Editorial

Cardiovascular disease is the leading cause of death in the World [1]. As the major risk factor for cardiovascular disease, hypertension has been identified as the most important cause of disability and the leading risk factor for death globally [2]. The causes of hypertension are complex and are related to genetic factors, lifestyle, diet structure, and environmental factors, including air pollution [3].

The short-term and long-term effects of air pollution may have detrimental effects of air pollution, the findings summarized in long-term or long-term exposure to the main air pollutants increases the risk. The results of the heterogeneity analyses showed significant heterogeneity for some analyses; however, all of the analyses showed increased odds ratios, providing strong evidence whereby both short-term and long-term exposure to the main air pollutants increases the risk of hypertension and suggesting that air pollution can promote hypertensive hemodynamic responses.

It can be hypothesized that hypertensive consequences of particulate matter exposure represent one of the most important biological mechanisms explaining the role of particulate matter as a modifiable factor contributing to cardiovascular morbidity and mortality. Similarly, unhealthy consequences of indoor and outdoor air pollution act on worldwide population, with considerable public health implications. Furthermore, both short-term or long-term exposure to some air pollutants may increase the risk of hypertension.

As a consequence of the role of hypertension as the major risk factors for premature mortality worldwide, and of the global detrimental effects of air pollution, the findings summarized in our editorial demonstrate an unequivocal relationship between particulate pollutants and blood pressure and these results have large public health repercussions. In fact, it is well established that even small changes in blood pressure levels lead to consistent decreases in stroke, coronary heart disease and overall mortality.

It must be reminded that given the enormous prevalence of hypertension and the ubiquitous and continuous nature of air pollution exposure, even a modest association between air pollution and hypertension and a small effect on raising blood pressure and/or the prevalence of hypertension, i.e. the major risk factor for mortality and morbidity worldwide, would place a large number of people at increased risk for cardiovascular morbidity and mortality and so
would have enormous implications and would be of considerable and growing global public health importance.

Both air pollution and hypertension are important worldwide public health problems. Even though a small risk of hypertension is induced by the air pollution exposure, it may bring a large population-attributable disease burden of hypertension because of the ubiquitous nature of air pollution. Therefore, if these exposures are avoided, they theoretically could reduce the incidence of hypertension; consequently, healthcare providers should be advised to educate their patients, in particular those at heightened cardiovascular risk, about the potential adverse hemodynamic effects of air pollution, in order to reduce individual exposure and subsequently moderate the effect of air pollution on public health.

In conclusion, the relationship between ambient air pollution and hypertension is a matter that strongly strikes around the clock, and so even any minimal disruption would be significantly useful. Even in case of short-term or long-term exposure to indoor and outdoor air pollution the risk of hypertension is increased. In light of this evidence, efforts to reduce exposure to air pollution should urgently be intensified, and supported by appropriate and effective legislation. Health professionals, including cardiologists, have an important role to play in supporting educational and policy initiatives as well as counselling their patients. Air pollution should be viewed as one of several major modifiable risk factors in the prevention and management of cardiovascular disease. Further research should explore the optimal methods of air pollution reduction and document the effects of this on the incidence of cardiovascular disease and related mortality in order to pressurize policy makers to intensify the efforts required for effective legislation on air pollution reduction.

References