

A Study of Noise Pollution in Kolhapur City with Special Reference to Silence Zone

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ABSTRACT

When the sound level goes beyond limit and become unwanted to hear and disrupts the quality of life then we call it as noise. World health Organization (WHO) 2001 stated that noise must be recognized as major threat to human being. The objective of present study was to monitor the noise level in silence zone in the Kolhapur city. Total six different locations which are in silence zones has been selected in the city to measure the noise level and after statistical analysis the data was compared with standards prescribed by Central Pollution Control Board (CPCB). The study reveals that the noise level in respective locations was found to be higher than permissible limit and it ranges between 59.22 dB (A) to 78.50 dB (A).

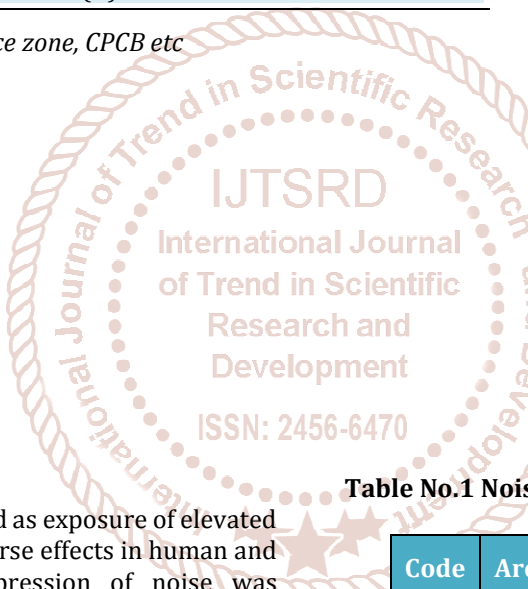
KEYWORDS: Noise Pollution, Silence zone, CPCB etc

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INTRODUCTION

Noise pollution is generally defined as exposure of elevated sound levels that may lead to adverse effects in human and other living creatures. The expression of noise was introduced in to Air (Prevention and control) Act 1981 act as "Air pollution means any solid, liquid or gaseous substance including noise present in the atmosphere in such concentration as may be or tend to be injurious to human being or other living creatures or plant or property or environment". Various man-made activities includes traffic noise, construction noise, industrial noise and public noise are responsible for noise pollution. World Health Organization (WHO) 2001 stated that noise must be recognized as major threat to human being which causes harmful effects to human like temporary or permanent hearing loss, poor cognitive function, cardiovascular disorder, sleep disturbance, communication problem and mental health problems. The high noise level causes harmful effects to wildlife also. The Central Pollution Control Board constituted a Committee on Noise Pollution Control. The Committee recommended noise standards for automobiles, domestic appliances and construction equipment, which were later notified in Environment (Protection) Rules, 1986 as given below.

Table No.1 Noise level standards by Central Pollution Control Board (CPCB)

Code	Area / Zone	Limits in dB(A)	
		Day time	Night time
A	Industrial	75	70
B	Commercial	65	55
C	Residential	55	45
D	Silence	50	40

1. Day time is reckoned in between 6 am to 9 pm.
2. Night time is reckoned in between 9 pm to 6 am.
3. Silence zone is referred as areas up to 100 meters around such premises as hospitals, educational institutions and courts. The Silence zone is to be declared by the Competent Authority. Use of vehicular horns, loudspeakers and bursting of crackers shall be banned in these zones.
4. Mixed categories of areas should be declared as one of the four above mentioned categories by the Competent Authority and the corresponding standards shall apply. (<https://www.cpcb.nic.in>).

The present study was conducted to study the status of noise level in silence zone area of Kolhapur city. Kolhapur city is known as Karveer Nagri which is located on Sahyadri mountain range and southwestern part of Maharashtra state.

Kolhapur is famous for its own style of jaggery, leather goods, jewellery and culture. Through recent advancements in industrial sector and urbanization the noise level increases day by day so therefore this study is important.

Literature Review

Mangalekar et al. (2011) studied noise pollution in Kolhapur city by continuous method for 3 days in a month in industrial, commercial, residential and silence zone. The results shows that higher values of noise level than standards as per given by Central Pollution Control Board. The noise level ranges from 55.88 dB (A) to 74.28 dB (A).

Hunashal R. and Patil Y. (2012) carried out noise level assessment in Kolhapur city. The study was carried out for 10 days at locations like educational, commercial cum residential, industrial cum residential areas for different time period. The higher noise level was found at respective areas.

Phukan B. and Kalyan K. (2013) carried out work in Guwahati University campus which is silence zone. The readings were taken at 3 times of day i.e. 9 to 11, 12 to 2, and 6 to 8 pm with 2 sec time interval. The final noise level was found to be 57 dB (A) to 64.4 dB (A) which was more than CPCB limits.

