

Research In Focus: A Weekly Digest of New Research from the NIDILRR Community

Healthy Lifestyles May be Linked with Longer Life Expectancy for People with Spinal Cord Injuries

A study funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR).

A spinal cord injury (SCI) is damage anywhere along the spinal cord from trauma. An SCI can occur in the upper part of the spine (a cervical injury) or in the lower part of the spine (a non-cervical injury), with cervical injuries having more severe impacts on mobility. Medical improvements have made it possible for more people to survive after an SCI. However, studies show that people with SCI still have shorter average life expectancies than people without SCI. Some of the most common causes of death in people with SCI include sepsis (a condition where infection spreads from the skin or elsewhere into the bloodstream); lung infections such as pneumonia or influenza; cancer; heart and blood vessel disease; and unintentional injury. Certain lifestyle factors such as smoking, drinking, diet, and exercise can affect a person's risk of developing these and other health conditions. In a recent NIDILRR-funded study, researchers looked at self-report assessments and health records from a group of adults with SCI, including some who died during the study period and others who survived. The researchers wanted to find out which health and behavioral factors differed between the deceased and the survivors. They also wanted to find out which factors were associated with specific causes of death.

Researchers from a project Risk of Early Mortality After Spinal Cord Injury looked at 2,979 adults with SCI who were treated at a large city hospital. All of these individuals had SCI for at least a year before filling out a self-report assessment about their health and lifestyles. The individuals answered questions about their injury severity; current age and age at injury; race/ethnicity; gender; and whether they were underweight, about normal weight, or overweight for their height. The individuals also answered questions about six types of lifestyle factors: whether they took prescription medications for spasms, pain, depression, or sleep; how often they drank alcohol; whether or not they smoked; how often they ate fruits and vegetables; how often they ate unhealthy or "junk" foods; and how much they exercised. One group of the individuals completed the survey between 1997 and 1998, while a second group completed the survey between 2007 and 2009.

The researchers then looked at national death records to find out which individuals had died before December 31, 2016. For the deceased, the immediate cause of death was placed into one of six categories: sepsis; pneumonia or influenza; cancer; heart/blood vessel diseases; accidental injuries; and all other causes of death.

The researchers found that 27% of the individuals had died by December 31, 2016. When the researchers compared the individuals who died with those who survived, they found that:

- The individuals with cervical injuries were less likely to survive: Half of the deceased had cervical injuries, while only 32% of the survivors did.
- Age at injury and the length of time an individual lived with the injury had an impact on survival: On average, the deceased individuals were about 7.5 years older than the survivors when they became injured, and they had been living with their injuries for about 1.8 years longer at the time they completed the survey.
- A higher percentage of women survived than men.
- A higher percentage of the survivors were normal weight, while a higher percentage of the deceased were under- or overweight.
- Compared with the deceased individuals, the survivors reported taking fewer prescription medications to treat pain, sleep, spasticity, or depression (a composite measure), smoking less, and exercising more. Drinking alcohol and diet were unrelated to the likelihood of death.

When the researchers looked separately at each cause of death, they found the following:

- Factors associated with death from sepsis were: having a cervical SCI, being older at injury and living longer with an SCI, being overweight, and taking prescription medications.
- Factors associated death from pneumonia or influenza were: having a cervical SCI and being older at injury and living longer with an SCI.
- Factors associated with death from cancer were: being older at injury and living longer with an SCI, being underweight, and smoking.
- Factors associated with death from heart or blood vessel diseases were: having a cervical SCI, being older at injury and living longer with SCI, being male, smoking, and exercising less often. The individuals who were underweight were less likely to die from heart/blood vessel diseases than those who were normal weight or overweight. Surprisingly, the individuals who reported eating more unhealthy foods were also less likely to die from heart/blood vessel diseases.
- Factors associated with death from unintentional injury were: having a cervical SCI, taking more prescription medications, and drinking more alcohol.
- Factors associated with death from other causes were: having a cervical SCI, being older at injury and living longer with SCI, being male, being underweight, taking more prescription medications, smoking, and exercising less.

The authors noted that different causes of death after SCI may have different risk profiles. For example, in this study, the individuals who smoked were more likely to die from cancer and heart disease, while the individuals who drank more alcohol were more likely to die from unintentional injury. The authors also noted an unexpected finding, as there was an association between eating more unhealthy foods and a lower risk of dying from heart and blood vessel diseases. According to the authors, getting enough calories each day may be an important part of staying healthy for people with SCI.

The authors also noted that screening individuals with SCI to learn about their lifestyles may help inform recommendations to improve their life expectancy. Physicians and rehabilitation providers treating people with SCI may wish to inquire about lifestyle factors such as smoking, alcohol use, exercise, and diet. Interventions such as programs to help people quit smoking, physical therapy to provide access to exercise, and nutritional counseling may help extend quantity and quality of life for people with SCI.

[To Learn More](#)

The Model Systems Knowledge Translation Center offers [many resources to learn about living with spinal cord injury](#) including videos and factsheets about exercise and fitness, respiratory health, and aging with SCI.

Previous issues in the Research In Focus Series have covered [exercise](#) and [diet](#) changes after SCI, [exercise and respiratory health](#) after SCI, the connection between [pressure injuries and pneumonia](#), the benefits of [alcohol counseling after SCI](#), [mobility and pain management](#), among many other topics.

[To Learn More About this Study](#)

DiPiro, N.D., Cao, Y., Krause, J.S. (2019) [A prospective study of health behaviors and risk of all-cause and cause-specific mortality after spinal cord injury](#). Spinal Cord 57, 933-941. This article is available from the NARIC Collection under Accession Number J81804.

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NARIC operates under a contract from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), Administration for Community Living, Department of Health and Human Services, contract #GS-06F-0726Z.