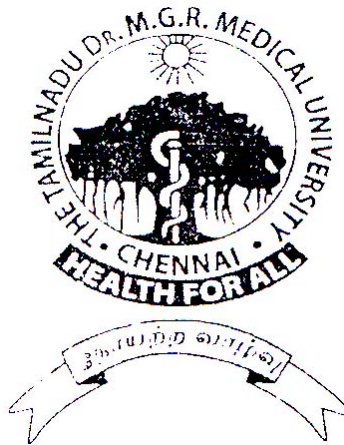


**“A STUDY TO ASSESS THE EFFECTIVENESS OF AN ORIENTATION
PROGRAMME ON NOISE INDUCED HEALTH HAZARDS ON THE AWARENESS
AND COMPLIANCE TO USING PROTECTIVE DEVICE AMONG EMPLOYEES IN
A METAL FABRICATION INDUSTRY AT CHENNAI”**

**M.Sc (NURSING) DEGREE EXAMINATION
BRANCH IV-COMMUNITY HEALTH NURSING**

**R.V.S. COLLEGE OF NURSING
SULUR, COIMBATORE**



**THE TAMILNADU DR.M.G.R.MEDICAL UNIVERSITY
CHENNAI-32**

**MASTER OF SCIENCE IN NURSING
APRIL 2012**

“A study to assess the effectiveness of an orientation programme on noise induced health hazards on the awareness and compliance to using protective device among employees in a metal fabrication industry at Chennai”

Examination : M.Sc (Nursing) Degree Examination

Examination Month & Year : _____

Branch & Course : Branch IV-Community Health Nursing

Register No : _____

Institution : RVS College of Nursing, Sulur, Coimbatore

Sd _____

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Internal Examiner

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ABSTRACT

A study to assess the effectiveness of an orientation programme on noise induced health hazards on the awareness and compliance to using protective device among employees in a selected metal fabrication industry at Chennai.

The main aim of the study was to assess whether an orientation programme makes any difference on the awareness of employees on noise health effects and the compliance to using hearing protective devices.

The conceptual framework of the study was based on Rosenstock's Health Belief Model (HBM) (revised 1996). The research approach used in this study was evaluator approach. The variables of the study were orientation programme on noise induced health hazards and the awareness and compliance to using hearing protective devices.

The study was conducted in a selected metal fabrication industry, Chennai. The data were collected from a convenient sample of 50 employees through interview schedule, Questionnaire, rating scale and observational checklist. The awareness on noise hazards and compliance were assessed before and after intervention. The investigator collected a list of employees in various sections through convenient sampling who fulfilled the selection criteria and they were divided into 3 groups. Two groups consisted of seventeen samples and one group had sixteen samples. For the ease of observation, the researcher prepared colour tags. The tags were prepared in orange, green and yellow colour for the three individual groups and the samples were requested to wear it during their work shift. The compliance of using protective devices was assessed through observational checklist and the health problems were collected through rating scale.

The data was analyzed using descriptive and inferential statistics. Every group was given orientation programme lasting 30 minutes and also demonstration of wearing technique is taught and made them to re-demonstrate among themselves and observed individually for three days observations in a week before and after intervention for assessing the compliance.

Before the intervention, the mean overall awareness score of samples were 14.62(45.69%) After the intervention, the mean overall awareness score 23.96,(74.88%) which showed the effectiveness of the orientation programme. Statistically there was a significant

difference in the mean over all compliance score of using hearing protective devices before & after the intervention ($t=24.01, P<0.05, df=48$).

The study concludes that the orientation programme was effective in improving the awareness on noise hazards and the compliance to using protective devices.

ACKNOWLEDGEMENT

I thank the *Lord Almighty* with my whole heart and soul for His abundant grace which strengthened me in each and every step throughout this endeavor.

First I would like to appreciate and thank the *respondents* for their participation and cooperation to conduct this study successfully.

It is my long felt desire to express my profound gratitude and exclusive thanks to *Prof.Dr.AnnammaPrabhakar, M.Sc (N), Ph.D*, the visiting professor, R.V.S College of Nursing, Sulur. It is a matter of fact that without her esteemed suggestions, highly scholarly touch and piercing insight from inception till completion of the study, this work could not have taken shape.

I express my sincere and heartfelt thanks to *Prof.Mrs. Saramma Samuel M.Sc (N)*, my guide and Principal, R.V.S College of Nursing, Sulur for her intuitive excellent guidance and motivation in all matters large and small since the inception of this thesis.

I wish to express my sincere thanks to *Mrs.Emerensia, M.Sc (N)*, Vice Principal, R.V.S. College of Nursing, Sulur for extending her support to conduct my study.

My sincere gratitude to *Dr.E.P.Chandrasekaran,E.N.T Specialist* ,RVS Hospitalfor validating the tool and for his constant guidance.

I express my sincere thanks to *Mrs.SujaSanthosh, M.Sc (Statistics), B.Ed*,Sulur for their expert guidance in statistical analysis.

I am deeply grateful to *Mr.Kannan,Mr.SenthuraPandian, Mr.Mohan* and *Mrs. Stella Librarians*, R.V.S. College of Nursing, Sulur .

I express my sincere thanks to *Mr.Sivagnanam, M.A(Freelance Journalist)* for their expert guidance in tamil translation of the research tool.

My sincere gratitude to *Ms.Vatsala, M.A, M.Sc, M.ed, M.Phil, P.hd (Lecturer in English Education)*, Principal, SRI AUROBINDO MIRA COLLEGE OF EDUCATION, Madurai for English editing of the research content.

I am thankful to *SRS computer centre* for their excellent help to bring this manuscript effectively.

I wish to extend my thanks to my classmates for their supportive and positive interaction.

Finally I wish to acknowledge my beloved husband and my family members for their prayers, love, affection, valuable suggestions, constant encouragement and support throughout my research study.

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INTRODUCTION

CHAPTER-I

INTRODUCTION

BACKGROUND OF THE STUDY:

The health of an individual is determined by various factors. Work is an important determinant of health. It can influence one's health positively or negatively. The working environment of the employee contributes to his health status. Just like home, the place of work is also an important environment for an employee. Such a person spends nearly 6 to 8 hours per day in the working place until his retirement, for nearly three decades. The worker should not only be healthy, but also safe and free from harmful agents. The working environment is becoming more ingenious because of industrialization and urbanization. Hence, worker in all occupation needs special health care services.

Working community comprises the major portion of our country's population. They determine the progress and development of the country. In other words, their health status is considered as a sensitive indicator for the development of the country.

According to Pimpas (2008) "All human beings need to be healthy and feel safe, both physically and psychologically because one of the most basic human need is safety". Most of us protect ourselves within the changing environment by functioning as healthy individuals who make decisions in a reasonable manner.

Health protection and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupation is most important. Industrial workers are given special attention by the government, because they work in hazardous environment and are exposed to specific risks. If the working environment is healthy, it is not only beneficial for the worker but also for the employer. There will be mutual benefit for both the employee and the employer, because there will be increased production and decreased accidents. There are many types of industries in India, such as chemical industry, leather industry, dye making industry and metal industries. Every industry has its own process of manufacturing and this may lead to various types of physical, chemical and psychological hazards. The most common hazard which is not given adequate importance in our settings is noise.

Sound is one form of energy. This energy is converted as pressure waves into the air. Our human ear is designed naturally to capture these pressure waves as sound. Sound is very common in our daily life, it may be of dwelling room or work place, or heavy traffic. When the sound becomes unpleasant or unwanted the sound level is called noise, which affects our physical, social and psychological well being. When the sound level reaches 85 decibel or more than that, they become hazardous noise. **(Denniston,2000)**

Noise is considered as a serious health hazard. In our recent technologically equipped work environment extreme level of noise is becoming a serious public health issue. World Health Organization (WHO) defined noise as “unwanted sound”. Noise can be defined in terms of intensity or amplitude (loudness), and it’s frequency (pitch). The intensity and duration of noise exposure decides the vulnerability of damaging our inner ear cochlea (hair cells damage). Extreme noise is terribly damaging other than the less frequency noise. The human ear will not react equally to all types of sound frequencies. Noise could be of serious public nuisance and there are four unavoidable common environment where the risk reduction is highly essential, they are work place, domestic, entertainment and travel settings.

The unit of sound is measured as decibels. For example, a normal conversation ranges approximately from 60 decibels, our daily urban traffic noise may range from 85 -105 decibel. If a person shouts from 2 meter distance, it can produce 85 decibels, and if the same person shouts from 1meter distance it can produce 90 decibels. According to the NIOSH (National Institute for Occupational Safety and Health) FACT SHEET- Occupational health, Occupational exposure of 85 decibel and more of 8 hours per day can damage the ear and it needs regular risk assessment.

Workplace Safety and Health Act is an essential part of the Workplace Safety and Health framework. The Act has the following four key features:

- It places the responsibility for workplace safety on all stakeholders along lines of control at the workplace.
- It focuses on Workplace Safety & Health systems and outcomes, rather than merely on compliance
- It facilitates effective enforcement through the issuance of remedial orders.

The report of National Institute for Occupational Safety and Health (NIOSH) stated that exposure to harmful noise in work place is a major problem for 30 million worker in the United States. Occupational hazards cause or contribute to the premature death of millions of people worldwide and result in the ill health or disablement of hundreds of millions more each year. The burden of disease from selected occupational risk factors amounts to 1.5% risks of the global burden in terms of Disability-Adjusted Life Year. The World Health report 2002 places occupational risks as the 10th leading cause of morbidity and mortality. Almost 22.5 Million Disability-Adjusted Life Year and 699,000 deaths are attributable to these risk factors. According to the report, work related injuries cause nearly 310,000 deaths each year, and nearly 146,000 deaths are attributable from the region remains largely un characterised. Member countries of South East Asia Region have witnessed major occupational health problems highlighted by the Bhopal disaster in India and the Kader Toy Factory fire in Thailand. However, workers of the region are exposed to a wider range of occupational hazards and risks including chemical, physical and biological as well as inadequate ergonomics practice and high psychosocial stress. Many of the countries in the Region are in the process of speedy economical development, a process that potentially amplifying the pre-existing traditional risks and introduces new occupational hazards in the region. Thus, occupational health is of major concern in the South East Asia Region of WHO with a work force of about 500 million persons.

Global scenario has stated that nearly 120 million people are estimated to have noise induced hearing problem (**WHO Report;Occupational and community noise,guidelines**) prolonged exposure to noise whether in community or at work environment may cause medical illness such as hypertension and ischeamic heart disease .Past studies have explained that 1,628,0000 cases are identified having noise induced hearing loss. With the worldwide population of 6.525 billion this holds good to 25 per 1,00,000 per year.

According to ILO (International Labour organization), work today has become more dangerous than decades ago. More than 70% of occupational hazards and accidents are found in developing nations. In India only 8.8% of workers enjoy some of the benefits from labour laws, which ensures safe and better working conditions. Occupational accidents are grossly under reported in India. Official figure shows that 23 injuries/1000 industrial workers. This compares with 4/1000 in Japan in 1992 and 10/1000 in Singapore.

Noise can produce hearing problem, interfere with communication and cause sleep disturbances, even leading to cardio vascular and psycho-physiological effects, reduce performance and may increase annoyance response and changes in social behavior. Noise induced hearing loss is one of the leading occupational disease and is the top most common self reported occupational health problem. The condition is irreversible and becomes permanent and there is no definite treatment available for permanent hearing loss resulting from excessive noise exposure.

Metal fabrication industry which involves noise producing activities like metal grinding, punch press, hammering on metal objects, square cutting produces the minimum sound level of 95decibels to 140 decibels. Due to the higher exposure of increasing sound level throughout the work shifts , the workers are more vulnerable to the noise induced health hazards.

But this can be prevented through proper use of hearing protective devices like ear plugs which help in shielding and it's effectiveness has been proven in lab settings and their effectiveness mainly depends on how regularly and how properly they use the earplugs.

So appropriate training and education of industrial employees is essential for a successful programme in which they must be counselled about sound, how it reaches the ear, how the inner ear is affected because of excessive noise, how the ear should be protected with proper precautions and how it should be worn to get the full benefit out of it. Such kind of information can be provided to the employees through an orientation programme.

NEED FOR THE STUDY:

Developed countries have got adequate medical services in the area of occupational health like having occupational medical team in each organization to monitor the employee's health and work for their health promotion. The people of the developed countries are more aware the work environment safety and the laws protecting their health. But in India, our occupational health area needs to be improved and needs more development .

The noise producing industries need proper guidance in areas of occupational health hazard for prevention and promotion of using hearing protective devices.

When industries or administrative services cannot control the measures to reduce the noise, they must encourage the employees to use the ear plugs when they are exposed to work in noisy area to prevent noise induced health hazards. Previous studies have reported that the employees are not regularly using the hearing protective devices such as ear plugs or earmuffs when required. It is necessary that every employee should take ownership of their personal rights and be responsible to prevent the noise induced health hazards.

Previous studies revealed the extent of using protective devices such as ear plugs. In one of the studies conducted among construction workers the usage of earplugs was estimated to be 18% to 70% (**Lusk,Kerr&Kuffman,1998**). Moreover several studies reported saying that there is no adequate reference on duration of wearing practice of ear plugs and they recommended that some behavioral interventions are essential to promote the use of earplugs among the employees in their work settings. Those studies also mentioned about the variety of educational programmes in that have been tried as a part of safety programmes for employees. They recommended that proper motivation and guidance should be enhanced and the managements will to implement this programme is also very essential. The studies also illustrated that high level motivation from the management is the key tool for the success of the programme which it makes the employees enthusiastic and participative.

The attitude studies of wearing hearing protection demonstrates the lack of commitment from employees and lack of motivation from management. So it is very essential that workers must assume responsibility to prevent noise induced hearing loss. According to **Goelzer 2001**, Noise induced health hazards can be prevented through hazard prevention and control programme, he recommended the following features to be considered during the educational interventions, they include government policies, management will, personal responsibility of employees, clearly defined targets, adequate resources, technology, proper implementation of the programme with cooperation of employees, communication media, regular evaluation, follow up programme.

Therefore some educational interventions behavioral or motivated are needed to promote the utilization of earplugs. Here the researcher provides an orientation programme through which the employees are informed about noise induced health hazards and it's prevention, proper fitting of earplugs and how it should be worn throughout the shift. This kind of studies are very limited

in our Indian settings. The researcher has observed that sheet metal fabrication industries can produce the noise level from 80 to 125 db. Exposure to noise in sheet metal fabrication industry is unavoidable. So it is essential to protect the ears with hearing protective devices. The Industrial Management personnel are aware the labour safety act and they provide safety devices to protect the employees yet, for some reason or the other reason the employees do not utilize the protective devices and they succumb to noise induced health problems. Therefore, remedial efforts need to be taken in order to orient the employees about noise induced health hazards. Hence the investigator has undertaken this study to motivate the use of hearing protective devices through an orientation programme.

