

**EFFECT OF NOISE POLLUTION ON MENTAL HEALTH: A
SYSTEMATIC REVIEW**

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ABSTRACT

Due to rapid urbanization in our country noise pollution resulting from various sources (e.g., road traffic, railway, household appliances, commercial services, mobiles) which shows adverse effect on health are being increasingly recognized. It effects directly on auditory system. Chronic low or high-level noise exposure can increase in stress hormone level resulting adverse effect on mental health, including mental stress associated with cardiovascular complication, annoyance, sleep disturbance, problems with concentration, nervousness, depression, anxiety, fatigue, uncertainty, irritation, decreased working

capacity, disturbed interpersonal relationship. This review put forth relationship between the noise exposure and mental health, psychological disorder including activation of autonomous nervous system. So, there is need to reduce noise pollution for good mental health.

INTRODUCTION

The word noise is derived from Latin word -nousia which means wrong sound at wrong place at wrong time. It is also defined as 'unwanted sound'.^[1] on Noise contamination is unwanted Sound that interfere into our day-to-day life. In our day today's life these sound we can't avoid these sounds. There are many sources of noise pollution. Such as industrialization, poor urban planning, social events, transportation, construction activities and mainly household

appliances which include gadgets like TV, mixer, grinders, pressure cooker, washing machine.^[2] and one of the important is mobile. Mobile is carried by every person in today's life. As it is necessity of our life due to which noise is generated by its ringtone or other activities we perform on it such listening music, listening video, playing game on it. Different people around us are equally affected by same noise of mobile or any other sources. Because of this noise pollution many adverse effect are seen in population. It may be auditory as well as non-auditory.^[3] Such as hearing problem which may affect psychological health. In children it affects like interference in speech communication, sleep disturbance, cardiovascular diseases,^[4] mental health of child.^[5] These effects are seen in all age group.

In *Ayurveda Samhita* like *Vangbhata samhita* while explaining the *Karnagata Vyadhi* many of *Karnaroga* has *Hetu* of *Mithyayogen Shabdasya*^[6] which means many ear diseases are causes due to unpleasant sound which is noise pollution. *Mithyayogen Shabdasya* is unpleasant and unwanted sound which causes hearing problems. Noise induced hearing loss which is one kind of deafness. Many studies show effect of noise pollution on mental health. It includes problems with concentration, fatigue, uncertainty, irritation, misunderstanding, decreased working capacity, disturbed interpersonal relationships and increased in Stress level. Impact of noise pollution on mental health with wide range of complex factors including biological, Psychological, social and environmental also.

METHODOLOGY

Study Design: A Systematic Review.

Review of literature

Noise Pollution

Regulars exposure to unwanted and elevated sound level that may lead to adverse effect on human being or another living organism. According to WHO sound level less than 70db(decibels) are not damaging to living organism.^[7]

Causes of noise pollution

- Street traffic sounds from ambulances, loud speakers, motor horns, Firecracker.
- Building construction sound like drilling machine other machinery in operation which produces sound of 105 db.
- Loud music in near commercial venues.
- Industrial sound like fan, machine, generator, mills.

- Airport sound during plane taking off or landing.
- Sound due to household appliances like television, radio, coolers, computer, fans, mixers, washing machines.

Normal human ear can detect sound that range between 0 db (hearing threshold) to 140 db.^[8]

Sound ranges between 120 db to 140 db causing pain (pain threshold).

Adverse effect of noise^[9]

- Hearing impairment - Long exposure to high sound levels causes loss of hearing
- Interference with Spoken communication- Noise pollution interfere with ability to comprehend normal speech and may leads number of personal disabilities, behavioral changes.
- Sleep disturbances-Noise pollution during sleep increased blood pressure, increase heart rate, increases pulse amplitude, vasocontraction, cardiac arrhythmias and increased body movement and this effect does not decrease over long time.
- Cardiovascular disturbances ^[10]- Acute exposure to noise activates nervous and hormonal responses leading to increased blood pressure and vasoconstriction.

Effect on mental health

Now a days, everywhere noise pollution can affect mental health. We all expose to noise at several places. Noise pollution effects central nervous system which affects brain. Noise pollution creates annoyance which leads to psychological effect.^[11] Annoyance may include fear and mild anger, related to a belief that one is being avoidably harmed.^[12] Annoyance reaction often associated with degree of interference. Any noise causes in everyday activities which probably precedes and lead to annoyance. Psychological symptoms are reported among industrial worker as they regularly exposed to high noise level in setting such as school, factories. Psychological symptoms include nausea, headache, argumentativeness and changes in mood and anxiety. Community surveys have found that high percentage of people reported 'headache', 'restless night' and 'being tense and edgy' in high noise area.

Various mental health, problems such as anxiety, fatigue, sleep disturbance, nausea, blood pressure, changes in mood are seen in industrial worker who regularly expose to high noise level in settings such as school. There productid can be decrease depending on length of time expose. Studies in children and adolescent have also report that environmental noise has a negative impact on children's health. In such studies children living in noisy neighborhoods

complained of more stress symptoms than those who are living in silent environment. Many psychological disorders can be occurred due to noise such as person can easily get irritated, nervousness, irrational in decision making and constant unease throughout the day. In extreme cases noise can make people so stressful that he become socially aloof, unproductive at work due to poor concentration and emotional instability due to reduce self-confidence.

How to reduce noise pollution^[13]

Reduce noise from home appliances by turning them off more often or by setting timer, so they only switch on at certain time.

By reduce noise from media devices like television, radio video game, mobile by avoiding unnecessary noise playing in the background for long period

We can reduce noise by repair or replace old machinery. Also, by reducing the use of mobile and lowering its volume. By using earplug or earmuffs to reduce its impact.

DISCUSSION

In this study, it has seen that the evidence on the associations between noise and sleep disturbance, annoyance, and cognitive performance. Noise pollution from housing, renovation, construction and commercial services shows a wide range of mental health disorders such as anxiety, stress, fatigue and headache. It is examined in some studies the spatial distribution of at a time multiple noise pollution at fine geographic resolution and their associations with various mental health symptoms, especially in developing countries. This study contributes to the literature about noise pollution. Firstly, it presents the people's subjective evaluations of noise pollution from sources like road traffic, railways, housing renovation, and commercial services at the community level in it main is mobile phone also. Secondly, this paper develops a broad conceptual framework on noise pollution which affect mental health such as anxiety, stress, fatigue, headache as well as sleep disturbance. Finally, as mental health is associated with various factors at both the individual and community scales. Housing tenure and noise with housing conditions are significantly correlated with some mental health symptoms such as anxiety, stress as well as sleep disturbance. People residing in neighborhoods close to the main road have significantly various mental health problems such as anxiety, fatigue, and sleep disturbance. Our country experiencing a rapid urbanization process. There are numerous ongoing construction projects which have led to

increase in construction noise has become a serious problem in many cities. So, one should take precaution to reduce noise pollution.

CONCLUSIONS

While the health affected by environmental pollution particularly air pollution have received worldwide attention in past research. Investigations are needed for the detrimental effects of noise pollution on people's mental health. This study attempts to highlight on the relationships between exposures to multiple sources of noise pollution and mental health. Higher noise pollution exposures are more significantly associated with the worse mental health in general. So, one should try to reduce noise pollution for good mental health.

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