

# Study Links Time Spent Sitting to Higher Risk of Death from 14 Diseases

## Association independent of moderate-vigorous physical activity levels



A new American Cancer Society study links prolonged sitting time with a higher risk of death from all causes, including 14 of 22 measured causes of death and 8 of the 10 most common causes of death. The link existed even after adjusting for levels of moderate-vigorous intensity physical activity. The study [appears early online in the American Journal of Epidemiology](#).

*“ Given the pervasive nature of sitting in contemporary lifestyle, this study further supports that encouraging individuals to reduce sedentary time may provide health benefits ”*

Advancements in technology have led to a significant increase in the amount of time spent sitting. In addition, sedentary time increases with aging, a time when the risk of chronic disease also increases. In the United States, most leisure time is spent in sedentary behaviors such as television viewing. In one Australian study, it was estimated that 90% of total non-occupational time was spent sedentary, and that 53% of sedentary time was spent on screen time (computer or television).

Previous studies have shown that prolonged time spent sitting is associated with several conditions and total mortality, independent of how much moderate-vigorous intensity physical activity an individual gets. Emerging evidence supports that sitting time is a behavioral risk factor that is distinct from inadequate exercise (i.e., physical inactivity) and could be an important additional target for intervention in the effort to increase daily physical activity in the population.

To examine leisure time sitting's link to specific causes of death, investigators led by Alpa V. Patel, Ph.D. analyzed data from the American Cancer Society's CPS-II Nutrition Cohort, a prospective U.S. cohort including 127,554 men and women who were free of major chronic disease at study entry. During 21 years of follow up, there were 48,784 deaths.

They found prolonged leisure-time sitting (defined as 6+ hours/day) was associated with a 19% higher rate of death from all causes combined compared to individuals who reported sitting less than 3 hours per day. Risk was significantly higher for 14 of 22 specific causes of death examined, and importantly, for eight of the top ten leading causes of death in the U.S

Risks of death were higher from cancer, coronary heart disease, stroke, diabetes, kidney disease, suicide, COPD, pneumonitis due to solids and liquids, liver disease, peptic ulcer and other digestive disease, Parkinson's disease, Alzheimer's disease, nervous disorders, and musculoskeletal disorders.

“These findings provide additional evidence for associations between a broad range of mortality outcomes and prolonged sitting time,” said Dr. Patel. “Given the pervasive nature of sitting in contemporary lifestyle, this study further supports that encouraging individuals to reduce sedentary time may provide health benefits.”

The authors say there are several possible factors that could explain the findings. For instance, time spent sitting displaces time spent in physical activity and is associated with lower total physical activity levels. But adjusting for moderate-to-vigorous activity levels in the current study did not change the results. It could also be that other forms of activity (e.g. daily-life light activities) that were not included in the analysis play a role.

It is possible that time spent sitting is associated with other unhealthy behaviors, such as excess snacking. In addition, prolonged time spent sitting has also been shown to have important metabolic consequences, including a negative impact on cardiometabolic factors such as triglycerides, fasting plasma glucose, blood pressure, and insulin, as well as the promotion of obesity-related systemic inflammation. These pathways could explain why associations were observed with death from cardiovascular disease, cancer, diabetes, liver disease, kidney disease, and COPD.

Other associations including death from suicide, Parkinson's disease, Alzheimer's disease, nervous disorders, and musculoskeletal disorders are less clearly understood. For these causes of death, it is plausible that underlying conditions that would result in excess time spent sitting may explain the associations.

The authors conclude that considering the increase in leisure-time spent sitting in westernized countries over the past several decades, the report highlights the importance of sedentary behavior, in addition to exercise, as a health behavior that may be modified in ongoing efforts to improve public health.

[Article](#): Prolonged Leisure-Time Spent Sitting in Relation to Cause-specific Mortality in a Large U.S. Cohort. Am J Epidemiol doi: 10.1093/aje/kwy125

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