International Journal of Research in Economics and Social Sciences(IJRESS)
Available online at: http://euroasiapub.org
Vol. 12 Issue 7, July- 2022
ISSN(o): 2249-7382 | Impact Factor: 8.018
(An open access scholarly, peer-reviewed, interdisciplinary, monthly, and fully refereed journal.)

HEALTH HAZARDS OF NOISE POLLUTION

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Abstract

Noise pollution is a significant issue that affects cities all over the world. Sound that is not desirable is referred to as noise. The term "environmental noise" refers to any undesirable sound that may be heard in our communities, with the exception of sounds that originate in places of business. Environmental noise pollution is a type of air pollution that poses a risk to people's health and well-being. It is more severe and pervasive than it has ever been, and its volume and severity will continue to increase as a result of population expansion, urbanization, and the related growth in the use of increasingly powerful, diversified, and highly mobile sources of noise. This is due to the fact that noise pollution is expected to continue to expand as a result of population growth and urbanization. It will also continue to expand as a result of the continued expansion of traffic on highways, rail lines, and airports, all of which continue to be significant contributors to environmental noise. Workers in industry settings are frequently subjected to loud noise because of the operation of the machinery. The potential adverse consequences of noise pollution on human health are extensive, ubiquitous, long-lasting, and substantial on both a medical and societal level. Noise has direct and cumulative negative consequences that are harmful to health and that damage the environment in residential, social, and working settings, resulting in actual (economic) and intangible (wellbeing) losses. These impacts are detrimental to the environment. Noise is a significant threat to public health, since it may cause hearing loss, disturbed sleep, cardiovascular illness, social handicaps, decreased productivity, bad social behavior, irritation reactions, absenteeism, and accidents. It can make it difficult to take pleasure in one's possessions and leisure time and can also raise the likelihood of engaging in antisocial behavior. The negative effects of noise on one's general health and well-being are comparable to those caused by prolonged stress. It will have a negative impact on future generations by lowering the quality of residential, social, and educational settings, as well as the economic losses that will result. Enlightened government restrictions should have as their primary objective the protection of citizens from the harmful consequences of airborne pollution, particularly those that are the result of noise pollution. It is not appropriate for outsiders to dictate the characteristics of a person's acoustical environment; instead, individuals should have the freedom to select such characteristics for themselves.

Keywords: *Health, Noise ,Pollution*

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Introduction

In 1859, Florence Nightingale identified noise as a potential threat to people's health when she said, "Unnecessary noise is the most cruel abuse of care which can be inflicted on either the sick or the well". The urban territorial phenomena known as noise pollution is reaching alarming proportions in each and every metropolis. Both the occurrence of pollution and its severity have been growing at an alarming rate. People experience aggravation as a result of noise pollution. Typically, the noise is the result of the operation of machinery, and it interferes with either the activity level or the equilibrium of human existence. It is a rising environmental concern that is gradually becoming an all-pervasive, yet undetectable sort of pollution not just in rich nations but also in developing ones. This is a problem that is occurring in both of these types of countries. The English term "noise" is derived from the Latin word "noisa," which means "unwanted sound" or a sound that is particularly loud, unpleasant, or unexpected. It is possible to characterize it as the wrong sound being produced at the wrong place and at the wrong time. The issues with noise that occurred in the past are negligible in comparison. Noise pollution continues to increase in extent, frequency, and intensity as a result of population expansion, urbanization, and technological improvements This is especially noticeable when compared to the levels of noise pollution experienced by those living in modern cities. People are suffering from a wide variety of illnesses as a direct result of their exposure to noise, including hearing impairment, interference with spoken communication, sleep problems, cardiovascular irregularities, annoyance, and so on.

