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ORIGINAL

Exploring the Impact of Environmental Health on Community Quality of Life Metrics

Exploración del impacto de la salud ambiental en las métricas de calidad de vida de la comunidad

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ABSTRACT

Environmental health is a very important part of a community's general quality of life. This research looks at how different natural factors like the quality of the air and water, how trash is handled, noise pollution, and access to green spaces affect important aspects of quality of life, such as health, social well-being, and socioeconomic status. Understanding how natural elements influence these measurements helps one create healthy urban development strategies that enhance the well-being of the surroundings. This research aims to ascertain how members of the society see the state of the environment and how it influences their everyday life by use of both quantitative data analysis and qualitative surveys. Along with environmental elements, the research examines health data including rates of lung illness, mental health statistics, and overall mortality. It discovers substantial connections between people's physical and mental health directly derived from the condition of the surroundings. The research also examines socioeconomic elements and notes that underdeveloped regions are more prone to be impacted by unfavourable weather conditions, which may result in health disparities and worse quality of living ratings. The paper also addresses how urban infrastructure clean drinking water access, air filtration systems, and transit networks may assist to mitigate the negative consequences of environmental hazards. According to the findings, increasing environmental health standards not only improves public health but also promotes fair society, stimulates economic development, and strengthens communities. The study's policy suggestions call for focused actions to lower environmental risks, support green infrastructure, and make sure everyone has equal access to resources that support a good quality of life. The study also suggests that policymakers and urban planners should think about public health when making decisions. This would help make communities healthier and more sustainable.

Keywords: Environmental Health; Quality of Life; Urban Planning; Public Health; Socio-economic Disparities.

RESUMEN

La salud medioambiental es una parte muy importante de la calidad de vida general de una comunidad. Esta investigación analiza cómo distintos factores naturales, como la calidad del aire y el agua, el tratamiento de la basura, la contaminación acústica y el acceso a zonas verdes, afectan a aspectos importantes de la calidad de vida, como la salud, el bienestar social y la situación socioeconómica. Comprender cómo influyen los elementos naturales en estas mediciones ayuda a crear estrategias de desarrollo urbano saludables que

mejoren el bienestar del entorno. Esta investigación pretende averiguar cómo ven los miembros de la sociedad el estado del medio ambiente y cómo influye en su vida cotidiana mediante el uso tanto de análisis de datos cuantitativos como de encuestas cualitativas. Junto con los elementos medioambientales, la investigación examina datos sanitarios que incluyen tasas de enfermedades pulmonares, estadísticas de salud mental y mortalidad general. Descubre conexiones sustanciales entre la salud física y mental de las personas derivadas directamente del estado del entorno. La investigación examina también elementos socioeconómicos y señala que las regiones subdesarrolladas son más propensas a sufrir el impacto de condiciones meteorológicas desfavorables, lo que puede dar lugar a disparidades sanitarias y peores índices de calidad de vida. El documento también aborda cómo las infraestructuras urbanas de acceso al agua potable, los sistemas de filtración del aire y las redes de tránsito pueden ayudar a mitigar las consecuencias negativas de los peligros medioambientales. Según las conclusiones, el aumento de las normas de salubridad ambiental no sólo mejora la salud pública, sino que también promueve una sociedad justa, estimula el desarrollo económico y fortalece las comunidades. Las sugerencias políticas del estudio abogan por medidas concretas para reducir los riesgos ambientales, apoyar las infraestructuras verdes y garantizar que todos tengan el mismo acceso a los recursos que favorecen una buena calidad de vida. El estudio también sugiere que los responsables políticos y los urbanistas tengan en cuenta la salud pública a la hora de tomar decisiones. Esto contribuiría a que las comunidades fueran más sanas y sostenibles.

Palabras clave: Salud Ambiental; Calidad de Vida; Planificación Urbana; Salud Pública; Disparidades Socioeconómicas.

INTRODUCTION

A major component of how wonderful living is in towns generally is the state of the surroundings. It covers a wide range of topics, including air and water quality, garbage management, noise pollution, and the availability of natural resources including green spaces. The condition of the surroundings immediately influences both people's mental and physical state. This affects social fairness, health outcomes, and community economic strength as well as other areas. As the world's population increases and cities are more crowded, legislators, urban designers, and public health professionals find increasing relevance in knowing how environmental health influences community quality of living. Quality of existence is a complicated idea this is frequently measured by using both emotional and objective criteria. Subjective measures examine such things as how wholesome, satisfied, and happy someone is with their life, while objective measures take a look at matters that can be measured, like bodily fitness, training, work, and earnings. In the beyond few years, increasingly more studies have proven that public fitness has a huge impact on those first-class of life measures. For example, breathing in dirty air has been linked to a higher risk of lung and coronary heart illnesses.[1] On the other hand, getting access to green regions has been shown to improve mental fitness and help carry humans together. This research seems into the complicated hyperlink between outside fitness troubles and specific measures of first-rate of life. The purpose is to find out how natural conditions affect the health, properly-being, and socioeconomic fame of communities. It's also essential to have a look at how those conditions have interaction with each different to have an effect on disregarded and marginalised businesses. Poor natural situations frequently harm low-profits areas more than different regions, making social and fitness problems worse. This event makes it clear that environmental policy and urban making plans want to be greater fair and placed the fitness and well-being of all citizens first.[2]

Air best is a critical a part of natural fitness. long-time period publicity to pollutants like particulate be counted (PM), nitrogen dioxide (NO2), and sulphur dioxide (SO2) has been proven in studies to have critical health results, ranging from lung and heart illnesses to higher demise prices. People who live in cities are more likely to get long-term health problems because of the high amounts of air pollution caused by vehicles, factories, and people living close together. Also, mental illnesses like sadness and worry have been linked to air pollution, which lowers the quality of life even more. So, fixing the air quality is very important for making people healthier and better communities' general well-being.[3] The cleanliness of the water is another important natural factor. To stay healthy, you need to be able to get clean, safe drinking water. Water sources that are contaminated can spread illnesses like cholera, dysentery, and typhoid fever. Heavy metal poisoning can also cause long-term health problems. Also, the quality of the water affects not only people's physical health but also how safe and healthy they feel in their society. Poor water quality is also caused by bad garbage management and a lack of cleaning services, which raises the risk of disease breakouts and hurts public health. Another important environmental factor that affects quality of life is garbage management, which means getting rid of and treating solid and liquid waste properly. Polluting the air and water can happen when trash is thrown away in the wrong way, which makes health risks even worse.[4] Additionally, it makes living conditions

unpleasant because the buildup of trash makes places look bad and could be dangerous. While on the other hand, garbage management systems that work well can greatly enhance both natural and social health, creating better, more stable communities.

