ORIENTATION PROGRAM IN TROUBLE SHOOTING BODY LEVEL HEARING AIDS

REG. NO.M9618

An Independent Project submitted as part fulfilment of First Year M.Sc, (Speech and Hearing), Mysore.

AH India Institute of Speech and Hearing, Mysore

May 1997

DEDICATED TO

MUMMY, PAPA AND BIJU

DECLARATION

This Independent Project entitled ORIENTATION **PROGRAM** IN TROUBLE SHOOTING BODY LEVEL **HEARING AIDS** is the result of my own study under the guidance of Dr. (Miss) S.Nikam, Director, All India Institute of Speech and Hearing, Mysore and has not been submitted earlier at any University for any other diploma or degree.

Mysore
May, 1997 Reg. NO.M9618

CERTIFICATE

This is to certify that this Independent Project entitled **ORIENTATION PROGRAM IN TROUBLE SHOOTING BOOT LEVEL HEARING AIDS** is the bonafide work in part fulfilment for the degree of Master of science (Speech and Hearing) of the student with Register NO.M9618.

Mysore
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CERTIFICATE

This is to certify that this Independent Project entitled ORIENTATION PROGRAM IN TROUBLE SHOOTING BODY LEVEL HEARING AIDS has been prepared under my supervision and guidance.

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INTRODUCTION

Audition or hearing may be thought as general understanding or awareness of an individual about his surrounding environment. Hearing thus plays a very important role in the overall development of an individual.

A new born is bombarded with numerous verbal and non-verbal sounds that do not make any sense to the child. However, in course of time the child learns to attach meaning to various sounds in the environment and also begins to produce sound. This in turn is made possible by the "Auditory mechanism" which helps the child to receive a particular sound and make an auditory image of these sounds and in course of time when the child is ready to speak, he/she will come out with all the words which was imaged before (Van Riper and Irwin, 1958).

At this point it becomes very important to distinguish between "Hearing and "listening".

Hearing may be thought as the general awareness of an individual of the various sounds around his/her environment. However, when we talk about listening,, it means that an Individual directs his attention towards a particular sound

irrespective of the sounds around him. This listening is a more complex process compared to hearing.

The interaction between these two processes are very crucial for acquisition of various sounds of language which are later shaped into various words thus resulting in full fleged speech.

Thus the development of speech and language are dependent upon various factors. The development of speech and language may be retarded by factors such as "mental retardation, "Lack of speech stimulation", "Psychological problems, "Organic problems "and so on. the most crucial factor being "Hearing loss".

There are various definitions of hearing loss. The most simplest definition is "A decrease in the sensitivity of hearing" (Sanders, 1971).

The decrease in the sensitivity can vary in degree from a very mild loss to a very severe or profound loss. Generally, greater the loss, greater is the problem encountered by the hearing-impaired individual. The consequences of hearing impairment is worse if its onset is at

childhood, since it may retard the speech and language development thus affecting the communicating ability of the child. It can also lead to various other social, emotional and academic problems.

Without adequate speech and language, a child cannot make himself understood, nor understand what is going on around him, becomes frustrated and withdraws and may even develop behavioral problems. The longer the child's problem, the worse the outcome is likely to be.

Hearing loss may be thus considered as a silent, hidden handicap. It is hidden because children, especially infants and toddlers cannot tell us that they are not hearing well, it is handicap because, if undetected and untreated, it can lead to above mentioned problems.

Thus the only method of overcoming these mentioned problems among adults and children is by "early detection and management".

The management process on the other hand varies with individuals depending upon the individual's presenting problem. For eg. for people with conductive loss, the management is generally through medication, however for the

other types of hearing losses, when no medication is possible then they are aided. Therefore hearing aid is a boon for the hearing-impaired population.

Given the current situation in India, hearing aid seems to be one of the major solutions in effective management of the aurally handicapped. Consequently, it becomes the responsibility of every one concerned with hearing aids to be well versed with the intrinsic mechanism and characteristics of the amplification device. This will not only ensure successful rehabilitation but also gives a major lead in the improvization and further sophistication of the hearing aid devices.

PURPOSE OF THE STUDY

Hearing aid technology has developed markedly in the recent years. Most of the researchers done on the body level hearing aids are on the technical aspects. Very few studies have focused on the trouble shooting of hearing aids.

Most of these studies done on the body level hearing aids, especially on the trouble shooting of body level aids, are too complicated to be understood by the layman. More

over the recent advances in the trouble shooting of body level aids are not known by the layman.

Thus, we see that no effort has been made to see whether people have understood the various findings of researches related to trouble shooting of aids and the various factors affecting their understanding.

Keeping this in mind, the present study was aimed at -

1. Finding out the influence or effect of the various factors on the understanding of trouble-shooting of body level aids.

2. Making people aware of the recent development in the trouble shooting of body level aids.

3. Promoting general awareness about trouble shooting of Body level aids through PAMPHLETS.

REVIEW

Trouble shooting refers to the tracing and correction of faults in any machinery (McGraw-Hill, 1974). Therefore trouble shooting in hearing aid is the identification of deficits and their rectification. By learning to trouble shoot the user, to some extent, can find the source of deficits and remedy them.

A variety of problems may be identified "in house" in order for determine whether the hearing aid can be repaired without sending for repair. The great majority of hearing aid complaints are the result of rather simple problems that can be repaired by the hearing aid users themselves. Many of the hearing aid problems could be noted during inspection of the hearing aid.

Duhamel and Yoshioka (1986) maintained that trouble shooting always should encompass 3 different types of examination.

(1) Visual inspection - Carefully examine the aid, checking for broken parts, pieces, cracks, clogged opening etc.

(2) Auditory inspection - Listen to the sound quality of the signal. Check for adequate amplification and clarity of speech.

(3) Objective inspection - Electroacoustic test equipments can be used to help quantify the hearing aid performance.

The investigator also contend that competent trouble shooting skills also require plenty of practice. To develop effective trouble shooting skills, the hearing aid professional must know which problems are most commonly expected. About 90% of the hearing aid problems are due to wear and tear. Only 10% of hearing aid faults are due to electronic solid state component failure.

If hearing aid users sufficiently understand the function of the component parts and controls of the hearing aids, they may intuitively be able to solve many of their own hearing aid problem.

Daily surveillance of the aid in the form of a personal trouble shooting check is must for the wearer. This preventive maintenance will uncover the small problems that may occur and assures that the instrument is ready for its daily use.

Some of the general problems or faults encountered in body level hearing aids are -

(1) No sound
(2) Weak sound
(3) Distorted sound
(4) Intermittent sound
(5) Squeal

The hearing aid users should therefore know about these possible problems, how to locate the problems and how to seek a solution to these problems. Moreover, a chart that lists these problems, possible causes and remedies should be provided to hearing aid users. The hearing aid users should be encouraged to keep this chart for immediate reference if hearing aid problems arise.

The chart should indicate clearly which causes can be remedied by the user and which should be remedied by an audiologist or hearing aid dispensers.

Dodds and Harford (1970) and Gaugen (1978) have given booklets on hearing aid orientation.

Burris (1990) maintained that many of the problems encountered in the hearing aid (ITC and ITE) can be solved by following a simple trouble shooting chart like the one below:

Dead (no sound)	Weak	Rec. or aic blocked.	Problea	Repair action
1. Check battery		Rec.or mic failed. Dirty circuit cali-bration out of spec.	Aid sound hallow	Shorten vent, enlarge vent, shoten canal, bell canal.
2. Check to see if the receiver is blocked (Click on ?C no sound).			Aid sounds tinny	Foan in mic, foam in receiver, reduce vent diameter.
1. Check to see if mic is blocked	Distorted	Calibration out of spec. Failed aic.or rec. Dirty circuit	Aid hurts ear, too tight	Use alarasive wheel or sanding. Drum to grind off ending area polish canal buff. If too light, grind concha, canal, helex and buff.
If using a drain **meter.**	Interai-ttent	blocked aic or rec. Fail volume con--trol,faulty vol.	Feedback all of the **tine**	Reduce vent size with SAV insert of foaa-close vent entirely. Use FBJ for persistent feed-back.
Drain in spec:	Hic or receiver block, aic or receiver failed	control socked poorly adj. con-tacts coaponents shorting.		
Broken lead Paiied capacitor Paiied circuit		Blocked aic. or rec. failed pot or switch.	Feedback occasionally or on the phone aid sound harsh.	Foam in vent or aic. Open vent, shorten canal, foaa in mic.
0.0 Broken leads Failed **volume** Control cold solder Failed **aic.**	Noisy	Paiied mic or rec. shorting of coaponents. Failed circuit, dirty circuit.	Doesn't like own voice hears but does not understand	Shorten vent enlarge vent, shorten and bell canal. Check aid on test or reduce low Hz enlarge vent, shorten canal.
1. Components shorting Failed volume control	Fades	Paiied aic or rec. blocked aic. or rec. failed circuit, failed drain resistor.	Hole or crack aid has lose	Patch with FB-4 build up with FB-5 or FB-4.
			Aid is dull/ dirty.	Use war loop to clear receiver tube, putty can clean up dirt on VC and hard to reach areas. Use pine clearner to clear vent polish with buffing wheel.

