

TO STUDY THE ASSESSMENT OF SOME DIFFERENT TYPES OF WATER-BORNE DISEASES IN JHARKHAND REGION

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ABSTRACT

In addition to the increasing number of research conducted in India over the past few decades on the health impacts of household and ambient air pollution, there are now methods that are widely accepted for estimating the health consequences in India based on studies conducted elsewhere. Similar methods, which are based on evaluations of exposure-response relationships, are frequently used in policy for a variety of environmental health concerns, such as those in water, hazardous chemicals, occupational contaminants, etc. It is now widely acknowledged that exposure to ambient and home air pollution has effects on ischemic heart disease, stroke, cataracts, and lung cancer in addition to chronic and acute respiratory outcomes in men, women, and children. The evidence for poor pregnancy outcomes, TB, asthma flare-ups, various malignancies, and cognitive impairments is also growing. In public health programmes for both communicable and non-communicable diseases, air pollution must now be taken into account, just like cigarette smoking, which has the same set of negative effects.

KEYWORDS: *Environmental Health, Hazardous Chemicals, Occupational Contaminants, Malignancies*

1. INTRODUCTION

The twentieth century has witnessed rapid technological advancements in all most all the spheres affecting the quality of life. One of the out-come of the technological advancements is a positive impact on human health, leading to increased life span due to modern medicines and population explosion. The world's population is increasing around 81 Million every year. The pace of growth has come down a little since the 1960s, but according to United Nations projections it remains fast enough to push the world's population above 9 billion by 2050, from around 6 billion today (World Population Prospects, the 2012 revision of United Nations). Most of that growth will be in developing countries. The proliferation of the population will be followed by

the increased demand on natural resources. The world's supply of natural resources is finite and already scarcity related issues like water, food are on the rise in some regions of the World. The exploitation of the precious natural resources in the name of development to cater the needs of the modern society and that of the proliferating population has indeed resulted in an unsustainable growth and release of various by-products and wastes into the atmosphere. Environmental pollution and degradation know no frontiers and are becoming even more international in scale. It is apt to recollect the words of the father of the Nation 'Mahatma Gandhi' that, "Nature has enough for every ones needs but not for greed". One of the by-products of the development is release of waste products into air, water and soil. The industrialization, urbanization and population growth all help to explain the developing world's growing environmental challenges. The development and the progress for the last two centuries especially due to Industrialization were masked by the gases pollutants released into the atmosphere, threatening the progress achieved. The pollution thus, will be the major challenge for the future generations. The development whether it is industrial, housing, urban sprawl or implementing new farming techniques has resulted in air pollution, water pollution or soil contamination.

2. OBJECTIVES OF THE STUDY

- 1) To study the nature, extent and dimension of ambient air degradation in Jharkhand with reference to selected cities
- 2) To develop preventive and corrective measures

3. RESEARCH METHODOLOGY

3.1 METHODOLOGY

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically.

3.2 Research design

The Research Design adopted in the study was a combination of descriptive, hypotheses testing and evaluative in nature and character.

3.3 Research purpose

The goal of this study is to describe the Character Ration and Assessment of Some Gases Pollutants in the Natural Environment. The researcher will investigate its effects in order to forecast Character Ration and Assess Some Gases Pollutants in Nature. As a result, the goal of this study is to shed light on the notion of character ration and the assessment of some gaseous pollutants in nature.

3.4 PROCESSING AND CONSOLIDATION OF DATA

The collected secondary and primary data were separately processed; appropriately consolidated; suitably classified; and meaningfully made into relevant tables availing computer facilities so as to enable the scholar to draw inferences and help herself in answering the objectives of the study.

4. RESULTS AND ANALYSIS

Data was obtained from the city's top public hospitals' Integrated Disease Surveillance Program (IDSP) to determine the city's health profile. The health profile is shown in the table, with a number of patients suffering from various ailments.

Sl. No.	Name of Disease	Number of cases admitted
1.	Cardiovascular Disease	2644
2.	Mental health and depression	4919
3.	Chronic Obstructive Pulmonary Disease (COPD)	11543
4.	Tuberculosis	1707

According to IDSP, there were 20,813 instances (patients) registered in major public hospitals, all of them were suffering from various illnesses. Chronic Obstructive Pulmonary Disease (COPD) has the highest number of hospitalised patients (11,543), followed by mental health and depression (4919), cardiovascular disease (2644), and tuberculosis (2644). (1707). This finding indicates that water pollution is the most serious problem in, followed by air pollution and other issues. Diarrhoea, jaundice, malaria, filariasis, infectious hepatitis, gastro-intestinal, influenza, dysentery, cholera, and other diseases are common during the rainy season. During the rainy season, unsanitary conditions in waterlogged areas provide an excellent environment

for the spread of many diseases. Furthermore, contaminated water supplies in a few areas contribute to the spread of these diseases. Water supplied through some time old and faulty water pipe lines is contaminated as a result of sewer pipe line leaks, resulting in gastrointestinal problems. According to studies, the majority of water-borne diseases in India occur during this time. Data was obtained from the record department of the office of the Chief Medical Officer (CMO) and other key hospitals in the Jharkhand region to determine the temporal fluctuation of water-borne illnesses. According to the data in Table 4.1, a high number of patients were registered for treatment in hospitals for various ailments. In 2015, a total of 6,502 people experienced issues related to waterborne illnesses. This number has steadily risen, reaching 6,653 patients in 2016.

