

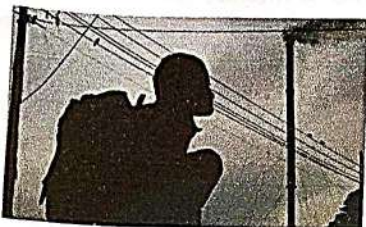
LUNG CANCER CAPITAL OF INDIA-KOLKATA A BREF ANALYSIS

POLLUTION WATCH

Cancer, lung ailments are on the rise in Kolkata. Yet the city is doing little to curb air pollution

It has the highest age-adjusted incidence of lung cancer among major Indian cities and 4 out of every 10 persons suffer from obstructive airways diseases.

Guruvinder Singh
May 16, 2019 · 01:30 pm



A schoolboy watches as smoke is emitted from a chimney at a factory in Kolkata. | Reuters

THE TIMES OF INDIA

Kolkata: '13 kids has perennial cough, nasal block due to air pollution'

1 week ago



THE TIMES OF INDIA

Poor air quality behind more than half of lung cancer cases in Kolkata, say experts'

07 Feb-2022



myKolkata The Telegraph

Bengal logs rise in lung cancer cases

08-Oct-2021



Health

Air Pollution Increasing Premature Death In India Tips To Avoid The Risk |...

4 weeks ago



THE TIMES OF INDIA

This story is from February 07, 2022

Poor air quality behind more than half of lung cancer cases in Kolkata, say experts

Krishnendu Bandyopadhyay | TNN | Updated: Feb 7, 2022, 11:09 IST



BASANTI DEVI COLLEGE

NAME: ROHINI CHANDA

CU. ROLL NUMBER: 203041-11-0054

CU. REGISTRATION NUMBER: 041-1211-0282-20

SUBJECT: Environmental studies (AECC-2)

DEPARTMENT: STATISTICS

SEMESTER: SECOND

ACKNOWLEDGEMENT

I *Rohini chanda*, student of Statistics department, Basanti Devi College, first year second semester, would like to express my special thanks to our principal ma'am Indrila Guha.

I would also like to express my gratitude to our EVS teacher Dr. Udita Chatterjee ma'am who gave me the golden opportunity to do this wonderful project on the topic **Kolkata-The Lung Cancer Capital of India** which also helped me in doing a lot of research and I came to know about so many new things.

Lastly, I want to thank our HOD Rusati Sen ma'am, Ardhendu Banerjee Sir, Dithi Bhattacharya ma'am, Joydeep Basu Sir and Soumita Modak ma'am who have always been there to help us and support us. I am really thankful to them.

DECLARATION

I, the undersigned, *Rohini Chanda*, student of second semester, statistics department, Basanti Devi college, declare that the work embodied in the project work hereby, titled, **Kolkata-The Lung Cancer Capital of India** forms my own contribution to the work and has not been previously submitted to any other journal or student's work.

SIGNATURE:

DATE OF SUBMISSION: 14.05.22

ABSTRACT

Now a days cancer cases are rising all over the world alarmingly and the third world countries like India share a great percentage of that. Among various cancers, lung cancer contributes the major percentage (after breast cancer) in India. Observing the major increment and contribution in lung cancer cases **Centre for Science and Environment** named Kolkata as **the lung cancer capital of India**. The purpose of the project is to discuss and analyse why Kolkata became the lung cancer capital, what are the causes and how alarming it is. Various news article, medical journal and doctors' interviews are the key documents which provided a clear vision towards the problem's significance. Oncologists in Kolkata said, air pollution, along with smoking, is a major factor for the high prevalence of lung cancer in the city and other parts of the state. NGOs, environmentalists, social activists are coming forward to make people aware that air pollution has an insidious and disastrous effect on our health and quality of life.

CONTENT

TOPIC	PAGE NO.
ABSTRACT	1
INTRODUCTION	2
OBJECTIVE	3
WHY KOLKATA IS THE LUNG CANCER CAPITAL OF INDIA?	4
RISING LUNG CANCER CASES:AN EFFECT OF INCREASING AIR POLLUTION	6
AN ARTICLE: PRESS CONFERENCE: AIR POLLUTION IN KOLKATA	10
EVALUATION	13
LIMITATIONS	15
CONCLUSION	16
GLOSSARY	17
REFERENCE	18

INTRODUCTION

“More and more people continue to flood doctors’ chambers everyday with respiratory complains. A sizable percentage of these patients are diagnosed with disorders like asthma, COPD, acute bronchitis, fibrosis, recurrent chest infections etc.” says the study conducted by NAABI a nodal organisation offering comprehensive treatment for chronic airway disorders.