Overview of environmental health

The physical, chemical, biological, and social forces that make up the environment can affect people's health in different ways. This is called environmental health. It includes a lot of different things that can have an impact on people's health, like the quality of the air and water, how trash is handled, noise pollution, and access to green areas. The goal of environmental health is to make sure that these things don't put people and places at risk. It has a lot to do with public health because the environment has a direct effect on how often sicknesses, accidents, and other health problems happen. One of the most important parts of outdoor health is the cleanliness of the air. Pollutants like particulate matter, nitrogen oxides, sulphur dioxide, and volatile organic substances have been linked to lung and heart illnesses, as well as death before its time. Similarly, the cleanliness of the water is also very important.[5] Everyone has the right to receive clean, safe drinking water. Water that is contaminated can spread diseases and cause long-term health issues. Similarly, trash management, which includes getting rid of both solid and liquid waste in the right way, is an important part of keeping the public healthy and clean. Figure 1 shows how the health of the world is affected by things like air quality, water quality, temperature, and human health.

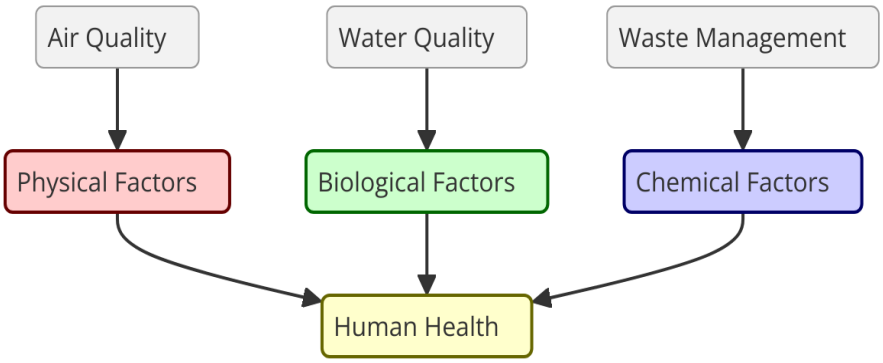

Figure 1. Illustrating the overview of environmental health

Noise pollution is another major natural health problem that is often forgotten. Long-term exposure to loud noise can lead to health problems like high blood pressure and heart disease, as well as mental health problems like sadness and worry. Finally, the presence of green places like parks, woods, and leisure areas has a big effect on health results. These places offer chances to be active, relieve stress, and connect with others, all of which are good for your general health.[6] Environmental health isn't just about keeping people from getting hurt; it's also about making sure that people's physical, mental, and social health is supported. If environmental health strategies work, they can even out health differences and make life better, especially in cities.

Community quality of life metrics

The well-being and liveability of a community can be judged by its community quality of life (QOL) measurements. Most of the time, these numbers include both subjective and objective measures that show how people see their surroundings and how different factors impact their general living conditions. Self-reported health, happiness, life satisfaction, and social well-being are often included in the subjective parts of quality of life. People's events, social connections, and the things around them shape how they see things. On the other hand, objective indicators are things that can be measured. Some examples of these are access to basic services, economic security, educational possibilities, healthcare access, and environmental conditions. Life expectancy, the number of chronic diseases, and access to health care are all physical health results that are often used as concrete measures of community quality of life.[7] These measurements show how the built and natural environment affects health. They can often show differences in how easy it is to get care or how pollution or other environmental dangers affect people. QOL is also affected by things like safety, social wealth, and involvement in the community. Higher quality of life numbers are often linked to having helpful networks, low crime rates, and strong social involvement. Stability in the economy is another important part of neighbourhood quality of life. This includes things like the cost of living, the number of jobs available, and the average family income. Strong economies give people in those communities more chances, like being able to get cheap goods and homes. Quality of the environment is also very important, because the health of natural surroundings, like clean air, water, and open areas, has a direct effect on quality of life. A clean, safe, and

visually beautiful space is good for your health.[8] Overall, community quality of life measures show how the different parts of a community—its health, its social life, its economy, and its environment—work together to affect the lives and chances of its people.

Literature review

Historical context of environmental health studies

Environmental health studies have changed a lot over the last few hundred years as people have become more aware of the connections between the climate and health. People in old civilisations used simple but important cleaning methods to keep everyone healthy. In the beginning, environmental health was based on the ideas that clean air, water, and proper trash removal were important for people to live. The Greeks and Romans knew that good cleanliness and public baths were important for keeping people from getting sick, especially from water-borne diseases. In the 1800s, industrialisation and urbanisation caused towns to quickly grow in population, while natural conditions got worse. During this time, more people got diseases like cholera, tuberculosis, and malaria, which were directly linked to dirty living situations and polluted environments.[9] As public health organisations grew in Europe and North America, the study of environmental health became more important. Pioneers like John Snow, who looked into the cholera outbreak in London in 1854, made important contributions to our knowledge of how polluted water sources can spread disease. Environmental health studies went through a big change in the 20th century. Environmental protection laws and the development of groups like the Environmental Protection Agency (EPA) in the US, along with global health groups like the World Health Organisation (WHO), were very important in dealing with environmental problems on a large scale. People became more aware of how damaging air pollution, industry waste, and misusing natural resources are, which led to these changes.[10]

