

# AUDIO CASSETTE ON NOISE

REGISTER NO: M.9115

An Independent Project submitted as part fulfilment for  
First year Master's degree (Speech & Hearing) to the  
University of Mysore

ALL INDIA INSTITUTE OF SPEECH & HEARING MYSORE-570 006

MAY - 1992

*DEDICATED TO :*

*"My KANCHI AKKA & VICTOR MAMA*

*who encouraged me through out*

*and*

*AMMA, ANNA, SUPA & LAVI*

**CERTIFICATE**

*This, is to certify that the Independent Project entitled "AUDIO CASSETTE ON NOISE" is, the. bonafide. work done, in part fulfilment for the first year of the Master Degree in Speech and Hearing of the student with Register No.M.9115.*

MYSORE

MAY 1992



Director

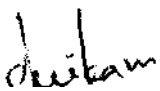
AllIndia Institute of Speech &  
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**CERTIFICATE**

*This, is to certify that the Independent  
Project entilled "AUDIO CASSETTE ON NOISE"  
has been prepared under my supervision and  
guidance.*

MYSORE  
MAY:1992

  
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### **DECLARATION**

*I hereby declare that this, independent project entitled "AUDIO CASSETTE ON NOISE", is a result of my own study under the guidance of Dr.(Ms) S. Nikam, Professor, Head of Department of Audiology, All India Institute, of Speech and Hearing, Mysore, and has not been submitted earlier at any University or any other diploma or degree.*

*Register No.M.9115*

*MYSORE*

*Dated: May 1992*

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## INTRODUCTION

Not many people pay enough attention to their ears, this is because they don't realise the value of sense of hearing, which the nature has provided to them. It is only through the sense of hearing both animals and human beings explore so many things which includes the basic needs like protecting themselves by being the prey for the predators and also to escape the dangerous situation by listening to the direction from which the sound comes from.

Human beings become superior to animals by the use of language and the ability to speak. This special ability is achieved by a complex mechanism of audition. Any damage to this system will lead to inability in learning language which in turn interfere with the communications. As a matter of fact, defects of hearing is not given much importance as that of the vision which is noticed easily. Individuals with hearing impairment are often able to escape noticing by using their vision and not committing themselves to anything. It is this point that lives may be affected by the lack of knowledge.

Damage to hearing may be caused by many factors such as, infection, trauma, ototoxic drugs and loud sound or prolonged noise exposure. Among these agents noise is the one which causes irreversable damage which cannot be treated by medicine. Its

effects is not only limited to auditory systems alone but also psychological and physiological systems. The hearing deficits



affects our communications and therefore our efficiency in leading our lives well.

Only those who work in the field of audiology and speech pathology can fully appreciate the importance of the hearing and the hazards caused by the loud noise. By and large it 'is only from the attention paid by these specialists who can help in enlightening the knowledge in the public regarding the noise and potential hazards. Educating the public in this aspect will go a long way in the early diagnosis and the prevention of hearing impairments, so that the individual is no longer given a chance to lose his valuable sense of hearing.

"The hand that serves is better than the lips that pray".

Bearing the above mentioned in mind this project has been taken up. This project primarily deals with educating the public on the effect of noise, its prevention, and the problem that could arise that hard our ears and consequently our ability to hear.

Hello every one!

All of us are aware of the influence of science and technology in modern life. Though we have not failed to make the most of its investments, we have conveniently turned a blind eye to its adverse nature which it has been unseemingly but continually effecting upon us. Are you puzzled? Let us get it straight. Here we go to an Audiologist's clinic and what do we see here, a few people with strange complaints.

**Audiologist** : Please come in

**Patient** : Good morning sir,  
**(Typist)**

**Audiologist** : what is your problem?

**Patient** : I have been having a hearing loss for the past 6  
**(Typist)**

months. I have trouble in listening to people if they do not speak loudly and I find it difficult to listen over phone too, and in my work I can't afford to miss out any part of information that is told to me. I am a typist.

**Audiologist** : Do you have any history of ear infection, trauma?

**Patient** : No  
**(Typist)**

**Audiologist** : How about your work situation? Is it particularly noisy? And how many hours do you spend typing?

**Patient** : My work situation is in a typing pool. I usually  
**(Typist)** spend 5 hours typing. Among other things, I type

continuously for 4 hours and 6 hours if the office is busy.