It is no secret that severe air pollution is damaging the health of people living in Kolkata and its outskirts. Doctors at the National Allergy Asthma Bronchitis Institute have found in ongoing research that incidence of obstructive airway diseases and Chronic Obstructive Pulmonary Disease has doubled to 40% in the past five years. They claim that 4 out of every 10 persons in the city are suffering from obstructive airways diseases.

“The bronchoscopy test shows that airway passages of patients are highly congested and full of mucopurulent secretions,” explains **Dr AG Ghoshal**, the institute’s medical director. “We can now confirm that air pollution has been directly leading to increases in mortality. The situation is worse in the congested areas of Kolkata.”

A comparison of age-adjusted incidence rates of lung cancer in India’s major cities also shows Kolkata at the top.

According to an article published in *The Telegraph*, Kolkata has been nicknamed the "lung cancer capital of India". In the World Health Organization's (WHO) ranking of cities by air pollution, Kolkata ranks 25th among a total of 1100 cities.

Kolkata is already infamously known as the Lung Cancer Capital of the country and reports claim that breathing the polluted air, is as bad as smoking cigarettes. Raising the red alert – eminent Doctors, Air quality Experts and Environmentalists came together under the banner of Kolkata Clean Air. They shared alarming data and facts on the issue at a press conference - claiming there is a Health Crisis unfolding in the city of Joy due to Air Pollution.

WHY KOLKATA IS THE LUNG CANCER CAPITAL OF INDIA?

Centre for Science and Environment named Kolkata as the lung cancer capital of India.

The comparative study on lung cancer is part of the National Cancer Registry Programme conducted by the Indian Council of Medical Research. In Calcutta, Chittaranjan National Cancer Institute (CNCI) is one of the host institutes of the programme.

In a 6-years long study completed in 2007, the (CNCI) found that 70% of residents of Kolkata suffer from respiratory diseases, like lung cancer, dyspnea and asthma, caused by air pollution. According to the CNCI study, Delhi had the highest number of new lung cancer patients in 2005 — 13.5 per one lakh people. The national capital was followed by Chennai (12.4) and Calcutta (11.9). But in 2006-07, Calcutta topped the list with 18.4 cases of lung cancer per 100,000 people.

“The data collected in 2008 reveal an 11.09 per cent increase in new cases compared with the previous year. We fear Calcutta is still on top of the list,” said Karabi Dutta, the head of the department of epidemiology and bio-statistics at CNCI.

According to data collected in 2010 by the Central Pollution Control Board (CPCB), Kolkata, along with Delhi, is among the worst affected Indian cities when it comes to air pollution. Between 2009 and 2011, the highest number of lung cancer cases in India were reported from Kolkata, Delhi and Mumbai. According to a report prepared by the Centre for Science and Environment (CSE), among the number of cancer cases reported between 2009 and 2011, the most frequent cases were of lung cancer with a share of 12%. According to an article published in *The Telegraph*, Kolkata has been nicknamed the "lung cancer capital of India."



Oncologists in Kolkata said air pollution, along with smoking, is a major factor for the high prevalence of lung cancer. SOURCE: The Telegraph

Bengal will have more than 13,000 new cancer cases every year by 2025 compared with the figures in 2020, data published by the Indian Council of Medical Research shows. Twenty per cent of the men among the new cancer patients in Bengal have lung cancer. Among women cases of lung cancer is rising too, breast cancer is most prevalent, while 6.6 per cent suffer from lung cancer.

Oncologists in Kolkata said air pollution, along with smoking, is a major factor for the high prevalence of lung cancer in the city and other parts of the state.

While 1,08,394 new cancer cases were diagnosed across Bengal in 2020, the figure is likely to go up to 1,21,639 in 2025, according to projections by the Profile of Cancer and Related Factors, Bengal, released by the National Centre for Disease Informatics and Research (NCDIR) of the ICMR in Bangalore. The projection was released by the end of September and is based on data collected between 2012 and 2015 for the population-based cancer registry.

