHA.121.024735)

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