Noise Pollution

Health Concerns

Both the World Health Organization (WHO) and the Environmental Protection Agency (EPA) of India have acknowledged the negative impact that noise pollution may have on people's health. According to the Centers for Disease Control and Prevention, noise pollution is "an increasing public health problem" that can lead to a wide variety of adverse health effects. Some of these effects include hearing loss, stress, high blood pressure, interference with speech, headaches, disturbance of rest and sleep, productivity and mental health effects, and a general reduction in one's quality of life.

What is Noise Pollution?

The term "noise pollution" refers to any unwanted noise that is produced by humans or machines and can be physically painful, distracting, invasive, or any combination of these. Both

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outdoor and interior sources can contribute to noise pollution. Some examples of outside sources include automobile traffic, jet aircraft, garbage trucks, construction equipment, manufacturing operations, lawn mowers, and leaf blowers. Some examples of inside sources are boom boxes, heating and air conditioning systems, and metal chairs that scrape on floors.

Noise Pollution and the Developing Child

- Children who are subjected to noise pollution while they are studying are more likely to encounter reading delays.
- Children who are educated in environments that are devoid of background noise develop greater focus abilities.
- Children who are exposed to high levels of noise pollution have the ability to tune out not just the sound of the environment but also the voice of their teachers, which can have a negative impact on their ability to read and communicate.
- When studying in a noisy setting, children have more difficulties understanding spoken language and differentiating the sounds of speech.
- Children who spend time in noisier environments have higher resting blood pressure and higher stress levels.

Noise pollution: Causes, effects and control measures

The primary mode of communication in many species, including humans, is auditory in nature. A low sound is both calming and safe to listen to. A sound that is loud, unpleasant, or unwelcome is referred to as noise. Some people will hear music in a sound that others would hear as noise and vice versa. It is contingent on the volume, duration, and disposition of the individual. A physical manifestation of pollution is noise, which derives its name from the Latin word for seasickness, nausea. It does not have a negative impact on the air, land, or water, but it does have an effect on the creatures, including people. The term "noise" refers to any sound that is not desirable and that is unwelcome, loud, and intrusive. The range of sound that can be heard by humans is referred to as their audible range. The audible spectrum is determined by the frequency and intensity of the sound. Both the frequency, which may vary from 20 to 20,000 Hz, and the loudness, which can range from 0 to 120 dB, are considered typical for someone with normal hearing. Decibels (dB) are the units used to measure sound. Noise pollution is defined as having a decibel level that is more than 80.

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Adverse Health Effects of Noise

The World Health Organization (WHO) has categorized the negative impacts of noise pollution on human health into seven different groups. The WHO Guideline on Community Noise is where much of the following information originates from, and its structure has been followed. In keeping with the findings of the other recent studies carried out on this topic, the guideline offers a summary of noise-related concerns that is not only outstanding but also relatively current and exhaustive.

Hearing Impairment

Hearing is critical to both one's health and one's sense of safety. An rise in the threshold of hearing as clinically evaluated by audiometry is the standard definition of hearing impairment. Hearing loss can be caused by a number of factors, including the environment in which a person works and lives, as well as by traumatic events, ototoxic medicines, infectious diseases, and even hereditary factors. There is widespread consensus that prolonged exposure to sound levels that are lower than 70 decibels does not result in permanent hearing loss, regardless of how long the exposure lasts. To put this into perspective, 85 decibels is about similar to the volume of heavy truck traffic on a major road. There is widespread consensus that prolonged exposure to sound levels that are greater than 85 decibels for more than eight hours poses a risk of health problems. Damage is proportional to both the sound pressure (measured in dB) and the length of time that an individual is subjected to it when sound levels are greater than 85 dB. Occupation-related noise exposure is the most common reason for hearing loss; however, exposure to noise from other sources, particularly during leisure activities, can also cause considerable hearing loss. According to the findings of several studies, youngsters appear to be more susceptible to noise-induced hearing damage than adults. Hearing loss brought on by noise exposure may be accompanied by abnormalities in loudness perception (loudness recruitment), distortion (paracusis), and tinnitus in the affected ear(s). Tinnitus can be a transitory condition, but after extended exposure, it can also become permanent. Hearing loss can eventually lead to social withdrawal, sadness, a diminished ability to discriminate speech, worse performance in school and on the work, fewer career options, and feelings of isolation.

