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# Perception level of Noise among Trainee Teachers, W.B., India

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## Abstract

*This study aimed to understand whether trainee teachers have any basic concept about environmental noise or not. Study results revealed that both male and female teacher trainee has basic concept about noise and it is non-significant among them (p<0.05). About 50.36% of respondents argued that noise induced hearing loss can happen when noise level greater 85 dB. However, 39% respondent correctly responds about the minimum level of noise permitted to the academic institute, hospitals etc. Finally it can be concluded that as noise is a vital factor which causes both auditory and non-auditory effect, so every teacher should know the basic feature of noise and its ill effects on the community.*

**Keywords:** Noise, trainee teacher, perception, auditory and non auditory effect.

## Introduction

Environmental noise has been defined as an unwanted outdoor sound which makes restlessness to human is a resultant of human activities, creates interference in communication and health[1-4]. According to World Health Organization (WHO) noise is considered as the third hazardous type of pollution after air and water[5]. Several studies demonstrated that auditory and non-auditory disorders, such as temporary and permanent hearing loss[6-9], sleep disruption[10-11], vertigo, agitation, weariness, hypertension, gastrointestinal problems (including gastric and duodenal ulcer), cardiac arrhythmia, nervous and psychic disorders[12-19] are consequence of extended exposure to noise pollution. The United States Environmental Protection Agency (USEPA) recommended guideline values for continuous background noise are 45 dB during the day and 35 dB at night. World Health Organization (WHO) also recommended guideline values for continuous background noise at school room are 35 dB. However Juang et al.[20] pointed out that working place with noise of above 85 dB is consider as a hazardous in working environment.

There is growing awareness and even some progress in the fight against air and water pollution but a third Jeopardy-noise-pollution has greatly begun to gain attention[2]. There is some specific regulation which makes the school building eco-friendly and sustainable. Therefore it is immense important to aware the common people about the ill effect of noise in our community. The prime and single most important to aware our school children through their class teacher. Keeping in mind the above thinking, a comprehensive self made questionnaire was framed and same was used to know the perception level about noise from the trainee teachers.

## Material and Methods

**Study area:** 46 samples were collected from Tarasankar Bandopadhyay Teachers Trainee college, Birbhum and 92 samples were collected from Durgapur BSA academy, Burdwan. Both the trainee centre's has only arts stream and commerce stream.

**Questionnaire family:** A self made questionnaire was framed by considering thirteen points which includes educational qualification, deputed or fresher, teaching experience if deputed, basic concept about noise, noise measurement unit, acceptable noise level in class room, health effect sleep disturbance, noise disturbance time etc. The validity of the questionnaire was done by the competent expert from physics department, Burdwan University.

**Statistical analysis:** After collecting data (N=138) from the study sides, data were suitable arranged for statistical analysis. Basic statistics (mean, standard deviation, etc.), student t-test and Pearson correlation was done to interpret the results.

## Results and Discussion

Study results revealed that both male and female fresher teacher trainee has basic concept about noise and it is non-significant among them (p<0.05) (table-1). Similar non-significant (p<0.05) results was also recorded for male and female deputed teachers (table-2). About 50.36% of the respondents demanded upper limit of the noise which can cause hearing loss is due to the noise >85 dB; 25.55% population says <85 dB; 16.58% agreed just 85 dB and 7.51% dose not respond against this particular item (figure-1). On the other hand, 27% respondents argues that 'noise can change hearing ability, either temporarily or permanently depending on the time of exposure". The same observation was recorded by many authors[21]. However, Juang et al.[20] 2010 recorded that the noise level above 85 dB is danger

in working place. According to Berglund et al.[22] reported the noise level 55 dB(A) is sufficient to cause serious annoyance in outdoor environment. In addition, night time noise greater than 40 dB (A) has been suggested to potentially lead to sleep interferance[23]. The generations of noise from different surceases especially from the motor vehicles, which are a very significant part of the urban environment, are an important source of noise emission, contributing 55% to the total noise[24-25]. Study results revealed that about 78.83% respondents feel unpleasant from vehicle horn; 16.77% from the noise of Lorries and buses and 4.39% from other sources.