Key factors affecting environmental health

Many elements influencing the state of the environment have direct or indirect consequences on human health as well. Among the most crucial are the state of the air and water, garbage management, noise pollution, and the count of green spaces. Air pollution, usually resulting from manufacturing, automobile emissions, and burning fossil fuels, is one of the primary causes of environmental health issues. Particle matter (PM), nitrogen oxides (NOx), and sulphur dioxide (SO2) might aggravate lung disorders, heart conditions, and other long-term health issues either initially or later on. Greater mortality rates have been connected to long-term adverse air quality exposure. This emphasises how urgently fast improvement of air quality management is necessary. Furthermore crucial is the water's quality.[11] Among the elements that could make water hazardous to consume include heavy metals, pollutants, and microorganisms. Numerous health issues including digestive ailments, neurological abnormalities, and even cancer may result from this. Everyone should have access to safe, clean drinking water if we are to prevent these health hazards. Waste management is the safe elimination and treatment of liquid and solid waste. It is also very important for deciding the state of the climate. Poor garbage management could contaminate water supplies and cause disease spread. Moreover, improper disposal of hazardous products could harm the surroundings over time. Though it is a major public health hazard, particularly in cities, noise pollution is sometimes disregarded. Extended loud noise may harm your hearing, lead to heart disease, and aggravate mental health issues like stress and anxiety. Finally, it has been shown that your mental and physical health benefit from having access to green spaces such parks, gardens, and metropolitan forests. These locations provide opportunities to unwind, have fun, and help one to release some anxiety.[12] They benefit your overall health and enable communities to remain together.

Existing studies on the impact of environmental health on quality of life

Studies demonstrating the significant impact of environmental health on quality of life (QOL) are becoming abounded. Numerous studies have shown that poor natural conditions such as contaminated air and water, poor garbage management, and insufficient green areas have a direct bearing on declining health impacts and a reduced quality of life. Studies have shown, for example, that long-term exposure to air pollution is linked to increased incidence of long-term disorders like asthma, cardiac issues, and lung infections. People are less happy with their life and more prone to end up in the hospital or die too soon in cities with lots of people where air pollution levels are generally higher. Studies on water quality[13] relate it to improved health and a better quality of living in places with access to cleaning services and pure drinking water. Conversely, areas with contaminated water supplies can show higher rates of water-borne illnesses and negative health effects, therefore compromising the general welfare of the society. Furthermore influencing quality of life is the kind of waste management systems. Communities with good waste management have better living spaces, fewer health problems, and higher levels of happiness. Access to green areas has also been linked to better physical health, mental health, and social contact. Researchers have found that people who live near parks and other green spaces tend to be happier, less stressed, and more physically fit. All of these things make life

better. Another thing that is good for general health is that these places often help people get along with each other. Overall, studies show that environmental health has a big impact on people's lives. People who live in safer, cleaner, and healthier settings usually have a better quality of life.[14] These results show that in order to improve the health of communities, policies and urban planning methods must be put in place that put environmental health first. Table 1 is a summary of the literature on linked work, future trends, obstacles, and the range of progress made in environmental health study.

Table 1. Summary of Literature Review

Approach	Future Trends	Challenges	Scope
Impact of Air Pollution on Respiratory Health	Increased Integration of IoT for Air Quality Monitoring	Limited Data Availability on Environmental Health Effects	Expanding Research on Air Pollution Health Effects
Water Quality and Health Outcomes in Urban Areas	Smart Water Management Systems for Disease Prevention	Social Inequalities in Access to Environmental Resources	Promoting Safe Drinking Water Access Worldwide
Social Disparities in Environmental Health Exposure [15]	Advancements in Green Infrastructure for Health	Lack of Standardized Health Metrics for Environmental Assessment	Enhancing Urban Green Space Planning and Mental Health
Climate Change Effects on Public Health Systems	Public Health Programs Integrating Environmental Justice	Challenges in Public Awareness and Engagement	Strengthening Environmental Justice Frameworks
Health Impact Assessments for Environmental Policies [16]	Focus on Mental Health and Environmental Stressors	Data Privacy Concerns with Health and Environmental Data Integration	Encouraging Multi-Stakeholder Collaboration for Sustainable Development
Environmental Justice and Health Inequalities	Holistic Approaches to Sustainable Healthcare Systems	Balancing Economic Development with Environmental Health Needs	Developing Integrated Public Health and Environmental Policy
Effects of Environmental Stressors on Child Development	Cross-Disciplinary Collaboration Between Health and Environmental Fields	Resistance to Policy Change in Industrialized Sectors	Implementing Advanced Technology for Health Risk Monitoring
Environmental Exposure and Cognitive Decline in Older Adults	Technology-Enabled Waste Reduction and Recycling Initiatives	Global Disparities in Addressing Environmental Health Issues	Supporting Climate Resilient Health Infrastructure

Environmental health factors

Air quality and pollution

Air quality is an important part of outdoor health because it has a direct effect on the heart and lungs, as well as on general health. Things humans do like running automobiles, working in industries, and burning coal fuels released pollutants harmful for the environment into the air. Among these hazards are nitrogen oxides (NOx), sulphur dioxide (SO2), carbon monoxide (CO), and volatile organic compounds (VOCs). Numerous health issues like asthma, COPD, heart disease, stroke, and even lung cancer have been related to long-term exposure to poor air quality. Particulate matter, especially small particles (PM2,5), can get deep into the lungs and into the bloodstream, where it can cause inflammation and make health problems worse that were already there. Additionally, air quality is a key factor in determining neighbourhood quality of life (QOL), since bad air quality can cause more disease, higher healthcare costs, and shorter life spans. Pollution levels are often higher in cities because of heavy traffic and economic activity, so people there tend to have lower QOL scores. Because of this, governments and groups around the world are working to clean up the air by implementing policies that raise fuel standards, support clean energy, and improve public transportation systems so that people don't have to rely on their own cars as much. By making the air quality better, cities and towns can greatly improve people's health and make life better for everyone who lives there.

