



Knowledge, Perception and Attitude of Sound Engineers to Hearing Conservation Programme in Oyo State, Nigeria

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ABSTRACT:

Objectives: Noise is everywhere in all nations of the world, but the rate as well as mechanisms of exposure differ according to the nature of such an environment. High noise in work place leads to hearing loss that has serious and long lasting health implication on the affected. Hence, efforts are being made to facilitate reduction of the impact of workplace noise among workers that perform their duties in risky noise zone through hearing conservation programme. However, one cannot conclude on the reaction to this programme by workers without empirical basis. Thus, this study investigated the influence of knowledge and perception of hearing conservation programme on attitude of sound engineers in Oyo State, Nigeria.

Methodology: The study employed descriptive survey research design with 250 sound engineers purposively selected. The instruments used in this study were sound meter level and hearing conservation awareness scale (HCAS) adapted from Purdue University hearing conservation programme with reliability of 0.72 using cronbach alpha measure.

Results: Three hypotheses were tested and the results revealed that there was significant positive relationship between knowledge and perception of sound engineers and their attitude towards hearing conservation programme, knowledge and perception of sound engineers jointly predict their attitude towards hearing conservation programme and perception of sound engineers contributed mostly to the attitudes of sound engineers to hearing conservation programme.

Conclusion: The study has been able to establish that the knowledge and perception of the sound engineers about hearing conservation have positive influence on their attitude and the practice of same conservation protocol. Therefore, health-related workshop, sensitization, awareness and education on the need/practice of hearing conservation, as well as baseline audiometric evaluation should be organised for workers, especially the sound engineers and a host of other industrial employees who work more 8hours per day in the noisy areas within their places of work.

KEY WORDS: Attitude of sound engineers, noise-induced hearing loss, noise, sound engineers, hearing conservation programme

INTRODUCTION

Sound is present in virtually all the environments across the globe, and it remains one of the major public health concerns as well as health challenges due to the way human beings manipulate it for several purposes. Sound consists of pressure changes in a medium that produces waves emanating from the turbulent or vibrating source [1, 2]. Sound by nature can be arbitrarily generated towards its utilisation in achieving series of human functions, engagements and pleasure. However, whenever sound is arbitrarily generated it will become noise, and capable of destroying hair cells leading to noise-induced hearing loss. With this, noise is commonly referred to any sound that is unwanted, disturbing, discomforting and pervasive, thereby leading to a gradual or sudden decrease in hearing ability, injury or damage to the inner ear hair-cells, frustration, anxiety, accident, occupational health problems, and psychological imbalances [3, 4]. Exposure to high level of sound(noise) always lead to hearing loss of varying degrees and is capable of causing other harmful health effects depending primarily on the intensity of the noise and the duration of the exposure [5, 6, 7]. Also, continuous exposure to high level of sound is insidious, deleterious and harmful to human auditory systems and capable of causing noise-induced hearing loss due to its oto-destructive nature of noise [8, 9, 10].

Noise remains deleterious in nature and unwanted, and one of the most pervasive occupational health hazards in Nigeria. It is also a health-threatening phenomenon affecting the human health, productivity, mental capability and psychosocial wellness, leisure as well as quality of life [11, 12, 13]. In most cases, regular exposure to industrial noise leads to noise-induced hearing loss with a devastating effect on the auditory performance, psychological wellness and quality of life of the factory workers [14, 7, 2]. Thus, noise-induced hearing loss has been documented as one of the main causes of sensori-neural hearing loss, after age-related hearing loss, even though it is virtually entirely preventable [15, 16]. Noise-induced hearing loss represents a much heavier burden in

developing countries like Nigeria than in the developed regions of the world. This is mainly due to lack of noise prevention programmes and awareness of the consequences of the excessive noise exposure [17, 7, 2].

