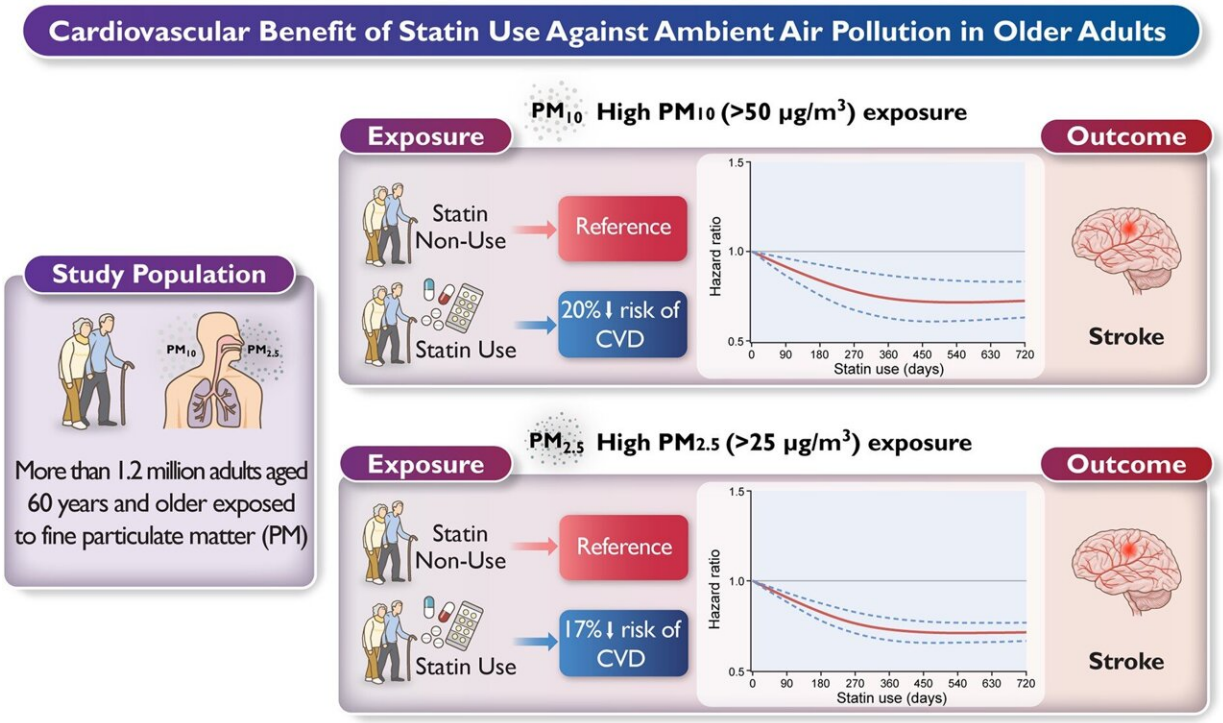
Statin prescription can reduce the risk of cardiovascular diseases against air pollutant exposure in older adults

August 9 2024



Graphical Abstract. Credit: *European Journal of Preventive Cardiology* (2024). DOI: 10.1093/eurjpc/zwae061

It has been discovered that older adults over 60 years old who are prescribed statins against air pollutant exposure can reduce the risk of cardiovascular disease, especially stroke.

By utilizing the National Health Insurance Service big data, Prof. Seogsong Jeong (co-lead author) of the Department of Biomedical Informatics, Korea University's College of Medicine, Prof. Sang Min Park of the Department of Family Medicine in Seoul National University's College of Medicine, and Principal Researcher Kyuwoong Kim of the National Cancer Center; confirmed such results after 6 years of follow-up on the effect of statin use on cardiovascular benefit of statin use against air pollutant exposure in older adults.

The work is published in the *European Journal of Preventive Cardiology*.

According to the Global Burden of Disease, cardiovascular diseases showed a prevalence of approximately 523 million cases and caused 18.6 million deaths worldwide as of 2019. In particular, the risk increases as cardiovascular function declines due to aging. Air pollutants are another major risk factor that increases the risk of cardiovascular diseases.

Statin is a drug widely used for the prevention and treatment of cardiovascular diseases such as dyslipidemia and hyperlipidemia. But its effectiveness on cardiovascular benefit against air pollutant exposure was not sufficiently studied.

The research team conducted a retrospective population-based cohort study using the National Health Insurance Service database linked to average daily PM10 and PM2.5 exposure data among 1,229,414 adults aged 60 years or older.

The follow-up period was from January 1, 2016 to December 31, 2021, and its analysis was performed by dividing the cohort into statin prescription group (prescribed for more than 90 days) and non-prescription group (not prescribed or prescribed for less than 90 days).

As a result, exposure to high level air pollutants of PM10 (>50μg/m^3)

and PM2.5 (>25μg/m^3) showed that the group prescribed statins had 20% and 17% lower risk of stroke compared to the non-prescribed group, respectively. In the case of exposure to low or medium level air pollutants of PM10 (>50μg/m^3) and PM2.5 (>25μg/m^3), the statin prescribed group showed similar risk reduction.

Such results were consistent in the analysis results that defined statin dosage as the total number of prescription days and defined daily dose (DDD). This means that prescriptions in the aging population are associated with significantly reducing the risk of stroke regardless of air pollutant exposure levels.

Also, reduction in the risk of stroke due to statin prescription showed a dose-response relationship to the risk of cardiovascular disease due to air pollutant exposure.

Prof. Jeong reported that "The results suggest that statin can be effective on preventing cardiovascular diseases against air pollutant exposure.

"We need further research on similar effects not just in the aging population but also in other vulnerable groups."

More information: Kyuwoong Kim et al, Cardiovascular benefit of statin use against air pollutant exposure in older adults, *European Journal of Preventive Cardiology* (2024). DOI: 10.1093/eurjpc/zwae061

Provided by Korea University College of Medicine