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# How loneliness is damaging health

As pandemic restrictions lift across parts of the world, one unknown is the lasting effects of two years of prolonged isolation and the loneliness that came with it

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NEW YORK For two years, you did not see friends like you used to. You missed your colleagues from work, even the barista on the way there. You were lonely.



Here is what neuroscientists think was happening in your brain.

The human brain, having evolved to seek safety in numbers, registers loneliness as a threat.

The centres that monitor for danger, including the amygdala, go into overdrive, triggering a release of “fight or flight” stress hormones.

Your heart rate rises, your blood pressure and blood sugar level increase to provide energy in case you need it. Your body produces extra inflammatory cells to repair tissue damage and prevent infection, and fewer antibodies to fight viruses.

Subconsciously, you start to view other people more as potential threats – sources of rejection or apathy – and less as friends, remedies for your loneliness.

And in a cruel twist, your protective measures to isolate you from the coronavirus may actually make you less resistant to it, or less responsive to the vaccine, because you have fewer antibodies to fight it.

New York City, where one million people live alone, was for two years an experiment in loneliness: Nine million people lived in silos with smartphones and 24/7 home delivery, cut off from the places where they used to gather.

For Julie Anderson, a documentary film-maker, it sets in every day at 5pm – the hour when she would be thinking of dinner with friends, evening plans, now shrunk to watching television alone.

Stephen Lipman, a fine artist in the Bronx, feels it in the idle hours – once a cherished time to work on his art, now drained of ideas or motivation.

Ms Robin Solod, who lives alone in New York City, thought she was an unlikely candidate for loneliness.

“I was too busy schmoozing,” she said of her life before the pandemic. “Chicken soup at the Mansion Diner. We would go to Zabar’s on the West Side every week, get a bagel, sit, schmooze. Who was home? I never was home. Then, all of a sudden, everything comes to a halt.”

As pandemic restrictions finally lift across various parts of the world, one unknown is the lasting effects of two years of prolonged isolation and the loneliness that came with it.

For Ms Solod, one of the hardest blows came just before the pandemic, when she had to part with her loyal companion, a rescue Shih Tzu named Annie.

The 67-year-old has health problems that keep her in a wheelchair and, eventually, she felt she could no longer care for the dog. “Now, Annie lives out in Long Island and it’s so lonely without her,” she said.

## BIOLOGY OF AN EPIDEMIC

Loneliness, as defined by mental health professionals, is a gap between the level of connectedness that you want and what you have. It is not the same as social isolation, which is codified in the social sciences as a measure of a person’s contacts.

Loneliness is a subjective feeling. People can have a lot of contact and still be lonely, or be perfectly content by themselves.

In small doses, loneliness is like hunger or thirst, a healthy signal that you are missing something and to seek out what you need.

But prolonged over time, loneliness can be damaging not just to mental health, but also to physical health.

Even before the pandemic, the United States Surgeon-General Vivek Murthy said the country was experiencing an “epidemic of loneliness”, driven by the accelerated pace of life and the spread of technology into all of people’s social interactions.

With this acceleration, he said, efficiency and convenience have “edged out” the time-consuming messiness of real relationships. The result is a public health crisis on the scale of the opioid epidemic or obesity.

In a 2018 study by the Kaiser Family Foundation, one in five Americans said they always or often felt lonely or socially isolated. The pandemic only exacerbated these feelings.

In a recent citywide survey by New York's health department, 57 per cent of people said they felt lonely some or most of the time, and two-thirds said they felt socially isolated in the prior month.

Being lonely, like other forms of stress, increases the risk of emotional disorders such as depression, anxiety and substance abuse. Less obviously, it also puts people at greater risk of physical ailments such as heart disease, cancer, stroke, hypertension, dementia and premature death.

In experiments, lonely people who were exposed to a cold virus were more likely to develop symptoms than those who were not lonely.

#### CHIPPING AWAY

Before the pandemic, Ms Solod was not concerned about any of this. She lived alone, which did put her at higher risk of isolation, but she had always immersed herself among people.

But New York can chip away at one's social network. Friends get buried in work, move away, find lovers, change dog parks. Men are more likely to be socially isolated, but women are more likely to be lonely.

For people aged over 60 like Ms Solod, who are one of the highest-risk groups, the isolation often begins with their health.

Six years ago, she began treatment for lung cancer, then multiple myeloma. Suddenly, her life revolved around medical treatments. Yet she was still enjoying the city with her friends or her mother, who lived nearby.

A year before the pandemic, her mother died. That was a connection she could not replace. She still had lots of social contacts, but she was missing a meaningful connection that she needed. The name for that gap is loneliness.

#### LONELINESS IN THE GENES

Integrative neuroscience professor Turhan Canli of the State University of New York at Stony Brook wondered whether there was a gene that turned on or off when a person was lonely.

Past researchers had shown that loneliness, like other forms of stress, was associated with depression, inflammation, cognitive decline and heart disease.

From the Rush University Memory and Ageing Project in Chicago, he was able to get tissues from the brains of older adults who, in their final years, had answered questions about their levels of loneliness.

Prof Canli's analysis provided an insight into the physical, cellular nature of loneliness. He found distinct differences between the brains of lonely and non-lonely people.

Some genes that promote the proliferation of cancerous cells were more activated in lonely people, while genes that regulate inflammation were turned off.

"We found hundreds of genes that would be differently expressed depending on how lonely these people felt," he said. "These genes were associated with cancer, inflammation, heart disease as well as cognitive function."

He cautioned that, as with many studies of loneliness, his did not prove that loneliness caused these differences in gene expression – it might simply have been more prevalent in people who had them.

Film-maker Anderson described nights when she felt so oppressively lonely that she would not answer her telephone. "I feel that the loneliness feels so heavy, that if I call someone, I'm going to be so down that they don't want to talk to me. It's exactly what I should do. I just don't feel like it."

For Ms Solod, the pandemic brought new levels of loneliness. There was the abrupt end to casual encounters with neighbours, merchants or waitstaff.

There were the friends who used to visit, but were suddenly just voices on the telephone.

Even if life returns to the way it was before the pandemic, it is unclear how far the loneliness of the last two years will lift or what scars it might leave behind.

According to Dr Stephanie Cacioppo, an assistant professor of psychiatry and behavioural neuroscience at the University of Chicago, loneliness, like other forms of stress, may leave lasting damage.

One early indicator is life on the college campus, she said. "Now that students are back, we are hearing so much loneliness and isolation tied to disappointment. College is not what kids expected it to be."

So social isolation was reduced, but a form of loneliness has lingered, in the gap between the social life people want and what they have.