Brady (1993-94) maintained that there are many non-acoustical dilemmas that may be encountered by the hearing aid specialist. Non-acoustic problems are defined as any non-hearing related condition which will impede a person's ability to benefit from amplification. These are conditions which influence attention memory and cognition and conditions related to other sensory and motor deficits.

As a result of the deficit in the above mentioned aspects many of the hearing aid users encounter a lot of problems. An audiologist should make the hearing aid users aware of these possible conditions and try means or methods to overcome the problems resulting from any of these condition.

IF THE AID IS DEAD

There may be several reasons for no sounds from the hearing aid.

- The battery may be wrong type, exhausted, corroded at the battery contacts or may be inserted in reverse. The remedy is to change the cell or reverse the polarity.

- The on/off switch may not be switched correctly therefore switch on the aid.

- The cord may be broken or damaged completely therefore the cord should be replaced.

- The earmold may be filled with wax or debries. The mould should therefore be removed and washed in luke worm soap water and should be dried thoroughly before use.

IF THERE IS WEAK SOUND

Some times the hearing aid will produce sound but soft. This may be due to

- Run down cell or partially blocked earmold. Therefore the cell should be replaced or the gain should be increased and the mould should be cleaned.

- Collection of dust near the switch or receivers. The hearing aid is therefore recommended to be cleaned every day.

- The volume control switch may be set at a very low level. The volume control should be set at an appropriate level.

- Weak sound may also result due to loose contact with switches and twisted cords, therefore correct the loose contacts and straighten the cords.

IF THERE IS DISTORTED SOUND

- This may again result due to run-down cells, dust on the microphone, broken receiver and cords or due to loose switches. Broken receiver is an important cause of distortion. The solution is by replacing the cell, cleaning the microphone, replacing the receiver and cord and correcting the loose contacts.

- There may be some fault with the tone control that may result in distortion. In such cases, the hearing aid should be repaired by a professional.

- Most often people close he aid with their cloths, which not only reduces the loudness but also causes distortion. This results because the cloth rub against the aid and produces noise which will interfere with the desired sound. Therefore, the users must be instructed to use a harness or place the hearing aid or clip the aid to the pocket.

Gawinski (1991) has performed many thousands of damage related transducer investigations, and maintains communication with hearing instrument manufacturers around the world.

He found that the number one process related cause of damage to transducers is excessive heat. Brief exposure to higher temperature during assembly is permissible, but should be minimized. The three primary sources of heat to the transducer are : wire lead soldering and desoldering, heat-shrink strain relief attachment and potting compound curing.

He further maintained that persons who assemble, repair, dispense or wear hearing aids can all minimize the risk of mechanical shock damage by observing the following:

1. Always handle hearing instruments and loose transduces over a cushioned counter top and minimize the height of the transducer above the work surface.
2. Provide conductive, grounded carpeting in work areas where hearing instruments and transducers are handled.
3. Handle transducers carefully and use protective packaging materials when shipping.

Solids, liquids and vapors can be harmful to the interval components of hearing instruments and cause performance problems.

IF THERE IS INTERMITTENT SOUND

- This problem often results due to broken cords, poor contact between the battery terminals and hearing aid. This problem can be solved by replacing the cord and pushing the battery properly into the battery compartment.

- Broke/loose switches, partially blocked earmould and poor connection between receiver and cord are other causes of intermittent sound. Therefore replace the broken switches, tighten the loose switches, clean the blocked earmould and fix the cord tightly with the receiver.

IF THERE IS SQUEAL

- Squeal may results if the hearing aid mic is very close to the receiver, therefore, the hearing aid should be kept at an adequate distance from the receiver; in case of a body level hearing aid.

- If the volume control is set very high than squealing results. The hearing aid users should therefore keep the volume control at recommended level.

- Ill-fitting or improper placement of the earmould could also result in squeal. Therefore place it properly.

- Poor contact between the receiver and the mould - some time the ring of the mould may not be fitting properly to the receiver. Under such circumstances the ring should be replaced.

- Cracks in the earmould can also result in squeal. The remedy for this is replacement of the mould.

A potential disadvantage of venting is feedback, but" patient reports of this can be confused with feedback due to incorrectly inserting of the mould. Also that a 2 mm vent might cause feedback in 10% of patient, when used in conjunction with BTE aids whose maximum gain was 45 dB (Mackenzie, 1989).

Dyrlund (1989) studied the feedback properties of 29 ears fitted with postaural hearing aids and hard acrylic for a group of profoundly deaf children. The results showed that

acoustical feedback above approximately 1 KHz did not limit the low frequency gain, which is assumed to be very important for the speech recognition.

Thus we see that among the various problems encountered in the hearing aid, feedback problems has drawn the attention of many manufacturers and audiologist. Various attempts have been made to control the acoustic feedback.

Lemay et al. (1986) maintained that stabilizer circuit shows promise for acoustic feedback control in canal and low profile custom ITEs without compromising either the desirable high frequency response or the clarity and quality of the amplified sound. The improvement is most apparent in fittings with large diameter vents.

However, there is no information whether this stabilizer' circuit can be used with body level aids.

Sweetow and Moderator (1990) maintained that among the problem of hearing instrument is the feedback created by placing a telephone receiver against a hearing instrument (especially in the ITE aid).

Grimes (1988) pointed out that the use of telecoils not only eliminates feedback but also enhances the signal to noise ratio when using the telephone. She recommended the use of pre-amplifier for the telecoil when the degree of hearing loss requires sufficient gain.

Hesla (1987) advocated use of a whistle stop, a portable adapter that attaches to round or square telephone receiver. Clinical trials showed that the whistle stop can block ambient noise, while at the same time minimizing the possibility of acoustic feedback.

SanDiego (1989) produced a portable travelling product called the TRAC 2000. While this adaptor also can minimize feedback and block ambient noise, Hygold Berg (1990) maintained that the main intension of the TRAC 2000 was to enhance sound quality by recreating a very specifically designed cavity between the telephone receiver and the instrument.

A some what more expensive but promising device is the "Starkey Hearset" that interfaces directly with the telephone and can be switched from pure telephone use to hearing instrument use simply by touching a switch.

Martin (1990) talked about the following 7 steps to control the feedback.

1. The tool that possibly is used most often to control feedback is the "high cut pot" unquestionably, this control reduces feedback; however, such adjustment must be made with skill and caution, because it is very easy to "over cut" the higher frequency gain and to kill the overall benefit of amplification.

2. Ensure that the sound bore opening faces the eardrum, not the ear canal wall.

3. Look in the patient's ear with a good light. Make sure the canal is not partly blocked with wax or dry skin.

4. "Peaks" in the real ear frequency response cause feedback. The peaks can be smoothened using acoustic filters or by having the factory switch transducres.

5. The market currently has several "antifeedback" electronic circuits, which are very helpful for minor feedback problems.

6. The most serious mistake one can make in fighting feedback is to attempt to use "tightness" to stop it. Tight hearing aids and tight earmolds are always bad. An excellent fit always feel comfortable.

7. Programmable hearing aids can be used to shape and control all aspects of the amplified sound.

This is a good study which help us to know, how to control the acoustic feedbacks due to various causes.

Bisgaard and Dyrlond (1991) maintained that there are several methods of reducing acoustic feedback in hearing instruments, like -

- Changes in overall hearing instrument gain or frequency response.
- Changes in the physical conditions (eg. type of microphone, microphone placement or tighter earmold) and
- Electronic feedback suppression methods.

The difference between the study by Martin (1990) and Bisgaard and Dyrlound (1991) is that the former is a more practical methods and the latter is more theoretical.

The position of the microphone of BTE hearing instrument affected the degree of acoustic feedback only marginally (Grover and Martin, 1990).

Turkev (1989) et al. Nolan (1990) et al. have shown that soft earmold materials (eg. soft acrylic and silicone rubber) gave more attenuation than the commonly used hard acrylic.

Veit and Lybarer (1991) described various electronic methods developed for PA systems to reduce in stability in the feedback path. These methods induced frequency and phase shifting, notch filters, time delay and phase angle control.

However, it was found that none of these methods could be adopted directly for suppression of feedback and hence more research is needed.

Bisgaard and Dyrlund (1991) talked about a digital feedback suppression system (DFS). The DFS attempts to eliminate acoustic feedback by injecting a cancellation signal in the hearing instrument signal path. This cancellation signal is almost identical to the external feedback signal in amplitude, but in opposite phase. It therefore, will cancel out much of the external feedback signal.

Reduction of high frequency gain permits substantial increase in overall gain before feedback is encountered (Tedev, 1992).

Most of the methods used to control feedback or any other problems require the use of equipment. The equipment or tools used to trouble Shoot vary depending upon the type of presenting problem.

Bare (1993) has given a list of tools and supplies for trouble shooting.

Tool list

- Needle point tweezers - light gauge
- Needle point tweezers - heavy gauge
- Fine point pliers
- Diagonal cutters
- Metal probe, straight and hooked on end
- Jeweler's screw driver
- Pinvice, with several small drillbits
- Tubing spreader
- Dispensing bottles
- Modified clothespins
- Scalpet or x-Acto knife
- Set of various round burrs

Expandable supplies

- Industrial razor blades, single edge.
- Tools picks
- Tester's plastic cement

- Cyanoacrylate (super glue)
- Polymer and manomer, various colors
- Paper cups
- TF solvent.

