

Cholesterol levels improving among US adults

October 16 2012

An analysis of nationally-representative data indicates that between 1988 and 2010 there has been a trend of declining average levels of total cholesterol, non-high-density lipoprotein cholesterol, and low-density lipoprotein cholesterol for U.S. adults overall, according to a study in the October 17 issue of *JAMA*.

"[Epidemiologic studies](#) have demonstrated that high concentrations of [low-density lipoprotein](#) cholesterol (LDL-C) and total cholesterol (TC) and low levels of [high-density lipoprotein](#) cholesterol (HDL-C) are major risk factors for [coronary heart disease](#) (CHD)," according to background information in the article. "Serum total cholesterol and LDL-C contribute to atherosclerosis and its clinical consequences. Between the periods 1988-1994 and 1999-2002, mean [average] TC and mean LDL-C declined in [adults](#). During this time, there was an increase in the percentage of adults receiving [lipid](#)-lowering medications."

Margaret D. Carroll, M.S.P.H., of the [Centers for Disease Control and Prevention](#), Hyattsville, Md., and colleagues conducted a study to examine trends in serum lipids in adults between 1988 and 2010, using three distinct U.S. cross-sectional National Health and Nutrition Examination Surveys, 1988-1994 (n = 16,573), 1999-2002 (n = 9,471), and 2007-2010 (n = 11,766). Included in the analysis were measurements of average levels of TC, LDL-C, HDL-C, non-HDL-C, and geometric triglyceride. The researchers also examined the prevalence of lipid-lowering medication use.

The authors found that average TC declined from 206 mg/dL in 1988-1994 to 203 mg/dL in 1999-2002 and to 196 mg/dL in 2007-2010. Similar trends over this 22-year period were observed in age-adjusted average TC levels for men and for women. From 1988 to 2010, there was a decreasing linear trend in age-adjusted average LDL-C levels for all adults, from 129 mg/dL in 1988-1994 to 123 mg/dL in 1999-2002 and to 116 mg/dL during 2007-2010. "Although men had a higher age-adjusted mean LDL-C level than women during 1988-1994 and 1999-2002, during 2007-2010 there was no longer a sex difference."

From 1988-1994 to 2007-2010, an increasing linear trend in age-adjusted average HDL-C levels was observed for all adults (50.7 mg/dL vs. 52.5 mg/dL). Between 1988 and 2010, a linear decline in age-adjusted average non-HDL-C level was observed for all adults. The age-adjusted geometric average triglyceride level for all adults increased from 118 mg/dL in 1988-1994 to 123 mg/dL in 1999-2002 and then declined in 2007-2010 to 110 mg/dL.

The researchers also found that from 1988 to 2010, there was an increasing trend in the age-adjusted percentage of adults taking lipid-lowering medications (from 3.4 percent in 1988-1994 to 9.3 percent in 1999-2002 and to 15.5 percent in 2007-2010. Among men and women age 50 years or older, increases in use of lipid-lowering medications of up to 35 percent were observed. "Among adults not receiving lipid-lowering medications, trends in lipids were similar to those reported for adults overall. Among obese adults, mean TC, non-HDL-C, LDL-C, and geometric mean triglycerides declined between 1988 and 2010."

"The favorable trends in TC, non-HDL-C, and LDL-C may be due in part to a decrease in consumption of trans-fatty acids or other healthy lifestyle changes, in addition to an increase in the percentage of adults taking lipid-lowering medications. They are unlikely to be the result of changes in physical activity, obesity, or intake of saturated fat," the

researchers write. They note that the intake of saturated fat as a percentage of calories did not decrease between 1999 and 2008; little progress was made from 1998 to 2008 in increasing leisure-time physical activity levels of adults; and the prevalence of obesity among adults remains high, at more than one-third of the population. The authors add that "although the percentage of adults receiving lipid-lowering medications continued to increase between 1999-2002 and 2007-2010, declining trends in TC, non-HDL-C, and LDL-C also occurred for adults not taking lipid-lowering medications."

"Further work is needed to assess simultaneously the effects of trans-fatty acids, lipid-lowering medications, and healthy lifestyle factors on TC, HDL-C, non-HDL-C, LDL-C, and triglycerides."

More information: *JAMA*. 2012;308[15]:1545-1554

Provided by JAMA and Archives Journals

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