

Social isolation linked to biological age gap, higher mortality rate

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A new study from Mayo Clinic finds that socially isolated people are more likely to show signs of being biologically older than their age and more likely to die from a variety of causes. The research, [published](#) in the *Journal of the American College of Cardiology: Advances*, suggests that social connection plays an important role in overall physical health and longevity, and it should be addressed as a necessary part of the [social determinants of health](#).

To investigate the role of social contact in biological aging, the researchers compared the Social Network Index and AI-enabled electrocardiogram (AI-ECG)-predicted age gaps of over 280,000 adults who received outpatient care between June 2019 and March 2022. Eligible participants completed a questionnaire on the social determinants of health and had AI-ECG records independent of the study on file within one year.

An AI-ECG model developed at Mayo Clinic was used to estimate biological age, which was then compared to chronological age. [Previous research](#) shows that the AI-ECG age prediction represents the heart's biological age. A positive age gap indicates accelerated biological aging, while a negative value suggests slower [biological aging](#).

Researchers assessed social isolation using the Social Network Index, which asks six distinct multiple-choice questions related to these areas of social interaction:

- Belonging to any social club or organization.
- Frequency of participating in [social activities](#) per year.
- Frequency of talking on the telephone with family and friends per week.
- Frequency of attending church or [religious services](#) per year.

- Frequency of getting together with friends or family in person per week.
- Marital status or living with a partner.

Each question response was given a score of 0 or 1, and the total score tallies ranged from 0 to 4, representing varying degrees of social isolation.

Participants with a higher Social Network Index score—indicating a better social [network](#)—had a smaller AI-ECG age gap, and that held true across all gender and age groups. Social network status significantly influenced mortality risk. During the two-year follow-up period, approximately 5% of the participants died. Those who had low social index scores less than or equal to 1 had the highest risk of death compared to other groups.

While the participants were 86.3% non-Hispanic white, the study data point to existing health disparities. Non-white participants had higher average age gaps than their white counterparts, especially those with lower Social Network Index scores.

"This study highlights the critical interplay between [social isolation](#), health and aging," says Amir Lerman, M.D., a cardiologist at Mayo Clinic and senior author of the paper. "Social isolation combined with demographic and medical conditions appears to be a significant risk factor for accelerated aging. But we also know that people can change their behavior—have more social interaction, exercise regularly, eat a [healthy diet](#), stop smoking, get adequate sleep, etc. Making and sustaining these changes may go a long way toward improving overall health."

More information: Association Between Social Isolation With Age-Gap Determined by Artificial Intelligence-Enabled Electrocardiography,

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