Water quality and access

Access to and quality of water is important parts of natural health. To avoid getting sick, stay healthy, and improve your general well-being, you need to drink water that is clean and safe. Diseases like cholera, dysentery, and typhoid fever can spread through water sources that are polluted by manufacturing processes, farming waste, or poor cleanliness. Long-term health effects of drinking water including heavy metals, herbicides, and industrial chemicals may also be detrimental; issues with development, cancer, and nervous system damage can all follow from this. Particularly in rural regions and underdeveloped cities, many locations of the globe

still have significant issues with access to clean water. Particularly for youngsters and the elderly, who are more prone to be harmed or ill, lack of clean water and toilets may cause mortality rates to rise. Often exacerbated by misuse, pollution, and climate change, a scarcity of water is increasingly becoming a more major issue in many countries, therefore stressing public health systems. Not only does hygienic water and sanitation help to avoid disease, but they also greatly enhance quality of life. Good for health is access to pure drinking water as it motivates individuals to be cleaner and reduces the danger of water-borne infections. Often linked to economic development are also water quality and availability. Locations with solid water supplies are more likely to have better living conditions, greater production, more employment and educational opportunities. Governments and international organisations have given access to toilets and clean water high importance. One such is Sustainable Development Goal 6 (SDG 6), which seeks to have toilets and clean water available to everyone by 2030.

Climate change and natural disasters

People are recognising more and more how profoundly natural occurrences and climate change affect global health. Rising global temperatures are causing more frequent and worsening occurrence of extreme weather phenomena like heat waves, storms, floods, and drenches. Many of the property is being destroyed by these incidents, thereby compromising individuals's health. Warmer temperatures let mosquitoes and other disease-carrying insects proliferate their infections across wider areas. This facilitates the spreading of infectious illnesses like malaria and dengue fever. Often exacerbated by climate change, natural catastrophes may compromise your emotional and physical health both now and down the road. Flooding could contaminate water supplies, therefore increasing the likelihood of infections transmitted via them. Conversely, wildfires may spew harmful particles into the atmosphere that would make breathing difficult. Following a natural catastrophe, communities might have to cope with issues like forced relocation, inadequate food, and broken healthcare services. These issues aggravate health disparities and reduce individuals's quality of life. Furthermore, climate change damages less fortunate populations more than others. Often the most affected by climate-related catastrophes are those with poor means, those who live near the shore, and those who live in areas without infrastructure. Getting medical attention, secure shelter, and knowledge on disaster readiness might be difficult for these populations. This complicates their recovery from the consequences of climatic events. Apart from the consequences on physical and mental health, climate change may disturb the equilibrium of power in society and the economy, therefore weakening communities over time. Strategies addressing adaptation to climate change and being ready for catastrophes are very crucial in order to minimise these consequences. Reducing greenhouse gas emissions, funding sustainable infrastructure, and strengthening local resilience can assist to mitigate the negative impacts of climate change on health and quality of living.

Noise pollution

People are largely responsible for it, particularly in cities where traffic, industries, construction sites, and public events are quite frequent. Long-term exposure to loud sounds may compromise your health in a variety of physical and psychological respects. Noise pollution has been connected to heart disease, high blood pressure, hearing loss, and insomnia. Long-term loud noise exposure has also been proven to increase stress levels, impair brain function, and negatively affect mental health, thereby aggravating disorders like depression, anxiety, and a reduced quality of life. Noise pollution may compromise your health and cause trouble for individuals getting along. It may also compromise the general state of the community. All of which may reduce their quality of life include noise that doesn't go away making individuals uncomfortable, depriving their opportunities to rest in quiet, and lowering their feeling of safety. For instance, noise pollution often interferes with everyday life in crowded cities, which may irritate individuals and cause them to feel as if they have little influence over their surroundings. Particularly vulnerable from noise pollution are those already weak that of youngsters, the elderly, the sick, and those with health issues already. Youngsters who are around loud sounds may find it difficult to grow and learn regularly. Noise affecting their health makes older persons more prone to suffer cardiac issues. We must act in many ways to combat noise pollution. These include improved city design, noise-lowering technology, and stricter regulations on how noise from companies and vehicles may be generated. Noise pollution may compromise people's overall quality of life and affect their physical and mental health. Communities may be helpful by lowering noise levels.

METHOD

Data collection methods

To get complete records for figuring out how environmental health impacts community pleasant of lifestyles, each qualitative and quantitative strategies are used to collect it. Surveys, outdoor monitoring, and conversations are the main ways that facts are accumulated. One famous way to get statistics from people inside the community is to use surveys. People's thoughts on things like noise stages, access to green areas,

the first-rate of the air and water, and how they sense about natural health troubles can be requested in those polls. Fitness-related questions, including self-pronounced fitness state, chronic diseases, and life happiness, also assist degree the emotional elements of pleasant of life. On-line and paper polls can get quite a few people to fill them out, so the results will be varied. This includes using distinct tools and monitors to measure the high-quality of the air, the water, and the noise stage. a number of the pollution that air quality monitors look for are particulate count (PM2,5), nitrogen dioxide (NO2), sulphur dioxide (SO2), and others. To parent out how polluted the water is, samples can be taken from different places. Sound level meters may be used to report each the common and top noise levels over time. Interviews with human beings in the neighbourhood, local medical experts, and environmental professionals deliver us higher information of how humans simply stay their lives. those in-depth talks help us understand the complicated effects of environmental health factors and the way human beings within the region see those factors affecting the fitness in their network. Interviews additionally allow us to look into problems which can be precise to a network and the social, monetary, and cultural heritage of environmental health troubles.

