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Effect of Urbanization on Environment and Health: Pollution and its Consequences

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ABSTRACT

One of the modern developments that are part of our society is Urbanization which has been realized in the society where many people are now moving from countryside to towns. As much as the general public benefits in other aspects from trends such as economic growth, advancement in technology, development of infrastructure, then the cost is paid by way of the deterioration in air quality and health conditions within the societal populace. It comprises the discussion of the phenomenon of the urban milieu, air pollution, effects on the health of the people, and an understanding of some of the methods in the process of eradicating such ill-effects.

1. Introduction

Urbanization is the developmental process of urban centers, especially at a high rate besides a rise in population density, and the industrialization of the created urban region. The database published by the World Bank shows that more than 50% of the global population is presently urbanized and the percentage is expected to rise and reach 67% of the world population within the next three decades (World Bank, 2019). The following are among the reasons why urbanization is a significant topic; job

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offer; social facilities; and better aeriel facilities. But it has other undesirable impacts as regards the environment particularly emission of air and health of the people.

2. Air Quality and Public Health

This is a measure of the pollutants in the form of substances, particles and gases that are in the air and which have an endearing effect on the environment and the people. Public health is the study of health in communities and how it can be preserved, checker, and improved through such means as assessment of the environment more so physical. Air quality is a major public health concern because poor quality air usually poses several threats to the general health and well-being of the community.

The following are the implication of adverse air quality results on public health: Air pollution has been found to be associated with respiratory and cardiovascular diseases including asthma, cardiovascular diseases, and other diseases including: cancer, neurological diseases, and reproductive diseases. Healthcare workers are also affected with vulnerable populations including children, the elderly and persons with co-existing health conditions becoming the most vulnerable. Major emitters are human related where through burning fossil fuels for energy and transport, and for industrial use, and minorly from natural causes such as fires, volcanic eruption, and storms. In specific, particulate matter, ground level ozone, nitrogen oxides, sulfur dioxide, carbon monoxide are categorized as the most recognized air pollutants. (Youvan, 2024)

PM is fine particles in the air which can actually be breathed into the lungs of humans and lead to a number of diseases. Ozone, the main component of smog at ground level, is a lung irritant that can make asthma and other breathing ailments worse. Nitrogen oxides and sulfur dioxide, released as a result of fuel combustion, are known to cause the acid rain and can lead to respiratory inflammation. Carbon monoxide is an invisible and odourless, tasteless and non-irritant gas that results from the partial combustion of fossil fuels. Carbon monoxide is produced that may lead to suffocation, headaches, dizziness and sometimes death. Measures that can be taken by government, organizations and people to enhance air quality and health are as follows. These include encouraging the generation of electricity from renewable energy, using clean technologies, discouraging emissions from transportation by encouraging the use of electric cars, public transportation and walking and cycling.

People can also take level obligations to reduce their carbon foot prints, by using energy star appliances, checking if their houses are well insulated, recycling and minimizing wastage. Another action which

also contributes to the area is the support of local, state and federal policies and initiatives that promote low emission levels to the atmosphere and better health standards. Finally, it can be noted that the quality of the air and the condition of the population's health can hardly be considered as being unrelated. This way, using knowledge about the link between air pollution risks and health, people can unite to create and apply measures that will help prevent negative consequences for the environment and people's health. We must fight for cleaner air and a better future by joining our efforts.

There is therefore an enhancement in levels of air pollution and as per WHO on average nine out of every ten people breathe in air that has high levels of pollutants (WHO, 2018). Urbanization, development in industrial sectors and transit and utilize energy more cause air pollution rates to rise. CO affects the public health causing respiratory and cardiovascular illnesses, cancer and early death as well as PM, NOx, SO2 and O3.

3. Impact of Urbanisation on Pollution and Health Consequences

Some of the processes include; In order to determine any relationship between urbanization, air quality and public health, the following processes are; First, large population density leads to over consumption of energy and transport, industrialization which in effect leads to air pollution. Second, those exposed to air depletion in urban areas are at high risk of contracting respiratory and cardiovascular diseases thus the meant quality of health in the public domain has deteriorated. Third, infrastructure improvement in urban areas involves the losing of green area that is significant in preserving clean air and reducing the effects of the health harm.

