Assessing nitrogen dioxide (NO2) impact on health pre- and post-COVID-19 pandemic using IoT in India

Por: Sitharthan, R (Sitharthan, R.)[1]; Sundar, DS (Sundar, D. Shanmuga)[2]; Rajesh, M (Rajesh, M.)[3]; Madurakavi, K (Madurakavi, Karthikeyan)[1]; Raglend, IJ (Raglend, I. Jacob)[1]; Edward, JB (Edward, J. Belwin)[1]; Singh, RR (Singh, R. Raja)[1]; Kumar, R (Kumar, R.)[4]
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Abstract

Purpose - Corona Virus Disease 2019 (COVID-19) is a deadly virus named after severe acute respiratory syndrome coronavirus 2; it affects the respiratory system of the human and sometimes leads to death. The COVID-19 mainly attacks the person with previous lung diseases; the major cause of lung diseases is the exposure to nitrogen dioxide (NO2) for a longer duration. NO2 is a gaseous air pollutant caused as an outcome of the vehicles, industrial smoke and other combustion processes. Exposure of NO2 for long-term leads to the risk of respiratory and cardiovascular diseases and sometimes leads to fatality. This paper aims to analyze the NO2 level impact in India during pre- and post-COVID-19 lockdown. The study also examines the relationship between the fatality rate of humans because of exposure to NO2 and COVID-19.

Design/methodology/approach - Spatial analysis has been conducted in India based on the mortality rate caused by the COVID-19 using the data obtained through Internet of Medical things. Meanwhile, the mortality rate because of the exposure of NO2 has been conducted in India to analyze the relationship. Further, NO2 level assessment is carried out using Copernicus Sentinel-5P satellite data. Moreover, aerosol optical depth analysis has been carried out based on NASA's Earth Observing System data.

Findings - The results indicate that NO2 level has dropped 20-year low because of the COVID-19 lockdown. The results also determine that the mortality rate because of long-time exposure to NO2 is higher than COVID-19 and the mortality rate because of COVID-19 may be a circumlocutory effect owing to the inhalation of NO2.

Originality/value - Using the proposed approach, the COVID-19 spread can be identified by knowing the air pollution in major cities. The research also identifies that COVID-19 may have an effect because of the inhalation of NO2, which can severe the COVID-19 in the human body.

Palabras clave

Palabras clave de autor: Internet of things; Covid-19; Nitrogen dioxide (NO2); Health impact; Aerosol optical depth
KeyWords Plus:POLLUTION; EXPOSURE

Información del autor

Dirección para petición de copias:
Vellore Institute of Technology Vellore Inst Technol, Sch Elect Engn, Vellore, Tamil Nadu, India.
Dirección correspondiente: Sitharthan, R (autor correspondiente)

Vellore Inst Technol, Sch Elect Engn, Vellore, Tamil Nadu, India.

Direcciones:

[1] Vellore Inst Technol, Sch Elect Engn, Vellore, Tamil Nadu, India

[2] Univ Chile, Fac Ciencias Fis & Matemat, Dept Fis, Santiago, Chile

[3] Sanjivani Coll Engn, Dept Comp Sci, Kopargaon, India

[4] Natl Inst Technol, Dept Elect & Instrumentat Engn, Nagaland, India

Direcciones de correo electrónico:sithukky@gmail.com; dshanmugasundar@gmail.com; rajesmano@gmail.com; karthikeyanfun@gmail.com; jacobraglend.I@vit.ac.in; jbelwinedward@vit.ac.in; rrajasingh@vit.ac.in; rajagopal.kumar@nitnagaland.ac.in

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