Research sample and target community

People from a great spectrum of backgrounds should make up the target community and study group. In this sense, the outcomes might be used in view of a greater picture. Usually depending on their location city, suburban, or rural the target audience is focused on locations where natural health concerns significantly affect quality of life. Particularly underprivileged groups in the community low-income individuals, the elderly, children, and those with pre-existing medical conditions should also get additional focus. These groups would be more prone to suffer from environmental hazards. Random sampling is probably going to be utilised for surveys and interviews for larger population based polls to guarantee a broad spectrum of participants. Stratified sampling may also be used to guarantee that the sample comprises persons from a spectrum of demographic groupings including age, gender, and economic level. From areas with a lot of garbage to areas with higher air and water quality, certain areas of the town will be selected to exhibit various degrees of environmental quality for environmental tracking. Selecting the research group requires careful consideration of whether the community of interest can provide insightful data on how public health influences quality of life. This could include places like towns near factories, transportation hubs, or areas where cities are growing quickly, since these are the places where natural factors are most likely to affect people's health.

Analytical approaches

Both data analysis and model building are used to figure out how the health of the climate affects the quality of life in a community. Statistical tools are used to look at the data, find connections, and test theories. Descriptive statistics will give an overview of the sample population's demographics, as well as the most important external factors and health-related data. Some types of inferential statistics, like association and regression analysis, will be used to look at how natural factors (like noise pollution, air quality, and water quality) affect health or quality of life. Multivariate regression models can be used to get a more accurate picture of how outdoor health issues affect quality of life. These models will let you include many variables, like socioeconomic class, age, and health problems that were there before, while also removing any factors that might change the results. In addition, these models can help figure out how much each external factor affects different aspects of quality of life, like health, mental health, and social cohesion. Advanced modelling methods, like structural equation modelling (SEM) or machine learning algorithms, could be used to find complicated connections and guess what will happen based on many social and economic factors.

Ethical considerations

Ethical concerns are very important in any study that involves people, but they are especially important when the study involves private health information or defenceless groups. The most important ethical issues are getting users' educated permission, keeping their information private, and reducing any risks they might face. A key ethical requirement is informed consent, which makes sure that all subjects know the goals, methods, and possible risks of the study before they agree to take part. People who take part in the study should be given a full account of what it is about, how their information will be used, and what will be done to keep their privacy safe. All subjects should sign written permission forms, and they should be able to quit the study at any time without being punished. During the whole study process, strict privacy must be kept. To protect the safety of the users, personal information should be taken away or made anonymous. Care should be taken when handling health-related data in particular, and only authorised staff should be able to see private data. It is important to keep data safe and only use it for the project. Researchers must also think about the risks that the subjects might face, especially when they are working with groups that are already weak. Some of these risks are feeling upset during interviews, not wanting to talk about personal health problems, or worrying that their answers will not be kept private. To lower these risks, academics should make the setting helpful, make sure that

participants feel safe and valued throughout the process, and offer the right resources or recommendations if needed. Lastly, the study should be meant to help the community by giving useful information that can be used to make laws that improve health and quality of life in the area. Ethical research practices will protect the study's honesty and reliability, which will build trust among subjects and the public as a whole.

Measuring community quality of life

Health metrics

Health markers are important for figuring out the quality of life in a community because they show how healthy people are physically and mentally. One of the most popular health measures is life expectancy, which shows how many years a person can expect to live on average based on the health of the group as a whole. Better living conditions, easier access to health care, and higher social well-being are often linked to longer life expectancy. A lower life span, on the other hand, usually means that there are major health risks, like bad air quality, contaminated water, or not enough medical care. For instance, areas with lots of pollution often have more lung and heart problems; however, areas with poor access to healthcare may have more diseases that might have been prevented. Mental health indicators include rates of depression, anxiety, and stress may reveal a great deal about the mental state of individuals within a community. These health indicators can allow you to determine the overall state of a community and identify areas requiring assistance and improvement. Figure 2 illustrates a community's perceived level of health based on factors like illness count, life duration, and health care availability.

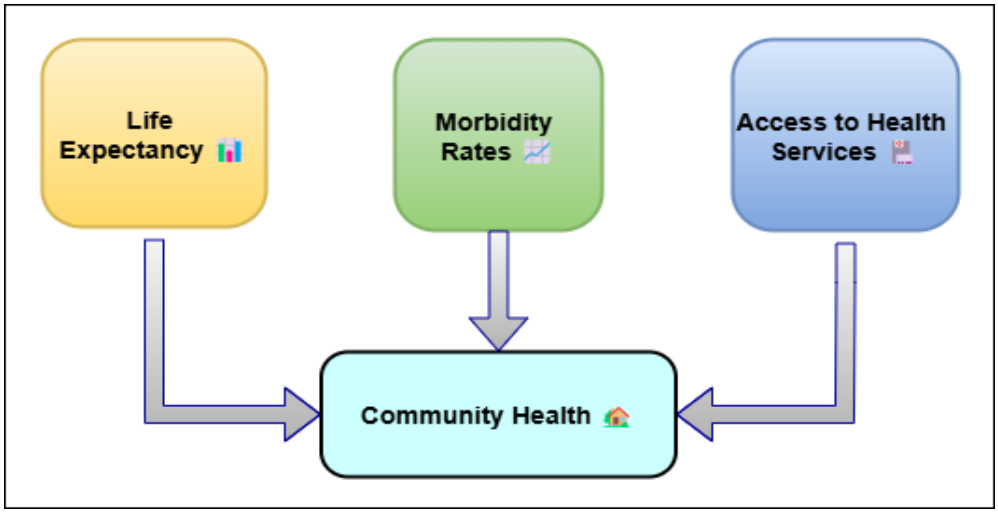

Figure 2. Measurement of community quality of life through health metrics

The infant mortality rate is another important health measure that shows how the health system, maternity care, and the social factors of health work as a whole. Lower baby death rates usually mean that the world is safe and that the health care system works well.