Urbanization is one of the most significant global transitions that has the potential to reshape a wide range of activities, from planting a farm to launching a business, from developing coordinated global responses to climate change to modeling the spread of disease. Urban areas, specifically cities, have expanded significantly and will continue to grow in the near future. This is evident from the continuous and rapidly increasing urban areas in developed countries. In 1900, only twelve percent of the world lived in cities; almost a century later, fifty percent were already urban residents. In 2030, 60% of the planet's population is expected to be urban dwellers. While sufficient data is available and suggests a steady rise in urbanization, it is mostly limited to developed nations, with a small proportion of research related to the underdeveloped or developing world. Urbanization has occurred and accelerated as a result of a host of demographic, technological, and economic factors. (Youvan, 2024)

People from rural areas are moving to areas of faster economic growth and greater job opportunities as cities develop locally in rural areas. People living in rural areas have few or no jobs available to them; higher wages in urban areas provide more hope for urban residents and better health facilities. Urbanization influences social and economic arrangements, regulatory structures and spatial distribution, interactions between different sections of the population, and relationships across different groups. It thus has major implications for health policy at the national level, which also fails to respect national borders. It also shapes the political structures within countries, affecting how local government, business, and civil society play their roles and interact in maintaining and promoting health. Social policies and support programs, urban policy decisions, and economic, trade, and other national relationships are also influenced by urban issues and prospects, differentiating between internal and external stability. It is clear from the arguments listed above that the challenges of health and pollution are rising in urban areas and need serious consideration, necessitating a comprehensive understanding of the subject as well as the causes and repercussions connected with it. (Dababnah et al., 2021)

The milieu of urban cities is generally thriving with the diverse kinds of pollutants that are predominantly emitted from numerous sources in anthropogenic living. The types of pollution prevalent in urban areas can include air, water, noise, and waste pollution. Air pollution is a widespread problem that has become predominantly severe in cities, caused by the burning of fossil fuels, vehicular emissions, construction activities, and industrial emissions being other potent sources. Furthermore, water pollution emanating from domestic sewage, industrial discharges, and agricultural runoff is another striking problem in urban areas. Noise pollution in urban centers is due to the multiplicity of traffic flow and human gatherings that consequently exhibit their displacement and proliferate sound waves. On a parallel note, the urban atmosphere is filled with the outburst of different waste products. (Nyitioseh, 2024)

Several urban infrastructural settings, urban lifestyles, and the daily routines of humans are the driving sources, which are influenced by high human density. This incoherence in population density is vigorous in fostering economic activities that eventually result in the exploitation of available resources, followed by environmental degradation due to massive pollution in the urban atmosphere. The key point is that pollution problems proliferate with the aggravation of industrial, residential, and commercial activities, thus leading to an increase in the density of the urban population. Furthermore, the variability and density of environmental pollutants can vary based on space. In effect, the clustering of different

residential compartments in the urban landscape eventually evokes the upsurge of pollution sources in space. Consequently, people with different spatial distributions are more exposed to various pollutant sources and their levels of exposure. Thus, pervasive and interrelated knowledge about the different types of pollution is acutely needed to pinpoint intensive control strategies to alleviate the effects of these urban impurities. (White et al.2023)

4. Possible solutions and ways of minimizing adverse effects

Given several impacts of urbanization on air quality and people's health, several measures and approaches can be taken. These include:

4.1. Urban Planning and Greenspaces: Concepts and Practice

Green concrete also referred to as green infrastructure means there are reduced levels of air pollutants surrounding people. Some of the services includes aesthetics, air purifying where parks, gardens, urban forests or green belts have the ability to moderate and or cleanse the local air by absorbing pollutants.

4.2. To improve physical activity levels, transport infrastructure and the specific use of public transport was an area identified as one to be targeted for the optimisation of active travel. This picture can be changed by supporting public transport and encouraging people to use non-private means of transport: for example through pedestrianism or cycling.

4.3. Greater Oversight of Air Pollution and Its Effects

This can be achieved by measures like high technology air monitoring, industries emission control policies and standards as well as automobiles emission control measures. This is about promoting cleaner fuel degree, changing the older forms of transport, and raising the level of controls on the emissions from the industry.

4.4. Urban Gardens and Vertical Gardening

Such knowledge means that an introduction of urban agriculture and green walls can contribute to reduction of pollutants and enhance the microclimate in cities. Other advantages of urban agriculture are that it creates availability of fresh foods and market thus creating food security as well as a healthy nation.

4.5. Health Promotion: Awareness and Education

Therefore knowledge enhancement of the community regarding the severe impacts of air pollution on health and promotion of health preventive measures as strategies that can reduce the risks of urbanization on health. Governing and relevant organizations should introduce social promotion campaigns among people on negative effects of pollution and importance of correct vital behaviors, daily exercises, and balanced diet.

5. Conclusion

If development, technology, and economic returns advance in any urban setting then this is a prime characteristic of that urbanization. However, this also has negative consequences to air quality and health of the region. Such concerns are linked to the city urbanization impact on air quality, and consequently on public health, which can be mitigated through sustainable urban development, assessment, compliance, facing and incitation of utilization of public and active transport commutes, cultivation of feeding in the city, and raise up awareness and information dissemination. This makes it very important that these solutions and strategies are enhanced so as to ensure that the urbanization generates positive aspects that will be well enhanced while curtailing those withdrawing backdrafts resulting from bad air good quality and also people health and wellbeing.

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