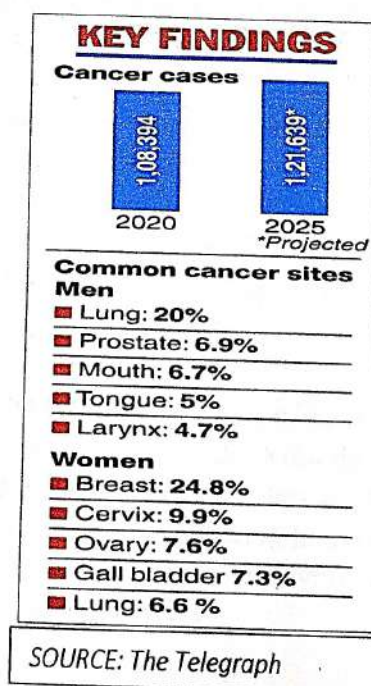
“There are a lot of cancer cases due to smoking and chewing tobacco,” said **Shyamsundar Mondal**, principal investigator of the cancer registry in Bengal.

According to Mondal, the prevalence of lung cancer among men was around 17 per cent in the previous report of the registry, published in 2016.

“Lung cancer has always been the leading cancer site for patients in Kolkata and Bengal. But what is alarming is the rise in its percentage,” said Mondal, who is the head of epidemiology and bio-statistics at CNCI.

“Although tobacco is still the main reason for lung and oral cancer, air pollution and carbon emission by vehicles are contributing to the rise,” said **Gautam Mukhopadhyay**, secretary of **Bengal Oncology Foundation** that works for cancer awareness.

Mohandas Mallath, senior consultant oncologist at **Tata Medical Center**, said some of the important factors for the rise in cancer cases were the rise in life expectancy and better techniques to diagnose the disease. “A lot more people from the economically weaker section now come to hospitals because of the insurance scheme coverage,” said Mallath.



RISING LUNG CANCER CASES: AN EFFECT OF INCREASING AIR POLLUTION

"Air pollution is the major cause, followed by smoking, for the sharp rise in lung cancer cases in the city," said CNCI director Jaydip Biswas.

According to data released in 2009 by the Scientific and Environmental Research Institute, atmospheric suspended particulate matter (SPM) in Kolkata was 511. This made Kolkata the most polluted metropolitan city in India, followed respectively by Mumbai, Delhi and Chennai.

Severe air pollution is damaging the health of people living in Kolkata and its outskirts. Studies conducted by government as well as private organisations have found harmful pollutants wreaking havoc on the city's air parameters.

CAUSES:

- Research has detailed how Kolkata experiences unhealthy air because of high suspended particulate matter (SPM) and respirable particulate matter (RPM), taking into account various studies that agree that 50% of the total SPM comes from traffic emissions and 48% from industries.
Coal-fired boilers were identified as major contributors for increasing the particulate matter in air. The lack of properly demarcated industrial zones in a dense, heterogeneously populated city, absence of periodic upgradation of machinery, ill maintained vehicles, lack of awareness and absence of strict enforcement of laws are listed as the key reasons behind the rise of particulates in Kolkata's ambient air.
- Kolkata's winter, however mellowed it might seem, brings no relief to our breathing. The NAABI study found a heightened pollution level in winter. The main reasons behind the decline in air quality during the colder months are temperature inversion, dense fog, low wind speed, and high congestion. All these make the air heavy and sluggish, allowing the pollutants to linger.
The brown haze that hangs over the city and which we mistake for fog is actually a shroud of nitrogen dioxide gas from vehicle emission. Coal fires and kaata tel the noxious mix of illegal fuels is also a killer.
"Unable to afford better means of keeping themselves warm, a majority of Kolkatans take recourse to fires, burning leaves, dried wood and tyres. No wonder a large number of patients visit doctor with respiratory complaints during this season," said Ghoshal.
- A key factor behind Kolkata's abysmal air quality is its flawed waste management system. The Waste Management Rules, 2016 divide waste in six categories and lay down stringent rules for disposing each but they are hardly followed. Tonnes of waste without segregation continue to be dumped in landfills such as the one in Baranagar. The dumps continually catch fire and the billowing smoke injects more toxic contaminants to the already polluted air.

- Vehicular emissions contribute nearly 60% of air pollution in mega cities, according to Somendra Mohan Ghosh, an auto emissions consultant. In Kolkata, he says, about 99% of commercial vehicles run on diesel. There are around 6 lakh vehicles in South Kolkata, 13.7 lakh in Central Kolkata and 7 lakh in North Kolkata.
- Apart from landfills and vehicular emissions, many believe the construction boom, particularly over the past decade, has contributed greatly to the city's air pollution. "We found construction projects were rarely scrutinised on environmental grounds, especially with regard to air pollution," says Kankana Das, an analyst at the non-profit Legal Initiative for Forest and Environment. "Even where the question of environment arose, project proponents were directed to submit additional information and projects got deferred, but not rejected. Traffic snarls and road density factors were not kept in mind while clearing these projects."



