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AN ANALYSIS OF ENVIRONMENTAL POLLUTION RELATED HEALTH HAZARDS AMONG AUTO RICKSHAW DRIVERS

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Abstract

Pollution can take the form of chemical substances or energy, such as noise, heat or light. Pollutants, the components of pollution, can be either foreign substances/energies or naturally occurring contaminants. Air and noise pollution in India is quite a serious issue with the major sources being fuel wood and biomass burning, fuel adulteration, vehicle emission, sound horn and traffic congestion. The auto and share-auto drivers spend most of their time during working hours in roadway and/or in bus stands while the taxi drivers park their cars to wait for passengers mainly in taxi/bus stands or stops. Therefore, these drivers are at high risk to be affected by traffic noise and polluted air. The majorities of drivers remain unaware of the health effects of noise and polluted air this is the main causes of the occupational hazards of auto and other drivers. This paper tries to describe the environmental pollution and health hazards of the auto drivers.

Keywords: auto rickshaw drivers, health problems, environmental pollution

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Introduction

Traffic congestion is severe in India's cities and towns. Traffic congestion is caused for several reasons, some of which are: increase in number of vehicles per kilometer of available road, a lack of intra-city divided-lane highways and intra-city expressways networks, lack of inter-city expressways, traffic accidents and chaos due to poor enforcement of traffic laws it is the main reason for the air and noise pollution in India. Air pollution in India is quite a serious issue with the major sources being fuel wood and biomass burning, fuel adulteration, vehicle emission, sound horn and traffic congestion. The commuter bus and auto drivers are engaged in transporting passengers, and most of their time they are exposed in noisy and dusty environment. The auto and share-auto drivers spend most of their time during working hours in roadway and/or in bus stands while the taxi drivers park their cars to wait for passengers mainly in taxi/bus stands or stops. Therefore, these drivers are at high risk to be affected by traffic noise and polluted air. The majorities of drivers remain unaware of the health effects of noise and polluted air this is the main causes of the occupational hazards of auto and other drivers. Many studies around the world have been carried out in different categories of population and workplaces on the impacts of noise and air pollution. This paper aims to identify the environmental pollution and health hazards on auto drivers along with prevention of health hazards from degradation of environment.

Review of the literature

Mirjana Ugljesic and et.al (1996) studied the "Exercise testing of young, apparently healthy professional drivers" this study was to examine the responses of young, apparently healthy professional drivers to exercise testing. A bicycle exercise test was performed by a randomly selected group of 42 apparently healthy, male professional drivers aged 20 to 40 years and a group of 30 building workers, who formed a reference group. The prevalence of resting electrocardiographic changes and complaints of chest pain and other symptoms suggestive of ischemic heart disease were less than one percent among these working populations. The major reason for non inclusion in the study was blood pressure over 140/90mm Hg (18.6/12kpa), which was found for about 15 per cent of the professional drivers and 10 per cent of the referents. The professional drivers and referents had the following standard cardiac risk factor profile, analyzed dichotomously. Twenty-six (62%) professional drivers and fifteen (50%) of the referents were

current smokers of 20 or more cigarettes a day and had been smoking for over five years. A body mass index greater than 28 was found for 16 (38%) professional drivers and 14 (47%) referents. The findings presented in this paper, together with those reported previously; suggest that professional drivers show a diastolic hyper responsiveness both to exercise and to work-related stressors. The results of such investigations would help us develop more effective early detection and prevention of these disorders among professional drivers.

Vadivel (2014) Studied the "Occupational Risks and Health Status among Professional Driver in Erode District, Tamilnadu" this paper analyzed on Socio-economic status among professional driver in Erode district of Tamilnadu. This paper found that drivers often ignore their health problems and carry on driving with headaches and other health imprints, or take over-the-counter medicines to relieve pain. In this paper the sampling 600 drivers was carried out in the 5 blocks of the district namely Erode, Gobichettipalayam, Bhavani, perundurai and Sathyamangalam and used stratified random. The result presents the chronic ailment of disease status of drivers. Out of the 97 sample respondents, as well 17.5 per cent were affected by heart attack/cardiac failure. This displays driver's overall health status after treatment, only 8 drivers (8.2 per cent) had poor health condition and 15 respondents (15.5 per cent) were had average health condition, more than half of them 68 per cent got Good health status and only 8 respondents (8.2 per cent) had poor health condition had excellent health status after treatment. This paper always insists of illness of health and other medical services critical to maintain the health status of professional drivers.