Socioeconomic factors

The general quality of life in a town is affected by socioeconomic issues in a big way. These factors frequently have a lot to do with health outcomes as people's capacity to acquire tools, opportunities, and health services may be affected by their educational and financial condition. A person's income is among the most crucial social determinant as it determines their capacity to pay for basic needs such food, housing, and healthcare. Those from low-income neighbourhoods are more likely to be exposed to natural hazards like pollution and poor living conditions, which could aggravate their health. A further crucial social element influencing quality of life is educational level. Higher degrees of education correlate with improved understanding of health, greater employment opportunities, and a better quality of life. Those who have higher education are more likely to engage in activities that benefit their general health, see a doctor when needed, and live in environments fit for their whole wellness. On the other hand, places where people don't have as much schooling tend to have higher rates of chronic diseases, mental health problems, and unemployment, which makes life less enjoyable. Rates of work, living situations, and hunger are some other social issues. Having a job gives you financial security, which has a direct effect on your health and quality of life. Not having enough housing, especially in places with bad drainage or environmental risks, can hurt your health and lower your standard of living. Poverty, which is often caused by low income and limited access to schooling, makes social problems worse and is a major cause of health differences.

Access to healthcare and social services

Access to social and medical care is a key factor in a community's quality of life because it has a direct effect on people's health and happiness. Communities with stable access to healthcare are better able to avoid, control, and treat illnesses, which makes people happier in general. Access to healthcare depends on many things, such as how close it is, how much it costs, whether or not you have health insurance, and how many healthcare workers are available. People who live in cities usually have better access to medical care because the system for healthcare is usually stronger. This means that people's health is better and their quality of life is higher. On the other hand, people who live in rural or poor areas may have trouble getting medical care because they have to drive a long way to get there, don't have access to transportation, or can't find enough general care doctors or experts. These problems can cause findings to be made later, chronic illnesses to go ignored, and life span to drop. Access to preventive care services, like vaccines, tests, and fitness check-ups, is also very important for lowering the number of diseases in a community and making everyone healthier. Quality of life is also improved by social services like counselling for mental health issues, care for drug abuse, and programs that help families. Poor living, mental health problems, and poverty are all social factors that affect health. Communities with strong social service systems are better able to deal with these issues. Social services can help lower health gaps and promote social equality by helping people who are weak. Not having access to these services can make people less social, hurt their mental health, and make them more likely to get diseases that can be avoided.

The impact of environmental health on community quality of life

Direct health implications

Since being exposed to environmental hazards may lead to many types of health problems, it is rather crucial to worry about the direct consequences of environmental health elements on health. For instance, breathing in contaminated air increases the likelihood of lung disorders like asthma, COPD, and lung cancer. Deeply ingrained in the lungs and circulation, fine particulate matter (PM2,5) and other pollutants from industries and vehicles worsen chronic illnesses and increase the risk of heart disease, stroke, and death before their time. Additionally posing significant direct health hazards is contaminated water. Those without access to safe drinking water are more prone to get water-borne illnesses like typhoid fever, dysentery, and cholera. Lead or arsenic that finds their way into water supplies may cause long-term health issues including nervous system damage, cancer, and slowed infant development. In areas where inadequate cleaning services exist, improper waste management may cause the spread of infectious illnesses. Overwhelming dumps, improper disposal of hazardous waste, and untreated trash may thereby pollute soil and water. This may increase health hazards and enable the spread of illnesses like malaria and hepatitis. For physical health, having access to green areas and a clean atmosphere is also very important. Studies have shown that places with lots of parks, gardening, and other fun places to play encourage people to be active, lower the number of overweight people, and improve heart health. On the other hand, living in places that are dirty, busy, or dangerous can directly hurt people's health, which can lower their quality of life.

Indirect social and economic effects

Environmental health problems have social and economic effects that go beyond the health of individuals and affect whole towns. Environmental problems often make healthcare more expensive because people who get sick from pollution or bad cleaning need to keep going to the doctor. These prices can put a lot of stress on local health care systems and public resources, taking money away from other important services and making the economy less stable. In addition to raising the cost of health care, outdoor health risks can also lower economic production and efficiency. When people get diseases linked to their surroundings, they often miss more work or school than other people, which can hurt the workforce and educational attainment. People with chronic diseases include cancer, heart disease, and asthma may find it difficult to completely engage in the workforce, which would reduce their income and complicate their upward mobility in the economic scale. Particularly in already suffering communities, environmental health issues may significantly aggravate socioeconomic inequality. Those with low means are often the most prone to suffer from pollution, hazardous water, poor housing conditions, etc. Many times, these groups lack the resources required to handle environmental hazards such access to healthcare or the capacity to migrate to better locations. This means they must cope with unfair health issues and are less likely to benefit from measures meant to make everyone healthy. Degradation of the surroundings might also lead to social disturbance. Rising ties between natural catastrophes like floods, wildfires, and storms which are increasingly linked to climate change can drive whole cities to relocate and disrupt nearby companies. Those impacted by these types of tragedies may not be able to recover socially or financially for years.

RESULTS AND DISCUSSION

This research reveals a clear correlation between measurements of neighbourhood quality of life and environmental health concerns. Communities with poor air and water quality, inadequate waste management, and noise pollution had more deaths and less enjoyment of their living conditions. Socioeconomic differences made the health effects worse, with environmental risks being felt more strongly by low-income and marginalised groups. A lot more people with mental health problems, like worry and sadness, lived in places with a lot of pollution and few green spaces. These data make it clear that natural changes need to be made right away to improve health and well-being, especially for groups that are already struggling.

Table 2. Health Metrics

Community	Air Quality (PM2,5, μg/m³)	Water Quality (Contaminants, ppm)	Morbidity Rate (per 1000 people)	Life Expectancy (Years)	Mental Health Score (%)
Urban Area	55	0,02	250	72	43
Suburban Area	35	0,01	180	76	60
Rural Area	20	0,005	140	80	76

The information in table 2 shows a strong connection between natural health factors and the quality of life in a community. The quality of life is measured by things like mental health scores, life expectancy, air quality, and water quality. Figure 3 shows an overall picture of community data for an area, showing how health, socioeconomic factors, and natural conditions vary.