Vehicular emissions are a key source of air pollutions in Kolkata. Source: scroll.in



Waste is piled up at the construction site of a high rise building near Howrah railway station in Kolkata. Source: scroll.in



The dumping ground receives almost 500 tonnes of solid waste per day. SOURCE: scroll.in

IMPACT:

The most telling impact of air pollution has been on the health of citizens.

- "Non-smokers lungs are as bad as smokers in Kolkata".

Experts said they are now coming across more and more patients with adenocarcinoma, which is evidently linked with declining air quality. "We are seeing an alarming rise in lung cancer patients, and majority of them do not have any history of smoking," said **Woodlands hospital** pulmonologist **Arup Halder**.

Health experts from the city urged for a collective effort to clean up the ambient air to save lives. **Suman Malik**, chief of radiation oncology and **MV Chandrakantha** a consultant medical oncologist of **Narayana Superspeciality hospital** said air pollution was behind more than 50% of lung cancer cases. "I have not found any history of smoking in more than half my patients", they added.

"Air pollution is considered to be the single largest threat to human health globally. By polluting the air we are exposing the children to a greater risk," said senior paediatric and neonatal medicine expert **Abhijit Sarkar**.

- Research work shows 47% kolkatans suffer from serious lower respiratory tract infection of the type seen only in long time smokers.
- Going by the study, nearly half of all kolkatans have developed black spots in their lungs, indicative of degeneration and blocked or dead Airways or blood vessels. These spots are called emphysema smoking-induced lung destruction that is peculiar to smokers who puff a pack or two a day. The culprit: air pollution and secondary smoke from cigarettes.
- The finding of the study, conducted by the **National Allergy Asthma Bronchitis Institute (NAABI)**, left the researchers stunned for days. The report is a measure of how dangerous air pollution has become in Kolkata. As one of the researcher put it, "I and every other Kolkata breathes in poison every walking and slumbering moment in the city. I never thought my lungs would as bad as smoker's."
- Doctors said lung surgeries were becoming complicated because of increasing air pollution. "In case of whole or partial removal of the lung affected by cancer, the non-cancerous lung helps a person breathe. But pollution reduces its capacity," said surgical oncologist **Gautam Mukhopadhyay**.

The chilling statistics prompted **NAABI** a nodal organization offering comprehensive treatment for chronic airway disorders like asthma, allergy, bronchitis, chronic obstructive pulmonary disorder (COPD) to undertake a unique research project to study the effects of pollution on high-risk groups and find ways to reduce the burden of the disease.

"Very few studies have been done on the effects of air pollution on non-smoking adults," said pulmonologist and NAABI director **Aloke Ghoshal**, who conducted the study along with respiratory medicine consultant **Raja Dhar**, director, research education, NAABI. The data that 47% of Kolkatans suffer from LRTI, which is far more serious than upper respiratory disorder, came to light in the very first phase of the research, which included testing Airways of non-smoking adults and conducting lung function tests.

"What we found was enough to send a chill down our spines. But the finding also gave us an in-depth insight into how the city's environment affects the health of an individual who would otherwise have been healthy," said **Dr. Dhar**.

- Data from the West Bengal Pollution Control Board shows the city's Air Quality Index is worsening, with PM 2.5 and PM 10 constituting a large chunk of harmful pollutants in the air. PM 2.5 – particulate matter up to 2.5 microns in diameter – is especially dangerous as the smaller particles penetrate into lungs and cause cardiovascular diseases leading to heart attacks, asthma and bronchitis. It can even impair brain development in children. PM 10 typically causes nasal and upper respiratory tract problems.
- Lower respiratory tract infections cause cough, breathlessness and wheezing, eventually leading to morbidity, say doctors. The study sampled 1,409 respondents, aged between 18 and 60 years, and mapped areas like Behala, Jadavpur, Park Circus and Shyambazar as being the worst-hit. Large stretches of North and South Kolkata were covered during the span of 16 months with the north emerging worse off. Automobile exhaust in all these stretches was the worst offender. Things seem to get worse between November and January. "In winter, hospital admissions due to chest infections were about 25% greater in some of these areas compared with summer," said this study.
- "The rise of child patients with sinusitis, pneumonia, and childhood asthma is very very sharp." Sarkar said that exposure of young adults to an increase of every 10 microgram finer particulate matter (PM2.5) per cubic meter of air, increases the risk of cancer by 22%, upper digestive tract cancer by 42% and lower GI tract cancer by 35%.
- Almost every individual breathing the city air is a victim of pollution, but some are more at peril than others. The duration of exposure to pollution, its severity and the overall health condition for the individual are major factors determining the extent of damage, says the NAABI report. It pinpoints the traffic personnel, hawkers, drivers and helpers spending long hours on road, motor vehicle mechanics and people exposed to burning fossil fuel as being more at risk for lung disorders. The study found that 60% of motor vehicle mechanics have lung damage of some kind and 79% of streetside hawkers have abnormal lung functions tests.



