

Air Pollution and Prevalence of COVID-19

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Editorial

There are a number of factors that may pose a great risk in increasing rates of infection of the emerging coronavirus, which first appeared in Wuhan, China. Among the most important of these factors is the weakening of the immune system, as people who suffer from a deficiency in the immune system are more vulnerable to infection with the virus in addition to the high death rate, where the weak immune system fails to address such a wild virus, so it strengthens the virus and activates it until it can control vital systems. It leads to failure in the work of the lung and consequently inevitable death. Another reason, which is more common, is the elderly, especially those who suffer from chronic diseases, where their vital organs are weak. They cannot protect the body from the virus, so it can penetrate and activate, and it may lead to death. We find that the common factor between these two factors is air pollution. Air pollution is known as it is the exposure of the atmosphere to chemicals, material particles or biological compounds that cause harm and harm to humans and other living organisms, or lead to damage to the natural environment. Scientific studies have shown that the death rate has doubled due to SARS-CoV-1 infection in places where air pollution is prevalent compared to places with lower rates. The distribution of COVID cases and death illustrate in Figure 1.

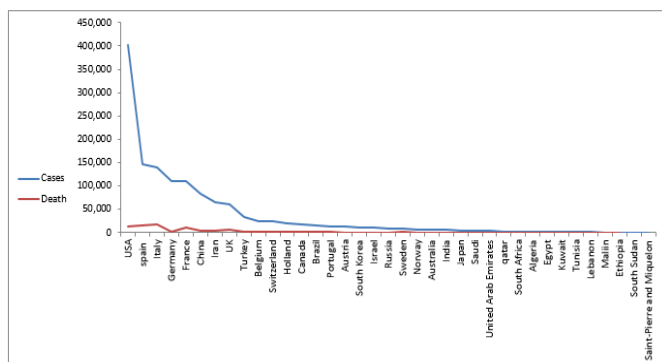


Figure 1: Diagram illustrate the distribution of COVID cases and death.

By applying this hypothesis to the emerging corona virus, we find that the high incidence of infection in areas characterized by significant pollution as a result of many industries that result in a lot of exhaust, not only industries that represent a major risk in air pollution, but also where the population relies on

burning wood. Many exhausts are generated and the chance of air pollution increases, so the infection rate increases. Global studies have shown that there is a relationship between the high death rate in the United States of America and poor air quality, as they have proven that industrial regions suffer from poor air quality due to the spread of particles with the ability to penetrate the lung, respiratory tract infection and chronic heart disease events, which is a major cause of high death rates in these regions. As is the case in Spain, where the rate of air pollution increases, due to the high percentage of NO₂ present in the air, which is produced by car exhaust and has a major impact on the high death rates in Spain.

It is noteworthy that the towns of the Northern provinces (Lombardy and Veneto Emilia Romagna), which are considered the industrial beating heart of Italy, formed the focus of the spread of Covid 19. This is due to the prevalence of P M 10 and P M 2.5 from the permitted rates and this has a negative impact on poor air quality. Studies have proven that the worsening air pollution crisis in Beijing was due to ignoring harmful emissions from a chemical called "formaldehyde". Formaldehyde or "methanol" is produced from incomplete combustion of carbon-containing materials, such as smoke from forest fires, car emissions, and tobacco smoke. Researchers say the study, released jointly by Harvard University of America, Tsinghua University of China and the Harbin Institute of Technology in China, that the main sources of formaldehyde gas emissions in eastern China are vehicles and industrial facilities such as chemical and oil refineries. The team of researchers explained that when sulfur dioxide interacts with formaldehyde, a new compound called "Hydroxyl Sulfonate Methane - (HMS)" is produced; this compound represents the basis of harmful particles formation in the sky of China, which explains the continued pollution of extreme air despite the reduction of dioxide Sulfur.

In Iran, the air pollution rate increases due to the high concentration of PM 2.5 particles in the air, due to the economic activity, especially in fuel and mines. The number of deaths in Iran has increased due to air pollution, especially in industrial areas. Air pollution in the UK has long been considered an important health problem. Many areas including major cities such as London were found significantly and regularly above legal and recommended levels. Air pollution in the UK is one of the main causes of diseases such as asthma, lung disease, stroke, and heart disease. It is estimated that air pollution causes forty

thousand premature deaths every year, or about 8.3% of deaths, while it costs about 40 billion pounds each year. And one of the studies showed that those who live in big cities, their ability to breathe is 5% less than others, and linked their cases and pollution rates in their cities. Research has shown that the air in the Kartal, Esenyurt and Fatih areas where air pollution has reached a level that can be called "unhealthy".

He attributed the air pollution to an increase in exhaust smoke, and pollutants coming out of factory chimneys, warning of an increase in respiratory diseases. Scientific reports indicated that Qatar is the second most toxic country in the world due to poor air quality. Saudi is also the second country in the Middle East to have unhealthy air quality. Air pollution is due to the high rate of PM2.5 in the air, which are small molecules that have the ability to penetrate the lung, and hence high rates of asthma, and may be a major cause of high death rates. This is

the case in the rest of the Gulf States and Cairo, where pollution rates increase as a result of traffic congestion and factories and burning fuel. Saint-Pierre and Miquelon's is one of the least air polluted countries. This is reflected in the number of people infected with the virus, as it is the lowest country in the number of infection with the virus, due to the nature of life in it and the distance from the sources of industrial costs. Saint-Pierre and Miquelon's health care system is entirely public and free. The inhabitants have traditionally earned their livelihood by fishing and by servicing the fishing fleets operating off the coast of Newfoundland. From the above we conclude that there is a relationship between infection with the virus and air pollution, and it seems that the relationship is indirect, as air pollution affects the vital organs of the body, causing them to fail, and thus be more susceptible to infection with the virus, and from there is a high death rate.