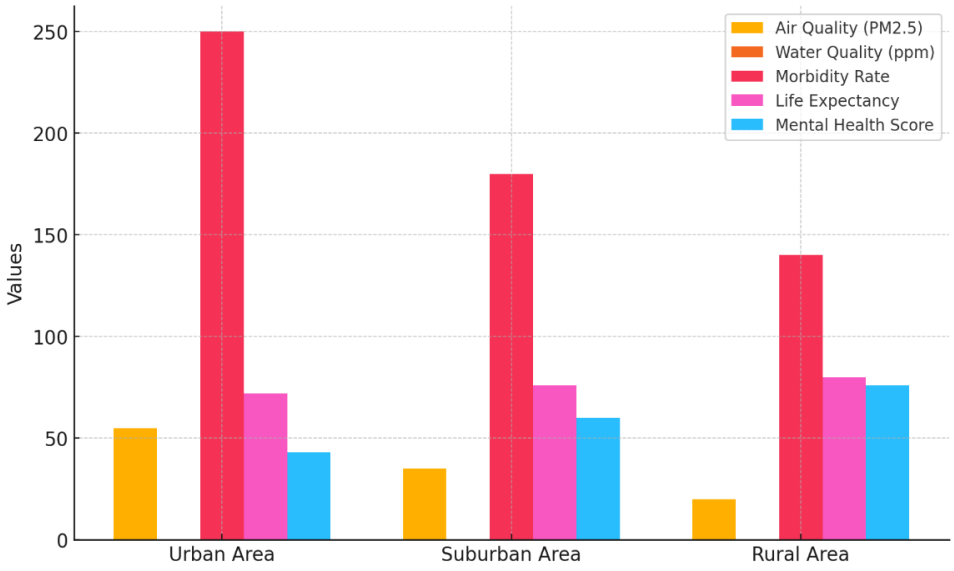

Figure 3. Community Metrics Overview by Region

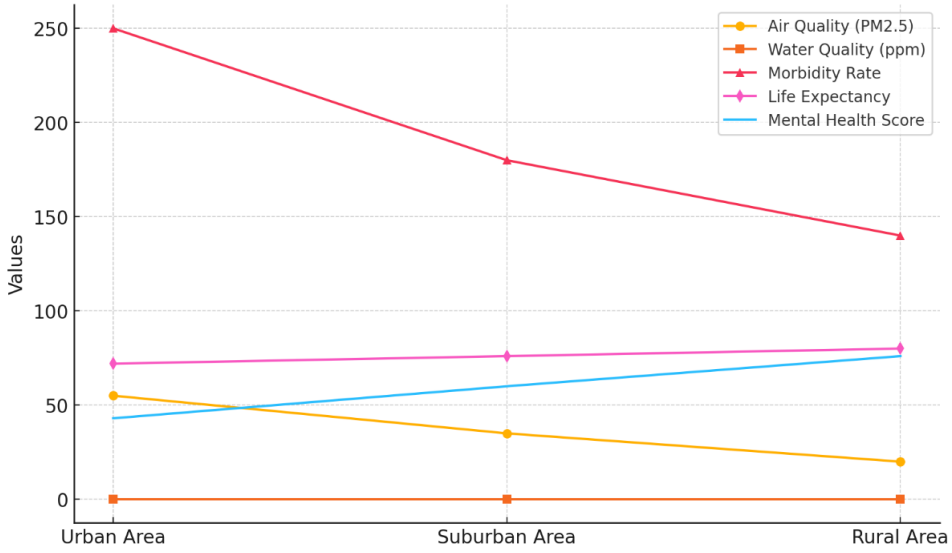

Figure 4. Regional Trends in Environmental and Health Metrics

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Highest amounts of air pollution (PM2,5 = 55 μg/m³) are linked to a higher death rate of 250 per 1 000 people and a shorter life expectancy of 72 years in cities. The mental health score is also the lowest in cities (43 %), which suggest that bad natural factors like smog and stresses are bad for both mental and physical health. Figure 4 shows regional changes in health and environmental measures, revealing links between the quality of the environment and the health of the people.

With better water quality (0,01 ppm) and average air quality (PM2,5 = 35 μg/m³), illness rates are lower (180 per 1000 people), life expectancy is higher (76 years), and mental health is better (60 %). It is in the country, where the air quality is better (PM2,5 = 20 μg/m³), the water quality is very low (0,005 ppm), and the death rate is lowest (140 per 1000 people), that people can expect to live the longest (80 years) and have the best mental health (76 %).

Table 3. Socioeconomic and Community Engagement

Community	Income Level (Annual Income, USD)	Unemployment Rate (%)	Access to Healthcare (%)	Community Engagement (%)	Social Cohesion Score (%)
Urban Area	25000	12	85	52	60
Suburban Area	45000	5	95	70	83
Rural Area	35000	8	70	44	55

Table 3 shows the social and community involvement factors that are different in cities, suburbs, and rural places. These changes are important for figuring out quality of life. Access to health care is pretty good (85 %) in cities, even though the average income is only $25000 and the jobless rate is high at 12 %. Community involvement, on the other hand, is only 52 %, and social stability is only 60 %. Higher unemployment and middling involvement show that even though healthcare is available, social and economic factors may make the community less happy and healthy as a whole. Figure 5 shows how income, jobs, access to health care, community involvement, and social harmony are spread out among different groups of people.