**Audiologist** : O.K.! Before saying anything conclusive, I recommend that a hearing evaluation be done.  
: There are two other people here with us who have been already tested, have similar but interesting problems. Let us go on with the testing.

**Audiologist** : You must be wondering why I have called all the three of you together.

**Patient** : What?  
(Housewife)

**Audiologist** : Well , here is something interesting

**Patient** : Really?  
(Factory worker)

**Audiologist** : Let me tell you something. All the 3 of you please take a look at your audiogram, you will find a dip in the graph at 4KHZ region.

**Patient** -: Oh, yes!  
(Housewife)

**Audiologist** : Well, this feature is peculiar to a condition known as "NOISE INDUCED HEARING LOSS".

**Patient** : Noise!  
(Typist) Noise causes hearing loss?

**Audiologist** : Yes, Noise is known to cause hearing loss.  
: Before telling you how noise causes hearing loss, I would like to let you know what noise is?

: Noise is sound that he/she finds particularly irritating or unpleasant to hear.

: " When exposed to this unpleasant loud sound an individual may develop a condition called noise induced hearing loss.

**Patient (Housewife)** : But how will we know what type of noises cause problem?

**Audiologist** : Every one of us do not know that noise is present everywhere, in order to understand better, the source of noise is classified into indoor and outdoor noises.

**Patient (Typist)** : What do you mean by indoor and outdoor noises?

**Audiologist** : Indoor noises are produced inside the house or building.

: Noise outside the house are produced by the moving vehicles on the road and those during the festival like, Diwali, Ganesh Chaturthi especially cracker noises are more and even during the occasions like marriage and other functions too, loud speakers are used which becomes a source of noise. Apart' from this Churches, temples and the entertaining halls, Cinema halls becomes one among the source of the community noise.

**Patient (Housewife)** : How is my problem related to this?

**Audiologist** : Now-a-days, modern life has a whole range of machines to lessen our work. Most of the homes are equipped with mixer, grinder, refrigerator, radio, televisions, tape recorders, etc., people tend to use them loud, together, even poorly maintained door and window hinges, fans, also becomes a potential source of noise.

**Patient (Typist)** : Yes, it is true madam, sincere stay in the apartment, we face the very same problem, the neighbours especially those who stay on the first floor plays the radio loudly, almost throughout the day it is noisy. Some times even the loud arguments can be heard, and every where we turn it would be noisy.

**Patient (housewife)** : Even in our house too we do make noise but we don't realise that it disturbs the neighbour. See! You could hear the childrens who are playing outside making lot of noise. Apart from these the loud noise moving on the road also disturbs our conversation. It has become a nuisance wherever we go there is much of noise and even the place where we worship.

**Audiologist** : The younger generations play music loudly without minding the harm it causes to the years. Also the persons who are working in the industry are more prone to this type of hearing loss,

especially those who are machinist, welder, turner, fitters, etc. These people get exposed to continuous noise.

**Patient (Typist)** : People say continuous noise exposure causes hearing loss. Is it true?

**Audiologist** : Continuous noise exposures may affect the sense of hearing and auditory structures. One can find that after a few hours of exposure to noise it causes difficulty in hearing the speech or the other sounds. Only if they are loud it could be heard better.

**Patient (Typist)** : I also feel I don't hear as well after typing continuously. But it goes away after I move away from the work spot and don't go into another noisy place.

**Audiologist** : Sometimes this temporary threshold shift may not return to normal leading to permanent hearing loss.

**Patient (Typist)** : What happens to your ears when exposed to continuous noise?

**Audiologist** : The continuous noise exposure damages the delicate structures inside the ear. These structures may be destroyed completely leading to permanent hearing loss.

**Patient (Housewife)** : Is it only the ear that is damaged?

- Audiologist** : Noise is sound. As such it damages the ear much more than the other systems in the body.
- Patient (Factory worker)** : Is it only noise that is continuous, produces the damage?
- Audiologist** : Not necessarily but even a single cracker burst or blast or gun shot sound can cause permanent damage to the ear.
- Patient (Factory worker)** : Oh! Now I remember my friend's son who has hearing loss. I heard that he lost his hearing following the cracker burst sound on the Diwali day.
- : How much of noise/loud sound causes damage to hearing?
- Audiologist** : In foreign countries, they measure noise in the work spot. It is said that above 85dB noise cause damage.
- : Even there were legislations/Act on noise exposure in industrial situations in which the noise level should not exceed 95dBA for 8 hours. If the noise level exceeds this specified limit, the employee who is susceptible is shifted to a less noisy place or the employees are made to work for a lesser number of hours in the noisy place.

