

Vitamin D status not predicted by surrogate markers, researchers find

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Vitamin supplements, diet, geographic location, demographic information or lifestyle, independently or in combination, cannot accurately predict vitamin D concentrations in blood, researchers at the University at Buffalo have found.

This finding indicates that data such as [vitamin D](#) from foods and supplements or latitude of residence (northern vs. southern) cannot be used dependably as surrogate markers to assess the risk of breast and [colon cancer](#).

Low blood levels of vitamin D have been associated with an increased risk of developing cancer, while high levels are considered potentially protective, making knowledge of a person's vitamin D status important.

Having a dependable way to obtain this information without drawing blood would eliminate the need for the [invasive procedure](#), which some people find unpleasant, and could encourage more investigations on associations between vitamin D and disease risk.

However, results of the study conducted by UB epidemiologists show that such factors (e.g., age, vitamin D intake, supplement use, etc.), taken together, could explain only 21 percent of the variation in vitamin D levels between people.

These markers were particularly poor at identifying women with severe vitamin D deficiency or those with high levels, according to the findings.

Results of the study appear online ahead of print on the [American Journal of Clinical Nutrition](#) website.

"If we could predict someone's vitamin D status by asking them about their location of residence and their lifestyle, and combining that information with their demographic and medical characteristics, then research could be conducted on vitamin D status and disease even if we don't have blood samples from study participants," says Amy E. Millen, PhD, UB assistant professor of social and preventive medicine and first author on the study.

"Our analysis says we are not there yet. Other factors, such as genetics or other variables not measured or not yet known, may help to better predict an individual's blood vitamin D level.

"This information is important, nevertheless, because it tells researchers that less weight should be given to previous studies that used proxy measures for vitamin D instead of blood measures to predict risk of cancer outcomes."

The investigation is based on blood samples from 3,055 postmenopausal women who took part in the Women's Health Initiative (WHI) Calcium plus Vitamin D clinical trial conducted from 1995-2000 or in the original WHI trial, which took place from 1993-98.

Actual vitamin D data from the samples was compared to surrogate markers for vitamin D status -- latitude of residence, annual sunlight at particular latitudes, and how much vitamin D participants consumed from foods and supplements.

Even after considering latitude, season of the year when blood samples were taken, regional sunlight exposure, age, race-ethnicity and other lifestyle factors such as waist circumference and physical activity, there

still were differences in serum vitamin D levels between people that could not be explained, results showed.

"We learned that using this data still doesn't allow us to very accurately predict an individual's blood vitamin D status," says Millen.

"However, our study did not have very detailed data on individual sun exposure, so if we had had that information, perhaps we might have been able to more accurately predict an individual's vitamin D [blood](#) levels. We assume, though, based on other studies similar to ours, that even with measures of sun exposure, a predictive model still wouldn't be very valid."

Millen's advice? "When evaluating the information you hear in the news, be aware that relationships between location of residence and a disease outcome, or even studies that looked at just vitamin D intake from foods and supplements (without consideration of sunlight exposure) may not accurately tell you about the true relationship between cancer and vitamin D."

Provided by University at Buffalo

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