Negative Social Behaviour and Annoyance

An individual is said to experience annoyance when they have a sensation of discomfort in connection with any agent or circumstance that they believe will have a negative effect on them. It's possible that the words "aversion" or "distress" do a better job of describing this reaction. Because it creates the same sorts of effects as other stressors, noise has been utilized as a

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noxious stimulus in a range of investigations because it produces the same kinds of effects. When noise is accompanied by vibration or other low frequency components, the level of annoyance experienced by the listener increases dramatically. Anger, disappointment, discontent, withdrawal, helplessness, melancholy, worry, distraction, agitation, or tiredness are some of the unpleasant emotions that are linked with noise pollution. The phrase "annoyance" does not even begin to encompass the vast spectrum of negative reactions that are connected with noise pollution. These effects are made worse by the feeling of having no control over the background noise.

The consequences of noise exposure on social and behavioral patterns are complicated, indirect, and imperceptible. These effects include changes in everyday behavior (for example, closing windows and doors to eliminate outside noises; avoiding the use of balconies, patios, and yards; and turning up the volume on radios and television sets); changes in social behavior (for example, aggressiveness, unfriendliness, nonparticipation, or disengagement); and changes in social indicators (for example, residential mobility, hospital admissions, drug consumption, and accident rates); and changes in mood (increased resentment, anxiety, and depression

It is generally accepted that exposure to noise in and of itself does not generate aggressive behavior. However, noise can be a trigger for aggressive behavior when it is combined with other factors such as provocation, pre-existing anger or hostility, alcohol, or other psychoactive substances.

The outcomes of irritation include the privately experienced feelings of displeasure, the publicly voiced complaints to authorities (although underreporting is certainly considerable), and the unfavorable health repercussions that have previously been recognized. A considerable decline in one's quality of life, which is directly correlated to a decline in one's health and sense of well-being, is described by the fact that the term "annoyance" can refer to more than just a small irritation. In this respect, it is essential to keep in mind that discomfort does not lessen with the passage of time, despite the fact that one remains exposed to noise.

Interference with Spoken Communication

Noise pollution makes it difficult to understand regular speech and is linked to a variety of personal problems, handicaps, and changes in behavior. Noise pollution also makes it more difficult to sleep. Problems with attention, weariness, doubt, loss of self-confidence, annoyance, misunderstandings, diminished working capacity, impaired interpersonal interactions, and stress reactions are some examples of these kinds of side effects. It is possible that some of these consequences will lead to an increase in accidents, a disruption in classroom communication,

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and an overall decline in academic achievement. Children, the elderly, and those who are not fluent in the spoken language are three categories who are especially susceptible to abuse.

Sleep Disturbances

for optimal physiologic and mental functioning in persons who are otherwise healthy. The ambient noise in one's environment is one of the primary contributors to sleep disruption. Alterations in mood, decreases in performance, and other negative long-term repercussions on health and well-being are the direct outcome of sleep disruptions that become chronic and continue over time. Recent years have seen a significant uptick in the amount of investigation into noise pollution caused by automobiles, aircraft, and trains. It is well knowledge, for instance, that a continuous noise that is louder than 30 decibels will prevent a person from sleeping. In the case of intermittent noise, the likelihood of being roused from sleep increases in proportion to the total number of noise episodes experienced during the night. The most common types of sleep problems are having trouble falling asleep, waking up often throughout the night, waking up too early, and experiencing changes in the phases and depth of sleep, most notably a decrease in REM sleep. In addition to a variety of consequences on the state of sleep itself, being exposed to noise while sleeping can induce an increase in blood pressure, an increase in heart rate, an increase in pulse amplitude, vasoconstriction, alterations in breathing, cardiac arrhythmias, and greater body movement. There is a possibility that the threshold and response correlations are distinct for each of them. Some of these effects, such as awakening, become less noticeable with continued exposure, while others, notably cardiovascular reactions, remain the same. Fatigue, a lowered mood and sense of well-being, and a reduction in performance are some of the secondary effects (also known as after effects) that are evaluated the following day. Both a lack of sleep and disruptions in circadian rhythms have been linked to decreased awareness, which in turn has been linked to accidents, injuries, and even fatalities. There is evidence that nighttime noise might have a lasting psychological and societal impact. The overall amount of noise that is disruptive for the next 24 hours is increased by any disturbances that occur during the night. The elderly, those who perform shift work, people who are susceptible to medical or mental problems, and people who have sleep issues are all examples of particularly sensitive groups.

