



AIR POLLUTION AND ITS IMPACT ON HEALTH STATUS

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ABSTRACT

We are facing severe problems due to air pollution and other factors. Due to increase in the number of vehicles, industries etc and other waste are responsible for increasing the pollution level. The main cause of exposure to polluted atmosphere has been found to cause various diseases. Studies related to quality of air have been performed. During this study, the concentration of certain pollutants i.e. SPM, NO_x and SO_x in air at different location in India, it was found out that there is direct correlation between higher percentage of these pollutants in air with various health disorders like asthma, cardiological problems, diabetes etc. In this paper, the study and interesting finding regarding the impact of these pollutants on diabetic patients are discussed.

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INTRODUCTION

When any foreign material entered in the atmosphere it disturbs the whole chemistry of environment [1]. Once it will disturb that causes several problems related to health for this few sources are responsible like primary sources. The primary sources are the main cause of worsening the air quality in urban area unit as are principally vehicle traffic, industrial sources and power plants [2]. During morning and evening office time we found that the congestion of traffic pollutes the atmosphere to a bigger extent. Vehicle areas are the prime supply of pollution in urban areas and these air pollutants from vehicles received a lot of attention than ever before with the continual increase of car demand worldwide in recent decades [3].

Gases and particulate emissions from vehicles add pollution to atmosphere drastically. The major air pollutants emitting from vehicular traffic are oxides of nitrogen (NO_x), carbon monoxide (CO), hydrocarbons (HCs), lead (Pb) and sulphur dioxide (SO₂) and particulate matter (PM) [4]. Due to discharge of excessive amounts of pollutants from vehicle traffic, the environmental air quality is deteriorated continuously. According to the estimation of United Nations, 4.9 billion inhabitants out of 8.1 billion will be living in cities by 2030. The air quality is a significant determinant of human health related to air as well as water pollution [5]. Ambient air quality is additionally called pollution index that measures purpose to grasp the modification in the level of pollutants

from commonplace level and helps to grasp the effects on human health because of increase in pollution [6].

For calculating sub-indices, the mathematical equations were developed by considering health criteria of the Environmental Protection Agency (1998) and Indian NAAQS [8]. Lucknow has insufficient transport infrastructure. Due to increasing urban population, use of personalized vehicles mainly two wheelers and intermediate public transport are growing at a rapid rate. Due to encroachment at the parking areas and additionally at street places the traffic flow becomes restricted and leads to a lot of emission of pollutants. In most part of city, due to bad quality of road surface and unavailability of traffic rotaries and light signals at the majority of the intersections has also increased the emission of pollutants in the environment.

The present study mainly emphasizes on oxides of nitrogen, sulphur dioxides and suspended particulate matter to measure the air quality due to vehicular emissions. The objective of present study is primarily to measure the air quality index of different zones to evaluate the level of pollution and health concerns of the people living in that zone by measuring the concentration of pollutants viz. NO_x, SO₂ and Suspended Particulate Matter in the same and put it on equation to evaluate the air quality status. Especially the quality of air related to diabetes.

MATERIAL AND METHODS

For the measurement of air quality index firstly we selected six cities and 100 test subjects on the basis of their pattern of living style and pollution level. The different identified locations are also shown in Table

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1&2. For measuring the air pollution in urban areas Air Quality Index (AQI) or Pollution index (PI) were developed.

RESULTS

According to our study we found that the pollution index effects on human health. As AQI increased the number of diabetic patients increases. We monitored different cities like Ghaziabad, Kanpur, Lucknow, Delhi, Faridabad and Varanasi were the level of AQI in between 350 to 438. In the same way we studied the AQI of different areas in Lucknow. The AQI were in between 286 to 407 and permissible standard limit should be 60 as per national ambient air quality. If the limit is above 60 then the number of diabetic patient will increase. This data is represented in fig 1 and 2.

Table 1 AQI index and percentage of diabetic patient in different cities

CITY	LEVEL	Diabetic patients(%)	AQI($\mu\text{g}/\text{m}^3$)
GHAZIABAD	Severe	10.8	438
KANPUR	Very poor	9.65	376
LUCKNOW	Very poor	9.35	388
DELHI	Severe	10	409
FARIDABAD	Severe	11	438
VARANASI	Very poor	9.25	350

Table 2 AQI index and percentage of diabetic patient in different areas of Lucknow

AREA	LEVEL	Diabetic patients(%)	AQI($\mu\text{g}/\text{m}^3$)
ALIGANJ	Severe	10	407
TALKATORA	Very poor	9.8	393
LALBAGH	Very poor	8.4	323
NISHATGANJ	Very poor	6.8	286

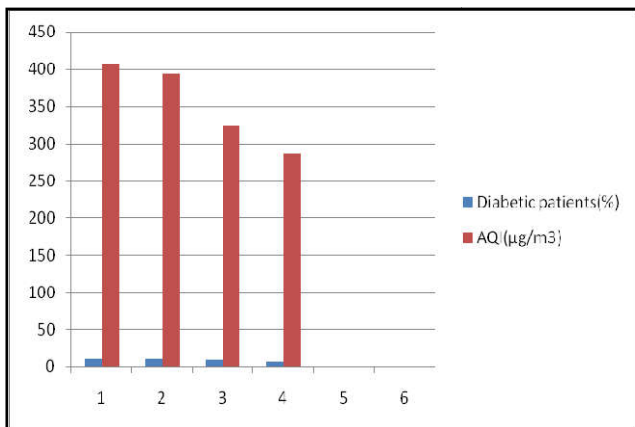


Figure 1 Graph between AQI and diabetic patients

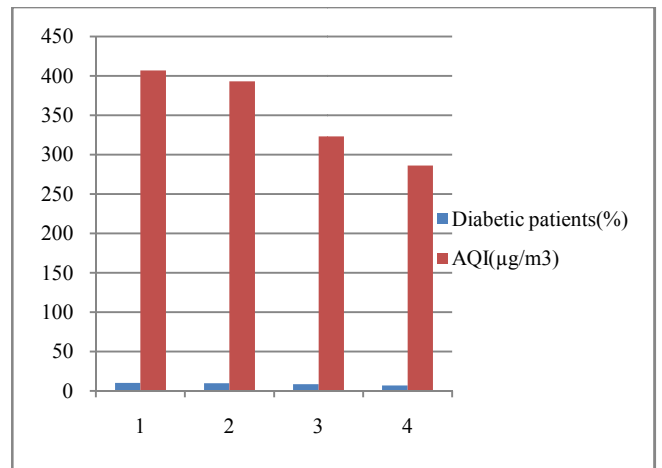


Figure 2 Graph between AQI and diabetic patient in Lucknow

CONCLUSION

As the level of pollution rises in the cities the number of diseases also increases. We found that asthma, cardiac, lung cancer etc are arises due to air pollutants according to our results we saw that if the pollution index is above 60 that will be major cause of diabetes.

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