



A study on noise pollution in Karwi city UP

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ABSTRACT

Noise pollution is a major problem in cities around the world. Noise is defined as unwanted sound. Environmental noise consists of all the unwanted sounds in our communities except that which originates in the workplace. Noise represents an important public health problem that can lead to hearing loss, sleep disruption, cardiovascular disease, social handicaps, reduced productivity, negative social behavior, annoyance reactions, absenteeism and accidents. It can impair the ability to enjoy one's property and leisure time and increases the frequency of antisocial behavior. However, all human activities generate sounds, even far from any human habitation (e.g. motor boats on lakes, aircraft in the air, etc.). Noise adversely affects general health and well-being in the same way as does chronic stress. It adversely affects future generations by degrading residential, social, and learning environments with corresponding economic losses. The aim of this paper is to measure the noise pollution in residential and commercial area of karwi city UP. The control on noise pollution needed to protect citizens from the adverse effects of noise pollution. People have the right to choose the nature of their acoustical environment; it should not be imposed by others. Many studies have shown the impacts of anthropogenic noise and concluded that it is potentially a threat to life on Earth.

Key Words: Noise Pollution, Decibel, Temp., Humidity, Health Effect.

Introduction-

Noise is defined as unwanted sound. The word noise is derived from Latin word, Nausea. Noise may be defined as “Wrong Sound in the Wrong Place at the Wrong Time”. Noise produces direct and cumulative adverse effects that impair health and that degrade residential, social, working, and learning environments with corresponding real (economic) and intangible (well-being) losses. It interferes with sleep, concentration, communication, recreation, vegetation, animals and birds. Though noise pollution is a ‘slow and subtle killer’, yet very little efforts have been made to ameliorate the same. (Anjum and Kumari 2022) All these problems are resulting as a consequence of rapid growth of population, self-centred human mentality, fast life style, no. of vehicles, use of large number of instruments in daily life, excessive exploitation of natural resources, rapid rate of urbanization and industrialization. In the present scenario, noise is becoming an increasingly source of discomfort and danger (Jariwala 2017)

Noise contamination is an undesirable or hostile sound that irrationally interfere into our day by day exercises. It has numerous sources, the majority of which are related with urban improvement like street, air, rail transport, modern noise, neighbourhood and recreational commotion. (Keerthana et al 2013) Various components add to

issues of high noise levels, including expanding populace and expanding commotion levels in a vehicle. (Ozer et al 2009) The familiarity with ecological commotion has expanded and there is a higher desire for region, state and neighbourhood government to diminish commotion levels in India. Expulsion of weight horns from all vehicles. Regulatory experts, nearby bodies, and princely individuals The Noise lately has developed as one of the critical poisons of condition. Indeed, it needs the enactment to control and there are some local and state authorisations which specifically or in a roundabout way identify with the issue of commotion be that as it may, there is no particular enactment in India as in some different nations to address the developing difficulties of noise contamination on national level. (Pramendra and Vartika 2011) Another issue of noise contamination rose as of late in India is a result of the unpredictable utilisation of amplifiers. Distinctive individuals have diverse profundities of rest and they can change in accordance with night time sounds. No question in India, institutions for natural security exist, yet the gravity of the issue of commotion contamination has not yet been acknowledged by the Government. issue of noise contamination has officially crossed the risk point and commotion like exhaust cloud, is debilitating as a moderate operator of death. It is elusive, even in country regions, wherever where the main sounds are those delivered by nature. People are the normal receptors of noise contamination. Noise can deliver genuine physical and mental weight on individuals. Effect of commotion relies on the sound's pitch, its recurrence, time example and length of introduction. Noise has both sound-related and non-sound-related impacts relying on the force and the term of the commotion level. It influences rest, hearing and correspondence, mental and physical wellbeing. (Priyanka and Dhivya 2018)

That noise acts as a nonspecific biologic stressor eliciting reactions that prepare the body for a fight or flight response. For this reason, noise can trigger both endocrine and autonomic nervous system responses that affect the cardiovascular system and thus may be a risk factor for cardiovascular disease.

Noise pollution is not believed to be a cause of mental illness, but it is assumed to accelerate and intensify the development of latent mental disorders. Noise pollution may cause or contribute to the following adverse effects: anxiety, stress, nervousness, nausea, headache, emotional instability, argumentativeness, sexual impotence, changes in mood, increase in social conflicts, neurosis, hysteria, and psychosis. (Singh and Pandey 2013). Population studies have suggested associations between noise and mental-health indicators, such as rating of well-being, symptom profiles, the use of psychoactive drugs and sleeping pills, and mental hospital admission rates. Children, the elderly, and those with underlying depression may be particularly vulnerable to these effects because they may lack adequate coping mechanisms. Children in noisy environments find the noise annoying and report a diminished quality of life.