In most developed countries, employers in factories and mining companies are required by law to institute hearing conservation programmes towards protecting workers against hazardous noise exposure. This is done to prevent unimaginable consequences of noise on both the employees and employers of labour. Hearing conservation programme refers to an organised activity aimed at preventing direct exposure to noise and development of noise-induced hearing loss, protecting (preserving) human auditory systems from being damaged, as well as equipping factory workers with the knowledge and hearing conservation devices towards protecting their auditory systems and other essential body parts while at work. Typically, hearing conservation programme, include noise measurements, routine audiometry, noise reduction and education of workers primarily on how to use of hearing protectors [18, 3]. It is designed to protect workers with significant occupational noise exposures from hearing impairment even with some forms of noise exposure due to occupational or related demands. With hearing conservation programme, employers are to monitor their noise exposure levels in a way that no employer should be exposed to noise which is more than 85 decibels (dB) at average of 8 hours of work per day, or an 8-hour time-weighted average (TWA). The exposure measurement must include the determination and prevent from all continuous, intermittent, and impulsive noise within 80 dB to 130 dB range and must be taken during a typical work situation [1]. This is followed by constant audiometric evaluation, which would serve as a means or basis to programme either individual or general hearing conservation protocols. In fact, the adequate record of the employees' audibility range would help in giving adequate advice and referral service where necessary [3, 6, 7].

As of now, not all the human daily activities or occupations have been evidently reported capable of causing hearing loss, let alone causing noise-induced hearing. But, the high level of noise generated within the environment or rate of noise exposure is scientifically suggestive of the possibility of acquiring hearing loss from such an environment. Importantly, sound engineering is one of such occupations that is presumed not capable of causing hearing, and as such sound engineers constantly and continuously listen to music playing functions, even in the presence of noise as they engage in their daily activities. Although sound engineering is not directly listed as a high-risk occupation, but it has been observed that many sound and music engineers, such as those employed in recording studio and related activities listen to noise for a prolonged time at level above 80 dB without adequate protection, and this is in line with the report that many employees working in noisy environments do not wear hearing protectors. Some who occasionally use the device(s) wear it unconventionally or use it for aesthetic purposes, and this substantially reduces the effectiveness of a hearing protector [19, 11]. Thus, using a kind of hearing conservation device with lower attenuation (and perhaps greater comfort) provides greater protection than a less-regularly applied higher-attenuation [20]. The National Health and Nutrition Examination Survey conducted by the National Center for Health Statistics carried out self-reported hearing protection device use among workers exposed to workplace noise from 1999 -2004. The finding showed that nearly one in six U.S. workers is exposed to workplace noise and one in three U.S. workers exposed to noise reported did not use HPDs [21]. Therefore, if attitude like this is observed in developed countries like the U.S.A, then the worse has happened in Nigeria, where the government is carefree about hearing conservation programme generally. This attitude can manifest as a result of some factors such as perception of people about hearing conservation programme, sometimes, level of knowledge of the risk of loud noise and sociological interplay.

Knowledge is a powerful tool for self-development and achievement of social and psychological activities. In the same vein, lack of knowledge may lead to failure or inability to function well in a given environment. Employee's knowledge of hearing impairment improves their safety performance. Workplaces with a strong safety culture that provide practical health and safety management are associated with greater adherence to hearing conservation practices among workers that work in risky noise environment such as the condition of sound engineers [22]. It has also been observed that a positive attitude and health/safety training have significant association with noise conservation practices [23]. This is because knowledge influences attitude and a level of training can aid knowledge of workplace noise conservation. In the same vein, strong relationship has been established between noise-related risk perception, knowledge, and the use of hearing protection devices (HPDs) among para rubber wood sawmill workers revealed that there is a positive association between hearing protection device use, training, years of service, education levels, gender, and type of hearing protection device [24]. From the finding, it could be observed that training and level of education can influence attitude to safety or hearing conservation programme.

Furthermore, reaction to hearing conservation programme by workers who are prone to noise induced hearing loss such as sound engineers may likely depend on whether the person perceives the environment as posing a risk to health and the usefulness of such programme to him at that point in time. To support the above claim, a study on test of the health promotion model as a causal model of workers' use of hearing protection found that 50.0% of the variance in HPD use among workers in an automobile transmission plant was explained by perceived self-efficacy, perceived barriers, perceived benefits, job category, health competence, and situational factors [25]. In a similar study on the health promotion model as a causal model of construction workers' use of hearing protection reported that 50.0% of the variance in HPD use among construction workers was explained by perceived value of use, barriers to use, self-efficacy for use, interpersonal modelling, and noise exposure [26]. From the two reports, it is evident that perception of an individual about a particular programme can influence his attitude. Hence, various attitudes of some sound

engineers can be traced to both their knowledge and perception of hearing conservation programme. Therefore, this study is on the influence of knowledge and perception of hearing conservation programme on attitude of sound engineers in Oyo State, Nigeria.