TABLE 4.2:
INCIDENCE OF WATER-BORNE DISEASES IN JHARKHAND REGION

Year	NAME OF DISEASE						
	Gastrointestinal infection	Jaundice	Diarrhoea	Typhoid	Malaria	Dengue	Total
2010	2340	1541	1675	17	922	7	6502
2011	1943	1654	1945	16	1034	61	6653
2012	2145	1742	2245	25	1240	35	7432
2013	1680	1921	2574	11	1347	12	7545
2014	3035	2123	2347	23	1657	20	9205
2015	7380	2189	4052	56	1152	9	14838
2016	8350	2432	4278	34	1413	79	16586

Source: Record Section of CMO office, OPD registers of Major Hospitals and Nursing Homes.

In 2016, the biggest number of patients in various hospitals were suffering from gastro-intestinal disease (8350 patients), according to Table 4.2. Diarrhoea (4278 cases), jaundice (2432 patients), and malaria were the next most common illnesses (1413 patients). In addition, life-threatening fevers such as typhoid and dengue have been detected in the city. In 2016, 34 people had typhoid fever and 79 had dengue fever. The prevalence of jaundice is likewise on the rise, as seen in Table 4.2. Malaria, typhoid, diarrhoea, and dengue fever, among other diseases, have shown a similar tendency. However, due to increased maintenance of municipal services in the region, the growth rate of patients suffering from water-borne diseases is low.

4.1 INCIDENCE OF AIR-BORNE DISEASES

An attempt has been made to investigate the occurrence of air-borne disease and its spatial pattern in this study. This information was gathered from many locations throughout the cities. During the study, residents reported a slew of issues related to air pollution. Respiratory disease, asthma, common cold, whooping coughs, acute respiratory, bronchitis, eye irritations, and other airborne ailments are frequent in the Jharkhand region. The increasing level of congestion, inadequate ventilation, and high accommodation density in the older parts of the city, poor economic conditions of slum and squatter dwellers, and rising levels of air pollution, particularly in areas with narrow roads and streets, are all factors that contribute to a higher prevalence of respiratory problems. Because the silt collected from drains during cleaning is dumped by the roadside for days, people in Jharkhand routinely inhale air contaminated with germs and dangerous microorganisms. Silt is distributed all along the dumped sites due to traffic and pedestrian movement, and as it dries, dust particles and smoke generated by coke used in petha businesses combine with ambient air, causing various respiratory ailments. Silt is not removed right away since it is difficult to carry in a moist state. When dust particles are inhaled for an extended period of time, they might induce bronchitis, fungal infection, and lungs weakness. When compared to vehicular pollution, these dust particles from drain silt are more damaging to human health. Organic materials and dangerous germs are present in such dust particles. Aside from that, there has been a significant increase in the amount of dust in the ambient air. The main causes of rising RSPM (Respiratory Suspended Particulate Matter) and SPM (Suspended Particulate Matter) levels in the ambient air are road digging for various purposes, an increase in the number of motor vehicles, an increase in the number of building construction works, narrow lanes, and tall buildings in old city areas. Increased RSPM concentrations are also related to the deposition of unsaturated hydrocarbons in the atmosphere as a result of frequent traffic congestion. During traffic bottlenecks, the engines were unable to completely burn the oil, resulting in the release of unsaturated hydrocarbons. People experience suffocation, unease, and headaches as a result of it.

TABLE 4.3 :**INCIDENCE OF AIR-BORNE DISEASES AMONG RESPONDENTS IN JHARKHAND REGION**

Sl. No.	Major Disease	Percent
1.	Asthma	29.8
2.	Tuberculosis	7.3
3.	Common cold	42.8
4.	Pulmonary Diseases	28.7
5.	Allergic problem	37.5

6.	Eyes irritation	58.0
Source: <i>Personal Field Survey,</i>		
<i>Note: 250 Respondents were interviewed for the purpose.</i>		

250 people were questioned in depth to learn about their reactions to the effects of air pollution on human health. Table 4.3 shows the responses to the question "Have you ever been exposed to an airborne disease?" According to the examination of the data, the most prevalent cause of eye infection and irritation (58 percent) is automotive exhaust emissions, followed by the common cold (42.8 percent). The common cold is more common in the winter, when gaseous contaminants are at their highest levels. Higher concentrations of airborne allergens such as aerosol, SPM, RSPM, NO₂, SO₂, and others cause respiratory problems, particularly viral respiratory infections. Poor ventilation in residences and concentration of industrial activity near industrial units revealed a significant occurrence of respiratory problems in the city's congested and older areas. An thorough survey was conducted in several zones of the Jharkhand region to determine the spatial distribution of air-borne illnesses. The distribution of airborne infections by zone is shown in Table 4.3.