Karen Belkic, et.al (April 1994) examined the "Mechanisms of cardiac risk among professional drivers" the objective of this study is to answer the question that how this excess cardiac risk occurs for professional drivers and to explore the neural mechanism based on epidemiologic and field studies as well as clinical laboratory and experimental data. The authors founded that the professional drivers have excess cardiac risk that is not yet fully explained by standard risk factors, more advanced neurophysiologic methods show higher cortical electro negativity to imperative signals among professional drivers than among non-driver referents. There is fair constant blood pressure level though some drivers show sudden dramatic rises. Increased heart rate has been consistently reported during professional driving by healthy subjects and cardiac

patients. Catecholamine excretion is consistently reported to be elevated during exposure to driving among professionals

Rahul Shaik and et.al (2014) studied the "The prevalence of musculoskeletal disorders and their association with risk factors in auto rickshaw drivers- a survey in Guntur city" in this paper made an attempt to find out the prevalence of work related musculoskeletal disorders, and their association with possible risk factors among the auto rickshaw drivers of Guntur City. This paper found that total sample of 300 drivers 63.66 per cent reported low back, 58.66 per cent reported knee troubles, 52.33 per cent reported neck troubles and 46.33 per cent reported ankle trouble. Driver's seat vibration is having strong significant positive association with the occurrence of low back ache. Work experience, maximum working hours per week, and less shoulder to handle distance are associated with knee troubles. Driver's seat on right side vibration is associated with lower back troubles; working experience and lower cabin space are associated with ankle troubles.

Overall Health Effects on air pollution

Many of us experience some kind of air pollution-related symptoms such as watery eyes, coughing, or wheezing. Even for healthy people, polluted air can cause respiratory irritation or breathing difficulties during exercise or outdoor activities. Your actual risk depends on your current health status, the pollutant type and concentration, and the length of your exposure to the polluted air.

People most susceptible to severe health problems from air pollution are:

- Individuals with heart disease - such as coronary artery disease or congestive heart failure
- Individuals with lung disease - such as asthma, emphysema or chronic obstructive pulmonary disease (COPD)
- Pregnant women
- Outdoor workers
- Children under age 14, whose lungs are still developing
- Athletes who exercise vigorously outdoors

High air pollution levels can cause immediate health problems:

- Aggravated cardiovascular and respiratory illness
- Added stress to heart and lungs, which must work harder to supply the body with oxygen
- Damaged cells in the respiratory system

Long-term exposure to polluted air can have permanent health effects:

- Accelerated aging of the lungs
- Loss of lung capacity
- Decreased lung function
- Development of diseases such as asthma, bronchitis, emphysema, and possibly cancer
- Shortened life span

Causes of air pollution

- **Natural air pollution:** some kinds of air pollution are produced naturally. Forest fires, erupting volcanoes, and gases released from radioactive decay of rocks inside Earth are just three examples of **natural air pollution** that can have hugely disruptive effects on people and the planet. Forest fires (which often start naturally) can produce huge swathes of smoke that drift for miles over neighboring cities, countries, or continents. Giant volcanic eruptions can spew so much dust into the atmosphere that they block out significant amounts of sunlight and cause the entire planet to cool down for a year or more. Radioactive rocks can release a gas called radon when they decay, which can build up in the basements of buildings with serious effects on people's health.
- **Traffic:** There are something like a half billion cars on the road today—one for every two people in rich countries such as the United States. Virtually all of them are powered by gasoline and diesel engines that burn petroleum to release energy. Petroleum is made up of hydrocarbons (large molecules built from hydrogen and carbon) and, *in theory*, burning them fully with enough oxygen should produce nothing worse than carbon dioxide and water. In practice, fuels aren't pure hydrocarbons and engines don't burn them cleanly. As a result, exhausts from engines contain all kinds of pollution, notably particulates (soot of various sizes), carbon monoxide (CO, a poisonous gas), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and lead—and indirectly produce ozone. Mix this noxious cocktail together and

energize it with sunlight and you get the sometimes brownish, sometimes bluish fog of pollution we call smog, which can hang over cities for days on end.