Research Questions

1. What is the pattern(s) of relationship that exists among the knowledge, perception and attitude of sound engineers to hearing conservation programme in Oyo State, Nigeria?
2. Will knowledge and perception of sound engineers jointly predict their attitude towards hearing conservation programme in Oyo State, Nigeria?
3. What is the relative contribution of knowledge and perception of sound engineers to their attitude towards hearing conservation programme in Oyo State, Nigeria?

METHODOLOGY

This study employed descriptive research design of correlational type. The population for the study comprised sound engineers in various locations where workers are exposed to noise around 85dB more than 8 hours daily in Oyo State, Nigeria. These include broadcasting houses, disk jockeys, religion organisations and private studios. A total of 250 sound engineers were purposively selected after they had agreed to participate in the research through their responses to consent forms distributed. A sound metre level was used to test the working environment to ascertain the noise levels which served as one the inclusive criteria. Other inclusive criteria were that: all samples selected are sound engineers and they are constantly exposed to sound above 85dB for more 8 hours every day. The participants were not induced nor forced to participate in the study. The instrument used was hearing conservation awareness scale (HCAS) adapted from Purdue University hearing conservation programme with reliability of 0.72 after validation using Cronbach alpha measure. The scale was divided into four sections namely A the demographic part, B, attitudinal scale, C, knowledge scale and D, perception scale respectively. The attitudinal sub-scale was construed in four likert type namely “Always like, somewhat like me, Rarely like me and Not like, The Knowledge sub-scale was constructed in four likert using Strongly agree, Agree, Disagree and Strongly disagree while Perception sub-scale was also constructed in four likert using Very true, True, Somehow true and Not true. The scale was given to each sound engineer after the inclusive criteria were carefully examined and consent was obtained. The respondents were allowed to adequately respond to the items of the scale while observations by sound engineers were attended to. Responses were immediately collected from each of the respondents. The data collected was analysed using Pearson Product Moment Correlation and Multiple Regression.

RESULTS

Research Question 1: What is the pattern(s) of relationship that exists among the knowledge, perception and attitude of sound engineers to hearing conservation programme in Oyo State, Nigeria?

Table 1: Zero Order Correlation showing the pattern of relationships among knowledge, perception and attitude of sound engineers towards hearing conservation programme.

Variable	N	Mean	St-Dev.	Df2 48	R	P
Attitude to hearing Conservation programme	250	24.12	5.200			
Knowledge		24.56	5.389		.464**	<.01
Perception		47.93	10.435		.501**	<.01

**** Significant level at 0.01, * significant level at 0.05 Source: field survey**

Table 1 reveals the pattern of relationships among knowledge, perception and attitude of sound engineers towards hearing conservation programme; attitude towards hearing conservation programme reveals a significant positive relationship with knowledge ($r = 0.464, p < 0.01$) and perception ($r = .501, p < 0.01$). This therefore indicates that there was significant positive relationship between knowledge, perception and attitude of sound engineers towards hearing conservation programme.

Research Question 2: Will knowledge and perception of sound engineers jointly predict of their attitude towards hearing conservation programme in Oyo State, Nigeria?

Table 2: Summary of regression for the joint contribution of knowledge and perception of sound engineers to their attitude towards hearing conservation programme.

R = .589^a						
R Square =.347 Adjusted R square =.342						
Std. Error =4.21778						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2339.583	2	1169.792	65.757	.000 ^b
	Residual	4394.053	247	17.790		
	Total	6733.636	249			

Table 2 indicates a significant joint contribution of knowledge and perception of sound engineers to their attitude towards hearing conservation programme. The result suggests that the two factors when combined jointly predicted sound engineers’ attitude towards hearing conservation programme ($F_{(2, 247)} = 65.757$; $Adj R^2 = 0.347$), which accounted for 34.7% of its variance. The result shows further that there was a significant joint influence of knowledge and perception of sound engineers on their attitude towards hearing conservation programme.

Research Question 3: What is the relative contribution of knowledge and perception of sound engineers to their attitude towards hearing conservation programme in Oyo State, Nigeria?

Table 3: Summary of regression for the relative contributions of knowledge and perception of sound engineers to their attitude towards hearing conservation programme

Models		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1.	(Constant)	7.034	1.515		4.643	.000
	Knowledge	.319	.053	.330	6.032	.000
	Perception	.193	.027	.387	7.077	.000

Table 3 shows that the two factors (knowledge and perception) are potent predictors of sound engineers’ attitude towards hearing conservation programme. The more potent factor was perception ($\beta = 0.387$, $t = 7.077$, $P < 0.01$) and followed by knowledge ($\beta = 0.330$, $t = 6.032$, $P < 0.01$). This implies that perception and knowledge contributed to the increased level of attitude of sound engineers to hearing conservation programme by 38.7% and 33.0% respectively.