Equipment

- Drain meter
- Voltmeter
- Dremel or foredowm flex shaft grinding motor
- Reducing or Baldar buffing motor

Though there are various tools and equipment available for trouble shooting, as far as Indian situation is concerned the hearing aid users, we will not have access to many of these tools.

Another important point to be noted is that most of the studies are concentrated towards the trouble shootings of ITE and BTE aids. Very few studies have been done on the trouble shooting of body level hearing aids. Hence more research in this area is recommended.

METHODOLOGY

Many studies have been done on the trouble shooting procedures of body level hearing aid; however, there is no information which of these procedures are beneficial and practical to the layman. This study therefore tried to findout to what extent has the concept of trouble shooting been understood by the layman and what are the possible factors that come in this way of understanding trouble shooting.

The orientation program was conducted on three groups in Kannada language :

Group I->Parents of the hearing-impaired children using hearing aid

Group II--->Adult hearing aid users

Group III---->Children using hearing aids

Group I

The parents of the hearing-impaired children attending preschool and therapy were selected. There eight females and two males in the age range of twenty to fourty years with a

mean age of thirtyfour years. Only those were selected who could read and write Kannada.

The parents/subjects were seated comfortably and general conversation was initiated to build rapport with them.

The subjects were then given a pretest. The pretest consisted of 15 multiple choice questions. The subjects were instructed thus "Here are a few questions. The possible answers to each question is given. You have to tick) the correct answers. There can be more than one correct answer. There will not to any negative marking."

The subjects were given adequate time to answer these questions. The orientation course began after the pre-test. During the orientation the subjects were informed about the following:

-> World of sound
-> On the "Anatomy and Physiology of the ear"
-> On hearing loss and its types.
-> Hearing and its importance
-> Hearing aid, an aid for the hearing-impaired
-> On the types of hearing aids
-> Components and accessories of the hearing aid

Trouble shooting
-> What is it
-> Its' importance
-> Tools and materials available
-> Procedure
-> Care and maintenance of hearing aid

The subjects were then demonstrated how to trouble shoot a few body level hearing aids, using the procedure of trouble shooting. For eg. the subjects were demonstrated how to trouble shoot a body level hearing aid with no sound using the following procedure :

(1) Check the battery -

(a) If the battery is discharged
(b) If the plastic cap of the battery is removed
(c) check if the battery is palced correctly in the battery compartment.
(d) Check if the terminals of the battery is corroded.

(2) Check the cord -

(a) Check if it is broken
(b) If it is connected to the hearing aid

(3) Check the ear mould and receiver

(a) Check if the earmould is broken or completely occluded by wax or dust.

(b) Check if the receiver is broken.

Similarly, the trouble shooting procedures for various problem of hearing aid (weak sound, distorted sound intermittent sound and squal sound was demonstrated.

The subjects were allowed to interrupt any time to get their doubts cleared.

Soon after this, they were given a break and later there was practical session. During this, few hearing aids (five) which had to be trouble shooted were kept on the table and the few subjects were randomly selected and were asked to trouble shoot the hearing aid.

They were helped when needed. Each subject was asked to describe how they trouble shooted the respective aid.

Soon after the practical sessions, the subjects were given the same questions given in the pre-test. Adequate time was given to answer these questions.

The course was conducted in a single day for a duration of one and a half hours as the parents found it difficult to come for two days.

Each of the subjects were given the pamphlet on the trouble shooting of hearing aids. (The pamphlet is shown in the Appendix).

Materials used

-> Model of the ear
-> Different types of hearing aids -Body level, Behind-the-ear, In-the-canal and spectacle hearing aid.
-> Components and accessories of body level hearing aids
-> Trouble shooting Kit containing
    (1) Brush
    (2) Earmold insert cleaner
    (3) Wax removal tool
    (4) Alcohol/Spirit

Group II

The orientation course for this group was done in two sessions.

In the first session the course was conducted on six subjects. These subjects were matched for severity of hearing loss. All the subjects had a pure tone average of about 80 dB in the better ear. The hearing loss among these subjects were acquired and not congenital.

Among these six subjects, five of them were males in the age range of 25-30 years (with a median age of 27 years) and one was female aged 28 years. All of them were Kannada speakers, except one subject who was a bilingual (Kannada and English). All of them used body level hearing aids since five to six years.

All of them were literate and could read and write Kannada. The orientation course was conducted on similar grounds as for the subjects of group I. The hearing aid was checked for each subject before the orientation began.

The subjects were seated comfortably and general conversation was initiated to build up rapport with them. They were then given a pre-test consisting of the same questions as for the Group I subjects.

After the pre-test, the orientation course was begun and the subjects were spoken to on similar topics as the subjects of Group I.

However, care was taken to repeat whatever was told, to talk at a slow rate and to talk loudly.

Later, the subjects were shown how to trouble shoot each problem in the body-level aid. This was followed by a practical session where in the subjects themself trouble shooted the aid. Prior to this, the subject were given a break.

The practical session was then followed by a post-test.

The course was again conducted for a duration of one and a half hours and each of the subject were given pamphlet on the trouble shooting of hearing aid.

The materials used were similar to those used for Group I subjects.

In the second session, subjects were taken from those who attended a workshop on hearing aid users on "Care and Maintenance of Hearing Aid" conducted at All India Institute

of Speech and Hearing. There were six subjects and were again matched for severity of hearing loss. All the subjects had an average threshold at 65 dB HL in better ear.

All the subjects were males in the age range 50 to 60 years. All of them were bilinguals. All the subjects were literate and could read and write Kannada.

The orientation program was conducted on similar grounds as for the subjects in first session. However, the course in this session differed from the first session in the following manner :

(1) Much individual attention was given to each

(2) Each question during the pre- or post test was read out and ensured that the subjects understood.

(3) The subjects already had an orientation on hearing aid, as part of the Workshop.

(4) The orientation program was for about two hours.

(5) They had many intervals during the program on account of their advanced age.

Group III

Ten children participated in this program. They were taken from the special school for the hearing handicapped. The hearing loss in this group was around 75 dS HL *(on* average) inthe better ear. The children were of age range between 13 and 14 years with a Median of 13 1/2 years.

Among the ten subjects, six were male and four were female. Ail of them knew Kannada and also could read and write Kannada. All of them used the body level hearing aid.

The program began with a general conversation. Later all of them were given the pre-test. The pre-test consisted of fiffteen multiple choice questions with the following instruction "Here are a few questions. The answers to each question is given. You have to tick (✓) the correct answer. There can be more than one correct answer and you will not lose points if the aaswer is wrong."

The questions were much more simple and easy to understand compared to the question used for Group I and II. Each of these questions were read to the child several times and was given adequate time to answer.

The pre-test was followed by the orientation program. The children were talked to on similar topics as the subjects of Group I and II. However, extra attention was paid on the following :

(1) The language used was very simple.

(2) Rate of speech was slow, with many repetitions.

(3) Important points were written on the black board and explained.

(4) A Chart was prepared for each problem of the hearing aid and their trouble shooting procedure.

(5) Two intervals were given during the course.

(6) The program was conducted for two days, each day for a duration of one hour.

(7) On the second day, they had one hour of practical session. Each child was given an opportunity to trouble shoot the aid. Before this, the children were demonstrated how to trouble shoot.

Post-test was given after the practical sessions and were also given pamphlets on trouble shooting of body level hearing aid.

Materials used was same as the Group I and II subjects except that for this group charts and block board were used.

The pre and post-test scores of the three groups was then tabulated and statistically analyzed.

RESULTS AND DISCUSSION

The aim of the study was to find if there was any significant influence of the orientation program on trouble shooting of body level aids on the parents of hearing-inpaired, adult hearing aid users and children using hearing aids.

The data was collected based on the methodology given in the previous chapter. The raw scors of pre- and post test of Group I, Group II and Group III is shown in the tables. The scores so obtained was tabulated and mean difference, standard devision and standard error difference were computed for each group and their significant difference at 0.01 level was found.

Table-I: Raw scores of pre-test and post test of Group I (Parents of hearing-impaired).

Pre-test	Post test	Difference	
11	11	0	Significant
12	13	1	difference at
12	13	1	0.01 level in
11	12	1	'D' table
12	15	3	(Garrette, 1966)
11	11	0	
10	13	3	
15	17	2	
13	13	0	
10	13	3	

Table-II: Raw scores of pre-and post test results of Adult hearing aid users (Group-II)

Pre-test	Post test	Difference	
10	12	2	
12	12	0	
9	9	0	Significant
7	10	3	at 0.01 level
10	10	0	in 'D' table.
8	10	2	
6	8	2	
9	9	0	
8	14	6	
11	17	6	
9	14	5	
11	15	4	

Table-Ill: Raw scores of pre-and post test for children using hearing aid (Group-Ill)

Pre-test	Post test	Difference	
8	14	6	
10	18	8	
9	15	6	
8	12	4	Significant
13	19	6	difference
8	15	7	at 0.01 level
11	18	7	
9	16	7	
7	16	9	
9	15	6	

Table-IV: Raw scores of Sub-group of Group II - 1st Session

Pre-test	Post test	Difference	
10	12	2	
12	12	0	
9	9	0	Not significant
7	10	3	at 0.05 level
10	10	0	
8	10	2	

Table-V: Raw scores of Sub-group of Group II - 2nd Session

Pre-test	Post test	Difference	
6	8	2	
9	9	0	
8	14	6	Significant at
11	17	6	0.05 level.
9	14	5	
11	15	4	

Table-VI: Table showing mean difference (MD), standard deviation (SD) standard error (SE) and 't'-scores of Group I, Group II and Group III.