Noise pollution interferes with the ability Annoyance is defined as a feeling of displeasure associated with any agent or condition believed by an individual to adversely affect him or her. Perhaps a better description of this response would be aversion or distress. Noise has been used as a noxious stimulus in a variety of studies because it produces the same kinds of effects as other stressors. Annoyance increases significantly when noise is accompanied by vibration or by low frequency components. (Singh 2016)

Social and behavioural effects of noise exposure are complex, subtle, and indirect. These effects include changes in everyday behaviour (closing windows and doors to eliminate outside noises; avoiding the use of balconies, patios and yards; and turning up the volume of radios and television sets); changes in social behaviour (Sagar and Rao 2006)

Uninterrupted sleep is known to be a prerequisite for good physiologic and mental functioning in healthy individuals. Environmental noise is one of the major causes of disturbed sleep. When sleep disruption becomes chronic, the results are mood changes, decrements in performance, and other long-term effects on health and well-being. (Singh 2016) Much recent research has focused on noise from aircraft, roadways, and trains. It is known, for example, that continuous noise in excess of 30 dB disturbs sleep. For intermittent noise, the probability of being awakened increases with the number of noise events per night.

A growing body of evidence confirms that noise pollution has both temporary and permanent effects on humans (and other mammals) by way of the endocrine and autonomic nervous systems. It has been postulated to comprehend normal speech and may lead to a number of personal disabilities, handicaps, and behavioural changes. These include problems with concentration, fatigue, uncertainty, lack of self-confidence, irritation, misunderstandings, decreased working capacity, disturbed interpersonal relationships, and stress reactions. Some of these effects may lead to increased accidents, disruption of communication in the classroom, and impaired academic performance (Ryherd and Wayne 2012). Particularly vulnerable groups include children, the elderly, and those not familiar with the spoken language.

The WHO has documented seven categories of adverse health effects of noise pollution on humans. Much of the following comes from the WHO Guideline on Community Noise and follows its format. The guideline provides an excellent, reasonably up-to-date, and comprehensive overview of noise-related issues, as do the other recent reviews on this subject.

Material and Method

In this study an effort is made to compare the noise level in some main areas of Karwi city during the morning hour and evening hour traffic using sound level meter. Since noise level varies with atmospheric conditions, in each area respective temperature and its humidity has also been recorded. The noise level also varies according to the no of vehicles passing so the total vehicles were also recorded during the study. The readings were taken during early hours of the day (6.30AM to 9.30AM) and during evening rush hours (6.30AM to 9.30AM) and with those readings comparison of noise level is done.

The data has been collected for overall 8 h on the respective day at the selected sites. The time being selected the most prior ones around 8-10am 10-12am 5-7m pm 8-10pm. The time has been selected so as to cover most part of the day, from calm mornings, rush hours, pleasant evening, to silent night, as they should be respectively. Possibly the readings have been taken from at least 1.5m above the ground level. The six selected sampling stations were Sonapur road, Railway Station, Chakrehi Chauraha, Traffic Chauraha, SDM colony and Bus Stand.

Table-1 Different Sampling Location and Sampling Location Code

S. No.	Sampling Location	Area	Sampling Code
1.	Sonapur	Residential	S1
2.	Railway Station	Commercial	S2
3.	Chakrehi Chauraha	Commercial	S3
4.	SDM Colony	Residential	S4
5.	Bus Stand	Commercial	S5

Atmospheric temperature, Relative humidity and Noise level was monitored in selected sampling site in calm mornings rush hours, pleasant evening, to silent night at selected site

Temperature: Bring a horse shoe magnet close to capillary tube of thermometer and with the down word strokes of it set the index in each limb to rest on mercury column. Preferably set the indices during morning hours. Place the thermometer in shady atmosphere. After a laps of 24 hours record the temperature in two limbs of the instruments. The temperature recorded on left limbs represents the minimum temperature while that on right limbs the maximum.

Humidity: Soak the cotton wick of wet-bulb thermometer in water and swing the set of thermometer in air with the help of handle provided at the top of the instruments. Until the reading in two the rmometer are constant. Record the temperature in both temperature and find the difference in two reading referred to as depression in wet bulb thermometer. Find the RH (%) following table-3 which involves temperature in wet bulb thermometer. If both the thermometer read same temperature, then it is indicative 100% relative humidity.

The present work analysis the vehicular traffic noise during the morning peak hours and evening peak hours. A large no. of set of data were recorded different data in a random manner in order to account for statistical temporal variance in traffic flow condition. The noise measurement parameters recorded was using sound level meter (Lutron, SL-4033SD).

Result & Discussion

The study report community noise level measured in fast developing semi-urban areas of Karwi city, which is one of the rapidly developing industrial city in Karwi supporting millions of people for livelihood. The noise value recorded at different sampling station and in diffrenet time is given in table – 2.

