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Long-term exposure of particle matter and ozone for cancer risk according to obesity and health-related behaviors: A nationwide population-based cross-sectional study

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Long-term exposure to ambient particulate matter (PM10) and ozone (O3) has been suggested to be associated with an increased risk of cancer. However, there is little evidence on association between cancer and air pollution according to obesity and health-related behaviors. We selected 100,867 subjects from the 2012 Korean Community Health Survey and socioeconomic characteristics, health-related behaviors and previous cancer history were surveyed. Daily average concentrations of hourly measured PM10 and O3 (2003-2012) from the Korean Air Pollutants Emission Service were obtained. The risk of cancer for the interquartile increase of particulate matter and ozone was evaluated using multiple logistic regression analysis according to age, obesity and health-related behaviors. PM10 and O3 were positively associated with cancer risk in univariate analysis (PM10: Odds ratio [OR] 1.18, 95% confidence interval [CI] 1.06-1.31. O3: 1.04, 1.01-1.07). We found out the increased risk of cancer with the obese subjects aged 50 years and older. However, we did not confirm these trends in non-obese and alcohol status. About PM10, obese men, obese ever smoker, obese inactive subjects were associated with the increased cancer risk. For O3, the cancer risk significantly increased in obese adults aged 50 and older, regardless of sex, smoking, alcohol intake and physical activity. However, active subjects aged 50 and older had no significant association with cancer risk. In conclusion, long-term exposure to ambient air pollution is associated with the risk of cancer, reinforced with obesity, smoking and physically inactivity over 50 years old.

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