Group	Mean difference between the pre & post test	Standard deviation difference	Standard error difference	't' score difference
Group I	1.4	1.26	0.39	3.58*
Group II	0.5	2.3	0.66	3.78*
Group III	6.6	1.3	0.11	16*

* Significant level at 0.01 level

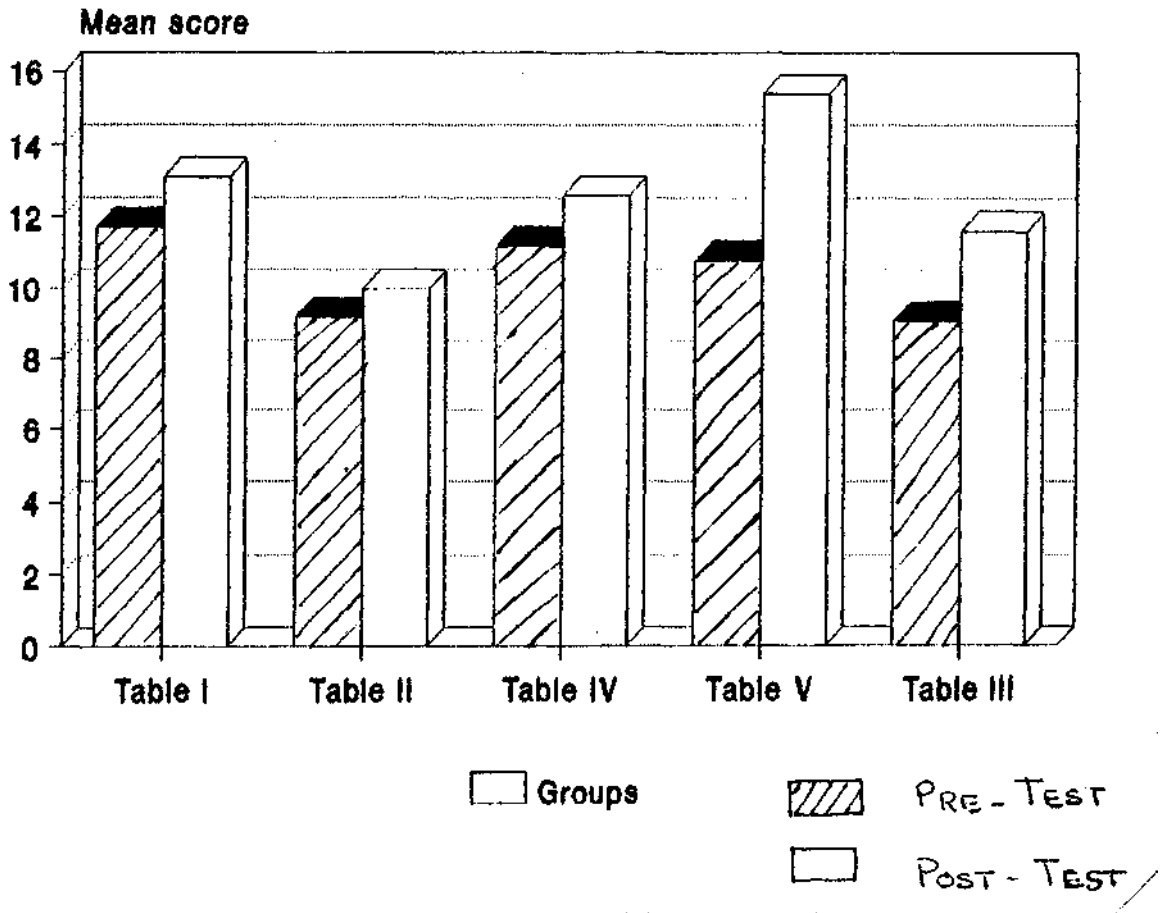
The data obtained from Group II was further divided into two sub-groups and statistical analysis for each of these sub-groups was done (Raw scores and significance level of these groups shown in table IV and V). Table VI shows the summary of the statistical analysis on all the three groups.

To find out the significance of difference between pre and post test, 't'-test was carried out and also correlation (Garrette, 1966) of pre and post test scores was computed for each group. The pre and post test scores were significant at 0.01 level of significance using the 'D' table) for all

three groups except the subgroup of Group II (Table IV and II).

The graphical representation of mean values using bar diagram for each group and also for sub-groups of Group II is shown.

Graph: Pre-test and post test performance of various groups



There could be various reasons for this significant differences. These reasons or factors are discussed separately for each group.

Group I

As mentioned earlier, the statistical analysis using 't'-test at 0.01 level showed significant difference between pre and post test for this group. There could be various factors that would have contributed for this significant difference.

- All the subjects taken in this group were literate. This would have helped them to understand better regarding trouble shooting of aid

- All the subjects were parents of the hearing-impaired who already had some Knowledge of hearing loss, hearing aids and how to trouble shoot the aid. This previous knowledge would have made it very easy for them to understand trouble shooting the hearing aid better.

- The practical sessions would have contributed the most. Since most of them had a chance to really trouble shoot the aid and thereby applying what they learnt, about trouble

shooting of hearing aids.

- Breaks were given between the program, this would have indirectly contributed by preventing any mental fatigue.

- The test given itself would have contributed the roost. Since -
  (a) The questions were very easy/simple.
  (b) Simple language was used
  (c) Multiple choice question were used.
  (d) Number of question given in the test were less.
  (e) There was no time limit, etc.

- The orientation programme was conducted using various teaching aids like model of ear, hearing aid and its accesories and various other trouble shooting equipment. This would have contributed to better understanding by the subjects.

- Number of subjects who participated were only ten. Thus individual attention could be given to each of them.

- The scores of the subjects revealed that females scored better than males. This may be attributed to two reasons:

(a) No.of males in this group was less; (b) females are the ones who are actively involved with the hearing-imparied child.

- The presentiev would have been very descriptive and would have carried out the course efficiently.

- The subjects were highly motivated and wanted to know more about trouble shooting of body level hearing aid.

Group II

As mentioned in the chapter on methodology, the orientation course for this group was done in two sessions and the subjects were not the same for these sessions. Therefore each session can be discussed separately.

First Session :

As shown in the Table IV, the pre and post test was not significant at 0.05 level for subjects under this group (1st session). This may be attributed to the following factors.

- The hearing aid used were not of good quality.

- May be they are not tuned to hearing through hearing aids since it was reported that most of them don't use the aid continuously.

- Few of the subjects used gestures for communication most often and therefore would have relied too much on lip reading, missing important acoustical informations.,

- The degree of hearing loss (severe - profound) would have contributed.

- None of them were interested in using the aid for communication rather they just used the aid for awareness.

- May be the rate of speech of the presenter was fast.

Second Session

As shows in Table V, the pre and post test results were found to be significant at 0.05 level. This could be due to the following -

- The rate of speech of the presenter was slow and sentence was repeated.
- The subjects had already attended a workshop for hearing aid users on Care and Maintenance of Hearing Aid. So they already were oriented to some extent on trouble shooting of body aid, thus made it very easy to understand about trouble shooting of body level aid during the orientation program on trouble shooting of body aids.

- Each question during the pre and post test was read out and were made to understand if needed. Thus a lot of individual attention was given.
- The duration of the program was more compared to Group I and first session of Group II
- Breaks given in between would have avoiding mental fatigue and thereby better performance.
- All the subjects were literate.
- The practical session was long.
- The test given and the materials used would have contributed as mentioned in Group I.
- Since most of them trouble shooted their aids themself, they would have found it very easy to understand the trouble shooting of body aids.
- The severity of hearing loss among the subjects in this session were less than to severe.
- Subjects were highly motivated.

However, on the whole the pre and post test of Group II (including the two sub-groups of Group II) was found to be significant at 0.01 level.

Group-III

As shows in Table III,the pre and post test of this group was found to be significant at 0.01 level. Following could be the possible reasons for this.

- The children taken for the study were those who attended special school for the hearing-impaired. They already knew something about trouble shooting and therefore would have found it easy to understand when talked about trouble shooting of body aid.

- All the subjects could read and write Kannada. Hence could answer the questions easily.
- The test given for this group was slightly different from the test given to other two groups in that the test for this group was revised (Since it was felt that the questions were verb complex) thereby making the question simple.
- The questions were read to the child, if necessary and also made them understand the questions.
- Very simple language was used with these children.
- Rate of speech was slow with many repetitions of the sentences.
- Some of the important points were written on the broad thus helping them to understand better.