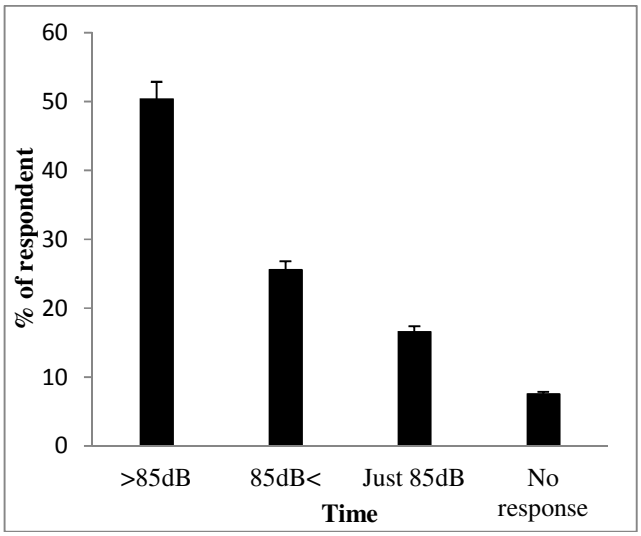


**Figure-1**
**Number of response against noise induced hearing loss**

Only 54 (39 %) respondents correctly responded that minimum noise level permitted to the academic institute, hospitals etc. and 71 (51.4 %) respondents expresses their view incorrectly about minimum level of noise against such instructions. But only 13 persons (9 %) do not respond. It is highly desirable that teacher should have basic knowledge about noise and its effects on community. Again many researchers demonstrated the health effects of environmental noise[26-29]. But present study results revealed that only 0.007% studied population express that noise pollution can cause cardiovascular disease, disturbance in cognitive develop, sleep disturbance and high blood pressure. But only 14.59% of the total samples agreed that noise only effect on blood pressure (figure-2 and figure-3). However, blood pressure level (both systolic and diastolic) is a good indicator for assessing an individual who intensely affected by vehicle noise[30]. The generation of noise from the different sources can cause unpleasant especially from the vehicle horn. About 78.83 % respondents correctly respond that vehicle noise is mostly caused more unpleasant. However, 16.78% and 4.39% respondent agreed that noise is unpleasant due to lorries/buses and other causes respectively (table-3). This result is quite desirable, because, the increase in the population and in the number of circulating vehicles has lead to an increase in noise pollution[31]. About 98 % respondents agreed that traffic noise can cause irritation in urban area (table-3). Same is endorsed by many researchers and they reported that road traffic is the most predominant and most generalized sources in urban areas[32-33]. The results of our questionnaires also showed that 94.16% of responded believed their sleep has been interfered by the vehicle noise during night (table-3). However, it is interesting that about 62.04% of total respondents express their views that noise can adversely affects on hearing loss. Noise induced hearing loss, which may be temporary or permanent depending on the time of exposure[34-36]. However, excessive noise may cause severe sleep disturbance, fatigue and irritation due to community noise[37].