Sen P et al. (2014) carried out noise pollution assessment in Agartala city at 19 different locations including residential, silence, commercial and industrial zone at morning 6 am to 11 pm at time interval. The result was found to be as, in day time the noise level was from 54.98 dB (A) to 63.79 dB (A) which higher than standards while at night time level was 45.43 dB (A) to 47.76 dB (A) which was lowest or in limit of standards.

Shinde D and Singh N. (2014) had worked on noise pollution in Dhar town, MP with reference to silence zone. He measured noise level For 10 different locations of cities at day time and result shows that noise level varies from 65 dB (A) to 83 dB (A) which was much higher than CPCB.

Deshmukh A. and Kadu P. (2015) studied traffic noise pollution at silence zone in Amravati city for sample size of 5 min in each hour for fourteen days from 8 am to 8 pm. They found that sound exceeds limits. This variation from 60 dB (A) to 110 dB (A) may have moderate to very severe effects on human health.

Kadadevaru G et al. (2017) carried out work in Hubli-Dharwad twin cities of Karnataka at 8 different locations covering industrial, commercial, residential, silence zone. The noise level was found to be from 94.80 dB (A) to 106.60 dB (A) which was much higher than standards so he suggested that precautions must be taken.

Study area

Kolhapur city is located at 1790 feet above mean sea level which lies between 16° 4' 30" North latitude and 74° 14' 00" East longitudes. The focus of respective study was to measure the ambient noise level with reference to silence zone. Six different locations were to be taken for the ambient noise level measurement.

The New High School area has many hospitals, schools and colleges so nearby roads have traffic throughout day. The second location of study was Chhatrapati Pramilaraje Rughalay (C.P.R.) area has many clinics, family court, Museum and traffic signal. Third location of study was Savitribai Phule Hospital which is government hospital, along with this hospital this area has Gopal Krishna Gokhale College and New English Medium school nearby. The fourth location was Mahalaxmi Temple area. Mahalaxmi Temple is famous for being a Shaktipeeth due to which Karveer Nagri is called as Dakshinkashi therefore many devotees visits this area. The next location was Shahupuri and location selected near Warna hospital. Last location was near Chhatrapati Shahu Institute of Business Education and Research (CSIBER) which is known as educational zone of Kolhapur city.

Table No.2 Details of locations

Sr. No	Location Name	Places near by
1	New High School area	3 Pediatric hospitals, 6 schools, 3 colleges and one garden.
2	Chhatrapati Pramilaraje Rughalay (C.P.R.)	2 Multispecialty hospitals, CID office, Family court, Museum and one traffic signal.
3	Savitribai Phule Hospital	G.K.G College, one orthopedic hospital, one school and Hutatmaa garden.
4	Mahalaxmi temple area	Main-Rajaram High school and college, temple area
5	Shahupuri area	Warna hospital and BT College
6	CSIBER college area	CSIBER College, Radhabai Shinde High School

Materials and Method

For the present study 6 locations were selected. The ambient noise level monitored with the help of Sound Level Meter (SL 4010 ISO9001) in month of November and January during day time at different time periods i.e 10-11 am, 1- 2 pm, 4-5 pm and 7- 8 pm. The monitoring of ambient noise equivalence level (Leq) was carried out by protocols given by Maiti.S.K (2003).

The Sound Level Meter was placed 1.5 m above the ground and 3 m away from the source point. Precautions were taken to avoid strong vibration and shock. The readings were taken at 1 min time interval for 60 min at day time and also personal observation was done for understanding the real scenario. The data were collected and compared with that of standards given by Central Pollution Control Board (CPCB).

