

# **Loneliness Increases the Risk for Cardiovascular Disease**

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## **ABSTRACT:**

Cardiovascular disease has been the leading cause of death for more than 20 years. Loneliness is a form of stress that releases cortisol, a hormone that raises blood pressure, causing hypertension and in turn, myocardial infarction and stroke. The goal of this scoping review was to find how much the risk of cardiovascular disease increases due to loneliness. I searched PubMed and Google Scholar using the key terms loneliness, cardiovascular disease, stroke, myocardial infarction, heart disease, and social isolation. I excluded all literature reviews, any health outcome that wasn't a cardiovascular disease, and studies that were older than 10 years old. Overall, loneliness increased the risk of cardiovascular disease by 13-42% and increased the risk of dying from it by two times. People who had a low amount of close contacts were found to be 4.9 times more susceptible to myocardial infarction and 4.1 times more susceptible to stroke. In line with the hypothesis, loneliness substantially increases cardiovascular disease risk. However, more work needs to be done to address the lack of information on loneliness' impact on physical health, teens, as well as if the duration of loneliness changes outcomes.

## **INTRODUCTION:**

Cardiovascular disease (CVD) is the number one leading cause of death in the world, and it has been since 2001 [1]. On average, it kills around 17.5 million people worldwide, but the death rate increases at an exponential rate [1]. CVD refers to any kind of disease that's related to the heart or blood vessels [2]. One's lifestyle can have a substantial impact on the risk of getting a cardiovascular disease and also the risk of dying from it; these factors of one's lifestyle are called the social determinants of health which include economic stability, education, transportation, access to healthcare, and social surroundings [1]. That means that low social support or loneliness can cause cardiovascular disease because it's a form of stress, which releases a hormone called cortisol [3]. High levels of cortisol from prolonged or high levels of loneliness can cause high blood pressure or hypertension [3], which then can cause stroke and myocardial infarction, two dangerous forms of cardiovascular disease [2].

Loneliness affects 1 in 3 people in developed countries, with 1 in 12 people experiencing very high levels of loneliness [4]. I defined loneliness as the feeling of sadness because one's social life is not what one wants it to be - even though loneliness and social isolation are sometimes used interchangeably, social isolation is not having adequate social interactions. A person who has a very active social life can still feel lonely, making the two terms not interchangeable. Loneliness affects every age group but is most common in older adults because friends and family may have passed away, they may not spend as much time with their children, and lower physical ability prevents them from going out as much. In the past, loneliness has been ignored

as a health problem and has been shoved aside in the eyes of public health officials, but especially after COVID-19 left us all isolated at home, loneliness is becoming a more prevalent problem [4], becoming the US Surgeon General Dr. Murthy's priority for the health of the US. The goal of this scoping review is to see how much loneliness increases the risk for cardiovascular disease among older adults in different countries, which will bring light to the pressing problems that loneliness induces.

## **METHODS:**

To gather the data for this scoping review, key search terms like loneliness, cardiovascular disease, stroke, myocardial infarction, social isolation, and heart disease were entered into Pubmed and Google Scholar. The inclusion criteria were articles about loneliness' connection to cardiovascular disease and original research. The exclusion criteria were articles about diseases other than cardiovascular disease, any kind of review, and articles that were more than 10 years old.

## **RESULTS:**

To measure loneliness, the studies analyzed conducted a questionnaire including questions about one's social interactions like "How often do you get to interact with family?," "How often do you go out?," "Do you feel included," and most of all, "Do you feel lonely?" These results were either put on an index or given on a numerical scale of 1-10 that later translated into a word scale like sometimes or frequently. All of these factors were then put together to find out if a participant was lonely, and the people who were identified as lonely were compared with the people who weren't identified as lonely to compare how many new cases of CVD were reported.

Studies found that people who are lonely or have poor social health are anywhere from 13-42% more likely to develop CVD, two times more likely to die from it [5,6], and 48% more likely to have a hospital admission because of CVD than people who have a good social network [7]. A study from Russia in 2013 found that 57.1% of women in this study had a low amount of close contacts (CCs), and 77.7% were found to have a low social network (SNs) [8]. Women with a low number of close contacts were 4.9 times more likely to get a heart attack and 4.1 times more likely to get a stroke, and a low social network increased heart attack risk by 2.9 times and 2.7 times for stroke [8]. It was also found that women who were married or worked hard physical jobs had a lot less understanding and knowledge about how to keep themselves heart healthy and also CVD in general, and a major amount of women in Russia fell under these categories [8]. One English study found that in a six-year time frame, 571 out of the 5397 people in the study developed a new case of CVD, which was more than 10% of the participants [9], and another English study found that 17% of their participants reported a new CVD case and 16% had a cardiovascular-related hospital visit in the almost 10 year monitoring period of the participants [7].

**Table 1: Article Summaries**

| Authors                 | Participants | Age                 | Gender        | Country                  | Results   |
|-------------------------|--------------|---------------------|---------------|--------------------------|---|
| Freak-Poli et al., 2021 | 11486        | 70+                 | Female & Male | Australia                | People with poor social health were 42% more susceptible to CVD and two times as likely to die from it.                           |
| Gafarov et al., 2013    | 870          | 25-64               | Female        | Russia                   | Women with low CCs and SNs were 4.9 & 2.9 times more likely to get a heart attack and 4.1 & 2.7 times more likely to get a stroke |
| Golazewski et al., 2022 | 57825        | 65-99               | Female        | United States of America | Women who experienced social isolation and loneliness were found to be 13-27% more susceptible to CVD.                            |
| Valtorta et al., 2020   | 5397         | 50+                 | Female & Male | England                  | 571 new cases of CVD were found out of the 5397 participants: more than 10% of the participants.                                  |
| Bu et al., 2020         | 10437        | 50+, mean age of 64 | Female & Male | England                  | 17% of participants reported a new case of CVD and 16% had a CVD-related hospital visit.  |

**DISCUSSION:**

Overall, loneliness does increase the risk for CVD by 13-42% [5], and having a low social network increases the risk for CVD by 4.5 times [8]. The cardiovascular diseases most associated with loneliness were stroke and myocardial infarction. While I was not surprised that loneliness impacts CVD, I was very surprised by the magnitude and how much the risk increases. Considering that 1 in 3 people suffer from loneliness in developed countries – 1 in 12 suffering

from it severely – how loneliness affects health, in general, should be studied more deeply, especially after seeing how much it increases the risk for CVD. I noticed that compared to other social determinants of health, not much research has been done in the past to examine the impact of loneliness on CVD, even though loneliness is a very prevalent problem.

Additionally, all of these studies were mainly done on older adults, except for Gafarov et al., 2013 which included adults 25-64 years of age [8]. While myocardial infarction and stroke are more common in older adults, everyone can experience loneliness. The stressful teenage years can be very lonely and may have an impact on future CVD outcomes. The role of social media and the sense of social belonging in teenagers in the development of CVD over time may be an area of future research.

Another piece of research that should be looked into is if there's any health difference between a person who's been lonely their whole life and a person who's been lonely only for a short period of time. Most of these studies asked if the participant felt lonely now, but not how long they've felt lonely for. Being lonely for a prolonged period of time rather than a short one and how it affects CVD could be interesting to look into because there would probably be some difference.

Overall, this scoping review provides evidence that loneliness increases the risk for CVD substantially. We can use this information to recognize the significance of loneliness in the health world and dig deeper into the devastating results of this growing feeling.

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