Diseased lungs & Cancer fighter.

Source: Google

An article:

Press Conference: Air Pollution in Kolkata

March 22, 2018

Kolkata Clean Air organized a press conference on March 22nd focusing on air pollution and health in the city.

Panelists included:

1. **Dr. Abhijit Sarkar** - Lead Consultant, Narayana MultiSpecialty Hospital
2. **Dr. Arup Halder** - Consultant Pulmonologist, Columbia Asia Hospital
3. **Dr. Chandrakanth** - Medical Oncology Narayana Superspeciality Hospital
4. **Dr. Lalit Kapoor** - Cardiac Surgeon, RN Tagore Hospital
5. **Dr. PK Hazra** - Cardiologist, HOD of Cardiology, AMRI Hospital
6. **Dr. Raja Dhar** - Consultant Respiratory Physician, Fortis Hospital
7. **Dr. Suman Mallick** - Clinical Director, Chief of Radiation Oncology, Narayana Superspeciality Hospital

Speaking at the event **Dr. Suman Mallick, Medicine, Consultant Radiation Oncology, Narayana Super Specialist Hospital** said that

"Air pollution is one of the most important causes of respiratory diseases and lung cancer. The City of Joy- Kolkata has not only touched the country's capital but have also surpassed in quite a few days in terms of air pollution. Kolkata Clean Air has come forward to spread the awareness among all citizens and to work hand in hand to provide a clean and safe environment for us and more precisely for our next generation."

Eminent doctors specializing in cardiology, pulmonary, pediatrics all echoed that - children, elderly and people working outdoors were falling in the most vulnerable categories and were getting severely affected due to pollution. **Dr Arup Halder, Consultant Pulmonologist, Colombia Asia** at the event questioned the city

"Do we really care for our children? If yes, then how we can allow our beloved ones to breathe poison every minute!"

Dr. Arvind Kumar, Chairman, Centre for Chest Surgery & Director, Institute of Robotic Surgery, Sir Ganga Ram Hospital emphasized that

"The situation is so alarming that today every child born in any urbanized & industrialized city of India smokes as many as 10-12 cigarettes a day through the pollutants present in the air. So, all the more it has become imperative to bring about a change now."

He went onto add "The time to act is now."

Dr. Prakash Kumar Hazra Head - Department of Cardiology, AMRI further added that

"Air pollution is causing havoc to our health and also the ecosystem of our beloved planet earth. Day by day it is increasing in severity and extent. Air pollution can change the genetic expression our next generation by epigenetic mechanism. Environmental impact can affect pregnant mother and the fetus. Irritation, difficulties in concentrating, problems with skin, eye, lung then heart takes the major burnt, other organ like brain, kidney are even not spared."

Air pollution has become one of the largest killers in the world – responsible for **6.4 million deaths per year (1 in 9 deaths)**. This is three times higher than the number of deaths from AIDS, Malaria and Tuberculosis combined. India has the highest pollution related deaths according to the Lancet Report.

While Delhi is considered the most polluted city in the world, but the experts were quick to point out that Kolkata's air is just as bad as Delhi's air quality. **Dr Halder** to this point added "*The emergence of fresh data suggests that air quality in Kolkata is as worse as Delhi with the possibility of being more detrimental due to unplanned urbanisation and vulnerable climates.*"

Dr Dhar, further added that,

"The air pollution in Kolkata is often worse than that of Delhi. The air quality in Kolkata is mainly related to diesel exhaust which results in respiratory particulate matter (RPM) of smaller particle size compared to the RPM in Delhi which is mainly a result of crop stubble burning. This results in far more acute severe asthma cases being admitted during the winter season as compared to anywhere else in the country."