STATEMENT OF THE STUDY:

A study to assess the effectiveness of an orientation programme on noise induced health hazards on the awareness and compliance to using protective device among employees in a metal fabrication industry at Chennai.

AIM OF THE STUDY:

The study is aimed to assess whether an orientation programme makes any difference on the awareness of employees on noise and it's health hazards at work place and their compliance to using earplugs.

SPECIFIC OBJECTIVES:

- a. To assess the level of awareness regarding occupational noise and its health hazards among the employees before and after intervention.
- b. To determine the level of compliance of employees to using hearing protective devices before and after intervention.
- c. To determine the degree of health problem among the employees due to exposure to excessive noise in the environment.
- d. To find out the association between the level of awareness and selected demographic variables.

HYPOTHESIS:

H₁. There will be a significant difference between the mean overall awareness score of the employees before and after intervention.

H₂. There will be a significant difference between the mean score of compliance of employees with regard to using hearing protective devices before and after intervention.

OPERATIONAL DEFINITIONS:

1. Effectiveness:

In this study, effectiveness refers to the desired outcome as a result of the orientation programme which is compliance to using hearing protective device and the awareness with regard to noise induced health hazards and its prevention.

2. Orientation programme:

In this study orientation programme refers to the systematic planned programme which consists of information regarding,

1. Sound transmission
2. Noise induced pathophysiology of inner ear
3. Other noise induced health hazards
4. Need for hearing protective devices
5. Method of proper fitting of hearing protective devices.

3. Hearing Protective devices:

Hearing protective devices are ear plugs or ear muffs which are provided to the employees to safeguard them from noise induced health hazards

4. Noise induced health hazards:

Health problems caused by excessive noise at workplace which is manifested by signs and symptoms.

5. Awareness:

Awareness means the individual's idea, information or factual knowledge gained through one's own perceptions or by means of education and experience which is verbalized and reported on interview.

6. Compliance:

Compliance means the adherence to expected prescribed standards. In this study, the compliance refers to wearing the ear plugs throughout the shift using correct technique.

7. Metal Fabrication industries:

Metal fabrication industry is a kind of industry producing noise levels between 85db-125db from the activities of electrical angle grinder, metal presses, cutting saws and hammering on metal objects and may therefore lead to noise induced health problems.

ASSUMPTIONS:

- 1 Health hazards are inherent in occupational areas, and these hazards are preventable to a great extent if one uses protective devices.
2. The use of protective devices at workplace may be influenced by personal and environmental factors.
- 3 Motivation and guided practice would enhance the use of protective devices.
4. Adherence to using protective measures is influenced by personal and environmental factors.

DELIMITATIONS:

The study is limited to one company, that is involved in sheet metal fabrication and who deal with hammering and banging on metal objects, punch press etc.

LIMITATIONS:

The study is limited to the sample size of 50. So it cannot be generalized for total population. The study is based on the verbal reports of the workers and the usage of protective devices is measured on careful observation.

SCOPE OF THE STUDY:

The awareness of noise induced health hazards, its prevention, the compliance to using earplugs, the duration and the correct technique of its uses are assessed among employees before and after intervention. If there is a significant increase in the noise awareness score and compliance to using earplugs, then it is a clear indication of the effectiveness of the orientation programme. This orientation programme is systematic and it can be implemented easily in the industry so that the employees will be protected from occupational hazards. If this intervention is practicable, the compliance of using earplugs will definitely improve.

The findings will be beneficial to noise producing industrial areas to motivate the employees to lead a healthy life.

CONCEPTUAL FRAMEWORK:

A conceptual model can be defined as a set of concepts and those assumptions that integrate them into a meaningful configuration (**Fewett, 1980**).

The development of a conceptual model is a fundamental process required before conducting actual research. The framework influences each stage of research process. The conceptual framework in nursing research can help to provide a clear concise idea of knowledge in the area.

The Health Belief Model (revised 1996) is one of the first theories of health behavior. The health belief model proposes that a person's health-related behavior depends on the person's perception of four critical areas:

- The severity of a potential illness,
- The person's susceptibility to that illness,
- The benefits of taking a preventive action, and
- The barriers to taking that action.

The Health Belief Model is a popular model applied in nursing, especially in issues focusing on patient compliance and preventive health care practices.

The model postulates that health-seeking behavior is influenced by a person's perception of a threat posed by a health problem and the value associated with actions aimed at reducing the threat.

The Health Belief Model addresses the relationship between a person's beliefs and behaviors. It provides a way to understanding and predicting how clients will behave in relation to their health and how they will comply with health care therapies.

THE MAJOR CONCEPTS AND DEFINITIONS OF THE HEALTH BELIEF MODEL.

There are five major concepts in health belief model:

1. Perceived Susceptibility
2. Perceived severity
3. Perceived benefits
4. Motivation
5. Enabling or modifying factors

Perceived Susceptibility: .In this study, the employee does not use earplugs and that makes him vulnerable to noise hazards.

Perceived severity: .In this study, perceived severity means the individual perception of seriousness of the noise hazards.

Perceived benefits: refers to the employee's belief that an orientation programme will improve the awareness or help to improve the compliance and thus preventing the hazards.

Motivation: It includes the desire to comply with using protective devices and the belief that people should follow the practice.

Modifying factors: include personality variables, patient satisfaction, and socio-demographic factors.

Fig-1 explains the conceptual framework of health belief model.

FIGURE-I

CONCEPTUAL FRAMEWORK BASED ON ROSENSTOCH'S AND
BECKER AND MAIMAN'S HEALTH BELIEF MODEL (1996)

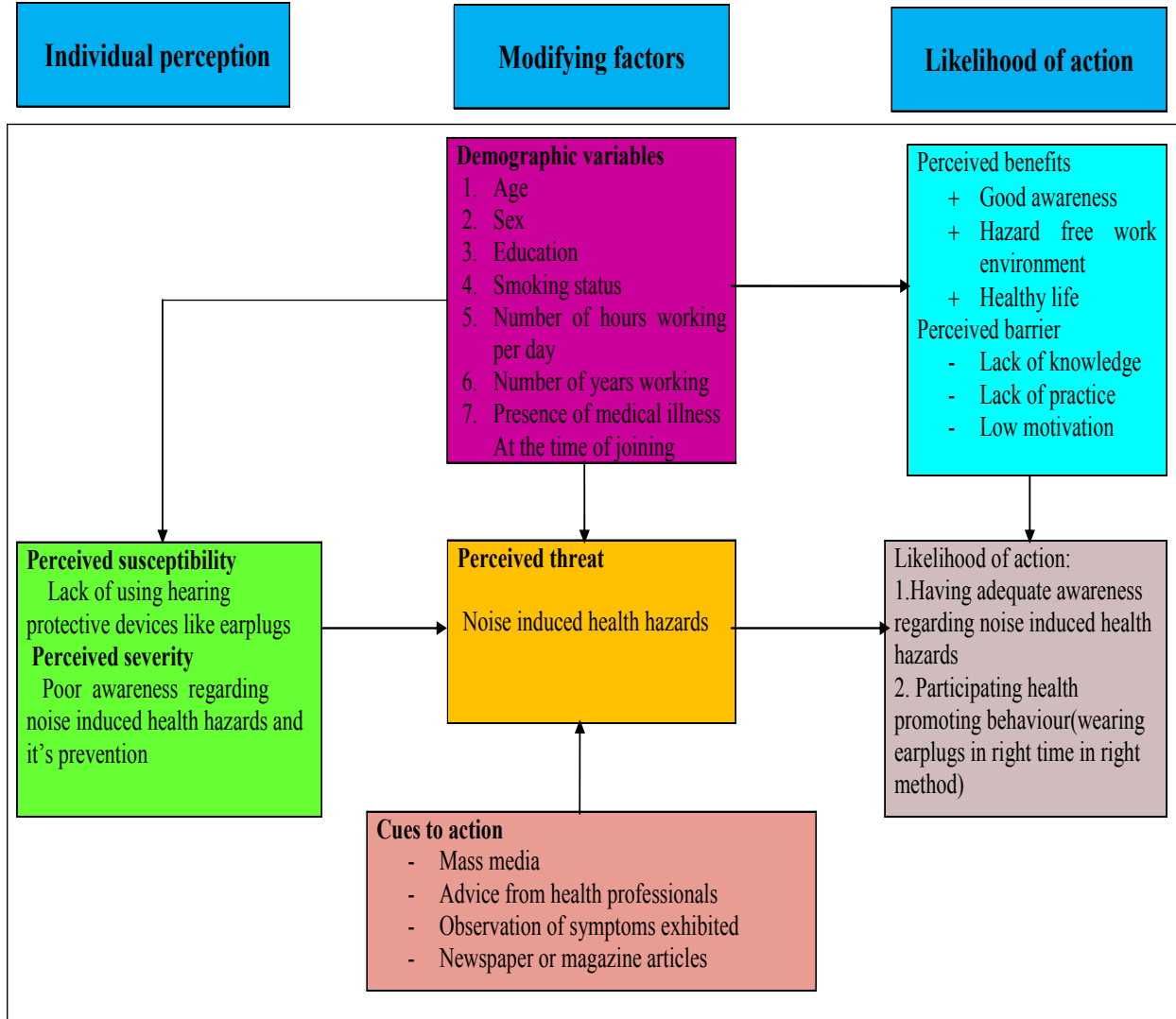


Fig-1 explains the conceptual framework of health belief model.

REVIEW OF LITERATURE

CHAPTER –II

REVIEW OF LITERATURE

According to Hulme and Groves (1994) review of literature is a systematic identification, location, scrutiny and summary of written materials that contain information on research problems. The review of literature in a research report is a summary of current knowledge about a particular problem of practice and includes what is known and not known about the problem.

According to Polit and Hungler (1999), review of literature is a critical summary of research on a topic of interest generally prepared to put a research problem on context or to identify gaps and weakness on previous studies to justify a new investigation.

The researcher came across with numerous theoretical and empirical literature related to the topic under study. The relevant and related literature that were found useful have been presented as follows.

Review of literature for the present study has been organized under the following headings

1. Literature related to occupational health and noise induced health hazards.

2. Literatures related to utilization of hearing protection.

1. Literature related to occupational health and noise induced health hazards.

Kalyan Cheeta Parv (1999) conducted a study to assess occupational health hazards of occupational noise exposure in the steel industry with the population of 356, He evidenced that constant loud noise can produce deafness, feeling of hot sensation, stomach upset, nervous problem and behavioral changes. So to prevent those problems, workers may be provided with hearing protective devices and shift of duties must be arranged. Vibrations from the equipments or machines may cause fatigue, head ache, tremors for the employees. To prevent these effects, workers must be frequently changed. He concluded saying that the working environment should be safe to the employees and they must wear protective devices.

Prasad M.S (2001) studied about the “primary prevention of diseases in working environment”. He reported that better health requires improvement made simultaneously to the work environment as well as the health of the workers. Primary prevention is the key factor to prevent health hazards in the work environment. The primary prevention approach is the most cost effective strategy. Primary prevention means that hazards are engineered out of the work space, production process and environment. Criteria for planning the design of the safe and healthy work environment, that are conducive to physical, psychological and social well being need to be considered. Thus development of occupational health and safety can be seen as an investment not as an economic burden.

Kulshrestha.R. et.al(2000) stated that the overall situation of occupational health and safety remains profoundly poor in India. The importance of health, need to be addressed through various occupational health programmes. This is to improve the health of the workers, their ability, productivity and economic development of the industry. There is such a growing awareness and consciousness of the occupational health among the workers .

Mark P Matheson (2003) had mentioned that noise is a prominent feature of the environment including noise from transport, industry and neighbours. Exposure to transport noise disturbed sleep in the laboratory, but not generally in field studies where adaptation occurred. Noise interfered in complex task performance, modified social behavior and can also lead to annoyance. Studies of occupational and environmental noise exposure suggested an association with hypertension, whereas community studies showed only weak relationships between noise and cardiovascular disease. Aircraft and road traffic noise exposure were associated with psychological symptoms but not with clinically defined psychiatric disorder. In both industrial studies and community studies, noise exposure was found related to raised catecholamine secretion. In children, chronic aircraft noise exposure impairs reading comprehension and long-term memory and may be associated with raised blood pressure.He also mentioned that further research is needed examining coping strategies and the possible health consequences of adaptation to noise.

Sheila(1995) conducted a study on textile workers about the prevention of accidents in work settings and concluded that factual knowledge should be provided to workers by management and health team members. The practice of workers should be supervised constantly because wrong practices leads to injuries and accidents. The accident rate depends on the workers educational status, job training, in-service education and adult education classes.

Sonopant Joshi(2006) conducted a study to assess the effectiveness of planned teaching on knowledge and practices of workers in the machinery units of selected industries in Pune with the population of 320 workers. The study reported that according to the knowledge, age, experience and education of the employee, the health hazard rate varied. He proved that planned education for the industrial workers have proved effective in changing the in workers practice in their work settings.

Willy Passchier-Vermeir and Wim .F.Passchier(2000) conducted a study about noise exposure and its effects on public health in Netherlands. They evidenced the health risk of occupational noise exposure. It is scientifically proven that noise exposure causes hearing difficulty, hypertension, Ischemic heart disease, annoyance, and poor task performances. There was a limited evidence on worsening immune system and birth defects.

Babisch W, Kamp (2004) says that noise is a stressor that affects the nervous system and the endocrine system. Under conditions of chronic noise exposure, the cardiovascular system will be affected. Past noise studies regarding the relationship between aircraft noise and cardiovascular effects have been checked out on adults and on children focusing on mean blood pressure, hypertension and ischemic heart diseases as cardiovascular endpoints. While there was evidence that road traffic noise increases the risk of ischemic heart disease, including myocardial infarction, there was less of such evidence for such an association with aircraft noise. This is partly due to the fact that large scale clinical studies are missing. There is sufficient qualitative evidence, however, that aircraft noise increases the risk of hypertension in adults. Regarding aircraft noise and children's blood pressure the results are still inconsistent. This association must be viewed as primarily due to limitations which are concerned with the pooling of studies due to methodological differences in the assessment of exposure and outcome between studies. More studies are needed to establish better estimates of the risk.

MahendraPrasshanth KV (2008) conducted a study to assess the adverse health effects based on noise intensity. For an efficient evaluation of noise effects, frequency spectrum analysis was used. The study aimed to substantiate the importance of studying the contribution of noise frequencies in evaluating health effects and their association with physiological behavior within human body. Data were extracted from the studies that fulfilled the following criteria: title and/or abstract of the given study that involved industrial/occupational noise exposure in relation to auditory and non-auditory effects or health effects. Significant data on the study characteristics, including noise frequency characteristics, for assessment were considered in the study. It is demonstrated that only a few studies have considered the frequency contributions in their investigations to study auditory effects and not non-auditory effects. The data suggest that significant adverse health effects due to industrial noise include auditory and heart-related problems. The study provided a strong evidence for the claims that noise with a major frequency characteristic of around 4 kHz had auditory effects and being deficient in data failed to show any influence of noise frequency components on non-auditory effects. Furthermore, specific noise levels and frequencies predicting the corresponding health impacts had not yet been validated.

