MAN POWER RESOURCES IN THE FIELD OF SPEECH AND HEARING

Register No.M8905

AN INDEPENDENT PROJECT WORK SUBMITTED IN PART FULFILMENT FOR FIRST YEAR M.Sc., (SPEECH AND HEARING) TO THE UNIVERSITY OF MYSORE.

ALL INDIA INSTITUTE OF SPEECH AND HEARING: MYSORE - 570 006.

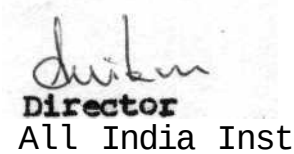
MAY 1990

APPA AND AAJI

(My beloved grandparents).

CERTIFICATE

This is to certify that the Independent Project entitled: MAN POWER RESOURCES IN THE FIELD OF SPEECH AND HEARING is the bonafide work, done in part fulfilment for First Year M.sc, (Speech and Hearing) of the student with Register No.M8905.

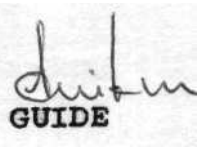


Director
All India Institute
of Speech and Hearing
Manasagangothri
Mysore.

Mysore
May 1990

CERTIFICATE

This is to certify that the Independent Project entitled: MAN POWER RESOURCES IN THE FIELD OF SPEECH AND HEARING has been prepared under my supervision and guidance.



DECLARATION

This Independent project entitled: MAN POWER RESOURCES IN THE FIELD OF SPEECH AND HEARING is the result of my own study undertaken under the guidance of Dr.(Miss) S.Nikam, Prof, and HOD, Department of Audiology, 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 1990. Register No.M8905

ACKNOWLEDGEMENTS

I am truely indebted to my guide Dr.(Miss) S.Nikam, for her invaluable guidance for my project without it I could not have completed this study.

I thank to the Director, A.I.I.S.H. Mysore for extending the facilities to carry out the study.

My sincere thanks are due to the Speech and Hearing Professionals for their prompt responses to the questionnaires.

My special thanks to Dr.Shukla who was kind enough to provide me with ISHA Directory in time.

Thanks to my old and new classmates who helped me one way or the other for completion of this study.

A ton of thanks to Sheeba, for her constant help during the course of project and also to Asha, Aparna and Vidya.

Thanks to my family members for their moral support and continuous inspiration for completion of my study.

My sincere thanks to "Raji" akka who typed this project neatly for me in short-time.

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INTRODUCTION

The field of speech pathology sad audiology is one of the most Important rehabilitative fields which mainly deals with the clients suffering from disorders of speech and hearing. In dealing with such clients the clinician has to first access and if possible diagnose the case before developing a rehabilitative program. It is important that the assessment and testing be done in detail so as to have comprehensive picture of the client and his abilities and areas of deficits.

In the audiological assessment, we start from the conventional testing namely that of puretone and speech audiometry and go on to the special tests like short increment sensitivity indix (SISI), alternate binaural loudness balance (ABLE), impedance audiometry, electrophysiological testing and free-field screening and make the necessary test selections and modifications in individual cases. To carry oat these tests we need sophisticated equipments such as audiometers (with facilities for special tests), impedance bridge, brainstem evoked response audiometry (BSERA) and others.

In speech and language assessment, we need materials such as proformae, tape recorders and even language tests and instrumentations such as spectograph, expirograph, visi-pitch for voice evaluation.

Based on the set up our requirements will vary private clinics may net be able to afford very sophisticated instrumentations. Educational institutions on the other hand are likely to have the most recent instrumentations and hence will be well-equipped. Besides this the assessment procedure followed may vary from one set up to another. In a country like India where this field is around a quarter of a century old, this is more likely to be true.

However, in a short span of time, this field has developed rapidly in India. In spite of the rapid strides there are a few drawbacks, so to identify these drawbacks, the man-power resources available in the field to deal with speech and hearing problems, a survey in this field is very essential. Along with this in a country where the percentage of this disorder is very high and Where half of the population stays in the villages, it is very essential to know the facilities available in the rural area. So thus, a survey would serve a variety of needs such as:-

1. to ascertain the pattern of utilization of man-power.
2. Whether the trainees are employed have sufficient tools or net because without the necessary tools their effectiveness will be limited.

