OBJECTIVES: Effects of air pollution parameters of sulfur dioxide (SO2) and particulate matter (PM10) values on the respiratory system were investigated.

MATERIAL AND METHODS: Data of SO2 and PM10 were obtained daily for air pollution and classified into two groups: Group I (2006–2007), coal burning years and Group II (2008–2009), natural gas + coal burning. Groups I and II were divided into two subgroups according to the months of combustion as combustible (November-April) and noncombustible (May-October). The number of patients with asthma and chronic obstructive pulmonary disorder (COPD) was recorded between 2006 and 2009.

RESULTS: There was no statistically significant difference between Groups I and II for PM10 and SO2 (p>0.05). Within the years, the values of SO2 and PM10 were statistically different between the groups defined by month (p<0.01). The number of patients in the combustible and noncombustible subgroups were found to be different for every 4 years, and the numbers of patients with COPD or asthma were not changed through the years. There was a strong correlation between PM10 and COPD (r=0.59, p<0.01) and a weak correlation between PM10 and asthma (r=0.25, p>0.05). A correlation was found between SO2 and COPD (p<0.01) but not between SO2 and asthma (p>0.05). The number of visits for COPD and asthma was statistically different between combustible and noncombustible sub-groups (X2:58.61, p=0.000; X2:34.55, p=0.000, respectively). The r² values for SO2 and PM10 for COPD patients were 17% and 24%, respectively, in contrast to 8% and 5%, respectively for asthma patients.

CONCLUSION: Air pollution is known to increase respiratory disease occurrences. With decrease in the usage of solid fuel, air pollution could be reduced and may be effective in preventing respiratory diseases.

KEYWORDS: Air pollution, respiratory system disease, PM10, SO2, asthma, COPD