Dr.Klea Kat Soyanni (2010) conducted a study to evaluate the association between the traffic noise and blood pressure reduction during night time sleep. Twenty four hour monitoring of ambulatory BP measurement at 15 minutes interval were done on 149 persons living near major European airport. The evidence showed that 5 decibel increase in road traffic noise during the night of the study was associated with 0.8% decreased dipping of diastolic blood pressure , Aircraft noise is not associated in BP dipping.

J.Halfield et.al (2005) conducted a study to examine the influence of psychological problems on occupational noise exposure among 1015 residents living near Sidney airport. The results indicated that change in noise level significantly increases the level of self reported psychological symptoms such an annoyance and aggressive behavior, headache and social behavior.

2.Literatures related to education on utilization of hearing protection

David.L.Ronis.et.al (2003) conducted a study to test the effectiveness of tailored interventions to promote the factory worker's use of hearing protective devices through

randomized controlled design among 548 factory workers, the results shown on the workers who received the intervention significantly increased the use of hearing protective devices. They also recommended that further research needs to explore in maximizing the benefit of intervention programme.

Sally.L.Lusk et.al (1999) evaluated the effectiveness of theory based intervention to promote the use of hearing protection among mid western construction workers, plumbers and pipe fitters. The results obtained 10-12 months follow up after the intervention. Total 837 high noise exposed workers practices were observed. The analysis showed that the intervention promoted the use of hearing protection among the workers.

Mul.C.ND,O quturk conducted a prospective study to evaluate the quality of life of employees in steel industry. The study group consists of 16 men with tinnitus and the control group of 30 men with normal ear. Workers were measured by questionnaire, surveys and Tinnitus Loudness Level was measured. The results of occupational noise induced tinnitus mainly leads to emotional disabilities rather than physiological problems.

Jenkins.PL (2007) conducted a study among Dairy farmers about use of personal protective devices use when they get expose to high level of noise. An intervention consisting of hearing and respiratory screenings added with education was given as a intervention. This study evaluated the impact of this intervention on farmers' self-reported use of protective measures and implementation of noise and dust abatement. Farmers were screened as to noise (n=209) or dust (n=392) hazards and use of personal protective devices. Following this, they were counseled on personal protective devices use, and identification and reduction of noise or dust hazards. Counselors sought a pledge from the farmers to eliminate hazards and increase personal protective devices use. Farmers were subsequently surveyed and asked whether they had implemented the changes. At baseline, 70% of farmers exposed to high levels of noise reported poor use ("sometimes", "rarely", or "never") of hearing protection. Results indicated that two months after intervention, 25.2% of these subjects had successfully improved their personal protective equipment use. At baseline, 79% of farmers reported poor use of respiratory protection, with 27.3% showing improvement in use of protective devices within the same time. Strategies to reduce noise hazards were identified by 92.8% of hearing screening attendees; 13.2% successfully reduced or removed exposure. These values for dust screening attendees

were 98.2% and 30.7%, respectively. Use of this intervention appears to be an effective method for increasing personal protective devices use on the farm.

El Dip. RP (2004) conducted a study involving 3917 participants. A computer-based intervention lasting 30 minutes, tailored to the risk of an individual worker, was not found to be more effective than video providing general information among workers. Around 80% of samples already used hearing protective devices. A four year school-based hearing conservation programme found that the intervention group was two times as likely to wear some kind of hearing protective devices as the control group that received baseline hearing test and two additional tests at years two and three. It showed improvement in the mean use of hearing protective devices for the tailored group. Tailored education showed an improvement in hearing protective devices use of 8.3% versus targeted education (6.1%).

The evidence strongly supports that some interventions improve the use of hearing protection devices compared to non-intervention.

TakS,Davis (2004) conducted a study on exposure to hazardous workplace noise and use of hearing protection devices among US workers. The main objective .of the study was to estimate the prevalence of workplace noise exposure and use of hearing protection devices at noisy work place. A total of 9,275 workers aged > or =16 years were included in the analysis. Hazardous workplace noise exposure was defined as self-reported exposure to noise at their current job that is so loud that the respondent has to speak in a loud voice to communicate. Industry and occupation have been determined based on the respondent's current place and type of work. Twenty-two million US workers 17% reported exposure to hazardous workplace noise. The prevalence of workplace noise exposure was highest for mining 76%, SE = 7.0 followed by lumber/wood product manufacturing 55%, SE = 2.5. High-risk occupations included repair and maintenance, motor vehicle operators, and construction trades. Overall, 34% of the estimated 22 million US workers reporting hazardous workplace exposure reported non-use of hearing protective devices. The proportion of noise-exposed workers who reported non-use of hearing protective devices was highest for healthcare and social services (73.7%, SE = 8.1), followed by educational services (55.5%).

Hearing conservation programs must be targeted at the industries and occupations identified to have a high prevalence of occupational noise exposure and those industries with the highest proportion of noise-exposed workers who reported non-use of hearing protective devices.

TSukadaT.Sakakibara.H et.al (2009) conducted a study on a trial of individual education for hearing protective devices with an instrument that measures the noise attenuation effect of wearing earplugs.

The aim of this study was to evaluate the effect of individual training of workers, using an instrument to evaluate the noise attenuation gained with the use of earplugs, on the efforts to improve the use of hearing protection devices. The subjects were 68 male workers exposed to noise of above 80 dB at an electronic parts manufacturer in Japan. They received group instruction on the prevention of noise-induced hearing loss and individual education on the effect of the proper use of earplugs. The individual education was done with the use of an instrument that measures the noise attenuation effect of wearing earplugs. After the training, the prevalence of the regular use of earplugs improved. Among workers in loud working environments, the usage was increased from 46% to 66% over two months after the instruction. The percentage of workers who received a sufficient noise attenuation effect of ≥ 25 dB in both ears with the proper use of earplugs also improved, from 46% before the training to 72% immediately afterward. This effect was observed about two months after the intervention. The results proved that the present individual training might be an effective means to improve both the utilization rate and the proper use of hearing protection devices, perhaps because it deepens individual's understanding of the effect of the proper use of protective devices.

K.Sabitu Z Illias (2008) conducted a study to assess the awareness of occupational hazards and adherence to safety measures among welders in Kaduna metropolis in Nigeria. A structured questionnaire was administered on a cross-section of 300 welders in Kadunametropolis. Information was sought on their socio-demographic characteristics, their awareness of occupational hazards and adherence to safety measures. Overall, 257 of the welders were aware of one or more workplace hazards. This was positively influenced by educational attainment, age, nature of training and work experience. Of the 330 respondents, 282 had experienced one or more work-related accidents in the preceding year. The most common injuries sustained were cut/injuries to the hands and fingers, back/waist pain, arc eye injuries,

burns , hearing impairment , fractures and amputation . Only 113 welders used one or more types of protective device with eye goggles, hand gloves and boots being more frequently used. Regular use of safety device, shorter working hours and increasing experience were protective of occupational accidents. The level of awareness of occupational hazards was high with sub optimal utilization of protective measures against the hazards. There is therefore need for health and safety education of these workers for health and increased productivity.

CONCLUSION

The above literatures highlight about the problems of noise exposure, evidences reported on noise induced health hazards, the effectiveness of educational and behavioral interventions to increase the use of hearing protective devices in various noise producing areas. This review enabled the researcher to develop the orientation programme on increasing awareness of the employees and improving the practices.

METHODOLOGY

CHAPTER-III

METHODOLOGY

This chapter provides a brief description of the method adopted for the study. Methodology of research indicates the general pattern of organizing the procedure of gathering valid and reliable data for the problem under investigation (**Kothari 1996**). The methodology of study includes the research approach, research design and settings of the study, population, sampling technique and criteria for samples, development of tool, pilot study and data collection procedure.

RESEARCH APPROACH

The evaluative approach was chosen for this study to evaluate the effectiveness of orientation programme on noise related hazards on the awareness and compliance to using protective devices among employees. This approach was considered to be most appropriate to achieve the aim of the study.

RESEARCH DESIGN:

The research designs selected for the study was pre experimental design with pretest-post test no control group. This design is considered as a weak design as there is no control group for comparison. According to Basavanthappa (1999), loss of control group decreases the usefulness of the study. But may be necessary in case where it is not possible. In this study, the researcher wanted to assess the effectiveness of the orientation programme. If a control group was included, it would have been difficult to control the interaction between the groups

One group pretest post test design was used to assess the effectiveness of orientation programme on noise induced health hazards on the awareness and compliance to using protective devices among employees.

$O_1 \rightarrow O_2 \rightarrow O_3 \text{-----} X \text{-----} O_4 \rightarrow O_5 \rightarrow O_6$

O_1 -----First week pretest awareness of noise related hazards and 1st day of compliance to using protective devices

O₂-----2nd day of compliance to using protective devices.

O₃----- 4th day of compliance to using protective devices.

X-----Orientation programme on noise related hazards on second week.

O₄-----Third week post test awareness score of noise related hazards and 1st day of compliance to using protective devices.

O₅-----2nd day of compliance of using protective devices

O₆----- 4th day of compliance of using protective devices

VARIABLES OF THE STUDY:

Independent variable: Orientation programme on noise induced health hazards

Dependent variable: The awareness and compliance to using hearing protective device.

SETTINGS OF THE STUDY:

A setting of the study refers to the area where the study is conducted. The study was conducted in a private metal fabrication industry located in Chennai. This industry is located in Sipcot industrial complex which is situated in a very remote area. The total number of employees working in the industry is around 300. The employees are involved in activities with electric angle grinder, metal presses, cutting saws, hammering, banging on metal object and causing noise level of minimum 95 to 125 decibels. There is no shift system, they have common working time from 9am to 4pm. The industry has the practice of providing earplugs for the employees.

POPULATION:

The population available for the study was 300 employees who were working in a metal fabrication industry.

SAMPLE SIZE:

The total number of samples selected for this study was 50 who fulfilled the criteria for sample selection.

SAMPLING TECHNIQUE:

Convenient non random sampling technique was adopted for the selection of sample. Since they involve working in various sections, the researcher selected the samples for the purpose of grouping in a specified area.

SAMPLING CRITERIA:

The following were the criteria for the selection of samples.

Inclusion criteria:

- Employees who were willing to participate
- Employee who were working for at least 3 year and more.
- Employee who understood Tamil & English.

Exclusion criteria:

- Employees who had the history of hypertension
- Employees who were on treatment with toxic drugs.
- Employees who were having ear trauma or deafness.

DESCRIPTION OF THE TOOL:

The tools used for the collection of the data were questionnaire, rating scale and observational checklist. The research tool consisted of the following questionnaire.

1. STRUCTURED INTERVIEW SCHEDULE:

The structured interview schedule was constructed to gather demographic data regarding age, sex, education, and work related information such as working hours, total years of employment in the industry and presence of medical illness at the time of joining in the industry.

2. QUESTIONNAIRE:

The questionnaire was used to assess the awareness of noise hazards. It consisted of 20 items which had multiple responses.

The main four areas of noise awareness includes the following,

1. Facts about noise. (7 items)
2. Noise induced health hazards (5 items).
3. Use of protective measures (5 items)
4. Care of protective devices (3 items).

SCORING AND INTERPRETATION:

The tool consisted of twenty items. For each correct options score of 1 was given. The obtained score varied from 1-36.The overall score was graded as following,

Score	Score%	Grading
23-32	66.67%-100%	Good
11-22	33.34%-66.66%	Average
1-10	1.00%-33.33%	Poor

Part I- Facts about noise.(Total score: 13)

Score	Score%	Grading
1-4	1.00%-35.71%	Poor
5-8	35.72%-71.42%	Average
9-13	71.43%-100.0%	Good

Part II-Noise induced health hazards (Total score: 10)

Score	Score%	Grading
0-3	1.00%- 33.33%	Poor
4-6	33.34%- 66.66%	Average
7-10	66.67%- 100.00%	Good

Part III-Use of protective measures(Total score: 6)

Score	Score%	Grading
0-2	1.0-31.25	Poor
3-4	31.26-62.52	Average
5-6	62.53-100	Good

Part IV- Care of protective devices (Overall score: 3)

Score	Score%	Grading
1	33.33	Poor
2	66.6	Average
3	100	Good

2 .RATING SCALE:

This part consisted of 18 noise induced health problems with three levels such as never, sometimes, often. Among them, eight problems were physical hazards and the rest of ten were psychosocial problems.

SCORING AND INTERPRETATION

A score of 2 was given for the response of “often” A score of 1 was given for the response of “sometimes” A score of 0 was given for the response of “never”

SCORE	SCORE%	CATEGORY
25-36	66.67%-100%	SEVERE
13-24	33.34-66.66%	MODERATE
1-12	1-33.33%	MILD

4.OBSERVATIONAL CHECK LIST

a)Observational checklist for assessing the duration of using hearing protective devices.

This checklist measured the duration of wearing earplugs by the employees during their work hours. It consisted of columns for recording the total 7 hours of one day, likewise 3 columns were provided to record for three days of observation. The hours of using earplugs were calculated and it was converted into percentage and that was categorized as follows,

SCORE	SCORE%	CATEGORY
4.67-7.00	66.67%-100.00%	GOOD
2.34-4.66	33.34%-66.66%	AVERAGE
0-2.33	1.00%-33.33%	POOR

b)Observational checklist for assessing the technique of using hearing protective devices.

This part consisted of 11 items to measure the technique of wearing the earplugs by the employees. Each item performed by the employee was scored as 1, not performed was scored as 0.

SCORE	SCORE%	CATEGORY
7.27-11.00	66.67%-100.00%	GOOD
3.67-7.26	33.34%-66.66%	AVERAGE
1.00-3.66	1.00%-33.33%	POOR

DEVELOPMENT OF THE TOOL:

The tool was developed using information from literature review, books and researcher's own experience with occupational noise exposure. Simplicity of language, organization, and clarity of statement were the few factors kept in mind while preparing the tool. The tool was revised several times by consultation with experts and colleagues until it reached the final stage. Then the tool was drafted in English and Tamil.

ORIENTATION PROGRAMME:

The industry had a room on the top of the plant which was designed as sound proof, the noise will not be heard inside, where the orientation programme was conducted and demonstration was done. The orientation programme lasted for 30 minutes. The selected samples were divided into 3 groups. Two groups consisted of seventeen samples and one group had sixteen samples. Each group was given orientation programme systematically, and observed individually before and after intervention for assessing the compliance. For the observational purpose, the researcher prepared colour tags and the awareness also measured before and after intervention. The tags were prepared in orange, green and yellow for the three individual groups and the samples were requested to wear during their work shift.

