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Sound Pollution effect on Pulse Rate, of Selected Students at the Science and Engineering Workshop

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Abstract
Sound which is a mechanical disturbance that generate waves through an elastic media is characterized by compression and rarefaction, within an audible frequency of 20-20,000Hz. It is a function of industrial and anthropogenic activities but a silent killer that affect human being, mentally and increase molecular task through the endocrine systems, which will increase the bio-oxygen demand and an increase pulse rate to cope with the demand. The study is to evaluate the impact of varying noise level on workshop staff and students using sphygmomanometer. The base is science and engineering workshop at N 04.53.4 E 54.26.3. The range is 'x' ≤ 90bBA, 'y'≥110 dBA, control 'C'50-60dBA,the sound source is a multi-media set of 0 Dba to 160 dBA which is varied as the need arises.
The results indicate a significant difference for 'y' ≥ 110 dBA with a p. value of 0.003 less than a level of significant of 0.05 but showed no significant difference at 'x' ≤90dBA in the pulse rate evaluation. The recommendation is the use of personal protective wear and enforcement of standards where applicable.

Introduction

Noise which is described as unwanted sound or sound of irregular frequency can be air, cavity or structure borne. The noise source are due to frictions among moving parts, mechanical shock, vibration of blocks, irregular fluid flow or viscosity along cavity and tubular constrictions. Effort is made to reduce noise by the introduction of polymer materials to replace metals, appropriate lubrication, isolation and improved shock systems.

Inspite of these, noise exist and the study this time, is to find out the level of noise impact on the workers and industrial attachment students of the Science and Engineering workshop, University of Port Harcourt.

Few persons that have been engaged in noise impact studies includes Kiernan (1997) who established that even low level noise effect human heal the adversely while bond (1996) claim that excessive noise can lead to memory loss, including rising incidence of deafness, Bhargawa (2001). Other authors include Birgirraand Lindvall (1995). Deutche (2003), Geary (1995), Kieman (1997), Kapoor (1995), Nagietal (1999 and 1993), Singh and Mahjan (1990), Singh and Davar (2004), Balisch (2005) Fogariet al (2001), Haralabidis et al (2008), Isingand Michalar (2004)

as well as Carter *et al* (2002). This study is to add the Nigerian input through pulse rate evaluation.

The method involves a multi-media stereo system with a noise level range of 0 -160dBA, pulse level meter or electronic sphygmomanometer and some medical assistance. Over sixty students and staff appeared for the text output of which 19 where screened out on health grounds. The remaining 41 were brought in one at a time for the exercise while the intensity of sound were varied between 'x' < 90dba, 'y' ≥110dba and the control C between 50-60 dBA, some drinks and snacks were given to participants to reduce environmental stressors while waiting to take their turn. The result and discussion is as shown in table 1, 2, 3, 4, 5, and 6.

Table 1: Paired Sample Statistics

	Mean	N	Std deviation	Std error mean
PULSE. RATE BEFORE. BP Pair M After90dB	75.2195 75.4146	41 41	16.55372 12.41969	2.58526 1.93963

Table 2: Paired Samples Test

	Paired Differences					T	df	Sig. (2-ailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidences				
				Lower	Upper			
PULSE. RATE BEFORE Pair 1 RE.BPM After 100dBA	.19512	11.61727	1.81431	-386198	3.47174	-108	40	.915

The analyses indicate that there is no significant difference between the health impact of the noise pulse rate before and during exposure with varying noise level, since P-values is 0.915 greater than the α level at 0.05.

Table 3: Paired Samples Statistic

	Mean	N	Std deviation	Std error mean
PULSE. RATE BEFORE Pair 1 M After 100Db	71.6585 77.0244	41 41	18.63546 14.37965	2.91037 2.24572

Table 4: Paired Samples Test

	Paired Differences					T	df	Sig. (2-ailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidences				
				Lower	Upper			
PULSE. RATE BEFORE Pair1and AFTER Re- After 100dBA exposure	-5.36585	13.82526	2.15914	-9.72964	-1.00206	-2485	40	.017

The analyses show a significant difference between the health impact of the noise using pulse rate before and during exposure with varying noise level, since p-values is 0.017 less than the a level of significant at 0.05.

Conclusion

Noise level above 90dBA to 100dBA shown a physical and psychological impact which is indicative of the increase in pulse rate and needs a regulatory control.

References

1. Babisch W. (2005). Updated review of the relationship between transportation noise and cardiovascular risk. Twelfth International Congress on Sound and Vibration, 11-14 July, 2005. Lisbon.
2. Bhargawa, Gopal (2001): Development of India's Urban and Regional Planning in 21" Century. Gian Publishing House, New Delhi, pp. 115-116.
3. Birgitta, Berglund and Lindvall, Homas (1995): A Draft Document of Community Noise. Who Environmental Health Criteria 12, World Health Organization, Geneva.
4. Bond. Michael (1996): Plagued by noise. New Scientist, November 16: 14-15.
5. Business Line, New Delhi, Oct. 8 (2002).
6. Carter N, Henderson R, Lai S. Hart M, Booth S Hunyor, S. (2002). Cardiovascular and autonomic response to environmental noise during sleep in night shift workers. Sleep 2002; 25:457-464
7. Deutche, Presse-Agentur (2003): Noisy cities make them dumb. Business Line, May 10.
8. Fogari R, Zoppi A, Corradi L, Marasi G. Vanasia A, Zanchetti A.(2001). Transient but not sustained blood pressure increments by occupational noise. An ambulatory blood pressure measurement study. *J Hypertens* 2001; 19:1021- 1027:
9. Geary, James (1996): Saving the sounds of silence. New Scientist, 13 April: 45.
10. Haralabidis*et al.*, (2008) precautions of illness that affect BP measurement. Europeanheart Journal method,
11. Ising H, and Michalak R. (2004). Stress effects of noise in a field experiment in comparison to reactions to short term noise exposure in the Laboratory. Noise Health 2004:6:1-7
12. Kapoor, B.S. and Singh, K. (1995); 'Noise'- the insidious killer. The Tribune, Nov. 25
13. Kieman, Vincent (1997): Noise pollution robs kids of languages skills. New Scientist. May 10: 5.
14. Nagi, G., Dhillon, M. K.. Bansal, A. S. and Dhaliwal, G. S. (1993): Extend of noise pollution from household equipment and appliances. Indian Journal of Ecology, 20(2): 152-156.
15. Nagi, G.K., Dhillon, M.K and Dhaliwal, G. S. (1999): Noise Pollution. Coomon wealth Publishers, New Delhi, p.5.
16. Narendra Singh and S.C. Davar (2004) Noise Pollution, Sources, Effects and Control. *Jr. Hum. Eco* 16(3):181-187
17. Singh, D.P. and Mahajan, C. M. (1990): Noise pollution: Its effect and control. In: G.K. Nagi, M K. Dhillon and G. S. Dhaliwal (Eds): Noise Pollution. Common wealth Publishers, New Delhi, p.22.
18. Singh, P. (1984): Noise pollution. Every Man s Science. 25(1&2): 231-35.