

# Gulf War illness may increase risk for heart disease or stroke

October 2 2023, by Michael Merschel

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Military veterans with Gulf War illness may face a higher risk for heart disease, stroke and several risk factors, a new study suggests.

Gulf War illness is a chronic condition with many symptoms that affects about a third of the 700,000 U.S. military personnel who served during

the Gulf War in the early 1990s. The study found that veterans with the illness were more than twice as likely to self-report atherosclerotic cardiovascular disease, or issues related to plaque buildup that blocks arteries, as veterans who did not have symptoms related to the condition.

The illness also was associated with more than double the odds of being diagnosed with diabetes and high blood pressure, according to the [study](#), which was published Friday in the *Journal of the American Heart Association*.

Senior study author Dr. Drew Helmer, deputy director of the IQuESt center at Michael E. DeBakey Veterans Affairs Medical Center in Houston, said he hadn't expected to see "such a clear, strong association" between Gulf War illness and cardiovascular issues.

"There are some limitations to the study, no doubt about it," said Helmer, who also is a professor of medicine at Baylor College of Medicine. "But this is a pretty large signal."

For people with Gulf War illness, he said, "I think this sends a pretty clear message to the clinical community and to the veteran community that, hey, we probably need to get serious about assessing your risk of cardiovascular disease."

Gulf War veterans were exposed to a variety of chemicals, including pesticides, that are thought to be related to Gulf War illness, which is defined by a collection of long-lasting symptoms, including chronic fatigue, cognitive difficulties and widespread pain.

Dr. Sarah Ahmed, the study's lead author and a research specialist at both DeBakey and Baylor, said there has been no study exclusively looking at cardiovascular risk among deployed Gulf War veterans with the illness.

For their analysis, the research team drew from a national sample of Gulf War-era veterans from a Veterans Affairs research program. The study is based on 942 veterans who served during the Gulf War from August 1990 to July 1991.

Overall, 78% of the group was men; 64% were white; 18% were Black; and 9% were Hispanic of any race.

The 942 veterans completed a mailed survey between 2014 and 2016 in which they reported symptoms and [health conditions](#). Researchers were able to match 669 of the veterans in that group with electronic health records in the Veterans Health Administration.

Gulf War illness does not have a diagnostic code, Ahmed said, and was determined from survey responses using a Centers for Disease Control and Prevention case definition.

Based on the survey results, 58% of those with Gulf War illness had high cholesterol compared to 51% without it. High blood pressure was reported by 56% of those with the illness compared to 45% without. The odds for reporting atherosclerotic cardiovascular disease, which included [heart attack](#), coronary heart disease, stroke and peripheral artery disease, were higher among those with Gulf War illness.

Among the subset of veterans who had electronic health records, diabetes had been diagnosed in 25% of those with Gulf War illness compared to 12% of those without. High blood pressure also was more common among those with Gulf War illness: 54% compared to 30%. The odds of having high cholesterol and [atherosclerotic cardiovascular disease](#) were higher in the group with Gulf War illness, but the associations were not statistically significant. That's possibly because the sample size was too small, Ahmed said.

The study was not designed to look for why Gulf War illness and heart risks might be linked. But the researchers said that chemicals veterans were exposed to may be associated with cardiovascular problems.

Dr. Lillian Khor, a cardiologist at the VA medical center in Salt Lake City, said the nature of the study meant it could not prove cause and effect. "However, a higher correlation with cardiovascular risk factors like diabetes and high blood pressure would make sense in veterans whose physical activity is limited," she said. Chronic fatigue and pain are among the activity-limiting symptoms related to Gulf War illness.

"This study is useful because it highlights the potential increased risk," said Khor, who was not involved in the new research. "Both veterans and their health care providers should pay attention to physical inactivity, which increases the risk of high blood pressure and diabetes."

The researchers acknowledged limitations of self-reported data. They noted that less than 13% of the veterans contacted for the national survey replied. Those who responded may be more engaged or sicker.

Khor also noted that [electronic health records](#) can be medically inaccurate and that although the researchers adjusted for age, sex, race and ethnicity, and post-traumatic stress disorder, they did not adjust for obesity, a key risk factor for heart disease, or physical activity differences. "Data on [physical activity](#) could suggest a mechanism behind the difference in prevalence of [high blood pressure](#) and diabetes and would have been useful for guiding therapeutic research on Gulf War illness," Khor said.

The researchers said many veterans receive care outside the VA system, which means some conditions could have been missed or not reported.

But while acknowledging such limits and the need to confirm the data in

a larger group, Helmer expects the findings to hold up. "Even if it ends up being a smaller number, it seems like there's a real signal there," he said.

To him, the findings suggest that physicians might want to pay closer attention to cardiovascular risk factors in patients who are Gulf War veterans and think, "maybe I'm going to be a little more assertive in my recommendation for evaluation, or I'm going to be a little more attentive to a new complaint about some vague sort of chest pain or nausea with exertion," he said.

The study also sends a message to veterans that researchers are listening to them, he said. "One of the challenges of trying to help veterans with Gulf War illness is they often don't feel like they're getting the help and the attention that they need."

Ahmed said she heard that directly from veterans when she sat with advisory groups who asked about heart attacks, [heart disease](#) and diabetes.

"Gulf War veterans are very concerned about these conditions," she said. Their questions are part of what inspired the study and her ongoing research.

Helmer said such questions are important.

"People don't die of Gulf War illness, but people do die of cardiovascular disease," he said. "So, addressing the elevated risk of cardiovascular disease is going to be really important for this population."

**More information:** Sarah T. Ahmed et al, Association of Atherosclerotic Cardiovascular Disease, Hypertension, Diabetes, and

Hyperlipidemia With Gulf War Illness Among Gulf War Veterans,  
*Journal of the American Heart Association* (2023). DOI:  
[10.1161/JAHA.123.029575](https://doi.org/10.1161/JAHA.123.029575)

Provided by American Heart Association

Citation: Gulf War illness may increase risk for heart disease or stroke (2023, October 2)  
retrieved 29 April 2024 from  
<https://medicalxpress.com/news/2023-10-gulf-war-illness-heart-disease.html>

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