- **Power plants:** Renewable energy sources such as solar panels and wind turbines are helping us generate a bigger proportion of our power every year, but the overwhelming majority of electricity (around 70 percent in the United States, for example) is still produced by burning fossil fuels such as coal, gas, and oil, mostly in conventional power plants. Just like car engines, power plants should theoretically produce nothing worse than carbon dioxide and water; in practice, fuels are dirty and they don't burn cleanly, so power plants produce a range of air pollutants, notably sulfur dioxide, nitrogen oxides, and particulates. (They also release huge amounts of carbon dioxide, a key cause of global warming and climate change when it rises and accumulates in the atmosphere. We discuss this a bit more down below.)
- **Industrial plants and factories:** Plants that produce the goods we all rely on often release small but significant quantities of pollution into the air. Industrial plants that produce metals such as aluminum and steel, refine petroleum, produce cement, synthesize plastic, or make other chemicals are among those that can produce harmful air pollution. Most plants that pollute release small amounts of pollution continually over a long period of time, though the effects can be cumulative (gradually building up). Sometimes industrial plants release huge of amounts of air pollution accidentally in a very short space of time. One notable case happened in Bhopal, India in December 1984, when a large chemical plant run by the Union Carbide company released a poisonous gas (methyl isocyanine) that hung over the local area, killing around 3000 people and injuring thousands more. (Wikipedia's article on the Bhopal Disaster gives a comprehensive account of what happened.)
- **Other causes of air pollution:** Although traffic, power plants, and industrial and chemical plants produce the majority of Earth's manmade air pollution, many other factors contribute to the problem. In some parts of the world, people still rely on burning wood fuel for their cooking and heating, and that produces indoor air pollution that can seriously harm their health (solar cookers are one solution to that problem). In some areas, garbage is incinerated instead of being recycled or land filled and that can also produce significant air pollution unless the incinerators are properly designed to operate at a high enough temperature (even then, there is a toxic residue left behind that must be disposed of somehow).

Prevention of air pollution

- Reduce the air pollution of your automobile. When you are out for a drive, do not idle your vehicle. Drive less by combining trips, telecommuting, and carpooling, car sharing, riding a bike, walking, and using public transit. When you are in the market to buy a new vehicle, consider buying the most efficient and least polluting vehicle. Be sure to keep car tuned and regularly replace air filters at recommended intervals.
- Save energy. When you save energy, whether it is at home, at work, or while you are traveling, you will be reducing air polluting particulates as well as carbon emissions that pollute the air. For more information on how you can save energy, check out our articles on 10 Tips on How to Improve Energy Efficiency at Home and 10 Ways to Save Energy and Money at Home.
- Use eco-friendly products in your home and in your yard. When purchasing household products for your home and your yard, opt for the cleanest and greenest products that don't contain any harmful polluting chemicals.
- If you smoke, do not smoke inside your home.
- Support public policies and representative politicians who will work to protect the air and the environment.
- Support companies that are committed to sustainable manufacturing practices and reducing pollution in the air.
- Recycle and buy recycled products. It takes more energy and natural resources to make new things, increasing the environmental footprint (including the air pollution that is produced) of those products, compared with those products that are made from recycled materials.
- Plant trees around your home and in your community that can help to reduce air pollutants. Trees help to clean the air of gaseous pollutants, such as nitrogen dioxide, carbon monoxide, sulfur dioxide, and ozone, as well as particulate pollutants[1].
- Keep air-cleaning houseplants to help reduce the air pollutants inside your home. A list of recommended houseplants to help keep your home's indoor air clean can be found here.
- If you own a wood burning stove or a fireplace, be sure to keep it well-maintained. Old wood stoves can be replaced with newer models that are more efficient. It is also important to burn the right wood in the right way to prevent the generation of unnecessary air pollution.

Overall Health Effects of noise pollution

Noise pollution creates a number of physical and mental ailments in a man. Sound Pollution may lead to human health hazards such as:

- **Deafness:** The impact of sound pollution may totally rob one of his hearing capacities. Prolonged living in an area infested with sound pollution may gradually induce deafness. Continuous stay near the source of 100 decibel sound is likely to rob one permanently one one's hearing faculty. When deafness is caused owing to one's profession, it is then called processional deafness.
- **Various other physical or mental losses:** Sound pollution is prone to distort the natural tempo of our speech. People may experience difficulty while speaking. Generally the explosive sound produced by the vehicular traffic and the air-planes tends to produce such problems.
- **Annoyance:** Sound pollution produces such annoyance. A nervous sort of a man of course, is by nature more prone to such discomfiture and discomfort. Excessive sound pollution makes one irritated, and a sort of unnaturalness and excitement is marked in one's behavior.
- **Tired and exhaustion:** A man feels tired and exhausted in a state of prolonged sound pollution. Those who engaged in different professions suffer from mental exhaustion or apathy in work and these tendencies gradually tells upon their efficiency and this factor may deprive the sufferer of his power of audibility in the long run.
- **Physiological losses:** Sound pollution may induce in human body various types of temporary physiological changes, such as hypertension, change of the rate of heart-beat, high respiratory rates, excessive perspiration, vomiting tendency, vertigo and exhaustion. Sound pollution disturbs sleep, too and as such, memory too runs short.