The following steps were adopted to develop the orientation plan

- Development of specific objectives
- Selection of teaching learning content
- Selection of teaching learning activity
- Organization of content

The content consisted of the following ,

1. Sound transmission
2. Noise induced path physiology of inner ear
3. Other health hazards of noise induced health problems.
4. Need for hearing protective devices
5. Method of proper fitting of hearing protective devices and care of devices.

The teaching plan was developed by keeping in mind the objectives, literacy level of the sample, and simplicity of the language. (refer appendix pg.no: 86)

VALIDITY OF THE TOOL:

It is the assessment of an instrument's ability to measure what it is supposed to measure, the degree to which the data collection tools reflect the body of knowledge pertaining to the concept being studied. The validity of the tool was done from five nursing experts and two doctors and one health education officer. All the nursing experts had Masters qualification in nursing with community health nursing specialization. Two nursing experts were Principal in a private and central govt school of nursing, with more than 9 years of experience and two nursing experts were readers in private college of nursing with 7 years of experience. The medical expert was an E.N.T Consultant in a private hospital. The other expert was the population research centre officer from a central government institute with six years of experience.

RELIABILITY

Reliability is the liability of an instrument to consistently measure what it purports to measure the extent to which random variation influences consistency, stability, and dependability of results. The reliability of the tool was established as follows,

The reliability of the awareness tool was established by test retest method. The retest was conducted after 1 week for the same sample (n=7). Correlation coefficient by Karl Pearson's method has shown a highly positive correlation and stability of the tool. ($r=0.796$).

The reliability of the observational checklist was established by inter-rater method, the tool was given to another researcher and the observation was done by two researchers at the same time. The reliability has been calculated through Karl-Pearson's correlation. The obtained score was 0.98

PILOT STUDY:

In order to test the practicability and feasibility of the tool, a pilot study was conducted with 8 samples selected from one of the metal fabrication industry in Chennai other than the industry under study. A convenient sampling of 8 employees from plant one was selected. Demographic data and the awareness of noise related hazards were collected through interview schedule, and the degree of health problems was collected through the rating scale before administering the intervention. The employees were observed three days in a week and carefully recorded the compliance to using earplugs in terms of duration of use and wearing technique through observational checklist.

Then the orientation programme was given to the employees about noise related hazards and the demonstration of wearing technique was taught, and the employees were given guidance and motivation to wear earplugs by the investigator. The coming next week, awareness of noise related hazards were collected through interview schedule employees were observed three days observations in a week and recorded the compliance to duration of using earplugs and wearing technique through observational checklist.

After the pilot study, the researcher modified the aspect of demonstration technique. After the demonstration class of the researcher, the employees were instructed to do return demonstration among themselves.

DATA COLLECTION PROCEDURE:

Before the commencement of the study, permission was obtained from the concerned authority of the industry. The investigator collected a list of employees in various sections and 50

samples were selected through convenient sampling who fulfilled the selection criteria and they were divided into 3 groups. Two groups consisted of seventeen samples and one group had sixteen samples. Each group was given orientation programme systematically, and observed individually each three times before and after intervention for assessing the awareness and compliance. For the observational purpose, the researcher prepared colour tags. The tags were prepared in orange, green and yellow for the three individual groups and the samples were requested to wear during their work shift.

Every group was given orientation programme lasting 30 minutes and also demonstration of wearing technique was taught and made them to re-demonstrate among themselves and observed individually for three observations in a week before and after intervention for assessing the compliance, and also the awareness on noise related hazards.

1st week: Pre intervention period is a period where the investigator developed rapport with the employees and collect the demographic data and awareness on noise related hazards through the interview schedule which was documented. The degree of health problems reported by the samples was gathered using through rating scale and the 1st, 2nd and 4th day of compliance was assessed through observational checklist before giving the intervention.

2nd week: Later the orientation programme was given to the employees about noise related hazards and the demonstration of wearing technique were taught inside the sound proof room,

3rd week: The employees were given guidance and motivation of wearing earplugs by the investigator.

4th week: Awareness of noise related hazards were collected through interview schedule and the employees were observed in 1st, 2nd and 4th day observations in a week and carefully recorded. The compliance to using earplugs by wearing duration and wearing technique through observational checklist. Likewise three groups were assessed simultaneously.

The total duration of data collection extended over a period of one month.

DATA ANALYSIS:

It was planned to analyze the data using descriptive and inferential statistics.

DESCRIPTIVE STATISTICS:

Frequency and percentage were used to analyze the demographic data and degree of health hazards and also the compliance to using ear plugs by the employees.

Mean and Standard deviation were used to assess the effectiveness of orientation programme.

Paired 't' test was used to test the hypothesis and compare the results.

INFERENTIAL STATISTICS:

Paired "t" test was used to test the hypothesis and compare the results. Chi square test was used to see the association between the demographic variables and study variables.

ETHICAL CONSIDERATION:

A prior permission was obtained from the management after explaining the total purpose and nature of the study and assured the total confidentiality about the subject who involved in the study. Adequate explanation was given whenever they asked doubts. Records were maintained for each sample confidentially.

**ANALYSIS AND
INTERPRETATION**

CHAPTER-IV

ANALYSIS AND INTERPRETATION

Data analysis is a method of rendering data in quantitative, meaningful and intelligible manner, so that research problem can be studied and tested and the relationship between the variables can be identified.

This chapter presents the analysis and interpretation of data collected from 50 employees working in metal fabrication industry with regard to awareness and compliance to using protective devices and also self reported health problems by the employees.

The data have been presented under the following sections.

Section-A: Demographic characteristics of samples

Demographic characteristics of samples have been presented in relation to personal characteristics and work related characteristics for the group.

Section-B: Awareness of noise hazards among the employees before and after intervention.

Awareness of noise hazards have been analyzed as over all awareness and in the four aspects of awareness such as facts about noise, noise induced health hazards, use of protective measures, care of devices. The awareness was assessed in frequency and percentage in three levels such as poor, average, good and in mean score and level of significance before and after intervention.

Section-C: Assessment of health problems reported by employees.

The health problems have been analyzed as overall, category wise and individually. The health problems were assessed in frequency and percentage in three degrees such as mild, moderate and severe health problems before intervention.

Section-D: Assessment of compliance to using protective devices.

Compliance to using protective devices had been analyzed as over all, by duration of wearing ear plugs and the wearing technique of ear plugs. The compliance was assessed in frequency and percentage in three levels such as good, average, poor and in mean score and level of significance before and after the intervention.

Section-E: Association of awareness with selected demographic variables.

Associations between demographic variables with the awareness on noise hazards before intervention have been analyzed.

Section-A: Demographic characteristics of samples

TABLE-1

**FREQUENCY AND PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO
THE DEMOGRAPHIC VARIABLES**

N=50			
SL.NO	Demographic Characteristics	Frequency	(%)
1	Age(In years)		
	20-30 years	26	52.0
	30-40years	12	24.0
	40-50years	11	22.0
	50-60years	01	02.0
2	Sex		
	Male	50	100.0
	Female	-	-
3	Education		
	Illiterates	07	14.0
	Primary	20	40.0
	Secondary	23	46.0
4	Smoking status		
	Present	08	16.0
	Absent	42	84.0
5	Number of hours working per day		
	6-10 hours	41	82.0
	11-15 hours	09	18.0
6	Number of years working		
	1-3 years	16	32.0
	4-6 years	24	48.0
	6-8 years	07	14.0
	Above 8 years	03	06.0

7	Medical Illness at time of joining		
	Present	03	06.0
	Absent	47	94.0

Table-1 presents the demographic variables of the samples

Age: The age group of the samples range from 20-60 years. Above half (52%) of the samples were in the age group of 20-30 years, 11-12(22-24%) of the samples were either in the age group of 40-50 years and 30-40 years, the remaining were in the age group of 50-60 years.

Sex: All the samples (50)100% were males.

Education: Majority of the samples were educated upto primary or secondary. 20 (40%) of the samples had primary education, 23(46%) had secondary education and the rest 7(14%) were illiterates.

Smoking status: Majority 41(82%) of the samples did not have the habit of smoking and only 8(16%) had the habit of smoking.

Number of hours working per day: Majority of the samples (41) 82% were working 6-10 hours per day and only 9 (18%) of the samples were working 11-15 hours per day.

Number of years working : Nearly half (24) 48% of the samples were working for 4-6 years in the industry, and (16)32% of the samples were working for 1-3 years, only 7(14%) were working for 6-8 years and the remaining 3(6%) were working for above 8 years .

Medical Illness at time of joining: Most 47(94%) of the samples had no medical illness at the time of joining and only 3(6%) had medical illness at the time of joining.

TABLE-II

**FREQUENCY AND PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO
OVER ALL LEVEL OF AWARENESS ON NOISE HAZARDS**

N=50

S.No	Level of Awareness	Before Intervention		After Intervention	
		F	%	F	%
1.	Good	--	---	46	92.00
2.	Average	46	92.00	04	08.00
3.	Poor	04	08.00	--	--

Table-II presents the frequency and percentage distribution of samples according to their level of overall awareness on noise related hazards.

The awareness was measured in three levels such as good, average and poor.

Majority 46(92%) of the samples had an average level of awareness and the remaining 4(8%) had poor level of awareness before intervention. After the intervention the awareness level had improved with same percentage from moderate level to good and poor to average

The marked gain in the awareness of sample is the clear indication of the effectiveness of orientation programme

Fig-2: shows the percentage of samples according to overall awareness of noise hazards before and after intervention

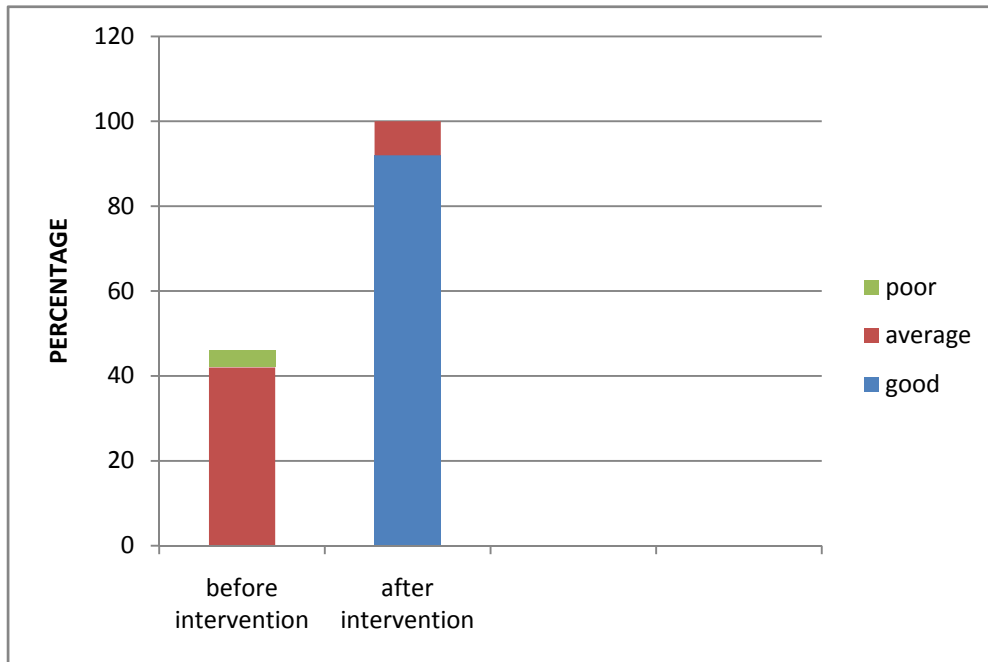


Fig-2 : The percentage of samples according to awareness with regard to over all aspect of noise hazards before and after intervention

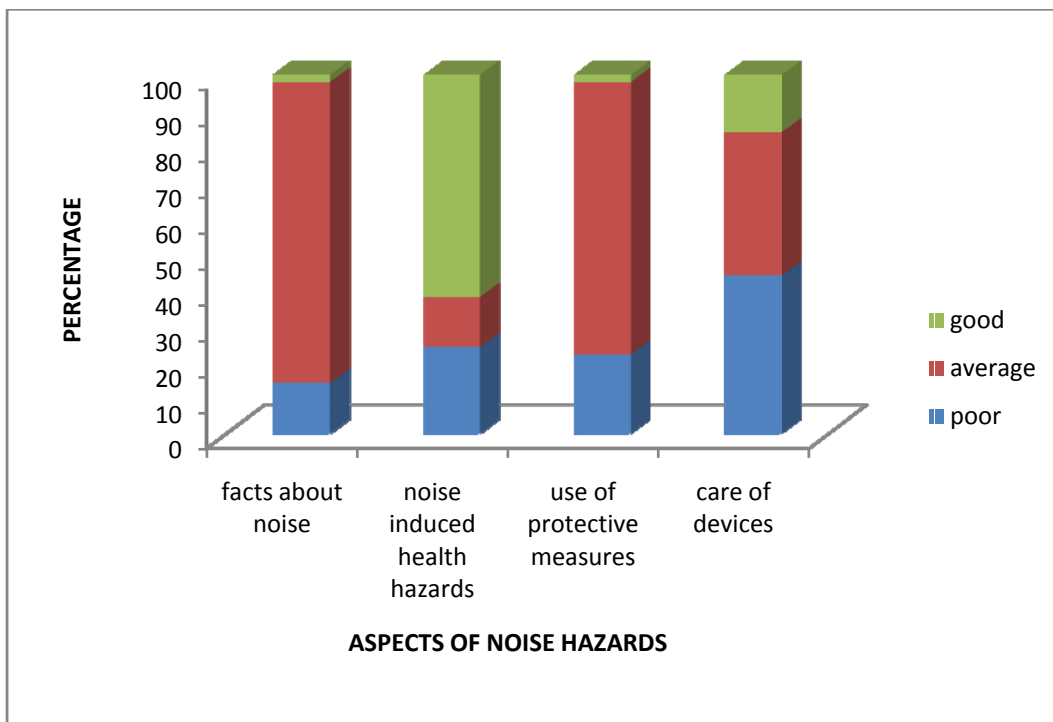


Fig 3 The percentage of samples according to the level of awareness before intervention

TABLE-III

FREQUENCY AND PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO LEVEL OF AWARENESS ON VARIOUS ASPECTS ON NOISE HAZARDS BEFORE INTERVENTION

N=50

S.No	ASPECTS	LEVEL OF AWARENESS					
		Poor		Average		Good	
		F	%	F	%	F	%
1	Facts about noise	07	14.00	42	84.00	01	2.00
2	Noise induced health hazards	12	24.00	07	14.00	31	62.00
3	Use of protective measures	11	22.00	38	76.00	01	2.00
4	Care of devices	22	44.00	20	40.00	08	16.00

Table III explains the frequency and percentage distribution of samples according to the level of awareness on different aspects of noise hazards.

In all the four aspects of noise hazards, the awareness was measured in three levels such as poor, average and good.

