Low Cholesterol As A Risk Factor For Suicide

People with total cholesterol levels lower than 160 mg/dL were more likely to commit suicide than those with higher cholesterol levels. And cholesterol levels lower than 130 are associated with treatment refractory depression.

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Suffering through a depressive episode can be very difficult, and one of the great fears is that someone in the throes of depression does not see any point in continuing to live.

Early evidence of a link between low cholesterol and suicide came from the Multiple Risk Factor Intervention Trial study, a large-scale, long- term look at various health factors involving hundreds of thousands of volunteers. Data from the study was analyzed by researchers from the University of Minnesota, who found that people with total cholesterol levels lower than 160 mg/dL were more likely to commit suicide than those with higher cholesterol levels. Other studies are equally alarming:

- A 2019 study looked at 632 patients and found that “high lethality suicide attempts” were associated with lower total cholesterol and LDL cholesterol (and higher C-reactive protein) when compared with low lethality suicide attempts and controls.
- A 2008 study looked at forty men who were hospitalized due to bipolar disorder. Twenty had attempted suicide at some point in the past, and the other twenty had not. Both cholesterol and blood fat levels were lower, on average, among those who had attempted suicide.
- A paper published in the Journal of Clinical Psychiatry in the same year reported the results of an examination of cholesterol levels in 417 patients who had attempted suicide at some point, 155 hospitalized psychiatric patients who had not, and healthy controls. Results of the study suggest that low cholesterol may be associated with suicide attempts.
- The suicidal method of choice, self-inflicted fatal gun wound versus pills, for example, may also be related to cholesterol levels. A 2008 study published in Psychiatry Research compared

> nineteen people who had attempted suicide using violent methods to sixteen who had attempted to kill themselves nonviolently, as well as to twenty healthy controls. The researchers found that “violent suicide attempters had significantly lower total cholesterol and leptin levels compared with those with nonviolent suicide attempts.”

The connection between low cholesterol and suicide is highlighted in a 2004 study, which concluded that a low total cholesterol level can be used as an indicator of suicide risk. This study, involving suicide attempters with major depressive disorder, nonsuicidal depressed patients, and normal controls, found significant differences in cholesterol levels among the various groups.

The average total serum cholesterol level was 190 mg/dL among the normal controls, 180 mg/dL in nonsuicidal depressed group, and 150 mg/dL among the suicidal depressive patients. This study showed that the total cholesterol level can be used to gauge possible suicide risk (less than 180 mg/dL) and probable risk (150 mg/dL and lower).

Suicide is not the only type of violence associated with lower cholesterol levels. Homicide and other violence committed against others is also associated with low cholesterol. Swedish researchers compared one-time cholesterol measurements on nearly eighty thousand men and women, ranging in age from twenty-four to seventy, to subsequent arrests for violent crime. The researchers reported that “low cholesterol is associated with increased subsequent criminal violence.”

What’s the Cholesterol-Depression Link?

There is strong scientific evidence indicating that low cholesterol and suicide, particularly violent suicide, are linked. The vast majority of studies linking low cholesterol to depression, suicide, and violence looked at the serum cholesterol level. But what about the amount of cholesterol in the brain?

Canadian researchers were the first to examine this question in their 2007 study published in the International Journal of Neuropsychopharmacology. The researchers measured and compared the cholesterol content in various parts of the brains of forty-one men who had committed suicide and twenty-one men who had died of other, sudden causes that had no direct impact on the brain. The results were intriguing: When the suicides were categorized as violent or nonviolent, those who had committed violent suicide were found to have less cholesterol than the others in the gray matter of their brains. This was seen specifically in the frontal cortex, a part of the brain that handles “executive functions,” including processes involved in planning, cognitive flexibility, abstract thinking, initiating appropriate actions and inhibiting inappropriate actions, and selecting relevant sensory information. The frontal cortex essentially controls the ability to make good decisions.

Cholesterol is a critical precursor to many essential physiological molecules in the human body that directly and indirectly affect our moods and optimal brain function. Some researchers theorize

that low levels of cholesterol alter brain chemistry, suppressing the production and/or availability of the neurotransmitter serotonin. Cholesterol is essential for the synthesis of all steroid and sex hormones, including DHEA, testosterone, and estrogen. Cholesterol is also needed in the synthesis of vitamin D.

Clinically low cholesterol is a significant variable in the treatment and recovery from mood disorders. A simple blood test looking at total cholesterol can reflect multiple factors influencing treatment. A low cholesterol (<130) has significant implications for what is referred to as "treatment-refractory" depression. This refers to patients who have failed to recover from traditional antidepressant medications. Treatment-refractory patients often struggle with intense suicidal ideation and aggressive behavior. Often, we are able to determine that low cholesterol is genetic, as there are other members in the family who also have low cholesterol levels, despite eating a diet rich in cholesterol and saturated fats. For individuals with low cholesterol, a diet with adequate cholesterol and saturated fats is highly recommended in order to replenish cholesterol levels, although supplemental cholesterol may also be needed for many.

(Low levels of lithium, a trace mineral that we used to get from drinking water but that today is increasingly rare, especially with the surge in drinking bottled water, have also pretty convincingly been associated with both aggressivity and increased risk of suicide, so make sure to check or monitor those as well.)

There is a growing amount of research looking at the use of essential fatty acids, particularly omega-3's in psychiatry, but we often overlook cholesterol. Low levels of cholesterol and essential fatty acids are intimately linked to depression. Understanding the consequences of deficiencies in essential fats and cholesterol is important for the effective treatment of depression. Whether it is drug induced, genetic, or a result of dietary patterns, low cholesterol impairs optimal brain function and often prevents successful recovery from chronic depression.

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