The doctors explained that air pollution is of two parts- particulate matter or gases. Particulate Matter PM (10) affects lungs and Particulate matter PM (2.5) affects heart and brain. Gases like SO₂, NO₂ and ozone cause damage to the lungs. **Dr. Tapan Kumar Biswas, State President, IMA Bengal State** pointed out that

"PM 2.5 is the main cause for serious issues like COPD, pneumoconiosis, and lung cancer, allergic rhinitis. Air pollution affects everyone, primarily the elderly and children with bronchial asthma."

Reports suggest that 47% Kolkata's suffer from lower respiratory tract infection (LRTI) and air pollution is resulting in life expectancy in Bengal dropping by 6.1 years. The cases of lung cancer is the highest in Kolkata and doctors attributed a large portion of the same to air pollution, **Dr. Raja Dhar, Respiratory Medicine, Consultant Pulmonologist, Fortis Hospital** "A study by CNCI has also identified Kolkata as being the Cancer capital of the world. This is due to a combination of smoking and air pollution. A joint study by CNCI, WBDE & CPCB has found that around a whopping 70% of people in the city of Kolkata suffer from respiratory disorders caused by air pollution. "Dr Chandrakanth MV, Medical Oncologist, Narayana Hospitals emphasised that "Every cell of our body breathes, multiplies and lives due to the air surrounding us. When air is contaminated, our body faces problems. Respiratory diseases like COPD, interstitial lung disease. It also increases the risk of lung cancer, head and neck cancer, bladder cancer and blood cancer. "

EVALUATION

Cancer, lung ailments are on the rise in Kolkata. Yet the city is doing little to curb air pollution.

- Despite the evident threat to environment and human health from dumps, the Kolkata Municipal Corporation is searching for fresh grounds now that the Dhapa dump – where the city has been throwing its mixed waste since the 1980s – has been filled beyond capacity. Attempts at reduction and segregation at source are minimal.
- As a pilot project, the municipality has begun distributing coloured bins for segregation of waste. But in the absence of awareness among the city's residents, such sporadic attempts are reduced to photo ops and have little impact on the overall waste scenario in landfills.
- On July 18, 2008, the Calcutta High Court banned commercial vehicles older than 15 years from the Kolkata Metropolitan Area, but activists allege the ban is being widely flouted due to the administration's laxity. Checking is lax as the motor vehicles department lacks the required infrastructure for monitoring vehicles.
- "Even the Kolkata airport is not pollution free. Vehicles carrying cargo are run on diesel and petrol rather than on electric power as mandated by the central government. Many junk vehicles at the airport operating with diesel and petrol engines should be checked for clean transport management."
- The Construction and Demolition Waste Management Rules, 2016, framed by the central environment ministry, provide comprehensive guidelines on segregation, storage, collection, reuse, recycling, transportation, disposal of construction and demolition waste generated. But the rules are rarely followed in Kolkata.
- The Pollution Control Board has only two ambient air quality monitoring stations in Kolkata – one at Victoria Memorial and the other at the Rabindra Bharati University – so proper monitoring of air quality can't be done.

The level of pollution is rising in the city and it is high time people should step forward and took action.

Awareness campaigns run by environmentalists seem to have struck a chord with the city's ordinary residents, who are now more aware of the pollution menace than they were a few years ago.

- ✓ Contesting polls could be the best way to raise awareness on these issues as controlling pollution levels will obviously bring down expenditure on healthcare as well. Conducting door-to-door awareness campaigns and trying to explain the ill-effects of pollution to the people can be a way.

"We are constantly trying to make people aware that air pollution has an insidious and disastrous effect on our health and quality of life," says Ajay Mittal, founder of Kolkata Clean Air, a community-led initiative that seeks to make Kolkata one of the most liveable and climate friendly cities in the world.