Majority 31(62%) of samples had good level of awareness in the aspects of noise induced health hazards, 38-42(76-84%) of the samples had only an average level of awareness in the aspects of facts about noise and use of protective measures. Nearly half of the samples (44%) had only poor level of awareness before the intervention.

Fig 3 presents the percentage of samples according to the level of awareness before intervention

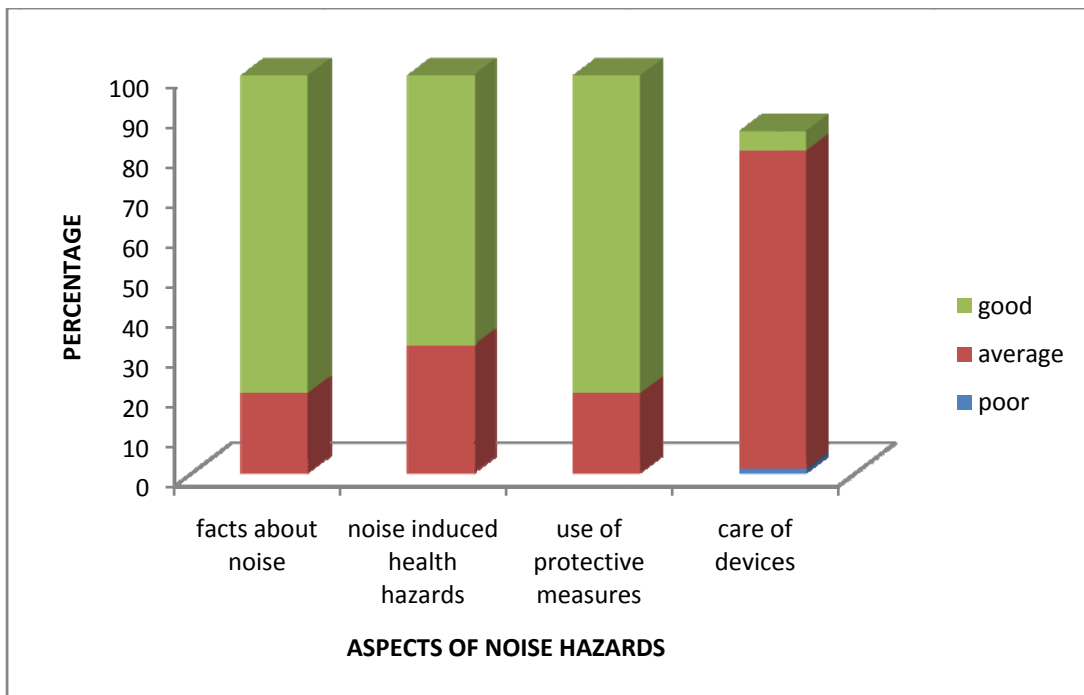


Fig 4 The percentage of samples according to the level of awareness after intervention

TABLE-IV

FREQUENCY AND PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO LEVEL OF AWARENESS ON VARIOUS ASPECTS OF NOISE HAZARDS AFTER INTERVENTION

N=50

S.No	ASPECTS	LEVEL OF AWARENESS					
		Poor		Average		Good	
		F	%	F	%	F	%
1	Facts about noise	--	--	10	20.00	40	80.00
2	Noise induced health hazards	--	--	16	32.00	34	68.00
3	Use of protective measures	--	--	10	20.00	40	80.00
4	Care of devices	01	2.00	40	80.00	09	18.00

Table IV presents the frequency and percentage distribution of awareness on various aspects of noise hazards after intervention

After the intervention in all the four aspects of noise hazards except care of devices, majority of the samples 40(80%) had good level of awareness on facts about noise & use of protective measures , 34(68%) on the noise induced health hazards in the aspect of care of devices, mostly, 40(80%) of samples had only average level of awareness.

In all the four aspects, the level of awareness had improved after the intervention which is a clear indication of the effectiveness of the orientation programme.

Fig 4 presents the percentage of samples according to the level of awareness after intervention.

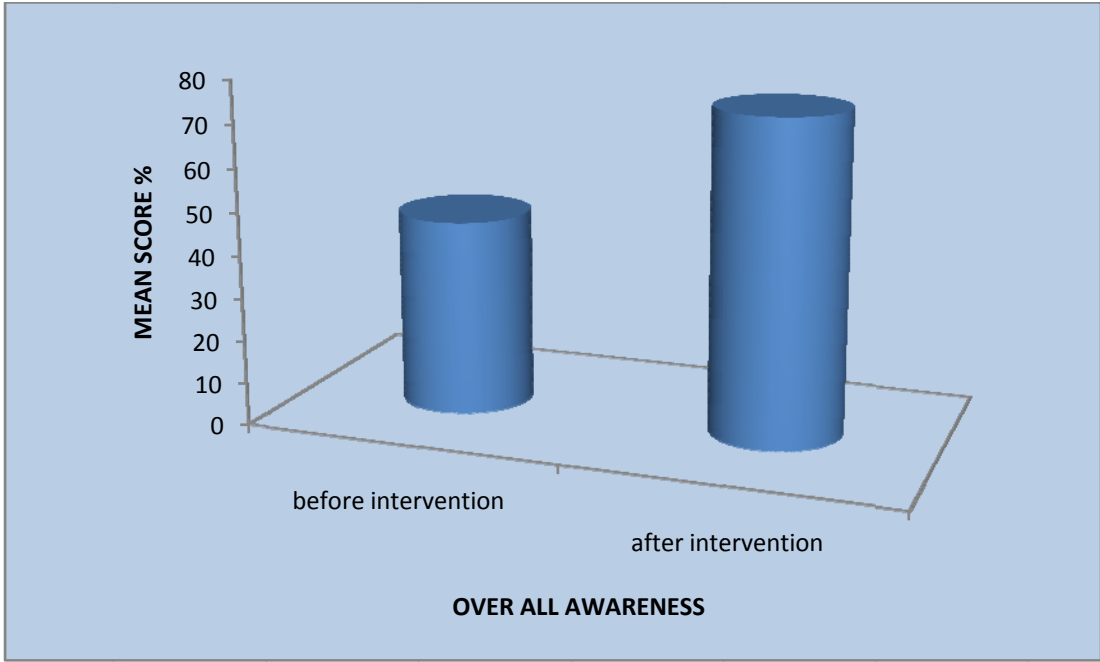


Fig 5: The mean overall awareness score on noise hazards before and after intervention.

.TABLE-V

MEAN OVERALL AWARENESS SCORE ON NOISE HAZARDS BEFORE AND AFTER INTERVENTION AND LEVEL OF SIGNIFICANCE

N=50

S.No	Intervention	Max score	Mean Score	Mean Score%	SD	Mean Difference	Paired t Value P<0.05 df=48
1	Before	32	14.62	45.69	2.51	9.34	23.678*
2	After	32	23.96	74.88	2.17		

* significance

tv=2.01

Table-V presents the mean overall awareness score on noise hazards before and after intervention.

Before intervention, the mean overall awareness score of samples was 14.62(45.69%) After the intervention, there was a marked increase in the mean overall awareness score 23.96, (74.88%) which shows the effectiveness of the orientation programme.

Statistically, there was a significant difference in the mean over all awareness score on noise hazards before& after intervention ($t=23.678$, $P<0.05$, $df=48$). Hence, the hypothesis H_1 “There will be a significant difference between the mean overall awareness score of the employees before and after intervention” is accepted.

Fig 5: Mean overall awareness score on noise hazards before and after intervention.

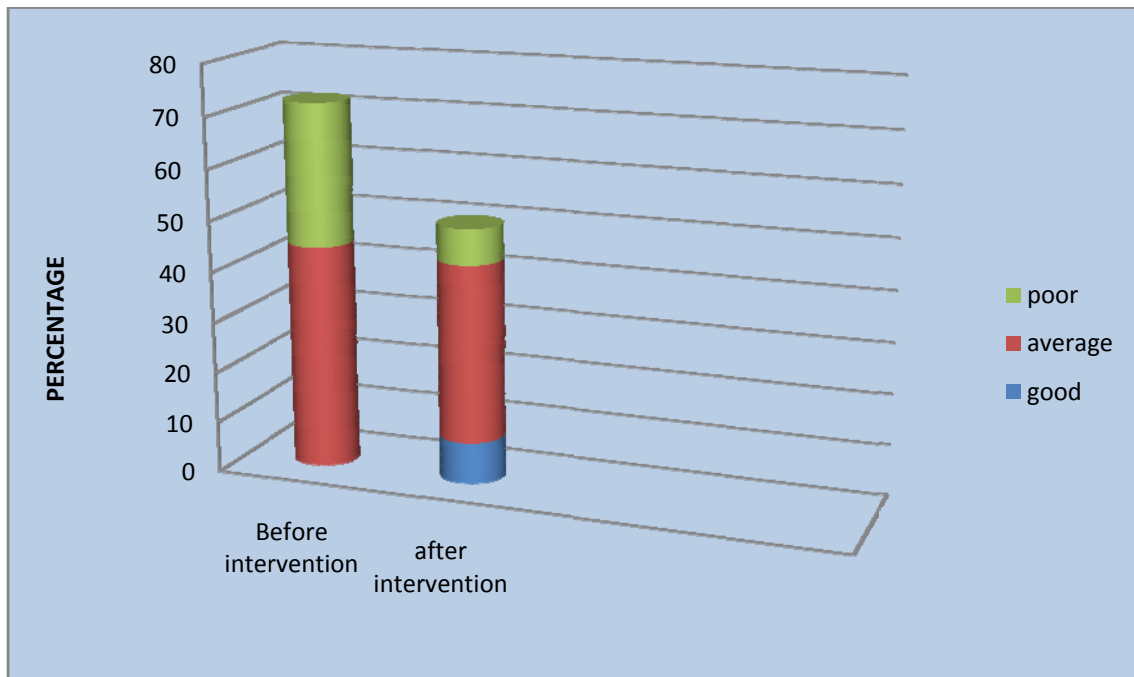


Fig:6: The overall level of compliance of using of hearing protective devices by the samples before and after intervention.

TABLE-VI**MEAN SCORE AND STANDARD DEVIATION OF AWARENESS ON VARIOUS ASPECTS OF NOISE HAZARDS BEFORE AND AFTER INTERVENTION****N = 50**

S.No	Aspects	Max Score	Before Intervention			After Intervention			MD	Paired t Value P<0.05 df=48
			Mean Score	Mean Score %	SD	Mean Score	Mean Score %	SD		
1	Facts about noise	13	6.18	52.30	1.42	9.40	74.92	1.74	3.56	11.228*
2.	Noise induced health hazards	10	4.92	49.20	1.59	7.10	71.00	1.15	2.18	8.949*
3.	Use of Protective measures	05	1.90	38.00	0.68	4.32	86.40	0.84	2.42	14.952*
4.	Care of devices	03	1.62	54	0.95	2.80	93.30	0.67	1.18	9.553*

* significance

tv=2.01

Table –VI presents the mean awareness score of samples on various aspects of noise hazards before and after intervention.

Before the intervention, the highest mean score percentage 54% was received with regard to the aspect of care of devices, secondly 52.3% received with regard to facts about noise, and 49.2% received in the aspect of noise induced health hazards, and the lowest mean score 38% received in the aspect of use of protective devices.

After the intervention, the mean score percentage increased in all the four aspects, ranging from 71-93.3%,the highest score received with regard to the aspect of care of devices, secondly on use of protective devices (86.4%) ,then the next score on facts about noise(74.92%) and noise induced health hazards(71%).

Statistically there was a significant difference in the mean awareness score on various aspects of noise hazards before & after the intervention ($t=11.228^*$, 8.949^* , 14.952^* , 9.553^* , $p < 0.05$, $df=48$)

Section-C: Assessment of health problems reported by employees.

TABLE-VII

FREQUENCY AND PERCENTAGE OF SAMPLES ACCORDING TO DEGREE OF HEALTH PROBLEMS REPORTED BY THE SAMPLES

N=50

S.NO	DEGREE OF NOISE INDUCED HEALTH PROBLEMS	F	%
1	Mild	18	36
2	Moderate	31	62
3	Severe	01	02

Table-VII explains the frequency and percentage of samples according to degree of noise induced health problems reported by the employees.

Most of the samples 31(62%) had moderate degree of noise induced health problems, 18(36%) had mild degree of health problems and the remaining 1(2%) had severe problems.

TABLE-VIII

FREQUENCY AND PERCENTAGE OF SAMPLES ACCORDING TO THE CATEGORY WISE DEGREE OF NOISE INDUCED HEALTH PROBLEMS

N=50

S.No	Category of health problem	Mild		Moderate		Severe	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1.	Physical	32	64.0	18	36.00	-	-
2.	Psycho social	21	42.0	27	54.00	02	4.00

Table-VIII explains the frequency and percentage of samples according to the category of noise induced health problems.

The noise induced health problems were categorized into physical and psycho social which had been classified into three degrees such as mild, moderate, severe .

Majority, 32(64%) of the samples had mild degree of health problem in the physical category and the remaining 18(36%) had moderate degree of problems, where as in the psycho social category above half 27(54%) had moderate health problems,21 (42%) had mild and the rest 2(4%) had severe problems.

This table concludes that the psycho social problems were highly prevalent among the samples rather than the physical problems.

TABLE-IX

FREQUENCY AND PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO THE INDIVIDUALIZED NOISE HEALTH PROBLEMS REPORTED IN THE PHYSICAL CATEGORY.

N=50

S.NO	List of Problems	Some times	%	Often	%
1	Hard Hearing	29	58	09	18
2	Hearing Ringing sound	18	36	08	16
3	Ear pain	13	26	12	24
4	Chest pain	04	08	-	-
5	Allergies	39	78	08	16
6	Respiratory infections	42	84	05	10
7	Stomach pain	15	30	04	08
8	Intake of pain medications	21	42	06	12

Table-IX explains the frequency and percentage distribution of samples according to the individualized noise health problems reported in the physical category. The physical problems were perceived as some times and often.

Majority of the samples 42(84%) sometimes, had the problem of respiratory infection, 39(78%) of the samples had allergic problems, 29(58%) of the samples had the problem of hard hearing and 21(42%) had the problem of intake of pain medications.

12(24%) of the samples often had the problem of ear pain,9(18%) of the samples had hard hearing, the equal number 8(16%) had often the problem of hearing ringing sound and allergic problems.

This table concludes that the ear related problems and respiratory infections and allergies were more prevalent physical problems reported by the samples.

TABLE-X

FREQUENCY AND PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO THE INDIVIDUALIZED NOISE HEALTH PROBLEMS REPORTED IN THE PHYCHO- SOCIAL CATEGORY.

N=50

S.NO	List of Problems	Some times	%	Often	%
1	Intake of alcohol	14	28	03	06
2	Aggressive behavior	38	76	07	14
3	Feeling stress	29	58	17	34
4	Irritability	26	52	-	-
5	Feeling of Decreased self esteem	24	48	06	12
6	Anxiety	13	-	-	-
7	Speech Disturbances	26	52	-	-
8	Feeling of decreased productivity	32	64	06	12
9	Argumentativeness	29	58	19	38
10	Feeling of annoyance	14	28	02	04

TABLE-X presents frequency and percentage distribution of samples according to the individualized noise health problems reported in the phycho-social category.