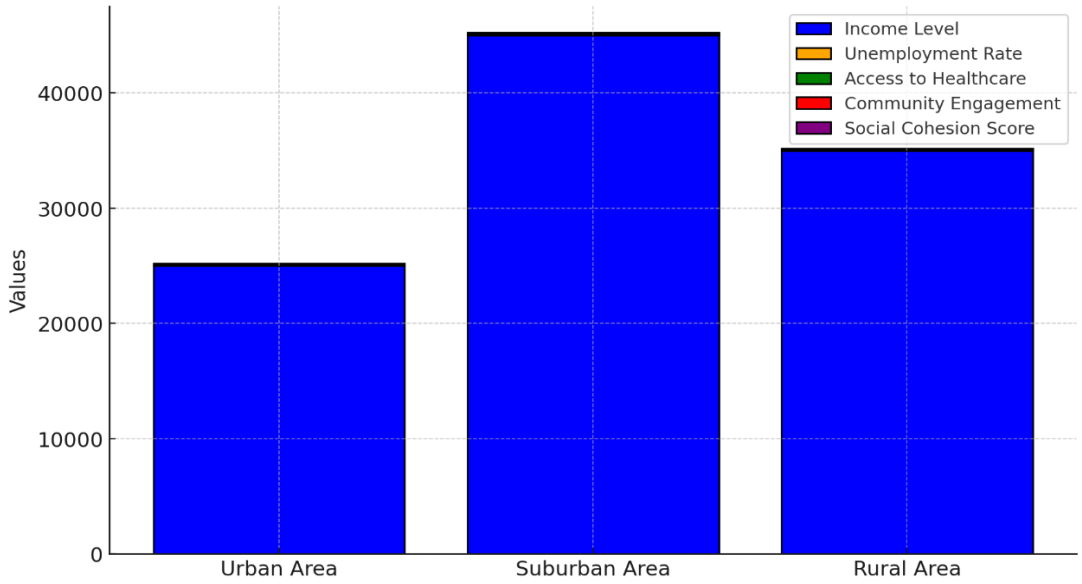

Figure 5. Distribution of Income, Employment, Healthcare, Engagement, and Social Cohesion Across Communities

With a higher income ($45000) and a lower jobless rate (5 %), the suburbs are much better places to get health care (95 % of people) and get involved in the community (70 % of people). A higher social harmony score (83 %), which means that neighbourhood ties are better and people feel safer in their social lives. Figure 6 looks at how neighbourhood measures have changed health and socioeconomic factors in cities, suburbs, and rural places over time.

A better quality of life is likely due to these things, which include a stable economy and strong neighbourhood bonds. With an average income of $35000 and a jobless rate of 8 %, people in rural places have less access to health care (70 %) and are less involved in their communities (44 %). The social integration number is the lowest (55 %), which suggests that problems with the economy and health care, along with few social interactions, may make people in these places less satisfied with their communities as a whole. People who live in rural areas face special problems that affect their health and the health of their communities as a whole.

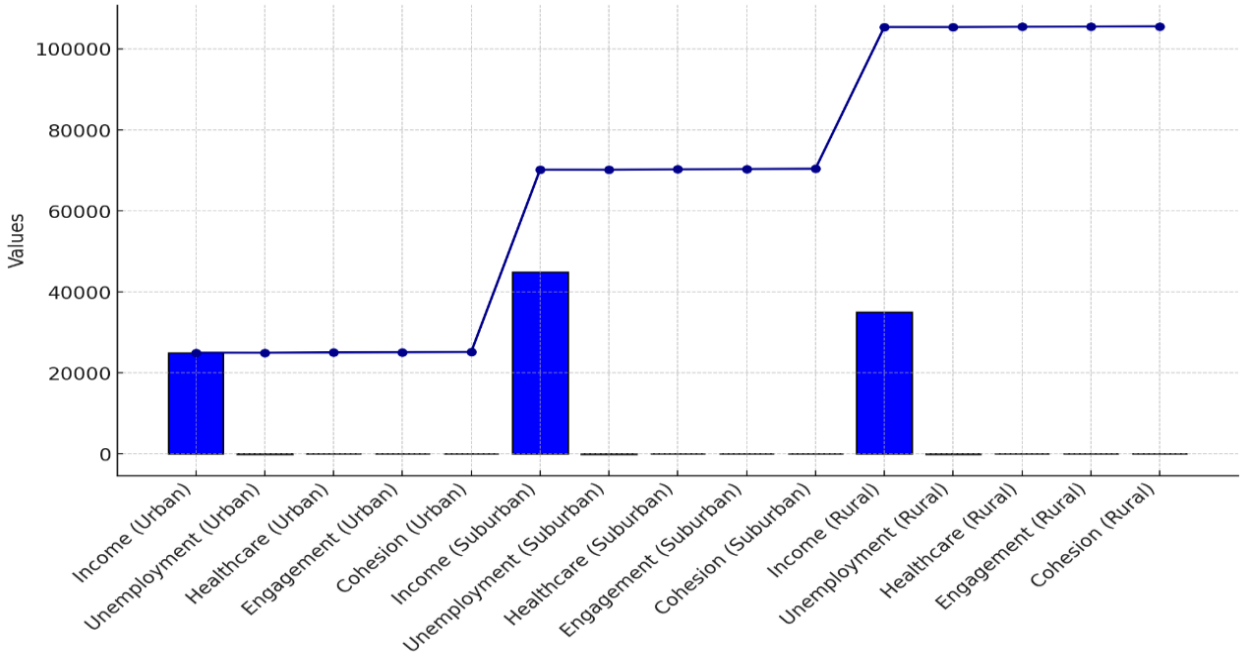

Figure 6. Community Metrics: Incremental Impact Analysis for Urban, Suburban, and Rural Areas

CONCLUSIONS

This study shows how important public health is to the general quality of life in communities. People's physical and mental health is directly affected by things like the quality of the air and water, how trash is handled, noise pollution, and access to green areas. The research found that places with a lot of pollution have higher rates of long-term illnesses like asthma, heart disease, and mental health problems, all of which make life a lot less enjoyable. Also, social issues are very important because poor areas often don't have the means to fix the problems caused by bad natural conditions. Environmental stresses, like being around smog and noise all the time, also had a clear effect on people's mental health. For example, locals reported higher levels of worry, anxiety, and sadness. In places where there weren't many or any green spaces, the lack of outdoor areas made mental health problems worse and made it harder for people to get along with each other. These results make it clear that specific actions are needed to make the world better, especially in places that aren't getting enough help. To make communities healthier and happier, policies must be put in place to clean up the air and water, encourage better trash management, and give more people access to green areas. Getting rid of social gaps and making sure everyone has equal access to resources like healthcare, schooling, and jobs is also important for lowering the health effects of environmental dangers. Prioritising environmental health will be important for improving quality of life and building healthy, adaptable communities as the world's population continues to move to cities and climate problems get worse.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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