- Charts were prepared for each problem of the hearing aid with the trouble shooting procedure for the respective problems. Thus these charts were used while demonstrating how to trouble shoot the body level aids.
- Two intervals were given which would have increased their interest and prevented mental fatigue.
- The duration of the program was long. The Ist day they were talked about trouble shooting of body level aid and they were asked to copy down the important points from the board and come well prepared the next day. The next day, the children were given opportunity to trouble shoot the aid. Thus they had a chance to apply the knowledge as trouble shooting of aid practically.
- The duration of the practical session for this group was the longest.
- The number of children were less hence individual attention could be easily given.
- The children were highly motivated to attend the program.
- The program was conducted in the morning. They were all very fresh and active. This would have contributed to the good score and also the ability to understand.

SUMMARY AND CONCLUSION

The present study was aimed at finding the effect of the orientation programme on trouble shooitng of body level aids on three groups -

- Parents of hearing-impaired
- Adult body level hearing aid users
- Children using body hearing aid

The orientation programme was conducted separtely for each group. Pre-test and post test was given to each group and the data was analyzed using 't' test, to find the level of significance.

Results showed significant difference at 0.01 level for each group. The possible factors that would have contributed to this significant difference among each group is discussed in detail in the present study.

Therefore, from the present study, it can concluded that

-> The hearing aid users are not aware of the simple problem encountered in their hearing aid and how to trouble shoot them.

-> Orientation programme on trouble shooing not only leads to

awareness of common problems of body level aid but also leads towards better understanding of use of aid.

-> Such programmes are extremely useful for hearing aid users, especially children since, they learn many aspects of hearing aid which are generally not taught to them.

-> More of audio-visualcues and practice should be given while dealing with children using hearing aid since they find it difficult to comprehend the speech unlike adult hearing aid users who has developed speech and language before the hering loss.

On the whole, as indicated by the presnt study, this programme can be very useful for children than adults.

Recommendations

- **Trouble** shooting should be considered as a crucial factor that should be emphasized during counselling after prescription of hearing aid.
- More study should be carried out on trouble shooting of body level aids and other styles of hearing aids.
- Such a programme should be conductd at every special schools for the hearing-impaired and also in speech and hearing institutes (at least once in a year), so that it will lead to use of hearing aid more efficiently.

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APPENDIX - 1

ಪ್ರಶ್ನಾವಳಿ

ಹೆಸರು ವಯಸ್ಸು : : ಲಿಂಗ

ವಿದ್ಯಾಭ್ಯಾಸ ವೃತ್ತಿ (ಉದ್ಯೋಗ) :

ಸರಿಯಾದ ಉತ್ತರವನ್ನು (✓) ಚಿಹ್ನೆಯಿಂದ ಅರಿಸಿ.
ಉತ್ತರವು ಒಂದಕ್ಕಿಂತ ಜಾಸ್ತಿ ಇದ್ದರೂ ಪರವಾಗಿಲ್ಲ.

೧. ಕಿಸೆಯಲ್ಲಿ ಧರಿಸುವ ಶ್ರವಣೋಪಕರಣದಲ್ಲಿ ಸಾಮಾನ್ಯವಾಗಿ ಕಂಡು ಬರುವ ತೊಂದರೆಗಳು ಯಾವುವು

* ಅವು ದೊಡ್ಡ ಆಕಾರವಿರುವುದು.
* ಅವು ನೋಡಲು ಎದ್ದು ಕಾಣುವುದಿಲ್ಲ.
* ಅವುಗಳ ರಿಪೇರಿ ಕಷ್ಟ

೨. ಕಿಸೆಯಲ್ಲಿ ಧರಿಸುವ ಶ್ರವಣೋಪಕರಣದ ಧ್ವನಿ ಪ್ರವರ್ತಕ ಯಂತ್ರ [microphone] ಸಾಮಾನ್ಯವಾಗಿ ತೊಂದರೆಗೀಡಾಗುವುದು [ಕೆಟ್ಟು ಹೋಗುವುದು.]

* ಕಿಸೆಯಿಂದ
* ಗಾಳಿಯಿಂದ
* ಶಬ್ದಗಳಿಂದ

೩. ಶ್ರವಣೋಪಕರಣದ ಶಬ್ದ ಮಟ್ಟವನ್ನು ಬದಲಾಯಿಸಲು ಆಗದೇ ಇದ್ದರೆ, ಅದು

* ಸ್ವರ ನಿಯಂತ್ರಣ ಸ್ವಿಚ್ಚಿನಲ್ಲಿ ತೊಂದರೆಯಿರುವುದರಿಂದ
* ವೈರ್‌ನಲ್ಲಿ ತೊಂದರೆ [ಅಡಚಣೆ]ಯಿರುವುದರಿಂದ
* ಶಬ್ದ ನಿಯಂತ್ರಣ ಸ್ವಿಚ್‌ನಲ್ಲಿ ತೊಂದರೆಯಿರುವುದರಿಂದ

೪. ಸ್ವರ ನಿಯಂತ್ರಣ ಸ್ವಿಚ್‌ನಲ್ಲಿ ಏನಾದರೂ ವ್ಯತ್ಯಾಸ ಅಥವಾ ತೊಂದರೆ ಇದ್ದರೆ ಅದು

* ಗಾಳಿಭರಿತ ಶಬ್ದಕ್ಕೆ ಎಡೆಮಾಡಿಕೊಡುತ್ತದೆ
* ಶಬ್ದಮಟ್ಟವನ್ನು ಅಸಮಾನ್ಯವಾಗಿ ಹೆಚ್ಚಿಸುತ್ತದೆ.
* ಕೀರಲು ಧ್ವನಿಯ ಶಬ್ದಕ್ಕೆ ಎಡೆಮಾಡಿಕೊಡುತ್ತದೆ.

೫. ಶ್ರವಣೋಪಕರಣದಿಂದ ಶಬ್ದವು ಬಿಟ್ಟು ಬಿಟ್ಟು ಬಂದರೆ ಅದು

* ಮುಗಿದುಹೋದ ಬ್ಯಾಟರಿಯ ಪ್ರಭಾವದಿಂದ
* ಬ್ಯಾಟರಿಯನ್ನು ಅದರೆ ಕೊಠಡಿ ಯಲ್ಲಿ ಸರಿಯಾದ ಕ್ರಮದಲ್ಲಿ ಇರಿಸಿಲ್ಲದಿದ್ದಾಗ
* ಬಿಟ್ಟು ಬಿಟ್ಟು ಬರುವ ಸುತ್ತ ಮುತ್ತಲ ಶಬ್ದಗಳಿಂದ

೬. ಕಿಸೆಯಲ್ಲಿ ಧರಿಸುವ ಶ್ರವಣೋಪಕರಣಕ್ಕೆ ಉಪಯೋಗಿಸುವ ಬ್ಯಾಟರಿ

* ಪೆಂಟಾರ್ಚ್ ಬ್ಯಾಟರಿ : ಸೆಲ್
* ಗುಂಡಿಯಾಕಾರದ ಸೆಲ್ [ಬ್ರಟನ್‌ಸೆಲ್]
* ನಿಕ್ಕಲ್ ಕ್ಯಾಡ್ಮಿಯಮ್ ಬ್ಯಾಟರಿ

೭. ಶ್ರವಣೋಪಕರಣದ [ಕಾರ್ಡ್]ವೈರು ಕಿಟ್ಟಿದೆ ಎಂದು ನಮಗೆ ತಿಳಿಯುವುದು

* ವೈರಿನ ಎರಡೂ ತುದಿಗಳನ್ನೂ ನೋಡಿದಾಗ
* ವೈರಿನ ಎರಡೂ ತುದಿಗಳನ್ನೂ ಎಳೆದು ನೋಡಿದಾಗ
* ವೈರಿನ ಎರಡೂ ತುದಿಗಳನ್ನು ನುಲಿಚಿ ನೋಡಿದಾಗ

೮. ರಿಸೀವರ್ [ಕಿವಿಯಚ್ಚು] ಒಡೆದುಹೋದಾಗ ಅದು ಶ್ರವಣೋಪಕರಣದಿಂದ ಬರುವ ಶಬ್ದದ ಮೇಲೆ ಯಾವ ಪರಿಣಾಮ ಬೀರುತ್ತದೆ.?

* ಶಬ್ದವನ್ನು ಹೆಚ್ಚಿಸುತ್ತದೆ.
* ಶಬ್ದದ ಮೇಲೆ ಏನೂ ಪರಿಣಾಮ ಬೀರುವುದಿಲ್ಲ.
* ಶಬ್ದದ ಕುಂದುಂಟು [ಕಡಿಮೆ] ಮಾಡುತ್ತದೆ.

೯. ಸಾಮಾನ್ಯವಾಗಿ ಕಿವಿಯಚ್ಚನ್ನು ತೊಳೆಯುವುದು.

* ಚೆಚ್ಚಗಿರುವ ಸೋಪು ನೀರಿನಿಂದ
* ಬಿಸಿ ಸೋಪು ನೀರಿನಿಂದ
* ತಣ್ಣನೆಯ ಸೋಪು ನೀರಿನಿಂದ

೧೦. ಕಿಸೆಯಲ್ಲಿ ಧರಿಸುವ ಶ್ರವಣೋಪಕರಣವನ್ನು ಸ್ವಚ್ಛ [ಕ್ಲೀನ್] ಮಾಡುವುದು.