Majority of the samples 38(76%) sometimes, they had the problem of having aggressive behavior, 32(64%) of the samples, sometimes had the problem of feeling of decreased productivity, 26-29(52-58%) of the samples, sometimes, had the problem of sleep disturbances, irritability, stress and argumentativeness.

19(38%) of the samples often had the problems of argumentativeness, 17(34%) of the samples had stress problems. 6-7(12-14%) often had the problem of feeling of decreased productivity, feeling of decreased self-esteem and aggressive behavior.

This table concludes that stress, aggressive behavior and argumentativeness were more prevalent under the psychosocial category.

Section-D:Assessment of compliance to using protective devices

TABLE-XI

FREQUENCY AND PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO LEVEL OF COMPLIANCE TO DURATION OF USING HEARING PROTECTIVE DEVICES BEFORE AND AFTER INTERVENTION.

N=50

**XI
the**

S.No	Level of compliance to duration of protective device use	Before Intervention		After Intervention	
		F	%	F	%
1	Good	-	-	-	-
2.	Average	07	14	41	82
3.	Poor	43	86	09	18

**Table –
presents**

frequency and percentage distribution of samples according to the level of compliance to duration of using hearing protective devices before and after intervention.

The compliance to duration of using protective devices was measured in three levels (good, average, poor.)

Majority 43(86%) of the samples had poor level of compliance and the rest 7(14%) had average level of compliance before the intervention, whereas after the intervention, the level of compliance had improved from poor to average.41(82%) of the samples had average level of compliance and only 9(18%) had poor compliance.

This table concludes that after the intervention, there is a marked increase in the level of compliance to duration of using hearing protective devices.

This result is an indication of the effectiveness of the orientation programme.

TABLE-XII

FREQUENCY AND PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO LEVEL OF COMPLIANCE TO THE TECHNIQUE OF WEARING HEARING PROTECTIVE DEVICES BEFORE AND AFTER INTERVENTION.

N=50

S.No	Level of compliance to wearing technique of protective device	Before Intervention		After Intervention	
		F	%	F	%
1.	Good	-	-	04	08
2.	Average	02	04	44	88
3.	Poor	48	96	02	04

Table –XII presents the frequency and percentage distribution of samples according to level of compliance to the technique of wearing hearing protective devices before and after intervention

Majority 48 (96%) of the samples had poor level of compliance and the rest 2(4%) of the samples had average level of compliance before the intervention, whereas after the intervention, the level of compliance had improved from poor to average and good. Majority 44(88%) of the samples of the samples had average level of compliance and 4(8%) had good compliance and a very few 2 (4%) had poor compliance.

This table concludes that after the intervention, there is a marked increase in the level of compliance to wearing technique of hearing protective devices.

The orientation programme could be a contributing factor to this.

TABLE-XIII

FREQUENCY AND PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO OVERALL LEVEL OF COMPLIANCE TO USING HEARING PROTECTIVE DEVICES BEFORE AND AFTER INTERVENTION

N=50

S.No	Level of overall compliance to using hearing protective devices	Before Intervention		After Intervention	
		F	%	F	%
1.	Good	---	---	08	16.00
2.	Average	22	44.00	35	70.00
3.	Poor	28	56.00	07	14.00

Table-XIII explains the Frequency and percentage distribution of samples according to the overall level of compliance to using hearing protective devices before and after intervention.

More than a half 28(56%) of the samples had poor level of compliance and the rest 22(44%) had average level of compliance before the intervention, whereas after the intervention, the level of compliance had improved from poor to average and good. Majority 35(70%) of the samples had average level of compliance and 8(16%) had good compliance and a very few 7(14%) had poor compliance.

This table concludes that there is a marked increase in the overall level of compliance after intervention. This could be due to the effectiveness of the orientation programme.

Fig:6: highlights the overall level of compliance of using of hearing protective devices by the samples before and after intervention.

TABLE-XIV

OVERALL MEAN COMPLIANCE SCORE AND STANDARD DEVIATION OF USING PROTECTIVE DEVICES BEFORE AND AFTER THE INTERVENTION.

N=50

S.No	Intervention	Max score	Mean score	Mean Score %	SD	Mean difference	Paired t Value P<0.05 df=48
1.	Before	133	27.56	20.73	23.67	61.42	24.01*
2.	After	133	88.98	66.90	23.61		

*= significance

tv=2.01

Table-XIV explains the overall mean compliance score and standard deviation of using protective devices before and after intervention.

Before intervention the overall mean compliance score were 20.73%, where as the mean compliance score had increased to 66.90% after the intervention.

Statistically there was a significant difference between the mean over all compliance score of using hearing protective devices before & after the intervention (t=24.01, P<0.05, df=48). Hence, hypothesis H₂ “There will be a significant difference between the mean overall score of compliance of employees with regard to using hearing protective devices before and after intervention” was accepted.

TABLE-XV

MEAN COMPLIANCE SCORE AND STANDARD DEVIATION OF DURATION OF USING HEARING PROTECTIVE DEVICES

N=50

S.No	Intervention	Max score	Mean score	Mean Score%	SD	Mean deviation	Paired t Value P<0.05 df=48
1.	Before	100	18	18	14.91	30.08	12.358*
2.	After	100	48.08	48.08	22.88		

* significance

tv=2.01

Table-XV explains the comparison of mean compliance score and standard deviation of duration of using protective devices before and after intervention.

Before intervention the mean compliance score was 18%, that has raised upto mean compliance score of 48.08% after the intervention.

Statistically there was a significant difference in the mean compliance score on duration of using hearing protective devices before & after the intervention (t=12.358, P<0.05, df = 48).

TABLE-XVI

**MEAN COMPLIANCE SCORE AND STANDARD DEVIATION OF WEARING
TECHNIQUE OF USING HEARING PROTECTIVE DEVICES BEFORE AND AFTER
INTERVENTION.**

N=50

S.No	Intervention	Max score	Mean score	Mean Score %	SD	Mean Deviation	Paired t Value P<0.05 df=48
1.	Before	33	3.92	11.87	3.11	11.68	25.381*
2.	After	33	15.60	19.96	1.36		

* significance

Table-XVI explains the comparison of mean pre and post test score of samples regarding the wearing technique of using protective devices before and after intervention.

Before intervention the mean compliance of wearing technique score was 11.87%, that has raised up to mean score of 19.96% after the intervention.

Statistically there is a significant difference in the mean compliance score of wearing technique before and after the intervention (t=25.381, P<0.05,df=48).

SECTION-D

Assessment of awareness with selected demographic variables

TABLE-XVII

**ASSOCIATION OF DEMOGRAPHIC VARIABLES WITH LEVEL OF AWARENESS
ON NOISE HAZARDS BEFORE INTERVENTION**

N=50

S.N	Demographic variable	VEL OF AWARENESS				χ^2 value P<0.05	χ^2 table value (df)
		Average		Poor			
		F	%	F	%		
1.	Age <ul style="list-style-type: none"> • ≤ 30yrs • > 30yrs 	24 22	48 44	2 2	4 4	NS 0.266	3.84 (df=1)
2	Education <ul style="list-style-type: none"> • Primary education • secondary education • Illiterates 	19 21 6	38 42 12	1 2 1	2 4 2	NS 44.79	5.9 (df=)
3	Total no of years working in the industry <ul style="list-style-type: none"> • 6 yrs • > 6 yrs 	37 9	74 18	3 1	6 2	NS 0.1494	3.84 (df=1)

NS -Non significance

Table-XVII explains the association of demographic variables with level of awareness on noise hazards before intervention.

This table shows that there is no association of demographic variables such as age, educational status, total number of years working in the industry with pre intervention awareness level of noise hazards.

DISCUSSION

CHAPTER-V

DISCUSSION

The discussion brings the research to closure section “make sense” of the research results. This is the most important section of any research report. The discussion section may be presented in precise and concise language avoiding research jargons.(Hays 1992,Klison 1985)

The study focused on assessing the effectiveness of orientation programme on the awareness on noise and it's health hazards at work place and their correct compliance to using hearing protective devices among the employees working in metal fabrication industry at Chennai.

Section-A: Demographic characteristics of samples

Demographic characteristics of samples have been presented in relation to personal characteristics and work related characteristics for the group.

Section-B: Awareness of noise hazards among the employees before and after intervention

Table II-Table VI presents the awareness on noise, noise related health effects, protective measures of the samples before and after intervention.

Table II shows 92% of the samples had average score of noise awareness and 8% had poor awareness before intervention. After intervention 92% achieved good level of awareness and only 8% had average level of awareness.

Table III presents the distribution of awareness on noise related hazards samples before intervention.

Table IV presents the distribution of awareness on noise related hazards before and after intervention. There was significant increase in the awareness score of samples after intervention.

Table-V presents the comparison of mean awareness score of samples before and after intervention

Before intervention, mean awareness score of sample was 14.62. There was a marked increase in the awareness after the intervention (Mean score 23.96). It may be because of the effectiveness of the orientation programme on noise related hazards.

The difference was tested by using 't' test. So in the hypothesis $H_0 - 1$ "There will be a significant difference between the overall mean awareness score of the employees before and after intervention is accepted

Table -VI presents the comparison of mean awareness score of samples on various aspects of noise, hazards before and after intervention. The statistical test also shows significant difference in the awareness score of various aspects before and after intervention.

The findings of the present study is consistent with **Sonopant Joshi (2006)** conducted a study to assess the effectiveness of planned teaching on knowledge and practices of workers in the machinery units of selected industries in Pune with the population of 320 workers. The study reported that according to the knowledge, age, experience and education of the employee, the health hazard rate varied. He proved that planned education for the industrial workers have proved effective in changing knowledge of the in workers.

Section-C: Assessment of health problems reported by employees.

Table-VII explains the frequency and percentage of degree of noise induced health hazards reported by the samples.

In that 62% (31) of them have reported being suffered with moderate degree of health hazards and 32% (16) of them had only mild problems and a little 2%(1) had suffered with severe health problem.

Table-VIII explains the frequency and percentage of samples according to the category of noise hazards. The hazards were categorized into physical and psycho social hazards which have been classified into mild, moderate, severe levels.

Table-IX explains the frequency and percentage of various noise induced health hazards reported by the samples. According to this table, the problems which they often suffering are

feeling of stress, ear pain, hard hearing, hearing ringing sounds and allergies as per the past studies revealed.

The present study findings are supported by the study done by **Halfield et.al (2005)** who examined the influence of psychological problems on occupational noise exposure among 1015 residents living near Sidney airport. **T,Stephen A Stansfield and Mark.P.Matheson(2006)**on the influence of psychological problems on occupational noise exposure. The results indicated that change in noise level significantly increased the level of self reported psychological symptoms such an annoyance and aggressive behaviour, headache, social behavior.

Section-D: Assessment of compliance to using protective devices.

Table –X presents the comparison of frequency and percentage distribution of samples regarding the duration of using protective devices.

Before intervention none of the samples had good duration compliance of wearing protective devices. But (86%) majority of the samples had poor compliance duration only a few (14%) had average compliance.

After the intervention 86% (43) of the samples achieved average compliance duration of using protective devices, and a few 18% (9) had poor compliance duration and none

Table-XI explains the comparison of mean pre and post test score of samples regarding the overall compliance of using protective devices before and after intervention.

Before intervention the mean overall compliance score was 27.58, that has raised upto mean overall compliance score of 88.98 after the intervention.

Table –XII presents the comparison of frequency and percentage distribution of samples regarding the technique of using protective devices before and after intervention

Table-XIII explains the comparison of mean pre and post test score of samples regarding the overall compliance of using protective devices before and after intervention.

Before intervention the mean overall compliance score was 27.58, that has raised upto mean overall compliance score of 88.98 after the intervention.

The result supported the hypothesis is H2 “There will be a significant difference between the mean score of compliance of employees with regard to using hearing protective devices before and after intervention

Before intervention the mean compliance duration score was 18, that has raised upto mean duration compliance score of 48.08 after the intervention.

This is a significant difference between the pretest and post test compliance duration. This increase in compliance to using protective devices of samples in the post test could be attributed to the orientation programme

Table-XIV explains the comparison of mean pre and post test score of samples regarding the compliance duration of using protective devices before and after intervention. Before intervention the mean compliance duration score was 18, that has raised upto mean duration compliance score of 48.08 after the intervention.

Statistically there is a significant difference between the pre test and post test compliance duration

Table-XV explains the comparison of mean pre and post test score of samples regarding the wearing technique of using protective devices before and after intervention.

Before intervention the mean compliance of wearing technique score was 3.92, that has raised up to mean compliance of wearing technique score of 15.60 after the intervention.

The findings are supported by the study carried out by **David.L.Ronis.et.al (2003)** who conducted a study to test the effectiveness of tailored interventions to promote the factory worker’s use of hearing protective devices through randomized controlled design among 548 factory workers ,the results shown on the workers who received the intervention significantly increased the use of hearing protective devices.

Several authors have highlighted the impact of educational interventions to promote the use of hearing protective devices.

Sally.L.Lusk et.al (1999) who evaluated the effectiveness of theory based intervention to promote the use of hearing protection among mid western construction workers, plumbers and pipe fitters. The results obtained 10-12 months follow up after the intervention. Total 837 high noise exposed workers practices were observed. The analysis showed that the intervention promoted the compliance of hearing protection among the workers..

Jenkins.PL(2007), reported that the use of this educational intervention appears to be an effective method for increasing Personal Protective Devices use on the farm.

El Dip. RP(2004) strongly supported that some interventions improve the use of hearing protection devices compared to non-intervention

Section-E:Association of awareness with selected demographic variables.

Table-XVI explains the association of demographic variables with level of awareness.

This table shows that there is no association of demographic variables such as age, educational status, total number of years working in the industry with the pre test noise awareness score.

**SUMMARY,
FINDINGS, CONCLUSION,
IMPLICATION AND
RECOMMENDATIONS**

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATION AND RECOMMENDATIONS.

This chapter presents the summary of the study, summary of the findings, conclusions and recommendations.

SUMMARY OF THE STUDY:

The main aim of the study was to assess whether an orientation programme makes any difference on the awareness of employees on noise health effects and the correct compliance to using hearing protective devices.

The conceptual framework of the study was based on Rosenstoch's Health Belief Model (HBM) (revised 1996). The research approach used in this study was evaluator approach. The variables of the study were orientation programme on noise induced health hazards and the awareness and compliance on the using hearing protective devices.

The study was conducted in a selected metal fabrication industry, Chennai. The data were collected from a convenient sample of 50 employees. The data were collected through interview schedule, Questionnaire, rating scale and observational checklist. The awareness on noise hazards and compliance were assessed before and after intervention. The compliance of using protective devices was assessed through observational checklist and the health problems were collected through check list. The data was analyzed using descriptive and inferential statistics.