Cardiovascular Disturbances

By means of the endocrine and autonomic nervous systems, noise pollution is shown to have both short-term and long-term impacts on humans (as well as other species). This is supported by an ever-growing amount of empirical research. It has been hypothesized that noise functions as a general biological stressor that elicits responses that get the body ready for either a fight or

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a flight response. Because of this, noise can set off responses in both the endocrine and the autonomic nervous systems, both of which can have an effect on the cardiovascular system. As a result, noise may be a risk factor for cardiovascular disease. Long-term, everyday exposure to noise levels that are greater than 65 dB, or acute exposure to noise levels that are greater than 80 to 85 dB, is required for these effects to become noticeable. Acute exposure to noise stimulates neurological and hormonal responses, resulting in transient elevations in blood pressure, heart rate, and vasoconstriction. These effects can be dangerous in high doses. Studies of individuals who were exposed to occupational or environmental noise show that exposure of sufficient intensity and duration causes an increase in the following: heart rate, peripheral resistance, blood pressure, blood viscosity, levels of blood lipids, electrolyte shifts, and levels of epinephrine, norepinephrine, and cortisol in the bloodstream. Reflex reactions can be triggered by sudden and unexpected sounds as well. Even if noise does not disrupt a subject's sleep, it may nonetheless stimulate autonomic reactions including the release of adrenaline, norepinephrine, and cortisol. Cardiovascular changes are not dependent on sleep disruptions. According to the comments, it appears that one can never become fully accustomed to the noise that occurs throughout the night. An exposure to noise for a short period of time might cause physiologic alterations that are easily reversible. However, exposure to noise that is of sufficient intensity, length, and unpredictability can cause alterations that may not be so easily reversed. The research that has been conducted on the impacts of ambient noise has demonstrated a link between noise exposure and eventual cardiovascular disease. Even if there is a possibility that the increased risk of noise-induced cardiovascular illness is rather low, the fact that the number of individuals who are at risk as well as the amount of noise to which they are exposed continues to rise gives the issue significant public health significance. Additionally, children are put in danger. It has been demonstrated that children who grow up in loud surroundings have higher than average blood pressures as well as higher than average levels of stress chemicals.

Disturbances in Mental Health

Although it is not thought that noise pollution directly causes mental disease, it is understood that it hastens and worsens the progression of mental conditions that were already present. The following negative consequences, which may be caused by or contributed to by noise pollution, include: anxiety, tension, nervousness, nausea, headache, emotional instability, argumentativeness, sexual impotence, changes in mood, rise in social conflicts, neurosis, hysteria, and psychosis. Noise pollution is a major source of environmental pollution. According to population research, there may be connections between noise and indices of mental health such as ratings of well-being, symptom profiles, the use of psychoactive pharmaceuticals and sleeping medicines, and admission rates to mental hospitals. Children, the

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elderly, and those who already struggle with depression on a fundamental level may be especially susceptible to these consequences due to the fact that they may not have effective coping strategies. Children who are raised in surroundings with a lot of background noise find the noise irritating and report having a lower quality of life overall. When noise levels exceed 80 decibels, researchers have shown a correlation between that and an increase in violent behavior as well as a reduction in behavior that is beneficial to others. The news media frequently record instances of aggressive behavior resulting from disagreements about noise; the outcomes of many of these disagreements were either injury or death. The impacts of noise, such as those described above, could be able to assist explain some of the dehumanization that can be observed in the modern, crowded, and noisy metropolitan environment.