**Patient** : What to do madami Our living depends on this,if  
(**Factory**  
**worker**) we want to gain something we have to loose something.

**Audiologist** : But this should not be at the expense of your health. Is it not!

**Patient** : Yes, but how to control the noise?  
(**Factory**  
**worker**)

**Audiologist** : The control procedures are adopted at different level.

1. At the source
2. At the path
3. At the receiver (Worker)

**Patient** : Can you tell me about the procedure at these  
(**Factory**  
**worker**) different levels?

**Audiologist** : Well, you know that the source is machine. The control at this level is achieved by fixing the machines over the rubber pad which lessen the vibration, fixing it with proper enclosures, tightening the loose screws reduces the noise.

**Patient** : Is it the only way to reduce the noise made by  
(**Typist**) the machine?

**Audiologist** : The above mentioned procedure should be followed and also maintenance of machine by proper lubrications also reduces the sound level at the source.



: The sound source at the transmission path could be controlled by making the modifications like, using wooden furnitures which dampers the sound, than the steel furnitures which tend to reflect the sound striking on it. Apart from this even, the acoustic modifications of the room should be made by packing the wall, floor by sound absorbant material like carpet, hanging roof and doors and windows in the room should be provided with the rubber beedings, stoppers, etc., which reduces the sound level in the room. Also curtains and sound absorbant tiles are made use of in controlling the sound level.

**Patient** : What if the above mentioned fail to reduce the  
**(Factory**  
**worker)** sound level?

**Audiologist** : Then control procedures are aimed at the receiver  
i.e. at the ear of the worker.

**Patient** : How this is achieved?  
**(Factory**  
**worker)**

**Audiologist** : Control is done by using ear protective devices.

**Patient** : Ear protective device! What are those?  
**(Factory**  
**worker)**

**Audiologist** : Ear protective devices are those which are worn  
on the individual to protect the ear from loud  
exposure. This includes ear plugs, ear muffler,

etc. Even cotton can be used to prevent the ear from getting exposed to noise.

**Patient** : When do we use these different devices?  
(**Factory worker**)

**Audiologist** : Depending upon the situation we use these different devices. If the sound level is too loud, ear muffler should be used where the reduction of sound level is 35 - 40/dB which is comparatively more than the ear plugs and cotton which is around 5-10/dB.

**Patient** : Yes madam, it is really interesting that we have  
(**Typist**) come to know the adverse effect of noise exposure.

**Audiologist** : It is like your birth right too, that one should take care in protecting ear from damage.

**Patient** : Let us tell to others to prevent their ears from this adverse effect of noise exposure.

"Dangerous" yes, till now we have learnt how noise is dangerous to our ears.

Let's get to know different types of noises which could be of potential danger to our ears, if not taken care off.

In our house:

- Loud music
- Television which is put on loud (News).
- A mixer
- Driving nail with the hammer

In the Office:

- Typewriter
- Phone call

**Many of** us go to the worship place, but .....

- Temple
- Church

THIS BRINGS TO THE END OF THE "AUDIO CASSETTE ON NOISE"

## BIBLIOGRAPHY

1. Bell L.H. (1982) "Industrial noise control" Marckei Dekker Inc., London.
2. Chereminisinoff P.N. and Chereminisinoff P.N. (1977) "Industrial Noise Control Handbook, Ann Arbor Science Publishers Inc., Michigan.
3. Course material (1984) Training programme on industrial hearing conservation, "A national model centre for occupational health services", A government of India (BHEL/ UNDP/ILO/Projects, Tiruchirapalli.
4. Duerden C. (1970) "Noise Abatement", Butterworth & Company, London.
5. Lipscomb D.M. Taylor A.C. Taylor (Ed) (1978) "Noise control hand book of "Principles and Practice", Van nostrond Reinhold Company, New York.
6. Lips-Comb D.M. (Ed) (1988) "Hearing conservation in industry and the military", Little Brown & Company Inc., Boston.
7. May D.N. (Ed) (1978) "Hand Book of Noise assessment" Van Nostrand Reinhold Company, New York.
8. Miller M.H. (1981) "Occupational hearing conservation" Monographs in contemporary audiology, 3(1).