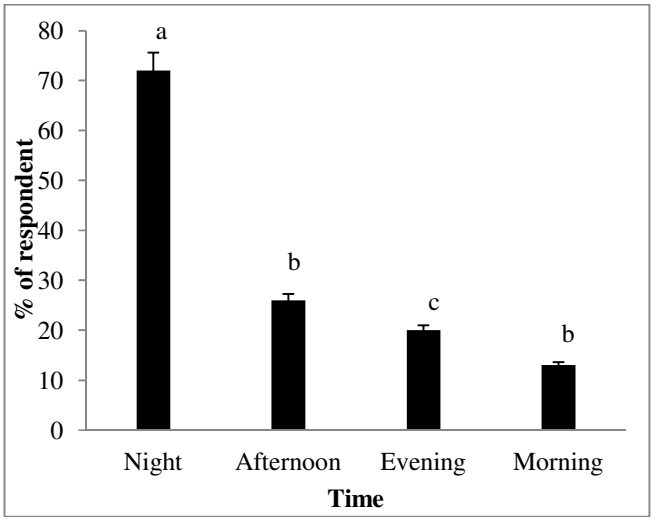


**Figure-2**
**Response against noise interference in different time interval**

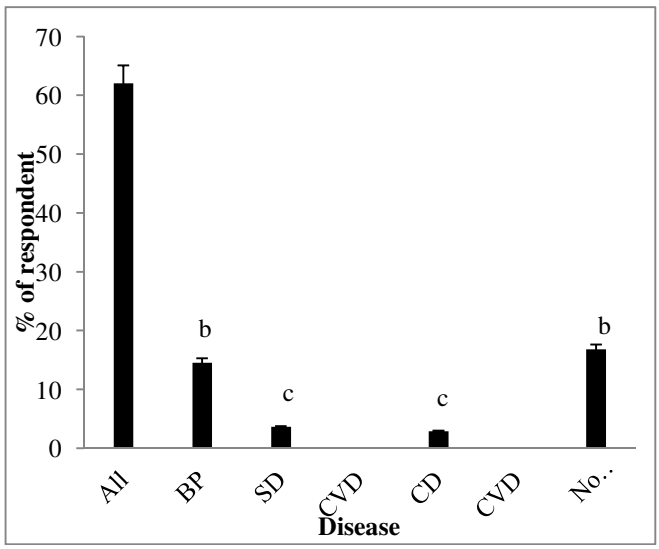


**Figure-3**
**Number of response against noise induced disease**

**Table-1**
**WHO guidelines for community noise[46]**

| Environment | Critical Health Effect | Sound level dB(A) | Time hours |
|---|---|---|---|
| Outdoor living areas | Annoyance | 50-55 | 16 |
| Indoor dwellings | Speech intelligibility | 35 | 16 |
| Bedrooms | Sleep disturbance | 30 | 8 |
| School classrooms | Disturbance of communication | 35 | During class |
| Industrial, commercial and traffic areas | Hearing impairment | 70 | 24 |
| Music through earphones | Hearing impairment | 85 | 1 |
| Ceremonies and entertainment | Hearing impairment | 100 | 4 |

**Table -2**
**Non parametric test with respect to physiological parameter of bus and truck drivers**

| Parameters | Male trainee teacher | Female trainee teacher | $X^2$ | Significant level |
|---|---|---|---|---|
| Basic concept about noise | 29 | 31 | 1.516 | NS |
| | 8(D) | 3(D) | 0.096 | NS |

Number (D): deputed male and Female

**Table-3**
**Response against different health related information**

| Variables | Unpleasant | Response | Sleep in noise environment | Traffic noise cause irritation | Noise is detrimental for health |
|---|---|---|---|---|---|
| Vehicle Horn | 78.83% | Yes | 94.16% | 97.81% | 94.89% |
| Lorries/Buses | 16.78% | No | 5.84% | 2.19% | 5.11% |
| Others | 4.39% | --- | --- | --- | --- |

The interference in hearing loss is derived from excessive exposure to high-amplitude sounds and is selectively impairs the higher frequencies that carries the majority of information in speech sounds[38]. Probably the severest effects of noise on human health can be observed in the so-called vibroacoustic disease. Which can results from long term presence of loud (above 90 dB SPL) low frequency (below 500 Hz) noise in some occupational settings[39].

Present finding also indicate that 94.16% respondent unable to sleep in noise environment (table-3). It is well known that uninterrupted sleep is known to be a prerequisite for good physiological and mental functioning of healthy persons. However, there are many factors responsible for sleep disturbance, among them, the intensity of the noise is considered to be the most vulnerable factor. It is related to sleep disturbance, with more intense stimuli awakening people more often[40]. For a good sleep, it is believed that the indoor sound pressure levels should not exceed approximately 30 dB (A) for continuous noise[41].

## Conclusion

From the above finding it can be suggested that both teachers and deputed trainee teachers has basic idea about noise. But they have no any clear-cut idea about ill effect of noise on human being. Less than 1 % of studied population expressed that noise pollution can cause cardiovascular disease disturbance in sleep and cognitive development etc. moreover variable response was received against the upper limit of noise which may cause hearing loss, minimum level of noise permitted to academic institute, hospital etc. therefore it is highly recommended that school authority should take initiative to conduct one day seminar, symposium, workshop on different topics of pollution such as noise pollution, water pollution, soil pollution, cell phone radiation etc. so that all branches of teachers along with student community can take part in such programme. In this way the knowledge about pollution can be enhanced.