SUMMARY OF THE FINDINGS:

Demographic data:

The age group of the samples range from 20-60 years. Majority were the age group of 20-30 years, 11-22(22-44%) were either in the age group of 30-40 and 40-50 years age group. The significant 1(2%) belongs to the age group of 50-60 years. All the samples (50)100% were males. The education of the sample shows an almost an equal number had either primary or secondary education. Only a 7(14%) were only illiterates. In majority of the samples 41(82%), the habit of smoking is absent, In the 8(16%), the habit of smoking is present. Majority of the samples (41) 82% were working 6-10 hours per day only a 9 (18%) of the samples were working 11-15 hours

per day. The majority(24) 48%of the samples were working in the industry about 4-6 years, and (16),32%of the samples were working in the industry about 1-3 years, only 3-7(6-14%) have the 6-8 and above 8 years of experience.94%(47) of the samples did not have any medical illness at the time of joining.

The awareness on noise hazards:

The awareness was assessed in the main four areas of noise hazards. They are Facts about noise , Noise induced health hazards, Use of protective measures, Care of devices. The awareness as assessed in three degrees such as poor, average, good. Before intervention, majority 31(62%) of samples had good level of awareness in the aspects of noise induced health hazards, 38-42(76-84%) of the samples had only an average level of awareness in the aspects of facts about noise and use of protective measures. Nearly half of the samples (44%) had only poor level of awareness before the intervention. After the intervention in all the four aspects of noise hazards except care of devices, majority of the samples 40(80%) had good level of awareness on facts about noise& use of protective measures , 34(68%) on the noise induced health hazards in the aspect of care of devices, mostly, 40(80%) of samples had only average level of awareness. Before intervention, the mean overall awareness score of samples were 14.62(45.69%) After the intervention, there was a marked increase in the mean overall awareness score 23.96,(74.88%) which shows the effectiveness of the orientation programme.

The health problems reported by employees.

Most of the samples 31(62%) had moderate degree of noise induced health problems, 18(36%) had mild degree of health problems and the remaining 1(2%) had severe problems. The noise induced health problems were categorized into physical and psycho social which had been classified into three degrees such as mild, moderate, severe.

Majority, 32(64%) of the samples had mild degree of health problem in the physical category and the remaining 18(36%) had moderate degree of problems, where as in the psycho-social category above half 27(54%) had moderate health problems,21(42%) had mild and the rest 2(4%) had severe problems.

The psycho social problems were highly prevalent among the samples rather than the physical problems.

Majority of the samples 42(84%) sometimes, had the problem of respiratory infection, 39(78%) of the samples had allergic problems,29(58%) of the samples had the problem of hard hearing and 21(42%) had the problem of intake of pain medications.

12(24%) of the samples often had the problem of ear pain, 9(18%) of the samples had hard hearing, the equal number 8(16%) had often the problem of hearing ringing sound and allergic problems.

Regarding the psycho-social category, majority of the samples 38(76%) sometimes, they had the problem of having aggressive behavior, 32(64%) of the samples, sometimes, had the problem of feeling of decreased productivity, 26-29(52-58%) of the samples, sometimes, had the problem of sleep disturbances, irritability, stress and argumentativeness.

19(38%) of the samples often had the problems of argumentativeness, 17(34%) of the samples had stress problems. 6-7(12-14%) often had the problem of feeling of decreased productivity, feeling of decreased self-esteem and aggressive behavior.

The stress, aggressive behavior and argumentativeness were more prevalent under the psychosocial category

The compliance of using protective devices:

The compliance of using protective devices was assessed through two determinants. They are the duration and the wearing technique of using protective devices.

Before intervention, none of the samples had good duration compliance of wearing protective devices. But (86%) majority of the samples had poor compliance duration only a few (14%) had average compliance. After the intervention 86% (43) of the samples achieved average compliance duration of using protective devices, and a few 18%(9) had poor compliance duration and none of them had a good compliance.

Regarding the technique of wearing protective devices, none of the samples had good technique of wearing protective devices before intervention. But (86%) majority of the samples had poor compliance duration only a few (14%) had average compliance.

After the intervention 86% (43) of the samples achieved average compliance duration of using protective devices, and a few 18% (9) had poor compliance duration and none of them had a good compliance.

The mean overall pre compliance score was 27.58, that has raised up to mean overall compliance score of 88.98 after the intervention.

SIGNIFICANT FINDINGS:

Statistically there was a significant difference in the mean awareness score on various aspects of noise hazards before & after the intervention ($t=11.228^*$, 8.949^* , 14.952^* , 9.553^* , $p < 0.05, df=48$). Hence, the research hypothesis H1 was accepted at 0.05 level of significance.

Statistically there was a significant difference in the mean over all compliance score of using hearing protective devices before & after the intervention ($t=24.01$, $P<0.05, df=48$). Hence, the research hypothesis H2 was accepted at 0.05 level of significance.

There was no significant association between the demographic variables and the level of awareness prior to intervention.

CONCLUSION:

The level of awareness on noise and it's hazards was increased after intervention and also there was significant improvement in the compliance of using protective devices after the intervention.

IMPLICATION:

The finding of the study has implications for nursing education, nursing service, nursing and nursing research.

NURSING EDUCATION:

The nursing curriculum should emphasize the students on the preventive measures of major health problems especially on the area of occupational health. The nursing curriculum should teach the students regarding the preventive measures available in the community to prevent the occupational health hazards. The nurse educator can provide in service education to the nursing personnel to update their knowledge on the area of occupational health and its awareness to the industrial worker's through orientation programme. The nurse educator can create awareness about noise induced health hazards.

NURSING ADMINISTRATION:

The result showed orientation programme on noise induced health hazards increase the awareness and compliance of using protective measures. Nursing administrator should be necessarily involved in formulating the health education programmes in industrial settings. The nurse as an administrator should plan and organize continuing nursing education programmes which are beneficial to the workers in the industrial planning and organization of such programmes require efficient team work, planning the man power, money, material and time to conduct successful health education programmes.

NURSING RESEARCH:

This is only initial investigation to assess the effectiveness of orientation programme on noise induced health hazards on the awareness and compliance to using protective devices. There is a need for intensive research in the area of nursing in preventing the occupational health hazards with other effective measures.

The findings of the study will help in extending the awareness in the area of noise induced health hazards and its prevention.

RECOMMENDATIONS:

Based on the findings of the study, the investigator proposed the following recommendations.

1. A replication of present study can be conducted with large samples.

2. Another study on complete noise analysis be performed which entails personal monitoring for the duration of work shift. The entire shift monitoring will provide an 8 hour weighed average plus additional two hours of monitoring for the entire shift will provide the best representation of the noise . Employees are exposed to and allow for better comparison to be made against the regulation.
3. Another study can be replicated in other noise producing industries.
4. A comparative study can be done rural and urban settings.
5. A similar study can be conducted with two groups.

**BIBLIOGRAPHY AND
REFERENCES**

BIBLIOGRAPHY

BOOK REFERENCE

1. Abdullah,F G. Levin E Better (1979)“Patient care through nursing research”, 7th edition, NewYork , Macmillian Publishing.
2. Basavanthappa, B.T.(2007) “Nursing Theories”,1st edition. New Delhi, Jaypee Brothers publication.
3. Basavanthappa,B.T(2007),“Nursing Research”, 1stedition.NewDelhi, Jaypee Brothers publication.
4. Burns,N.(1999).”Understanding nursing research”, 2ndedition Phildelphia: WBSaunders company.
5. Gupta, S.P. (1996). “Statistical methods”, 2nd edition. Newdelhi: Sultan chand and sons publishers.
6. Rabinowitz PeterM, Rees Thomas (2005), Text book of Clinical Occupational and Environmental Medicine., 2nd edition. China. Elsevier publishers
7. Alberti, (1996) A practical guide to NIOSH,2nd edition, DHHS publishers,UK.
8. Lancaster Stanhope. (1992), Community health nursing ,process and practice for promoting health 3rdedition, NewDelhi, Mosby publications.
9. LucitaMary (2000), Public Health and Community Health Nursing. 2ndedition, Chennai, B.I Publications.
10. Mishra.R.Wal, (2000), Encyclopaedia Of Health And Family Welfare. 1stedition,NewDelhi,Samp and Sons Publications.
11. Murray.B.Ruth, Zentner.P.Judith (1989) Nursing Concepts For Health Promotion.2ndedition,EaglehoodCliffs,Prento-Hall INC Publications.
12. Park.K (2009), Text book of Preventive And Social Medicine. 19 th edition, Jabalpur, M/S Banarsidas Bhanot Publications.
13. Robbain.I (2006), Foundation Of Community Medicine. New Delhi, Elsevier Publications.
14. Vijay.E (2004), Text Book Of Community Medicine. 2ndedition, New Delhi, Beacoz Zen Publications.

JOURNAL REFERENCE

1. Penny,P&Eerl (2004) Occupational noise and effects on blood pressure.American Association of Occupational and Health Nurses Journal,476-481
2. Stewart,M.Konkle (2001) The effect of recreational gunfire noise on hearing in morkers exposed to occupational noise.Ear,Nose& Throat Journal,32-40
3. NilanJ, Zenz (1994) Occupational hearing loss, noise and hearing conservation.Occupational medicineJournal,volume 21 -24
4. McShulskis,E(1997) Protect employees from hazardous noise levels. HR Magazine,22-24
5. Dear,T.A (1998),Updating damage risk criteria to include performance under work place noise regulations .Journal of occupational hearing loss,61-66
6. Tharmmaphornphillias , W green, B.J.Norman,B.A(2003), Applying mathematical modeling to create job rotation for minimizing occupational noise exposure .American Industrial Hygiene Association Journal,401-405
7. Bhavana (2006), Health For The Millions, Nursing Times, Vol-1,20-26.
8. Carl HiulianaBoilis(2003), Protecting health in the work place ,Health Action, Vol-16,28
9. Carla.M.Stewart (2005), As Needed Medical Supervision In Industry, Nursing Times,Vol-2,40-42
10. Edlin et.al (2005), Monitoring The Health Condition, Nursing Times,Vol-6,12-13
11. Henvylito.D.Tacio (1996), Health Hazards From Industry, Herald Of Health,18
12. Jayalakshmi.V, Occupational Health Nursing (2006), Nursing Journal Of India,Vol-57,31-33
13. Joshi Sonorpant(2006),Prevention Of Occupational Health Hazards In Mechanical Industries, Nursing Journal Of India,Vol-2,27

ONLINE REFERENCE

1. Hope for hearing conservation(2005) how the ear works, retrived june 12, 2011 from <http://hope4hearing.org/anatomy.htm>
2. National Institute of Occupational Safety and Health,(2007) Noise and hearing loss prevention , retrieved may 2011 from <http://www.cdc.gov/noish/topics>
3. Occupational Safety and Health Administration(1996),common hearing loss prevention programme, retrieved December 2011 from [.http://www.hpterm.html](http://www.hpterm.html).
4. Young.B (2003) Occupational noise retrieved may 2011.<http://nt.gov.au/deet/worksafe/corporate/publications/pub0007.pdf>
5. Klane,J. (1998) Are your workers protected to deaf? Occupational health and safety.retrieved September 2011 from [.http;ohs//work safety.html](http;ohs//work safety.html)
6. Martin.B (2002) The health and safety effects of work place noise pollution retrieved july 2011 from <http;nt.gov.au/safe/corporate/publication>
7. Denniston.V (2000) Preventing hearing loss. Industrial distribution, retrieved june 2011 from <http;/www.cdc.gov/noise/topics>
8. Erlandsson, S.I&Hallberg . L.R. Prediction of quality of life in patients with tinnitus retrieved November 2011 from <http.osha pub.cdc>.
9. Pyyokko,I.V,Toppila,E.M (2000) Data base conservation programme, retrieved December 2011 from <http;hpterm.html>
- 10.Turney,T (2004) Cover your ears. The safety and health practitioner, retrived march 2011 from <http;nt/health safety/noise>
- 11.Laine,J (2002) The health and safety effects of work place noise pollution, retrieved july 2011 from [www.safety work .pub](http://www.safetywork.pub)
- 12.Cornell University.(n.d) Cornell University hearing conservation programme,retrieved November 2011 from [.http.ehs.cornell.edu\ochs\HCP.html](http.ehs.cornell.edu\ochs\HCP.html)

APPENDIX

Appendix – i

LETTER REQUESTING PERMISSION TO CONDUCT THE STUDY

To

The Managing director
Balaji Metal Industry
Sipcot Industrial Complex
Chennai-57

Sub: Letter requesting permission for conducting the study.

Respected Sir / Madam,

Ms.K.Vedavalli is a postgraduate nursing student of our institution. She has selected the below mentioned topic for her research project to be submitted to Dr.MGR Medical University of Health Science as a partial fulfillment of Master Nursing degree.

“A study to assess the effectiveness of an orientation programme on noise induced health hazards on the awareness and compliance to using protective device among employees in a metal fabrication industry at Chennai”

Regarding this project, she is in need of your esteemed help and co-operation as she is interested in conducting a study of her project ,in the community during the month of May 2012. I request you to kindly permit her to conduct the proposed study and provide her the necessary facilities.

The student will furnish further details of the study if required personally. Please do the needful and oblige.

Thanking You

Yours Faithfully,

Place:

Date:

Principal

Appendix – i

LETTER GRANTING PERMISSION TO CONDUCT THE STUDY

To

The Principal
RVS College of Nursing
Sulur, Coimbatore – 641 402

Sub – Granting permission for conducting the study.

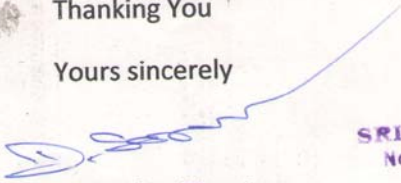
Respected Sir/Madam

With reference to your letter dated 14.10.2011, we permit your student Ms. Vedavalli. K to conduct the study titled

“A study to assess the effectiveness of an orientation programme on noise induced health hazards on the awareness and compliance to using protective device among employees in a Metal Fabrication Industry at Chennai” in our industry.

Thanking You

Yours sincerely



Managing Director
Sri Balaji industries
No 40, SIDCO
SIPCOT Industrial Complex
Gummidipoondi – 601201

SRI BALAJI INDUSTRIES
No: 40, Sidco Industrial Estate,
Sipcot Complex,
Gummidipoondi - 601 201.
Ph: 221919.

Place:

Date:

Appendix – ii
PERMISSION LETTER FOR CONTENT VALIDITY

From

Reg.No:30104634, II Year MSc (N)

R.V.S College of Nursing,

R.V.S Institute of Health Sciences,

Sulur, Trichiy road, Coimbatore.

