AIR POLLUTION AND DEPRESSIVE SYMPTOMS IN THE ELDERLY: THE KOREAN ELDERLY ENVIRONMENTAL PANEL STUDY (KEEPS)

Youn-Hee Lim, *Department of Epidemiology and Biostatistics, Graduate School of Public Health, Seoul National University, Republic of Korea*
Ho Kim, *Department of Epidemiology and Biostatistics, Graudate School of Public Health, Seoul National University, Republic of Korea*
Jin Hee Kim, *Institute of Environmental Medicine, Seoul National University Medical Research Center, Republic of Korea*
Sang-Hyuk Bae, *Environmental Health Center, Seoul National University College of Medicine, Republic of Korea*
Yun-Chul Hong, *Institute of Environmental Medicine, Seoul National University Medical Research Center; Department of Preventive Medicine, Seoul National University College of Medicine, Republic of Korea*

Background and Aims: Although the effects of air pollution on various diseases were well studied, few studies examined its effects on depression. This study investigated the effect of air pollution on the depression symptoms.
Methods: Authors used 569 participants who regularly joined a community elderly care center located in Seoul. The Korean version of the Geriatric Depression Scale-Short Form (SGDS-K) was used to evaluate depression symptomatology during 3-year follow-up study from 2008. Five ambient air pollutants were analyzed using Generalized Estimating Equations (GEE) to associate with SGDS-K. A factor analysis was conducted to determine which items of the SGDS-K were combined to generate a given factor.
Results: Increases of interquartile range of a 3-day moving average of PM_{10}, a 5-day moving average of NO_2, and 3 weeks moving average of O_3 were associated with increases 0.16% (95% CI, 0.04-0.30), 0.24% (95% CI, 0.07-0.44), and 0.83% (95% CI, 0.26-1.65), respectively, of SGDS-K scores. For these three pollutants, factor analysis showed that air pollution worsened emotion such as happiness and satisfaction, and increased physical discomfort such as problems with memory and less energy. However, air pollution was not strongly associated with inferiority feeling or loss of interest. Air pollution effects on depression symptoms were exerted more for female and in warm temperature.
Conclusions: This study showed increasing particulate matter, nitrogen dioxide, and ozone may deteriorate depression symptoms among the elderly. Emotion and physical discomfort were most affected by ambient air pollution.

References:

Grippo AJ. Mechanisms underlying altered mood and cardiovascular dysfunction: The value of neurobiological and behavioral research with animal models. Neuroscience & Biobehavioral Reviews 2009;33(2):171-180.
Szyszkowicz M, Willey JB, Grafstein E, Rowe BH, Colman I. Air pollution and emergency department visits for suicide attempts in vancouver, Canada. Environ Health Insights 2010;4:79-86.
Bateson TF, Schwartz J. Who is Sensitive to the Effects of Particulate Air Pollution on Mortality?: A Case-Crossover Analysis of Effect Modifiers. Epidemiology 2004;15(2):143-149 10.1097/01.ede.0000112210.68754.fa.
Park AK, Hong YC, Kim H. Effect of changes in season and temperature on mortality associated with air pollution in Seoul, Korea. J Epidemiol Community Health;65(4):368-75.
Bae JN, Cho MJ. Development of the Korean version of the Geriatric Depression Scale and its short form among elderly psychiatric patients. Journal of Psychosomatic Research 2004;57(3):297-305.