- ✓ Many residents now think of raising the issue of pollution with their prospective candidates before casting their votes. None of the political parties, however, seem to be taking the issue seriously.
- ✓ It may be possible to reduce Kolkata's energy emissions through measures that also save money, such as parking demand management and improved vehicle efficiency standards. Activists seeking to generate awareness about air pollution emphasise the creation of alternative modes of transport as a solution. The time has come when people should start using alternative systems of transport like trams, electrical buses, e-rickshaws. The frequency of trams should be increased and commuters should opt for metro trains to reduce their dependency on private vehicles and public transport emitting toxic gases.
- ✓ Kolkata Clean Air has installed two air monitor devices in the city at Moulali and Ballygunj, to assess the air quality. It was found that out of the 35 days recorded between Jan and March – 69% of the days, Kolkata Air quality was reported as very poor, with max AQI (air quality index) ranging between 300 and 400. And it was found 17% of the days reported severe levels of pollution, even touching the 500 AQI mark! The acceptable limit of AQI is under 50. In any other country such alarming levels of air quality would have led to an emergency – and led to citizen alerts, and avoidance of all outdoor exertions.
Air experts demanded that air quality monitoring stations be setup across the city and a Source Based Action Plan for Abatement of Air pollution be put in place like other cities and countries have done. In addition to this the city should strongly act against offenders driving polluting vehicles, burning trash or construction sites not using permeable sheets. The group felt that it was imperative for the city to formulate and implement a comprehensive mobility plan with an integrated multi modal public transport plan keeping Electric vehicle at the centre of the plan.
- ✓ All doctors all agreed that a clean environment will be the best investment for our children and urged urgent action.
The experts agreed that **sweeping lifestyle changes** and **bold policy changes** are required. The positive thing though is that there is Technical and economical feasible solutions to control air pollution are already with us. They have effectively been implemented in many countries and these countries have substantially reduced their air pollution by implementing the same. Kolkata has always been the thought leader and can again take the lead to save its citizens and show the path to other cities in India and other parts of the world.

LIMITATIONS

The findings of the study have to be seen in light of some limitations --

Limitations which are faced in taking preventive measures of lung cancer: -

- The majority of people of third world countries like India are poor, they have to work in the most polluted areas for their living without proper protection.
- Though severe air pollution is damaging the health of people living in Kolkata and its outskirts, no necessary steps are being taken by the government. Even if some rules and laws have been passed but there is no proper system to monitor whether they are being followed or not.
- The Pollution Control Board has only two ambient air quality monitoring stations in Kolkata – one at Victoria Memorial and the other at the Rabindra Bharati University – proper monitoring of air quality can't be done. So, without proper data proper steps can't be taken.
- The lack of awareness and ignorance about the harmful effect of smoking in the youth.

Limitations without which the project will be more informative and can serve greater purposes.

- To evaluate the actual situation and to draw a proper conclusion a proper survey covering a large amount of people is needed, which is not being possible to conduct because of shortage of time.
- If the project could be done in a group, it would have been possible to conduct at least a small survey or interviews of doctors which would have helped us know the problems and actual severity of the situation to some extent, thus making the project more fruitful.
- For shortage of time and not being able to do a survey, the entire project is based on the information and data shared by various news articles. As data are being collected from secondary sources, they are not real time and may not be 100% accurate.
- As the work is done on the basis of secondary sources, there is limited access to data. So, it was not possible to work with the actual situation and draw a conclusion about the actual scenario.
- The sources who published the data may have some bias, which can affect the study's legitimacy.

CONCLUSION

In the absence of data on the prevalence of cancer affliction, we can only assume what we are seeing and discussing is only a tip of an iceberg and solutions are not as obvious as we think. But the cleaning up of ambient air should be the top priority as it is playing havoc with our lives, be it respiratory diseases, cardiac ailments or various types of cancer.

Citizens from various walks of life and professions have come together to find solutions to air pollution.

Since coming together on the 28th of January, hundreds of children and active citizens from all walks of life marched and cycled across Kolkata with air pollution masks on their faces. Through the Kolkata Book Fair Kolkata clean air (a citizen driven initiative with a vision for Kolkata to be one of the Most Live-able and Climate Friendly city in the World) team collected over 20 thousand signatures and pledges. At the event Kolkata Clean Air also launched a missed call (9289220740) campaign to take pledges of citizens.

The SwitchOn Foundation launched Clean Air Medical Students Ambassador program. Medical students chosen for the program will get a stipend and undergo training on air pollution and its impact.

"Polluting air today, pollutes lungs tomorrow and imperils lives the day after. We have to stop polluting our air together today to ensure a safer tomorrow."