TABLE 4.4					
PREVALENCE OF AIR-BORNE DISEASES AMONG RESPONDENTS IN DIFFERENT ZONES IN JHARKHAND REGION					
Zone	Air-borne diseases (%)				
	Respiratory Disease	Asthma	Bronchitis	Common Cold	Others
Ranchi	25.5	10.0	22.2	17.7	18.9
Ramgarh	9.8	11.4	17.2	8.3	16.0
Chirkunda	21.2	21.4	12.0	18.0	10.7
Dhanbad	9.8	13.4	7.6	16.3	12.5
Jamshedpur	8.8	7.0	8.4	8.2	7.6
Source: <i>Personal Field Survey, 2014</i>					
Note: <i>250 Respondents for each response.</i>					

The incidence of respiratory sickness is highest (25.5 percent) in Ranchi, followed by Chirkunda, out of the total 250 families surveyed. This is owing to significant traffic congestion and commercial activities (21.2 percent). It is attributable to high levels of SPM over the permissible limit, as well as SO₂ and NO_x. The highest incidence of asthma is recorded due to significant traffic congestion and commercial activity.

Bronchitis was determined to be the most common airborne disease among respondents. The high concentration of SO₂ is the main cause of the high incidence of bronchitis in this zone, despite the fact that no one has ever had bronchitis. During the winter, when gaseous pollutants are at their highest, the common cold is more common. Because of the higher concentration of air pollution, Chirkunda had the highest percentage of people affected by the common cold (18%). Jamshedpur has the lowest percentages of respondents suffering from a common cold (8.2). Other than airborne infections, the majority of responders have experienced problems.

Table 4.4 shows that due to high concentrations of automobile exhausts in these areas, the highest percentage of other disease (21.2%), such as eye irritation, pulmonary disease, allergic disease, tuberculosis, and so on, is found in these areas, while the lowest percentage of other disease (1.5%) is found in the Jharkhand region zone.

4.2 PREVALENCE OF WATER- BORNE DISEASES AMONG RESPONDENTS

Most water-borne diseases, including gastroenteritis, cholera, diarrhoea, jaundice, malaria, dysentery, typhoid, worm infection, and viral hepatitis, are caused by contaminated water. In comparison to other regions, the incidence of infectious diseases in Southeast Asia is very high, according to the World Health Organization, owing to poor drinking water quality. It is common knowledge that polluted water and food are responsible for a large proportion of life-threatening and health-threatening diseases. In addition, in order to determine the impact of water pollution on human health, the question "How does water pollution influence your health?" was posed, and the responses were tallied (Table 4.4). It's also worth noting that respondents didn't just say they were afflicted by one sort of ailment; they also said they were afflicted by multiple diseases. Due to various responses, responses to the effects of water pollution on human health encompass the whole number of samples (250).

Water Born Disease	Number	Percent
Gastrointestinal	371	53.0
Jaundice	271	38.7
Diarrhoea	265	37.9
Typhoid	195	27.9
Malaria	190	27.1
Dysentery	327	46.7

Worm infection	347	49.6
Source: <i>Personal Field Survey, 2016</i>		

The majority of respondents (53%) said that gastrointestinal problems are the most serious concern for city dwellers as a result of drinking contaminated water in the city, followed by 49.6% who were infected with worms. About 46.7 percent of respondents said they had dysentery, while 38.7 percent said they had jaundice, followed by diarrhoea (37.9%), typhoid (27.9%), and malaria (27.1%). Water-related disorders or ailments are detected in about 80% of all outdoor patients in hospitals, nursing homes, and clinics. Inadequate water supply has a significant impact on the facilities for disposing of human excreta, resulting in a slew of dreaded diseases. Water tainted with nitrate, fluoride, chloride, and other contaminants can also cause waterborne illnesses. Every year, a substantial number of individuals in India succumb to water-borne ailments. Typhoid, jaundice, gastro-intestinal, diarrhoea, malaria, dysentery, and other diseases are also frequent in Jharkhand. Surface water is the primary source of water in the city. The river Yamuna is the city's only surface water supply, entering from the north-east corner, flowing south for a short distance before turning left. The city's drinking water is contaminated with chemical contaminants, according to a chemical examination of ground and surface water used for supply. Water supplies have a higher bacterial count than the allowed criteria, according to an investigation of biological properties of water. In addition, poor maintenance of water pipelines and sewerage systems results in the contamination of water sources with undesired chemicals and bacteriological pollutants.

5. CONCLUSION

Environmental quality has become subordinated to development aspirations in our pursuit for rapid urban and industrial growth throughout the years. Due to widespread land degradation, water pollution, air pollution, noise pollution, inappropriate solid waste management, mushrooming slum expansion, and population explosion, the country is now progressively moving towards permanent environmental damages. The current administrative and institutional framework is too weak and ineffective to deal with the task of environmental protection, which poses a threat to our fundamental existence. As a result, a new environmental attitude is required to face the challenge. Businesses in the twenty-first century face a strategic challenge in environmental planning and management. People's health, safety, and security, as well as the environment's, have become litmus tests for good citizenship. Environmental challenges are not solely scientific, but also require planning and administration. They are a part of the company's vision, mission, and strategy, all of which must be well-planned in order to stay competitive.

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