Result and Discussion

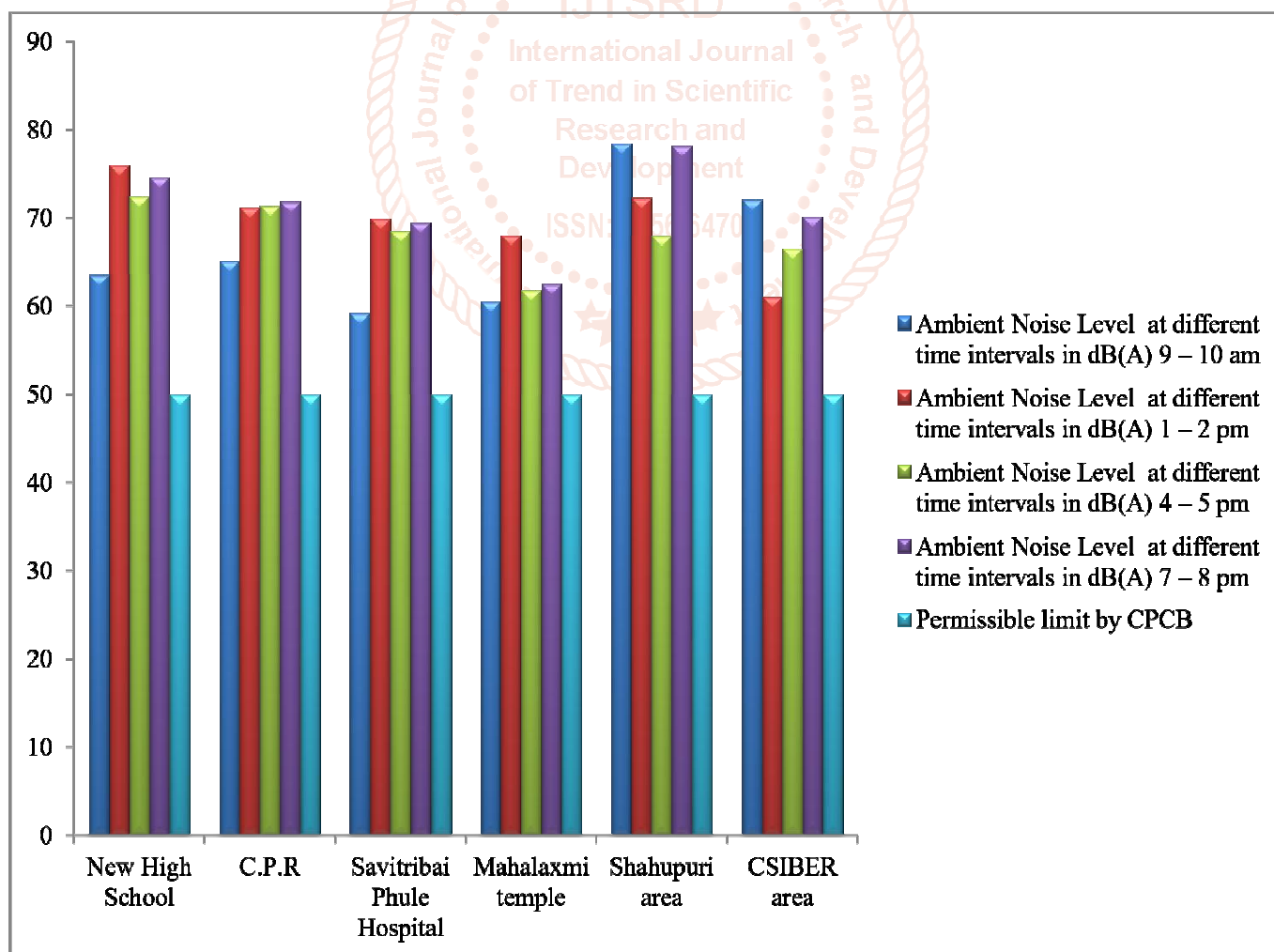
The present study was carried out in silence zone of Kolhapur city at six different locations. The results of study shows that the ambient noise level at all locations was found to be higher than the permissible limit as per given by CPCB. The work was carried out during month of November and January in year 2018 - 2019 at various time intervals.