Table-2 Minimum, Maximum & Avarage Noise level at different Sampling station at different time

Station/station code	Time											
	8:00AM			10:00AM			5:00PM			8:00PM		
	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Sonepur (S1)	56.67	88.33	77.67	67.67	89.00	84.33	57.67	89.00	78.33	44.67	88.33	75.33
Railway Station (S2)	55.33	87.00	83.00	58.67	89.00	81.00	70.33	89.00	70.33	69.00	89.00	81.67
Chakrehi Chauraha (S3)	68.00	88.33	80.00	65.00	88.33	80.67	59.33	82.00	77.00	56.33	76.33	72.00
SDM Colony (S4)	25.00	86.33	49.33	49.33	89.00	65.00	47.67	71.33	69.00	34.33	86.00	67.67
Bus stand (S5)	45.33	87.67	75.33	56.33	76.67	65.67	61.33	79.33	69.67	56.33	82.67	73.33

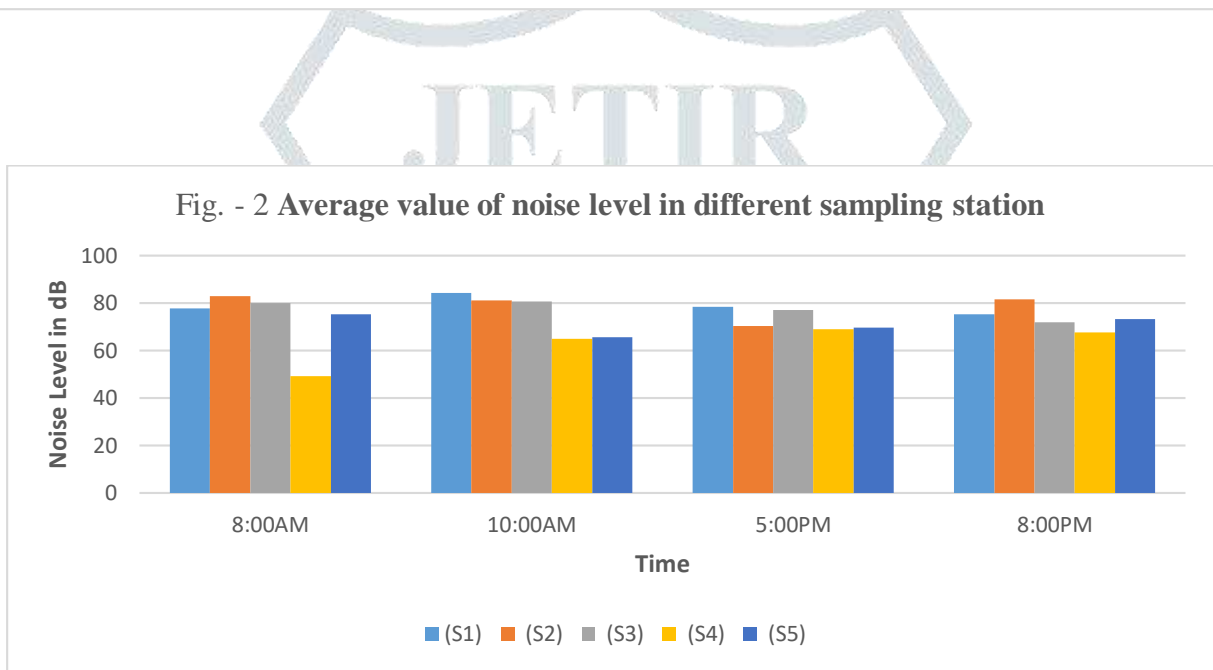
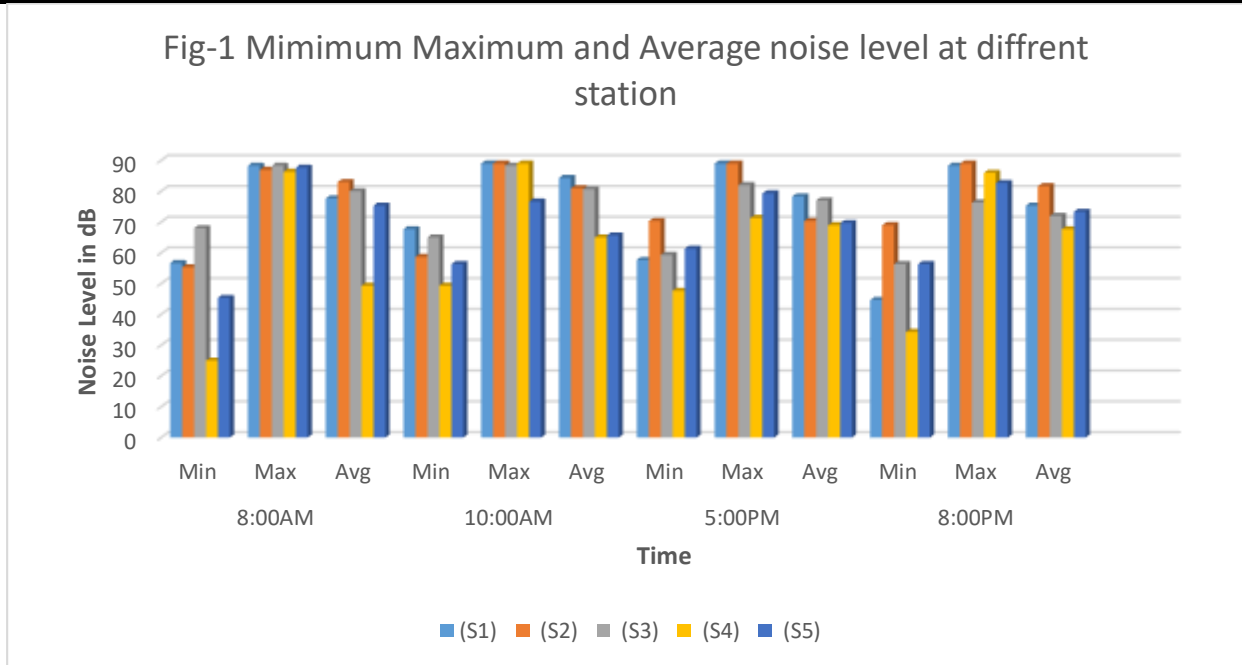