Causes of Noise pollution

- **Fire crackers:** Fire crackers are exploded to make huge sound during celebrations and festive occasions. It is common sight to witness the firing of crackers at live concerts.
- **Transportation vehicles:** Noise pollution is severest in the cities. The different modes of transportation (land, air and water), such as motor-cars, buses, trains, trams, airplanes, etc. produces sound that disturbs human mind.
- **Microphones:** The unrestricted use of microphones during social and political events.
- **Loud speakers:** During social events and other festive occasions, people use loud speakers in unjustified manner.

- **Factories and industries:** In large cities, there are large number of factories, mills and industries. These industrial sites produce immense environmental noise to disturb the habitats of nearby residential areas.
- **Domestic appliances:** Even at homes, people use large number of domestic appliances such as grinder, mixer, juicer, etc.
- **Loud music:** Playing music in high volume,
- **Television:** Television also causes sound and watching television for long hours in just as harmful for ears as they are for eyes.
- **Building and construction sites near residential areas:** The building and construction activity involves use of sound producing equipment such as cement-mixer, road-roller, crane, etc. All the above activities produce enough noise to disturb the health and mind of human-beings and other living bodies.

Prevention of noise pollution

- **Turn off your electronics.** Computers, game systems, televisions and the like all make noise when they're not in use—whether it's a fan spinning or that high-pitched, barely-audible screech some TVs make in standby. Over time, all of these sounds cause stress on the ears. Turn them off when you are not using them. A little extra effort is worth it; as a bonus, you'll save some money on electricity.
- **Sound proof your space.** There are a lot of things you can do to reduce the sound at home (or perhaps your workplace).
- If you have hard floors, rugs will go a long way in the fight to dampen sound.
- Windows are a known weak point in many structures. Installing better windows, sealing window frames, or hanging curtains (even thin ones) will help reduce the sound coming from outside.
- If you have noisy neighbors on one side of you, put furniture or a big bookshelf (preferably full of books) against that wall.
- If you have laundry machines in a separate room, shut the door. Also try running appliances like dishwashers and bread machines when you're getting ready to leave the house for a bit. When you're gone they can make as much noise as they want.

- **Mask or cancel noise.** Several options are available for you here. Some people like to create peaceful sounds around them. You can do this by hanging wind chimes, turning on a fan, or running a small water feature. It may seem paradoxical because you're creating more noise, however these things help mask the more unpleasant sounds that may otherwise bother you. People who really need help tuning sounds out could opt for a white noise machine. White noise consists of sounds of all audible frequencies (the same way white light is a combination of all visible wavelengths). White noise is able to effectively mask most outside sounds. Many people who use such machines frequently report 'not hearing anything at all' including the noise machine.
- **Earplugs.** Sometimes the simplest solutions are the most effective. If nighttime noise keeps you awake, earplugs could be your ticket to sweet slumber. Just make sure you set your alarm loud enough. Earplugs can also be great if you are going to a noisy event or concert. They don't block out all the noise; rather, they bring sounds down to a manageable level.
- **Move.** This one sounds drastic, but it may be worth it. Sometimes barrier walls and thick curtains can only do so much (and we're not about to line our walls with egg carton foam). While moving outside the city (or perhaps suburbs) will reduce your sound levels greatly, it is not possible for everyone. However, be aware that sound levels can vary quite a bit even within a city. You may not have to move very far to experience a significant drop in noise. Choosing a home away from aircraft paths, trains, highways, or industrial districts is your best bet.

Conclusion

Environment and health interact with one another. The work environment and the nature of job contribute significantly in the causation of diseases. Professional driving is associated with long hours in a single body posture, under exposure to vibration, vehicle exhaust, fuel omission and noise. Furthermore, the work is performed in an environment that demands constant vigilance. There are, however, many specific diseases for which significantly increased risks of mortality and morbidity have been reported. Health should be considered as a fundamental human right and therefore the attainment of the highest level of health should be the most important goal. Most of the drivers always worked in noisy places and dusty air and also the majorities of drivers remain unaware of the health effects of noise and polluted air this is the main causes of the occupational hazards of auto and other drivers. This paper helps to identify

the environmental degradation along with the health hazards of auto drivers and also clearly know the prevention of health diseases from the degradation of environment in India.

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