* ನೀರಿನಿಂದ
* ಎಣ್ಣೆಯಿಂದ
* ಬ್ರಷ್‌ನಿಂದ

೧೧. ಕಿಸೆಯಲ್ಲಿ ಧರಿಸುವ ಶ್ರವಣೋಪಕರಣವು ಧರಿಸಿರುವಾಗ ಬಟ್ಟೆಯಿಂದ ಮುಚ್ಚಿಕೊಂದರೆ ಏನಾಗುತ್ತದೆ..

* ಶಬ್ದ ಚೆನ್ನಾಗಿ ಕೇಳಿಸುತ್ತದೆ.
* ಗಾಳಿ ಭರಿತ ಶಬ್ದ ಕೇಳಿಸುತ್ತದೆ.
* ಶಬ್ದ ಕೇಳಿಸುವುದೇ ಇಲ್ಲ.

೧೨. ಕಿಸೆಯಲ್ಲಿ ಧರಿಸುವ ಶ್ರವಣೋಪಕರಣದಲ್ಲಿ ಶಬ್ದವು ಸ್ವಲ್ಪವೂ ಕೇಳಿಸದೇ ಇರುವುದು.

* ಮುಗಿದು ಹೋದ ಬ್ಯಾಟರಿಯಿಂದ.
* ವೈರನ್ನು ಉಪಕರಣಕ್ಕೆ ಜೋಡಿಸದೇಯಿದ್ದಲ್ಲಿ
* ಶ್ರವಣೋಪಕರಣದ ಮೇಲಿನ ಕಿಸೆಯಿಂದ
* ಮೇಲಿನ ಎಲ್ಲಾ ಕಾರಣದಿಂದ

೧೩. ಕಿಸೆಯಲ್ಲಿ ಧರಿಸುವ ಶ್ರವಣೋಪಕರಣದಲ್ಲಿ ಬಿಟ್ಟು ಬಿಟ್ಟು ಬರುವ ಶಬ್ದಗಳ ಕಾರಣಗಳು

* ಹರಿದು ಹೋಗಿರುವ ವೈರ್‌ನಿಂದಾಗಿ
* ಬ್ಯಾಟರಿಯ ಎರಡೂ ತುದಿಗಳು ಅದರ ಕೊಡಿಯ ಎರಡೂ ತುದಿಗಳ ಜೋಡಣೆಯಲ್ಲಿ ವ್ಯತ್ಯಾಸವಿದ್ದಾಗ) ರೆ
* ಸಡಿಲವಾದ ಜೋಡಣೆಯಿಂದ.

೧೪. ಶ್ರವಣೋಪಕರಣದಿಂದ ಬರುವ ಕೀರಲು ಧ್ವನಿಗೆ ಕಾರಣ

* ಸ್ವರ ನಿಯಂತ್ರಣ ಸ್ವಿಚ್‌ನಲ್ಲಿ ಏನಾದರೂ ತಪ್ಪಿದ್ದರೇ
* ಶ್ರವಣೋಪಕರಣದ ಧ್ವನಿಪರಿವರ್ತಕ [ಮೈಕ್] ಮತ್ತು ರಿಸೀವರ್‌ಗಳ ಅಂತರ [ದೂರ] ಕಡಿಮೆ ಇದ್ದರೆ
* ಶಬ್ದ ನಿಯಂತ್ರಣವನ್ನು ಅತಿ ಹೆಚ್ಚಿನ ಮಟ್ಟದಲ್ಲಿ ಇದ್ದಾಗ..

೧೫. ಶ್ರವಣೋಪಕರಣದಿಂದ ಬರುವ ಕಡಿಮೆ ಶಬ್ದಕ್ಕೆ ಕಾರಣಗಳು

* ಶಬ್ದ ನಿಯಂತ್ರಣದ ಸ್ವಿಚ್‌ನ್ನು ಕಡಿಮೆಪ್ರಮಾಣದಿಂದ ಇರಿಸಿದಾಗ.
* ಮುಗಿದು ಹೋದ ಬ್ಯಾಟರಿಯಿಂದ
* ಕವಿಯಚ್ಚಿನ ರಂಧ್ರಗಳು ಗುಗ್ಗೆಯಿಂದ ತುಂಬಿಕೊಂಡಾಗ

APPENDIX - 2

ಮಕ್ಕಳಿಗೆ ಪ್ರಶ್ನಾವಳಿ

ಹೆಸರು : ವಯಸ್ಸು :

ವಿದ್ಯಾಬ್ಯಾಸ : ವೃತ್ತಿ (ಉದ್ಯೋಗ) :

ಸರಿಯಾದ ಉತ್ತರವನ್ನು(✓) ಚಿಹ್ನೆಯಿಂದ ಆರಿಸಿ. (ನಿಮ್ಮ ಉತ್ತರವು ಒಂದಕ್ಕಿಂತ ಜಾಸ್ತಿ ಇದ್ದರು ಪರ್ವಾಗಿಲ್ಲ).

(1) ಜೇಬಲ್ಲಿ ಧರಿಸುವ ಮೆಷಿನ್‌ನಲ್ಲಿ ಸಾಮಾನ್ಯವಾಗಿ ಕಂಡು ಬರುವ ತೊಂದರೆಗಳು ಯಾವುವು ?

* ಅವು ದೊಡ್ಡದಾಗಿರುವುದು
* ಅವು ನೋಡಲು ಎದ್ದು ಕಾಣುವುದಿಲ್ಲ
* ಅವುಗಳ ರಿಪೇರಿ ಕಷ್ಟ

(2) ಜೇಬಲ್ಲಿ ಧರಿಸುವ ಮೆಷಿನ್‌ನ ಮೈಕ್ ಸಾಮಾನ್ಯವಾಗಿ ತೊಂದರೆ ನೀಡುವುದು (ಕೆಟ್ಟುಹೋಗುವುದು)

* ಕಸದಿಂದ
* ಗಾಳಿಯಿಂದ
* ಶಬ್ದಗಳಿಂದ

(3) ಮೆಷಿನ್‌ನ ಶಬ್ದಮಟ್ಟವನ್ನು ಬದಲಾಯಿಸಲು ಆಗದೇ ಇದ್ದರೆ ಅದು

* ಸ್ವರವನ್ನು ನಿಯಂತ್ರಿಸು (ಶಬ್ದವನ್ನು ಹೆಚ್ಚು ಕಡಿಮೆ ಮಾಡುವ)ವ ಸ್ವಿಚ್ಚಿನಲ್ಲಿ ತೊಂದರೆಯಿರುವುದರಿಂದ
* ಮೆಷಿನ್‌ನ ವೈರ್‌ನಲ್ಲಿ ಅಡಚಣೆ (ತೊಂದರೆ) ಇರುವುದರಿಂದ
* ಶಬ್ದವನ್ನು ಹೆಚ್ಚು ಕಡಿಮೆ ಮಾಡುವ (ಶಬ್ದ ನಿಯಂತ್ರಣ) ಸ್ವಿಚನಲ್ಲಿ ತೊಂದರೆ ಇರುವುದರಿಂದ.

(4) ಸ್ವರ ನಿಯಂತ್ರಣ ಸ್ವಿಚನಲ್ಲಿ ಏನಾದರೂ ವ್ಯತ್ಯಾಸವಿದ್ದರೆ ಅದು

* ಗುಸ್.... ಎಂಬ ಗಾಳಿಬರಿತ ಶಬ್ದಕ್ಕೆ ಎಡೆಮಾಡಿಕೊಡುತ್ತದೆ.
* ಶಬ್ದವನ್ನು ಜೋರಾಗಿ (ಅತಿಯಾಗಿ) ಹೆಚ್ಚಿಸುತ್ತದೆ.
* ಕೀರಲು ಧ್ವನಿಯ ಶಬ್ದಕ್ಕೆ ದಾರಿಮಾಡಿಕೊಡುತ್ತದೆ.

(5) ಮೇಷಿನ್‌ನಲ್ಲಿ ಶಬ್ದವು ಬಿಟ್ಟು ಬಿಟ್ಟು ಬಂದರೆ ಅದು.

* ಖರ್ಚಾದ (ಮುಗಿದುಹೋದ) ಬ್ಯಾಟರಿಯ ಕಾರಣದಿಂದ
* ಬ್ಯಾಟರಿಯನ್ನು ಅದರ ಸ್ಥಳದಲ್ಲಿ ಸರಿಯಾಗಿ ಜೋಡಿಸಿಲ್ಲದಿದ್ದಾಗ
* ಬಿಟ್ಟು ಬಿಟ್ಟು ಬರುವ ಸುತ್ತಮುತ್ತಲ ಶಬ್ದಗಳಿಂದ

(6) ಜೇಬಲ್ಲಿ ಧರಿಸುವ ಮೆಷಿನ್‌ಗೆ ಉಪಯೋಗಿಸುವ ಬ್ಯಾಟರಿ

* ಪೆಂಟಾರ್ಚ್ ಬ್ಯಾಡರಿ / ಸೆಲ್
* ಗುಂಡಿಯಾಕರದ ಸೆಲ್/ ಬಟನ್ ಸೆಲ್
* ನಿಕ್ಕಲ್ ಕ್ಯಾಡ್ಮಿಯಮ್ ಬ್ಯಾಟರಿ

(7) ಮೆಷಿನ್‌ನ ವೈರು ಕಟ್ಟಿದೆ ಎಂದು ನಮಗೆ ತಿಳಿಯುವುದು

* ವೈರಿನ ಎರಡು ತುದಿಗಳನ್ನು ನೋಡಿದಾಗ
* ವೈರಿನ ಎರಡು ತುದಿಗಳನ್ನು ಎಳೆದು ಜಗ್ಗಿಸಿ ನೋಡಿದಾಗ
* ವೈರಿನ ಎರಡು ತುದಿಗಳನ್ನು ಹಿಡಿದು ನುಲಿಚಿ ನೋಡಿದಾಗ

(8) ರೀಸಿವರ್ ಹೊಡೆದು ಹೋದಾಗ ಅದು ಮೆಷಿನ್‌ನಿಂದ ಬರುವ ಶಬ್ದವನ್ನು ಹೇಗೆ ಬದಲಾಯಿಸುತ್ತದೆ.