GLOSSARY

1. **Asthma**: A condition in which a person's airways become inflamed, narrow and swell and produce extra mucus, which makes it difficult to breathe.
2. **Bronchitis**: Bronchitis is an inflammation of the lining of bronchial tubes which carry air to and from the lungs.
3. **Bronchoscopy**: Bronchoscopy is an endoscopic technique of visualising the inside of the airways for diagnostic and therapeutic purposes.
4. **Cardiovascular disease**: Heart conditions that include diseased vessels, structural problems and blood clots.
5. **COPD**: Chronic obstructive pulmonary disease (COPD) is a chronic inflammatory lung disease that causes obstructed airflow from the lungs. Symptoms include breathing difficulty, cough, mucus production and wheezing.
6. **Dyspnea**: Shortness of breath-known medically as dyspnea-is often described as an intense tightening in the chest, air hunger, difficulty breathing, breathlessness or a feeling of suffocation.
7. **Emphysema**: Emphysema is a lung condition that causes shortness of breath. In people with emphysema the air sacs in the lungs (alveoli) are damaged. Overtime, the inner walls of the air sacs weaken and rupture - creating larger spaces instead of many small ones.
8. **Epidemiology**: The branch of medicine which deals with the incidence, distribution and possible control of diseases in other factors related to health.
9. **Fibrosis**: The thickening and scarring of connective tissue, usually as a result of injury.
10. **LRTI**: lower respiratory tract infections are infections that affect the Airways below the level of the larynx including the trachea in the alveoli sacs.
11. **Mucopurulent**: Respiratory excretion composed of or containing both mucus and pus.
12. **Sinusitis**: Sinusitis is an inflammation of the sinuses that can cause them to get blocked and filled with fluid. It is usually caused by cold or allergies.
13. **SPM**: Suspended particulate matter are microscopic particles of solid or liquid matter suspended in the air.

REFERENCE

- ✓ <https://www.bing.com/ck/a?!&&p=93c09b5266f242341dbd40c54d3a6474b233ff4eabf4ef48f10fb985cccf0132JmldHM9MTY1MjIzMDU1OCZpZ3VpZD04MDc4MWFmZC1lZTUxLTQ0MWMtOTEwMS1kMjA4YjQxNmI0MWUmaW5zaWQ9NTE1NA&ptn=3&fclid=1e3441a1-d0c5-11ec-803f-66384be8950d&u=a1aHR0cHM6Ly93d3cudGVsZWdyYXBoaW5kaWEuY29tL215LWtvbGthdGEvbmV3cy9iZW5nYWwtbG9ncy1yaXNlLWluLWx1bmctY2FuY2VyLWNhc2VzL2NpZC8xODMzODM1P21zY2xraWQ9MWUzNDQxYTFkMGM1MTFIYzgwM2Y2NjM4NGJlODk1MGQ&ntb=1>
- ✓ <https://www.bing.com/ck/a?!&&p=050e6f4a67cc63ed0b70b3e7e6b7ff8123c140278740e1fb9eb214aea816b78bJmldHM9MTY1MjIzMDY4MyZpZ3VpZD0wYjcyNDQ0Zi0zMTJlL2Q4ZWYtYjc2MC04MWUwODU2ZDg3ODAmaw5zaWQ9NTE1Ng&ptn=3&felid=692a8035-d0c5-11ec-81ca-0df86b13155b&u=a1aHR0cHM6Ly90aW1lc29maW5kaWEuaW5kaWF0aW1lcy5jb20vY210eS9rb2xrYXRhL3Bvb3ltYWlyLXF1YWxpdkhktYmVoaW5kLW1vemUtdGhhbi1oYWx1eW9mLWx1bmctY2FuY2VyLWNhc2VzLWluLWtvbGthdGEtc2F5LWV4cGVydHMvYXJ0aWNsZXNob3cvODkzOTI1MTUuY21zP21zY2xraWQ9NjkyYTgwMzVkMGM1MTFIYzgxY2EwZGY4Nm1xMzE1NW1&ntb=1>
- ✓ <https://www.bing.com/ck/a?!&&p=64e0861818b0849b8f2ea7f33d9fe5aa43be8359abc77c21b78693b1d1bd1b78JmldHM9MTY1MjIzMDg2NyZpZ3VpZD03ZDk5NjlmZS0xYTE1LTQyYzYtYmFiYy03NTFIMDRINjc0M2YmaW5zaWQ9NTE3Mw&ptn=3&fclid=d684e619-d0c5-11ec-a4fa-3a0882b7cc7a&u=a1aHR0cHM6Ly93d3cudGVsZWdyYXBoaW5kaWEuY29tL3dlc3QtYmVuZ2FsL2NpdHktdG9wcy1sdW5nLWNhbmNlci1maW5kL2NpZC8xMTg5NjlyP21zY2xraWQ9ZDY4NGU2MTIkMGM1MTFIY2E0ZmEzYTA4ODJiN2NjN2E&ntb=1>
- ✓ [Kolkata: Cancer, lung ailments are on the rise, yet the city is doing little to curb air pollution \(scroll.in\)](#)
- ✓ [Citizen Matters](#)

Udit Mukherjee
29/6/2022