Sources of Noise Pollution

1. Industrialization: The vast majority of commercial enterprises rely on large pieces of machinery that are capable of making noise. In addition to that, several different pieces of machinery, such as compressors, generators, exhaust fans, and grinding mills, all contribute to the production of noise.
2. Poor Urban Planning: In the majority of emerging nations, inadequate urban planning is also a significant factor in the problem. Noise pollution is the result of factors such as crowded living quarters, big families living in cramped quarters, loud traffic and honking, parking lots, and commercial zones, and it has a negative impact on society's environment.
3. Social Events: The majority of social activities include exceptionally loud noise levels. People typically disobey the laws that have been established by the local authority and cause a disturbance in the area, regardless of whether it is a wedding, party, tavern, disc, or place of church. People sing their favorite songs at top volume and dance until midnight, which makes the situation for those who live close far worse.
4. Transportation: Heavy noise is produced when there is a large number of automobiles on the roads, airplanes, or trains. The excessive loudness causes a circumstance in which a typical person's hearing becomes impaired, leading to this predicament.
5. Construction Activities: Construction work, including mining and the building of bridges, dams, buildings, stations, highways, and flyovers, is carried out in virtually every region of the world. In order to satisfy the requirements of an ever-increasing population, it is necessary to carry on with these building projects. In addition, it contributes to the pollution of noise.
6. Household Chores: We humans are surrounded by technological devices, and we make considerable use of them in our day-to-day lives. Toys and appliances that make a lot of

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noise, such as a television, a mobile phone, a mixer grinder, a pressure cooker, a vacuum cleaner, a washing machine and dryer, a cooler, and an air conditioner, are all contributors to the total amount of noise that is created, which may negatively impact the standard of living in our area.

7. Fireworks: During many of the many types of fairs, festivals, and cultural festivities, fireworks are a familiar sight. In addition to contributing to air pollution, the volume of their sound contributes to noise pollution.
8. Agricultural Machines: Agriculture has become quite mechanical, but also very noisy, as a result of the proliferation of tractors, thrashers, harvesters, tube wells, powered tillers, and other similar tools.
9. **Defence Equipment and launching of satellites:** Artillery, tanks, the launch of rockets, explosions, the exercise of military jets, and shooting practices all contribute significantly to the level of noise pollution that exists in the environment. Sonic booms and the screams of jet engines can have a loud effect on the hearing. Sonic booms also occur when satellites are launched.
10. **Miscellaneous Sources:** Other areas that contribute to noise pollution include car repair businesses, public markets, public transportation hubs, schools, universities, and train stations, among other places.

Effects of noise pollution

The way in which individuals react to sound is highly dependent on factors such as age and personality. Even within the same individual, it is possible for it to fluctuate from time to time as a result of shifts in health, weariness, and other factors (Fig). The following is a list of the impacts that noise has on humans:

Conclusions

In most cases, only fundamental measurements (in dBA) have been published, despite the fact that the ultimate objective ought to be to discover strategies to improve the acoustic environment. It's possible that the acoustic measures presented here are too basic for hospital settings. In addition, a number of "mechanism" studies that evaluate changes in the acoustic environment are required in order to maximize the efficacy of acoustic or behavioral modifications. These studies need to be conducted in order to optimize the effectiveness of acoustic or behavioral changes. In order to save our valuable lives, we need to take precautions to ensure that the working environment is free of noise.

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