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## References

1. Roy H., Environmental advertising and its effects on consumer purchasing patterns in West Bengal, India, *Res. J. Management Sci*., **1(4)**, 16-20 **(2012)**
2. Paul K.E. and Armah F., Determination of ambient noise levels in the main commercial area of Cape Coast, Ghana, *Res. J. Environ. Earth Sci.,* **3(6),** 637-644 **(2011)**
3. Phatak V., Tripathi B.D. and Mishra V.K., Dynamics of traffic noise in a tropical city Varanasi and its abatement

through vegetation, *Environ. Mon. Assess*., **146**, 67-75 **(2008)**

**4.** Agarwal S. and Swami B.L., Road traffic noise annoyance in Jaipur city, *Inter. J. Eng. studies*, **1(1),** 39-46 **(2009)**

**5.** World Health Organization. Occupational and community noise. Who-OMS. http://www.who.int.inffs/en/fact.htmal, **(2005)**

**6.** Keipert J.A., The harmful effects of noise in a children's ward, *J. Paediatr. Child Health*, **21(2)**, 101-103 **(2008)**

**7.** Yildirim I., Kilinc M., Okur E., Inanc Tolun F., Kilic M.A., Kurutas E.B. and Ekerbicer H.C., The effects of noise on hearing and oxidative stress in textile workers, *Ind. Health*., **45(6),** 743-749 **(2007)**

**8.** Nassiri P. and Golbabai F., The effect t of noise induced hearing loss on dentists, *Med. J. Iran.,* **7(2),** 83-86 **(1993)**

**9.** Selfe R.W., The ear and hearing ear, nose and throat in the workplace. In: Clinical Medicine for the Occuptional Physician. Alderman, M.H. and Hanley. M.J., eds. Marcel Dekker, New York: 507-522 **(1982)**

**10.** Freedman N.S., Gazendam J., Levan L., Pack A.I. and Schwab R.J., Abnormal sleep/ wake cycles and the effect of environmental noise on sleep disruption in the intensive care unit, *Am. J. Respir. Crit. Care Med*., **163 (2),** 451-457 **(2009)**

**11.** Freedman N.S., Kotzer N. and Schwab R.J., Patient perception of sleep quality and etiology of sleep disruption in the intensive care unit, *Am. J. Respir. Crit. Care Med.,* **159 (4)**, 1155-1162 **(1999)**

**12.** Roozbahani M.M., Nassiri P. and Shalkouhi P.J., Risk assessment of workers exposed to noise pollution in a textile plant, *Int. J. Environ. Sci. Tech*., **6(4)**, 591-596 **(2009)**

**13.** Job R.F.S., The influence of subjective reactions to noise on health effects of the noise. *Environ. Int.,* **22(1),** 93-104 **(2008)**

**14.** Ising H. and Kruppa B., Health effects caused by noise: Evidence in the literature from the past 25 years. *Noise Health*, **6(22),** 5-13 **(2004)**

**15.** Penney P.J. and Earl J., Occupational noise and effects on blood pressure exploring the relationship of hypertension and noise exposure in workers, *Am. Assoc. Occup. Health Nurses J*., **52(11)**, 476-480 **(2004)**

**16.** Van Kempen E.E.M.M., Kruize H., Boshuizen H.C., Ameling C.B., Staatsen B.A.M. and de Hollander, A.E.M., The association between noise exposure and blood pressure and ischemic heart disease: A meta-analysis. *Environ. Health Perspect*., **110(3)**, 307-317 **(2002)**

**17.** Holmberg S. and Coon S. Ambient sound levels in state psychiatric hospital. *Arch. Psychiatr. Nurs*., **13(3)**, 117-126 **(1999)**

**18.** Nichols A., Bach V., Tassi P., Dewasmes G., Erhart J., Muzet A. and Lipert J.P., Electroencephalogram and cardiovascular responses to noise during daytime sleep in shift workers. *Eur. J. Appl. Physiol. Occup. Physiol*., **66(1)**, 76-84 **(1999)**

**19.** Buemi M., Allegra A., Grasso F. and Mondio G., Noise pollution in an intensive care unit for nephrology and dialysis. *Nephrol. Dial. Transplant*., **10(12),** 2235-2239 **(1995)**

**20.** Juang D.F., Lee C.H., Yang T. and Chang M.C., Noise pollution and its effects on medical care workers and patients in hospitals, *Int. J Environ. Sci. Tec*., **7(4)**, 705-716 **(2010)**