DISCUSSION

The results reveals that there was significant positive relationship among the knowledge, perception and attitude of sound engineers towards hearing conservation programme. The implication of this is that perception of sound engineers can influence their attitude to hearing conservation programme, and likewise knowledge of hearing conservation programme can also influence attitude of sound engineers. It could be inferred that adequate and good knowledge of sound engineers of hearing conservation programmes and etiology of noise induced hearing loss can affect their attitude and the way they perceive hearing conservation programme. The finding is in line with the reports earlier researchers that suggested the need to improve the knowledge regarding the risk of hazardous noise exposure [27]. Also, the findings of this study corroborate with past findings on the relationship between noise-related risk perception, knowledge, and the use of hearing protection devices (HPDs) among para rubber wood sawmill workers in which the outcome revealed that there is a positive association between hearing protection device use, training, years of service, education levels, gender, and type of hearing protection device [24].

The findings also revealed that there was significant joint contribution of knowledge and perception of sound engineers to their attitude towards hearing conservation programmes. The implication is that adequate knowledge of impact of high frequencies, noise conservation programmes and positive perception can make sound engineers and cum other workers in high risk noise environment develop positive attitude to any programme that will help in hearing conservation. The outcome of this study is in line with the findings of a study on relationship between noise-related risk perception, knowledge, and the use of hearing protection devices (HPDs) among para rubber wood sawmill workers in which the outcome revealed that there is a positive association between hearing protection device use, training, years of service, education levels, gender, and type of hearing protection device [24]. It is imperative to note that good attitude is influenced by knowledge and the way an individual perceives certain programme as being beneficial or not.

In addition, the findings revealed the relative contribution of sound engineers' attitude to hearing conservation, and that change of attitude of an individual or a group of people depends on the way the programme or activity is perceived. This finding lends credence to a study on test of the health promotion model as a causal model of workers' use of hearing protection and found that 50.0% of the variance in HPD use among workers in an automobile transmission plant was explained by perceived self-efficacy, perceived barriers, perceived benefits, job category, health competence, and situational factors [25]. Also, a research on workers' perception to hearing conservation programme, using focus group discussion reported hearing trouble of various degrees, all described their workplace as noisy, and all indicated that hearing protection was at least offered where they work because of the ways the employees and employers perceive the programme [27, 28, 29]. This accounts for both positive and negative attitude towards hearing conservation programme.

CONCLUSION

This study investigated the influence of knowledge and perception of hearing conservation programme on attitude of sound engineers in Oyo State, Nigeria. The findings revealed a significant positive relationship among the knowledge and perception of sound engineers and their attitude towards hearing conservation programme, and there was also significant joint contribution of knowledge and perception of sound engineers to their attitude towards hearing conservation programmes and that perception of sound engineers to hearing conservation programme contributed mostly to the attitude sound engineers to hearing conservation programme in Oyo State, Nigeria.

RECOMMENDATIONS

Employers of labour are encouraged to make hearing conservation programme topmost priority in order to protect and preserve the general health status and psychosocial wellness of their workers, especially those working in the noise-prone areas within their organisations, firms or industries. Employers should also organise a periodic health screening and talks on hearing loss as well as effects of such on the general wellbeing of the workers who developed such health problems. The health-related talks should include presentations on the factors causing/influencing hearing loss among the industrial workers. Also, sound engineers should be exposed to hearing health-related workshop, sensitization, awareness and education on the need/practice of hearing conservation. More importantly, it is pivotal to conduct baseline audiometric evaluation and determination of their hearing profile among the industrial workers, especially the sound engineers and host of other industrial employees working more 8hours per day in the noisy areas within their places of work. This exercise should done periodically, as it would serve as a mechanism to safeguard the industrial workers for acquiring noise-induced hearing loss and other attendant psychosocial problems. Also, it would help to reduce both the cost and number of hospital visit for medical/health-related care. Through, the health-related workshop, the sound engineers would have access to adequate and right knowledge on safety in workplace, noise control and conservation, impact of noise on human being's general wellbeing, as well as how to preserve/protect their health. Sound engineers should be mandated to undergo hearing assessment at intervals as well be encouraged to use/ wear hearing protective device (HPD) whenever they are actively engaged with the use of music playing functions or carrying out their daily functions.

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