* ಶಬ್ದವನ್ನು ಹೆಚ್ಚಿಸುತ್ತದೆ
* ಶಬ್ದಕ್ಕೆ ಏನು ಆಗುವುದಿಲ್ಲ
* ಶಬ್ದವನ್ನು ಕಡಿಮೆ ಮಾಡುತ್ತದೆ

(9) ಸಾಮಾನ್ಯವಾಗಿ ಕಿವಿಯಚ್ಚನ್ನು ತೋಳೆಯುವುದು.

* ಬೆಚ್ಚಗಿರುವ ಸೋಪು ನೀರಿನಿಂದ
* ಬಿಸಿ ಸೋಪು ನೀರಿಂದ
* ತಣ್ಣನೆಯ ಸೋಪು ನೀರಿನಿಂದ

(10) ಜೇಬಲ್ಲಿ ಧರಿಸುವ ಮೆಷಿನ್‌ನನ್ನು ಸ್ವಚ್ಛ ಮಾಡುವುದು

* ನೀರಿಂದ
* ಎಣ್ಣೆಯಿಂದ
* ಬ್ರಷ್‌ನಿಂದ

(11) ಜೇಬಲ್ಲಿ ಧರಿಸುವ ಮೆಷಿನ್‌ನನ್ನು ಅದು ಬಟ್ಟೆಯಿಂದ ಮುಚ್ಚಿಕೊಂಡಾಗ ಅದು

* ಶಬ್ದವನ್ನು ಚೆನ್ನಾಗಿ ಕೇಳಿಸುತ್ತದೆ
* ಗಾಳಿಬರಿತ ಗುಸ್ ..... ಶಬ್ದ ಕೇಳಿಸುತ್ತದೆ
* ಶಬ್ದ ಕೇಳಿಸುವುದೇ ಇಲ್ಲ.

(12) ಜೇಬಲ್ಲಿ ಧರಿಸುವ ಮೆಷಿನ್‌ನಲ್ಲಿ ಶಬ್ದವು ಸ್ವಲ್ಪವೂ ಕೇಳಿಸೇ ಇರುವುದು

* ಮುಗಿದ ಹೋದ (ಖರ್ಚಾದ) ಬ್ಯಾಟರಿ (ಸೆಲ್)ಯಿಂದ
* ವೈರನ್ನು ಮೆಷಿನ್‌ಗೆ ಜೋಡಿಸದೇ ಇದ್ದಲ್ಲಿ
* ಮೆಷಿನ್‌ನ ಮೇಲಿನ ಕಸದಿಂದ
* ಮೇಲಿನ ಎಲ್ಲಾ ಕಾರಣಗಳಿಂದ

(13) ಜೇಬಲ್ಲಿ ಧರಿಸುವ ಮೇಷಿನ್‌ನಲ್ಲಿ ಬಿಟ್ಟು ಬರುವ ಶಬ್ದಗಳ ಕಾರಣಗಳು

* ಹರಿದು ಹೋದ ವೈರಿನಿಂದಾಗಿ
* ಬ್ಯಾಟರಿಯನ್ನು ಅದರ ಸ್ಥಳದಲ್ಲಿ ಸರಿಯಾಗಿ (±) ಜೋಡಿಸದೇ ಇದ್ದಲ್ಲಿ.
* ಬ್ಯಾಟರಿಯ ಸಡಿಲವಾದ ಜೋಡಣೆಯಿಂದಾಗಿ.

(14) ಮೇಷಿನ್‌ನಲ್ಲಿ ಬರುವ ಕೀರಲು ಧ್ವನಿಗೆ ಕಾರಣ

* ಸ್ವರವನ್ನು ನಿಯಂತ್ರಿಸುವ ಸ್ವಿಚ್‌ನಲ್ಲಿ ಏನಾದರೂ ತಪ್ಪಿದ್ದರೆ.
* ಮೇಷಿನ್‌ನ ಮೈಕ್ ಮತ್ತು ರೀಸಿವರ್‌ಗಳು ಹತ್ತಿರ (ಅಕ್ಕ ಪಕ್ಕ) ಇದ್ದರೆ
* ಶಬ್ದನಿಯಂತ್ರಣವನ್ನು ಅತಿ ಹೆಚ್ಚಿನ ಮಟ್ಟದಲ್ಲಿ ಇಟ್ಟಾಗ.

(15) ಮೆಷಿನ್‌ನ್ನಿ ಬರುವ ಕಡಿಮೆ ಶಬ್ದಕ್ಕೆ ಕಾರಣಗಳು.

* ಶಬ್ದ ನಿಯಂತ್ರಣ ಸ್ವಿಚ್ಚನ್ನು ಕಡಿಮೆ ಪ್ರಮಾಣದಲ್ಲಿ ಇರಿಸಿದಾಗ
* ಮುಗಿದು ಹೋದ ಬ್ಯಾಟರಿ (ಸೆಲ್)ಯಿಂದ
* ಕಿವಿಯಚ್ಚಿನ ತೂತು (ರಂಧ್ರ) ಗುಗ್ಗೆ / ಕಸದಿಂದ ತುಂಬಿಕೊಂಡಾಗ

ಅಖಿಲ ಭಾರತ ವಾಕ್ ಶ್ರವಣ ಸಂಸ್ಥಾನ ಮೈಸೂರು ಇವರಿಗೆ ಅಂಜಿ ೧೯೬೧ರ ಪ್ರಕಾರ ಆದಾಯ ತೆರಿಗೆಯಿಂದ ವಿನಾಯಿತಿ ಪಡೆಯಲು ಅನುಮತಿ ದೊರೆತಿದೆ.

ದತ್ತಿದಾನ ಕೊಡಲು ಇಚ್ಛಿಸುವವರು ಈ ಸೌಲಭ್ಯ ಪಡೆಯಬಹುದು.

RL

ಭಾರತದಲ್ಲಿ ವಾಕ್ ಮತ್ತು ಶ್ರವಣ ತೊಂದರೆಯಿರುವವರಿಗೆ ಸರ್ಕಾರವು ಒದಗಿಸುತ್ತಿರುವ ಕೆಲವು ಸೌಲಭ್ಯಗಳು

ಮಾಹೆಯಾನ ೭೫ ರೂಪಾಯಿಗಳು ಭತ್ಯೆ ರೂಪದಲ್ಲಿ ದೊರೆಯುತ್ತದೆ.

೫ಂಗಳ ವರಮಾನ ೧೫೦ರಿಂದಕ್ಕಿಂತ ಕಡಿಮೆ ಇದ್ದಲ್ಲಿ ಅವರಿಗೆ ಶ್ರವಣೋಪಕರಣವು ಉಚಿತವಾಗಿ ದೊರೆಯುತ್ತದೆ.

೫ಂಗಳ ವರಮಾನ ರೂ.1201 - 2500ರೂ ಇದ್ದಲ್ಲಿ ಅವರಿಗೆ ಶ್ರವಣೋಪಕರಣದ ಬೆಲೆಯಲ್ಲಿ 50% ಕಡಿತ ದೊರೆಯುತ್ತದೆ.

ಕಿಸೆಯಲ್ಲಿ ಧರಿಸುವ ಶ್ರವಣೋಪಕರಣ ದೋಷ ಮತ್ತು ನಿವಾರಣಾ ಕೈಪಿಡಿ

ಅಖಿಲ ಭಾರತ ವಾಕ್-ಶ್ರವಣ ಸಂಸ್ಥೆ
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ಶ್ರವಣ ವಿಜ್ಞಾನ ವಿಭಾಗ
ಅಖಿಲ ಭಾರತ ವಾಕ್-ಶ್ರವಣ ಸಂಸ್ಥೆ
ಮಾನಸ ಗಂಗೋತ್ರಿ
ಮೈಸೂರು 570 006

APPENDIX - 3

ತೊಂದರೆಗಳು

ಶ್ರವಣೋಪಕರಣದಿಂದ

ಶಬ್ದಯಿಲ್ಲದಿರುವುದು.

ಕ್ಷೀಣವಾದ ಶಬ್ದ ಅಥವಾ

ಬಿಟ್ಟು ಬಿಟ್ಟು ಶಬ್ದಬರುವುದು.