**21.** Michaud D.S., Keith S.E. and Mcmurchy D., Noise annoyance in Canada. *Noise and Health*, **7(27),** 39–47 **(2008)**

**22.** Berglund B., Lindvall T. and Schwela D.H., Guidelines for community noise, World Health Organization, Geneva, **(1999)**

**23.** WHO (World Health Organization), Night noise guidelines for Europe, WHO Regional Office for Europe **(2009)**

**24.** Banerjee D., Chakraborty S.K., Bhattacharya S. and Gangopadhyay A., Evaluation and analysis of road traffic noise in Asansol: An industrial town of eastern India, Inter. J. Environ. Res., Public Health, **5(3)**, 165–171 **(2009)**

**25.** Nirjar R.S., Jain S.S., Parida M., Kartiyar V.S. and Mittal N., A study of transport related noise pollution in Delhi. *J. Institution Eng*., **84(1)**, 6–15 **(2003)**

**26.** Kim M., Chang S.I., Seong J.C., Hott J.B., Park T.H., Ko J.H. and Croft J.B., Road traffic noise, Annoyance sleep disturbance, and Public Health implications. Am. J. Prev. Med. **43(4),** 353-360 **(2012)**

**27.** Xie H., Kang J. and Tompsett R., The impact of environmental noise on the academic achievements of secondary school students in Greater London. *Appl. Acoust*., **71**, 551-555 **(2011)**

**28.** Davis H.W., Teschke K., Kennedy S.M., Hodgson M.R. and Demers P.A., Occupational noise exposure and Hearing protector use in Canadian Lumber Mills. *J. Occup. Environ. Hyg*., **6**, 32-41 **(2009)**

**29.** Mondon A.N., Real noise from the urban environment: how ambient community noise affects health and what can be done about it, *Am J Prev Med*., **37(2)**, 167-71 **(2009)**

**30.** Paunovic K., Stansfeld S., Clark C. and Belojevic G., Epidemiological studies on noise and blood pressure in children: Observation and suggestions. *Environ. Inter*., **37**, 1030-1041 **(2011)**

**31.** Mansouri N., Pourmahabadian M. and Ghasenkhani M., Road traffic noise in downtown area of Tehran. *Iranian J. Environ. Health, Sci. Engin*., **3(4)**, 267-272 **(2011)**

**32.** Nelson P.M., Transportation noise. *Noise Control Eng. J.*, **46(4)**, 159-166 **(1998)**

**33.** Saadu A.A., Onyeonwu R.O., Ayorinde E.O. and Ogisi. F.O., Road traffic noise survey and analysis in some major urban centers in Nigeria. *Noise Control Eng. J.*, **46(4)** 146-158 **(1998)**

**34.** Jamrah A., Omari A. and Sharabi R., Evaluation of traffic noise pollution in Amman, Jordan. *Environ. Moni. Assess.*, **120**, 499–525 **(2006)**

**35.** Zannin P.H., Ferreira C.A.M. and Szermetta B., Evaluation of noise pollution in urban parks. *Environ. Moni. Assess.*, **118**, 423–433 **(2006)**

**36.** Bjorkman M. and Rylander R., Maximum noise levels in the city traffic, *J. Sound and Vibration*, **205**, 513–16 **(1996)**

**37.** Habibullah S. and Afsar S., Effects of community noise on urban population. *Pak J Med Res.*, **46(4)**, 98–102 **(2007)**

**38.** Kujala T. and Brattico E., Detrimental noise effects on brains's speech fucnctions. *Biol. Psyc.*, **31**, 135-143 **(2009)**

**39.** Castelo Branco N.A.A. and Rodriguez E., The vibroacoustic disease-an emerging pathology. *Aviation, space, and Environ. Med.*, **70**, 1-6 **(2009)**

**40.** Bugliarello G., Alexandre A., Barnes J. and Wakstein C., The impact of noise pollution: A socio-technological Introduction. New York: Pergamon Press **(1976)**

**41.** Vallet M., Vallet M., and Vermet I., In A. Lawrence, Night aircraft noise index and sleep research results. Inter-noise 91. *The cost of Noise,* **1 (20)**, **(1991)**