Table No. 3 Ambient Noise Level in November month

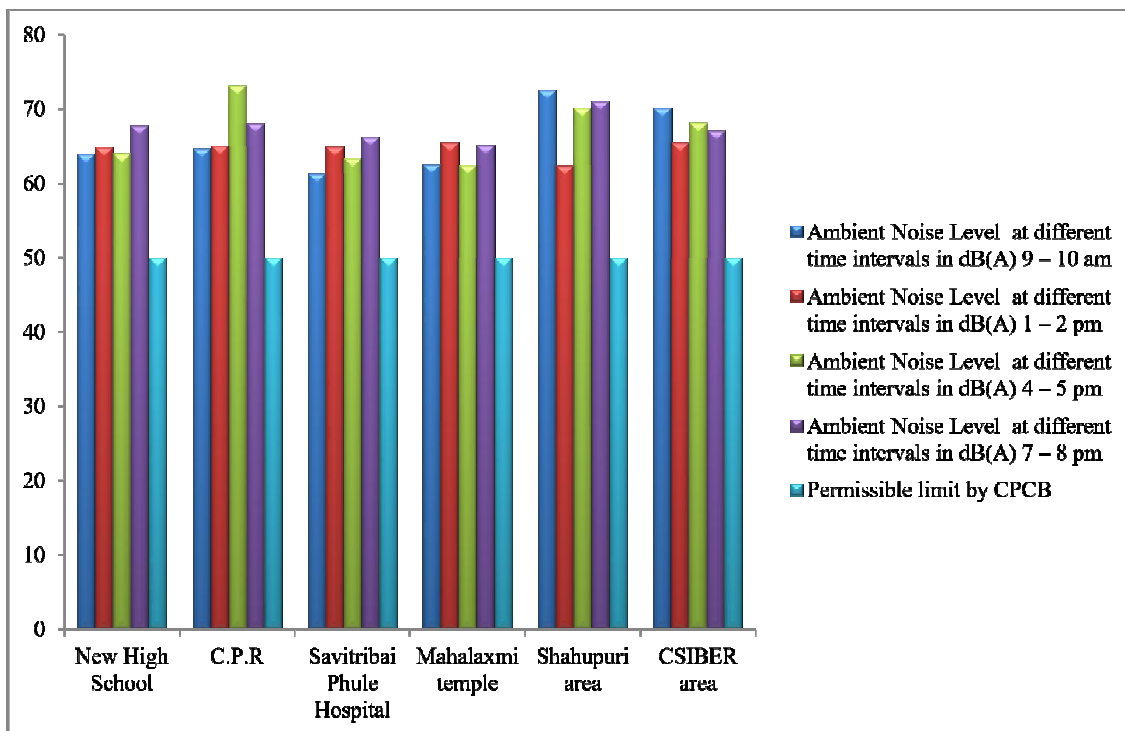
Sr. No	Location	Ambient Noise Level at different time intervals in dB(A)				Permissible limit by CPCB dB(A)
		9 – 10 am	1 – 2 pm	4 – 5 pm	7 – 8 pm	
1	New High School	63.59	76.01	72.48	74.65	50
2	C.P.R.	65.16	71.21	71.39	71.88	50
3	Savitribai Phule Hospital	59.22	70.00	68.49	69.50	50
4	Mahalaxmi temple	60.56	68.09	61.87	62.55	50
5	Shahupuri area	78.50	72.30	68.01	78.20	50
6	CSIBER area	72.09	61.10	66.54	70.19	50

Table No. 4 Ambient Noise Level in January month

Sr. No	Location	Ambient Noise Level at different time intervals in dB(A)				Permissible limit by CPCB dB(A)
		9 – 10 am	1 – 2 pm	4 – 5 pm	7 – 8 pm	
1	New High School	63.95	64.90	64.04	67.83	50
2	C.P.R.	64.71	65.11	73.20	68.12	50
3	Savitribai Phule Hospital	61.36	64.92	63.40	66.28	50
4	Mahalaxmi temple	62.59	65.51	62.52	65.17	50
5	Shahupuri area	72.60	62.41	70.21	71.10	50
6	CSIBER area	70.21	65.49	68.20	67.10	50



Graph No. 1 Ambient Noise Level in November month



Graph No. 2 Ambient Noise Level in January month

Table No.3 and Graph No.1 shows ambient noise levels in November month. The noise level ranged from minimum 59.22 dB (A) to maximum 78.50 dB (A). The New High School area noise level ranged from 63.59 dB (A) to 76.01 dB (A). At C.P.R it ranged between 65.16 dB (A) to 71.88 dB (A). At Savitribai Phule Hospital, noise level varied from 59.22 dB (A) to 70 dB (A). The noise level at Mahalaxmi temple ranged between 60.56 dB (A) to 68.09 dB (A). The Shahupuri area noise levels are from 68.01 dB (A) to 78.50 dB (A) and at CSIBER it was between 61.10 dB (A) to 72.09 dB (A).

Table No.4 and Graph No.2 shows ambient noise levels in January month. The noise level ranged from minimum 61.36 dB (A) to maximum 73.20 dB (A). At New High School area noise level found was between 63.95 dB (A) to 67.83 dB (A). The C.P.R area noise level ranged between 64.71 dB (A) to 73.20 dB (A). At Savitribai Phule Hospital area noise level ranged from 61.36 dB (A) to 66.28 dB (A). At Mahalaxmi temple area noise level ranged between 62.52 dB (A) to 65.51 dB (A). The Shahupuri area noise level ranged between 62.41 dB (A) to 72.60 dB (A) and CSIBER area it ranged between 65.49 dB (A) to 70.21 dB (A).

Conclusion

The study was conducted in six different locations which are considered as silence zone of Kolhapur city. The noise levels obtained at respective locations were higher than permissible limits given by Central Pollution Control Board (CPCB). From the analysis it can be seen that increased use of vehicles, unnecessary honking and public noise becomes main reason or source of noise pollution so strict action has to be taken by government. At these locations there are hospitals, schools, colleges and religious place therefore unnecessary honking must be prohibited inside silence zone by governing authority.

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