To

Through the Principal

Respected Madam / Sir

Sub: Request for opinions and suggestions of experts for establishing content validity of research tool.

I am a Master of Nursing student in RVS College of Nursing, Sulur in the Speciality of community health nursing. As per the requirement for the partial fulfillment of the Master of Nursing degree under the Tamil Nadu Dr.MGR Medical University, I have selected the following topic for dissertation.

“A study to assess the effectiveness of an orientation programme on noise induced health hazards on the awareness and compliance to using protective device among employees in a metal fabrication industry at Chennai”

I humbly request you to kindly validate the tool and give your valuable suggestion.

Thanking You

Yours sincerely

Reg.No:30104634

Enclosures: 1. Statement of the problem
2. Objectives of the study
3. Research tool
4. Criteria rating for validation
5. Content validation certificate.

Appendix – iii

CERTIFICATE OF CONTENT VALIDITY

This is to certify that tool developed by Ms.K.Vedavalli, MSc Nsg II year student, R.V.S. College of Nursing, Sulur, Coimbatore to collect data on the problem **“A study to assess the effectiveness of an orientation programme on noise induced health hazards on the awareness and compliance to using protective device among employees in a metal fabrication industry at Chennai”** is validated by the undersigned and she can proceed with this tool to conduct the main study.

Name and Address :

Signature :

Seal :

Date :

LIST OF EXPERTS

MEDICAL EXPERT

Dr. E.P.CHANDRASEKARAN M.B.B.S,DLO,DNB (ENT) -----

Consultant ENT Surgeon,

R.V.S. Hospital, Coimbatore.

POPULATION RESEARCH EXPERT

DR.N.DHANABAGHYAM. -----

Asst Chief

Population Research centre

The GANDHIGRAM Institute of Rural Health & Family Welfare Trust

Ambathurai, Gandhigram

Dindigul Dist

NURSING EXPERTS

1. Mrs.Jaeny Kemp, M.Sc (N) -----

Principal,

Institute of nursing,

G.K.N.M. Hospital

Coimbatore.

2. Mrs. Christy Megala, M.Sc (N) -----

Professor,

PSG CON, Peelamedu

Coimbatore.

3. Mrs.Saramma Samuel, M.Sc(N) -----

Principal,

R.V.S College of college

Coimbatore. -----

Appendix – iv

CRITERIA RATING SCALE FOR VALIDATION

Criteria scale for content validating the interview and measuring blood pressure sheet and sleep assessment.

Kindly go through this tool, please give your view regarding clarity, relevance, adequacy and remarks.

Items	Clarity	Relevance	Adequacy	Remarks
SECTION – A Demographic Data and Personal data				
1				
2				
3				
4				
5				
6				
7				
SECTION-B Awareness Questionnaire				
1				
2				
3				
4				
5				
8				
9				

10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
SECTION-C RATING SCALE FOR ASSESSING NOISE INDUCED HEALTH PROBLEMS				
SECTION-D OBSERVATIONAL CHECKLIST ON COMPLIANCE TO WEARING PROTECTIVE DEVICES.				

Appendix – v

REQUISITION LETTER FOR CO-GUIDE

To

Dr. E.P.CHANDRASEKARAN M.B.B.S,DLO,DNB (ENT)

consultant ENT Surgeon,

R.V.S. Hospital, Coimbatore.

Through the principal

Respected Sir ,

Sub: Request for Co-Guide

Ms.N.Vedavalli is a post graduate nursing student of our institution. She has selected the below mentioned topic for her research project to be submitted to Dr.MGR Medical University of Health Science as a partial fulfillment of Master Nursing degree.

“A study to assess the effectiveness of an orientation programme on noise induced health hazards on the awareness and compliance to using protective device among employees in a metal fabrication industry at Chennai”

Regarding this project, she is in need of your esteemed help and co-operation as she is interested in conducting a study of her project . Please do the needful and oblige.

Thanking You

Yours Faithfully,

Place:

Date:

Principal

Appendix – vi

INTERVIEW SHCHEDULE

INTRODUCTION:

Environment has many factors which affect the health, whether it is at home or in a working place. Especially in working places like metal fabrication industries, the control of noise is unavoidable since they involve in the activities of producing high level noise [80-125db] from electrical angle grinder, metal presses, hammering and banging on metal objects and may therefore lead to serious noise induced health hazards.

However, extra care and additional motivation is essential for employees who are vulnerable of becoming a victim of noise induced health hazards. To control those problems, they must use hearing protective devices.

PURPOSE:

The purpose of the interview is to assess your awareness with regard to effect of noise, noise induced health hazards, its safety measures.

INSTRUCTIONS:

1. Kindly go through the following multiple choice question and answer it by placing a tick mark in the appropriate box.
2. Each question can have one or more correct answer.
3. Please, do not leave any question unanswered.
4. Your answers will be kept confidential

The research tool consists of the following sessions..

Section A – Demographic data

Section B—Awareness on noise induced health hazards and it’s prevention

Section C—Rating scale for assessing the degree of health problrms

Section D- Compliance of using ear plugs

SECTION-A

Name of the respondent:

Place:

Area of work:

Demographic Data:

Note: please tick () the appropriate option which is suitable for you.

1) Age in years

- a)21-30
- b)31-40
- c)41-50
- d)51-60

2)Sex

- Male
- Female

3)Education

- a)Illiterates
- b)Primary Education
- c)Secondary Education
- d)Graduates

4)Smoking status:

- a)Yes
- b}No

If smokes, no of cigarettes/beedis
per day:.....

5)Total number of hours working per day

- a)1-5 Hours
- b)6-10 Hours
- c)11-15 Hours
- d)16–20Hours

6)Number of years working in this current area

- a)1-3 Years
- b)4-6 Years
- c)6-8 Years
- d)Above 8 years

7)Did you have any medical illness at the time of joining?

- Yes
- No

If yes, please specify.....

Section B—Awareness Tool on effects of noise,noise induced health hazards and it's prevention

1. A person is able to hear all type of sounds when
 - a) The ear passage is normal
 - b) The sound reaches the inside of the ear
 - c) The sound reaches brain
 - d) The sound is transmitted to the ear bone.
2. Hearing is important because it helps the person
 - a)To communicate with each other
 - b)To prevent accidents
 - c)To Work correctly
 - d)To take appropriate action
3. It is pleasant and comfortable to hear a sound when
 - a) It is very soft
 - b) It is very loud
 - c) It is heard from speaker
 - d) It is heard from near
4. A person who is experienced to a very noisy environment will get used to the sound
 - a) Yes
 - b) No
5. Which of the following is true about sound ?
 - a) It is not possible to hear a very soft sound
 - b) Sound should be loud enough to reach to the ear
 - c) Sound has varying intensity
 - d) Extreme sound will be annoying
6. What is the noise level that is heard for longtime that may cause hearing loss?

- a) Near silence
- b) A whisper
- c) A car horn
- d) normal conversation

7. When a person can hear properly?

- a) when the ears are normal
- b) when the environment sound is not too high
- c) when we shout high
- d) when we talk clearly

8. Exposure to a very noisy environment can affect the health of a person

- a) Yes
- b) No

9. Working in a very noisy environment can cause which of the following ?

- a) Feeling Head ache
- b) Irritating
- c) Unable to communicate with others
- d) getting annoyed
- e) speaking louder
- f) Hearing ringing sound inside the ear

10. Extreme exposure to noisy environment can cause hearing difficulty

- a) Yes
- b) No

11. How can you protect yourself from noise induced health problem?

a)By using protective devices

b)By using cotton plugs

c)By keeping yourself away from the noisy area

d)By keeping the noisy machines outside of work area

12)Prolonged exposure on noisy work area can produce hypertension?

a)Yes

b)No

13.Is it necessary to use the ear plugs?

1.Yes

2.No

14. Why the earplug is given?

a) They can not control the noise from machine

b) To protect the employees from excessive noise

c) To make them to work properly without talking to others

d) To protect them from ear infection

15. When the ear plug should be worn?

a) Most of the time during at work

b) Some times during at work

c)Whenever feel like wearing

d) When the supervisor is watching

16. Is it necessary to insert the ear plugs in particular way?

1.Yes

2.No

If Yes how?

- a) Insert into ears.
- b) pull the ears upward and insert
- c) pull the ear downward and insert
- d) Insert thoroughly till it feels tight

17. How do you know that the earplugs is in correct position?

- a) If the ear plug is not coming outside.
- b) If the ear plug is very tight into the ears
- c) If the person is hearing less noise through it.
- d) If the person is comfortable to wear

18. If wearing the earplug is uncomfortable what should be done?

- a) Ask for replacement of correct size
- b) Check whether the ears are pulled up and inserted
- c) Check whether the earplug is broken
- d) Throw the plugs

19. Where should we keep the earplugs when not in use during work?

- a) keep it inside the cup board
- b) hang it around the collar
- c) Keep it near the working machine
- d) keep it inside the pocket

20) How to clean the reusable ear plugs?

- a) Wipe it with cotton
- b) Wash it with water and dry
- c) Rinse it with soap water and dry
- d) Wipe it with soapy cotton

Blue print for structured knowledge questionnaire regarding occupational noise exposure and it's prevention and use of devices.

SL.NO	Content area	Knowledge	No of questions	%
1.	knowledge Facts about noise	1,2,3,4,5,6,7	7	35%
2.	Knowledge on noise induced health hazards	8,9,10,11,12	5	25%
3.	Knowledge on use of protective measures	13,14,15,16,17	5	25%
4.	Knowledge on care of devices	18,19,20	3	15%

Scoring key for knowledge items:

S.NO	Answer	Scoring	S.NO	Answer	Scoring
1.	c	1	11	a	1
2.	a,b,c,d	4	12	a	1
3.	a	1	13	a	1
4.	a	1	14	b	1
5.	a,b,c,d	4	15	a	1
6.	c	1	16	1,b	1
7.	b	1	17	c	1
8.	a	1	18	a,b	2
9	a,b,c,d,e,f	6	19	b	1
10	a	1	20	c	1

SECTION: C

RATINGSCALE

INTRODUCTION:

Noise is considered as a serious health hazard in recent technological advancements and is slowly becoming a public health problem. several occupational studies have reported of stating those problems into auditory effects, on auditory effects, behavioural effects Those effects are classified and listed on the following checklist.

PURPOSE:

The purpose of the checklist is to assess the degree of the self reported health problems experienced by the employees when they get exposed into prolonged period of noisy working environment.

INSTRUCTIONS:

Kindly tick the appropriate option which you are experiencing (your answers will be kept confidential)

List of Problems	Never(0)	Sometimes(1)	Often (2)
1) Hard Hearing			
2) Hearing Ringing sound			
3) Ear pain			
4) Feeling of annoyance			
5) Chest pain			
6) Allergies			
7) Respiratory infections			
8) Stomach pain			
9) Intake of pain medications			
10) Intake of alcohol			
11) Aggressive behavior			
12) Feeling stress			
13) Irritability			
14) Feeling of Decreased self esteem			
15) Anxiety			
16) Speech Disturbances			
17) Feeling of decreased productivity			
18) Argumentativeness			

Interpretation of scoring:

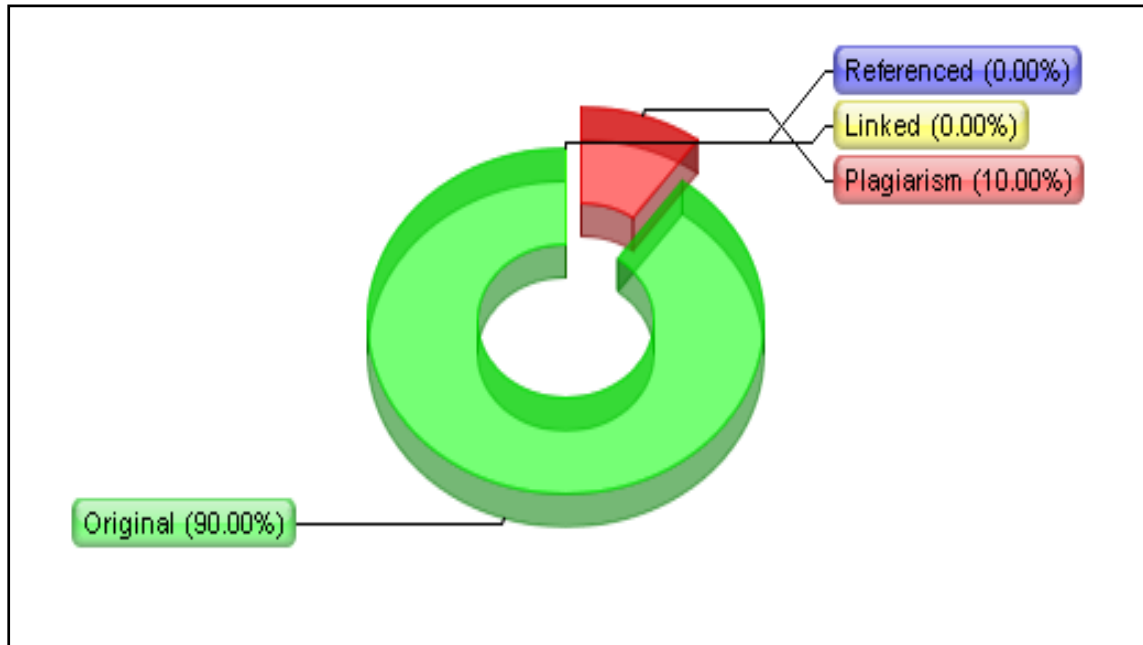
25 – 36 indicates **severe** level, **12-24** indicates **moderate** level. **<11** indicates **mild** level

**B.Observational checklist to assess the compliance of using protective devices
by technique**

	CRITERIA	YES	NO
1	Wash hands		
2	Clean the ear plugs by wiping with cotton		
3	Hold the ear plug between your thumb and forefinger		
4	Begin by rolling the plug into a very thin crease-free cylinder		
5	In right ear ,bend the head slightly forward, Pull the outer ear (pinna) outward and upward with the left hand reaching behind or over the head.		
6	Hold the ear plug between thumb and forefinger of the right hand insert the Plug into the ear		
7	In left ear ,bend the head slightly forward, Pull the outer ear (pinna) outward and upward with the right hand reaching behind or over the head.		
8	Hold the ear plug between thumb and forefinger of the lefthand insert the Plug into the ear		
9	Pull the pinna with the opposite hand by reaching behind or over the head.		
10	check whether the end of the plug is resting beyond the tragus and in the concha		
11	If the noise seems decreasing,repeat the procedure till listening to steady noise		

APPENDIX-viii

PLAGARISM REPORT USING PLAGARISM DETECTOR



Top 3 Plagiarized Sources:

Words#:	Source url:
52	http://www.ijnmr.mui.ac.ir/index.php/ijn...
74	http://www.jbums.com/english/abstract.as...
18	http://essential-oils.most-effective-sol...

Report:

10.00% of the content matched plagiarized sources and 90.00% of the content is original