ಶಿಳ್ಳೆಯಂತಹ ಶಬ್ದ
ಅಥವಾ
ಗಟ್ಟಿಯಾದ ಮಾತಿನಿಂದ

ಕರ್ಕಶವಾದ ಶಬ್ದ ಬರುವುದು.

ಗಲಾಟೆಯಂತಹ ಶಬ್ದ ಕೇಳಿಸುವುದು.

ಕಾರಣಗಳು

ಶಕ್ತಿ ಕುಂದಿದ ಶಕ್ತಿಯಿರದ ಅಥವಾ
ತಪ್ಪು ಬ್ಯಾಟರಿ ಹಾಕಿರುವುದು.
ಶ್ರವಣೋಪಕರಣವನ್ನು ಆನ್
ಮಾಡಿಲ್ಲದಿರುವುದು.
ಬ್ಯಾಟರಿ ಇಡುವ ಜಾಗದಲ್ಲಿ ತುಕ್ಕು
ಹಿಡಿದಿರುವುದು.
ಟೆಲಿಫೋನ್ ಅಥವಾ
ಮೈಕ್ರೋಫೋನ್ ಸ್ವಿಚ್ ತಪ್ಪು
ಜಾಗದಲ್ಲಿರುವುದು.

ಕಿವಿಯಲ್ಲಿ ಕಿವಿಯಚ್ಚನ್ನು ಸರಿಯಾಗಿ
ಇಟ್ಟಿಲ್ಲವೇ
ಕಿವಿಯವಾಳದಲ್ಲಿ ಕಿವಿಯಚ್ಚನ್ನು
ಸರಿಯಾಗಿ ಇಟ್ಟಿಲ್ಲವೇ
ಕಿವಿಯಚ್ಚಲ್ಲಿ ಬಿರುಕಾಗಿರಬಹುದು.
ಕಿವಿಯಚ್ಚಿನ ಟ್ಯೂಬಿನಲ್ಲಿ
ರಂಧ್ರವಾಗಿರಬಹುದು.
ಕಿವಿಯಚ್ಚಿನ ಗಾತ್ರಕ್ಕೆ
ಸರಿಯಾಗಿಲ್ಲದಿರಬಹುದು.
ಧ್ವನಿ ನಿಯಂತ್ರಣ ಅತೀ ಹೆಚ್ಚಿನ
ಸಂಖ್ಯೆಯಲ್ಲಿ ಇರಬಹುದು.
ಟ್ಯೂಬು ಮತ್ತು ಕಿವಿಯಚ್ಚಿನ ನಡುವೆ
ಶಬ್ದ ಸೋರಿ ಹೋಗುವುದು.
ಶಬ್ದ ಪ್ರತಿಧ್ವನಿ ಆಗುವ
ಸ್ಥಳಗಳಲ್ಲಿ ಅಥವಾ ಗೋಡೆಯ
ಹತ್ತಿರದಲ್ಲಿ ಕುಳಿತಿರಬಹುದು.

ಸ್ವಿಚ್ಚಿನ ಕಾಂಟ್ಯಾಕ್ಟ್‌ಗಳು
ಸರಿಯಿಲ್ಲದಿರಬಹುದು.
ಬ್ಯಾಟರಿ ಕಾಂಟ್ಯಾಕ್ಟ್‌ಗಳು
ಸರಿಯಿಲ್ಲದಿರಬಹುದು.

ಪರೀಕ್ಷೆಗಳು

ಹೊಸ ಬ್ಯಾಟರಿ ಇಟ್ಟು ಪ್ರಯತ್ನಿಸಿ.
ಸ್ವಿಚ್ ಪರೀಕ್ಷಿಸಿ.
ಬ್ಯಾಟರಿ ತುಕ್ಕು ಹಿಡಿದಿದೆಯೇ ಎಂದು
ಪರೀಕ್ಷಿಸಿ.
ಸ್ವಿಚ್ ಇಟ್ಟಿರುವ ಜಾಗಸರಿಯಿದೆಯೇ
ಎಂದು ಪರೀಕ್ಷಿಸಿ.

ಕಿವಿಯಲ್ಲಿ ಕಿವಿಯಚ್ಚನ್ನು ಸರಿಯಾಗಿ
ಇಟ್ಟಿದೆಯೇ ಎಂದು ಪರೀಕ್ಷಿಸಿ.
ಕಿವಿಯವಾಳದಲ್ಲಿ ಕಿವಿಯಚ್ಚನ್ನು
ಸರಿಯಾಗಿ ಇಟ್ಟಿದೆಯೆ ಎಂದು
ಪರೀಕ್ಷಿಸಿ
ಕಿವಿಯಚ್ಚಲ್ಲಿ ಬಿರುಕಾಗಿದೆಯೇ
ಎಂದು ಪರೀಕ್ಷಿಸಿ.
ಕಿವಿಯಚ್ಚಿನ ಟ್ಯೂಬಿನಲ್ಲಿ
ರಂಧ್ರವಾಗಿರಬಹುದೇ ಎಂದು
ಪರೀಕ್ಷಿಸಿ.
ಕಿವಿಯಚ್ಚಿನ ಗಾತ್ರಕ್ಕೆ ಸರಿಯಾಗಿಯೇ
ಎಂದು ಪರೀಕ್ಷಿಸಿ.
ಧ್ವನಿ ನಿಯಂತ್ರಣ ಅತೀ ಹೆಚ್ಚಿನ
ಸಂಖ್ಯೆಯಲ್ಲಿ ಇರದಿರಬಹುದು
ಪರೀಕ್ಷಿಸಿ.
ಟ್ಯೂಬು ಮತ್ತು ಕಿವಿಯಚ್ಚಿನ ನಡುವೆ
ಶಬ್ದ ಸೋರಿ ಹೋಗುತ್ತಿದೆಯೇ
ಎಂದು ಪರೀಕ್ಷಿಸಿ.
ಶಬ್ದ ಪ್ರತಿಧ್ವನಿ ಆಗುವ
ಸ್ಥಳಗಳಲ್ಲಿ ಅಥವಾ ಗೋಡೆಯ
ಹತ್ತಿರದಲ್ಲಿ ಅಥವಾ ಕುಳಿತಿರುವ
ಜಾಗದ ಸುತ್ತ ಏನಿದೆ ಎಂದು
ಪರೀಕ್ಷಿಸಿ.
ಆನ್ ಆಫ್ ಸ್ವಿಚ್ ಪರೀಕ್ಷಿಸಿ.
ಬ್ಯಾಟರಿ ಇಡುವ ಜಾಗವನ್ನು ಪರೀಕ್ಷಿಸಿ.

ನಿವಾರಣಾ ಕ್ರಮಗಳು

ಬ್ಯಾಟರಿ ಬದಲಾಯಿಸಿ.
+ಎಂಬ ಜಾಗದಲ್ಲಿ ಸ್ವಿಚ್ಚನ್ನು ಇರಿಸಿ.
ಬ್ಯಾಟರಿಯ +ಚಿಹ್ನೆ ಬ್ಯಾಟರಿಯಿಡುವ
ಜಾಗದಲ್ಲಿನ +ಚಿಹ್ನೆ ಯೊಂದಿಗಿರಿಸಿ.
ಹಳೆಯ ಬ್ಯಾಟರಿ ತೆಗೆದು ಕಾಂಟ್ಯಾಕ್ಟ್
ಜಾಗವನ್ನು ಶುಚಿಗೊಳಿಸಿ.
+ಎಂಬ ಜಾಗದಲ್ಲಿ ಸ್ವಿಚ್ಚನ್ನು ಇರಿಸಿ.

ಕಿವಿಯಚ್ಚನ್ನು ಕಿವಿಯಲ್ಲಿ
ಸರಿಯಾಗಿಡಿ.
ಕಿವಿಯಚ್ಚನ್ನು ಕಿವಿಯಲ್ಲಿ
ಸರಿಯಾಗಿಡಿ.
ಕಿವಿಯಚ್ಚನ್ನು ಬದಲಾಯಿಸಿ.
ಟ್ಯೂಬಿಂಗ್ ಬದಲಾಯಿಸಿ.
ಕಿವಿಯಚ್ಚನ್ನು ಬದಲಾಯಿಸಿ.
ಕಿವಿಯಚ್ಚನ್ನು ಬದಲಾಯಿಸಿ.
ಬೇಕಾದ ಭಾಗಗಳನ್ನು ಬದಲಾಯಿಸಿ.
ಶ್ರವಣೋಪಕರಣವನ್ನು ಧರಿಸಿದಾಗ
ಗೋಡೆ ಹತ್ತಿರದಲ್ಲಿ
ಕುಳಿತುಕೊಳ್ಳಬೇಡಿ ಅಥವಾ ಶಬ್ದ
ಪ್ರತಿಧ್ವನಿ ಆಗುವುದನ್ನು ತಡೆಗಟ್ಟಿ.

ಸ್ವಿಚ್‌ಅನ್ನು ಹಲವಾರು ಭಾರಿ ಹಿಂದೆ
ಮುಂದೆ ತಿರುಗಿಸಿ.
ಶ್ರವಣ ತಜ್ಞರನ್ನು ಭೇಟಿಮಾಡಿರಿ.