Table-3 Average Noise, Temperature and Humidity Value in different stations

Time	Stations						Temp. °C	Humidity %
	S1 (Noise Level) dB	S2 (Noise Level) dB	S3 (Noise Level) dB	S4 (Noise Level) dB	S5 (Noise Level) dB	S6 (Noise Level) Db		
8:0AM	77.67	83.00	80.00	78.34	49.33	75.33	23.00	26.90
10.0AM	57.67	81.00	80.67	78.33	65.00	65.67	28.00	27.93
5:00PM	78.33	70.33	82.00	72.67	69.00	69.67	29.00	28.93
8:00PM	75.33	81.67	72.00	73.67	67.61	73.35	27.00	25.95

Table-4. Ambient noise quality standard.

Area zone	Category of area/zone	Limit in Db (A) leq.	
		Day	Night
A	Industrial area	75	70
B	Commercial area	65	55
C	Residential area	55	45
D	Silence zone	50	40

It is showed the different sound level in selected area situated in Karwi which can be considered as a high value according to CPCB guideline 65dB in commercial area and Noise level at all the commercial sites during day and night time were found above the prescribed limits of 65 and 55 dB (Table - 4). Working hours are similar to each selected location (8hrs per day)

At 8:00 AM the maximum sound level was found at Railway Station (S2) 83.00dB and the minimum noise level was found at SDM Colony (S4) 49.33dB (Table -3).

At 10:00 AM the maximum sound level was found at Railway Station (S2) 81.00dB and the minimum sound level was found at Sonepur (S1) 57.67dB (Table -3).

At 5:00 PM the maximum sound level was found at Chakrehi Chauraha (S3) 82.00dB and the minimum sound level was found at SDM colony (S4) 69.00dB (Table -3).

At 8:00 PM the maximum sound level was found at Railway Station (S2) 81.67dB and the minimum sound level was found at SDM Colony (S4) 67.67dB (Table -3)

Conclusion and Recommendation

Noise is one of the physical factors that is outcome of our modern life. Noise pollution including noise from transport, workshop, factory, construction activities and neighbours is a significant environmental problem in many rapidly urbanizing areas. Migration of people from rural to urban areas, expansion of cities, infrastructure development and population growth are important factors resulting in motorization and consequent increase in levels of various pollution.

Noise pollution is very extensive. Noise is not a new hazard, Health and Safety are mandatory to each other. the range of occupational noise exposure is from 50.0dB(A) to 75.0dB(A) as per CPCB Stanadard & 85.0 dB(A) as per Factory Act - 1948. It is noted that high level of noise pollution can affect the human ear and lead to the increase of blood pressure, which can cause heart disease. Present situation of noise pollution in Karwi is not good. It is necessary to control this situation. Minimum noise level was found at S4 (SDM colony) in the range of 49.33-69.00dB. Maximum noise level was found in S2 (Railway station) 70.33-83.00dB followed by S3 Chakrehi Chauraha 72.00-80.00dB.

The day time noise level at all the station was found higher than limit. Most of the shopkeepers have problem with high noise pollution but they even do not have any knowledge of the harmfulness of Noise Pollution, thus it is recommended that it is necessary to mitigate this problem through publishing helpful material in print media and awareness programs in TV channels to make people aware the effects of noise pollution and their corrective measures.

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