Thus before embarking on this survey, its better to see what exactly survey research means.

Research is an action producing truthful information about things and what happens to them (Wolman, 1965).

Research is fact finding activity and when this fact finding activity is carried out in a formal way it is referred to as scientific research (Kerlinger, 19).

It is carried out in many other ways ranging from mailed questionnaires to in-depth personal interviews. It is mainly applied to general area of social research and the advantage is that the information is obtained from a large population, so it is reliable.

Survey research seems ideally suited for obtaining facts regarding education, training and employment of man-power resources in the field of Speech Pathology and Audiology. Survey research follows a sequence of phases, they are:

1) Formulation of theoretical pragmatic use.
2) Formulation of research problem
3) Sampling of respondants
4) Measurement of information items
5) Data collection
6) Data analysis

7) Interpretation and reporting

8) Integration of findings in theory of pragmatic use.

Thus, the social survey in the field of speech and hearing is conducted before this many times in India. The first such research was done by Kapur (1966). He conducted a survey of personnel, equipments and facilities available in India, in the field of speech and hearing. Along with this the survey of man-power resources in the field of speech and hearing was conducted by Balakrishna (1978).

Need for the study:

The study will help us la following way:

1. To test the relevance of training and to ascertain the pattern of utilization of man power.
2. To find out, is the level of training correlated to the different organizational structures where they are employed?
3. To find out the concentration of the professionals all over the country.
4. To ascertain whether the field in India is keeping up with the latest development in terms of equipment and research or not.
5. Finally, since it is the youngest field in India so to help us to find out the rate at which it is developing and keeping up with latest development in the field world wide.

REVIEW OF LITERATURE

The recent most study of 'Man-Power Resources and needs in the field of Speech and Hearing' was carried out by Balakrishna (1978); through mailed questionnaires with the following objectives:

(1) To find out high level manpower in the field and the investment in education. Because investment in education is worthwhile if personnel trained are employed gainfully.

(2) To find out the pattern of utilization of man power resources in the field.

(3) To study whether, is the level of training correlated to the different organizational structure? Where they are employed? and Are they performing duties that are commensurate with their levels of training?

(4) What equipment facilities the professionals have in the field of speech and hearing? Because quality service delivery depends both upon the personnel and equipments.

(5) It is not known whether people who need services of the profession are aware of the availability of qualified persons in speech pathology and audiology, so to Know about it for eg. in the hearing conservation program in industries, whether people are really aware about it or not.

(6) To know the availability of comprehensive information concerning man power and service needs would help the planners to involve speech and hearing services. And to know whether personnel performing similar duties or same levels of training carry similar job title and salary or not.

(7) To find out the information regarding the distribution of the professionals that is whether they are concentrated in geographical area or diffused through out the country or not. What role the speech and hearing personnel play in the rural health scheme?

(8) To know, whether the professionals need services for continuing education or not. Because new technique in diagnosis and therapy are constantly being evolved in speech pathology and audiology and information regarding such development may not be available to all the professionals in the field.

Specifically, the study was designed to obtain information regarding the personnel, equipments and work environment.

The results of the above study indicated that the work force in the field of speech and hearing was found to be of a younger age group. Medical institutions, speech and hearing

clinics and special schools employed a large majority of speech and hearing professionals as compared to industries, training colleges, institutions and other industries. Speech and hearing person has more contact with the medical professionals. More than three fourths of the professionals were employed within an year or less after qualifying themselves. The 'critical skill' of the speech and hearing professionals could have been effectively used provided the technical and other facilities were adequate in their employment set up. Where were more number of professionals concentrated in the urban area compared to rural area. So this was the last study done in India about 'man power resources in the field of speech and hearing'.

The first of this kind of study was done by Kapur (1966). He conducted a study through mailed questionnaires with the following objectives:

(1) To know the instrumental facilities audiometers, instruments for calibration of audiometers and availability of sound treated rooms and facilities for making earmolds.
(2) To find out the total number of instruments used by the professionals in the field of speech and hearing, the instruments were audiometers, speech trainers, and hearing aids.

(3) To know how the man-power resource is utilized in the field,whether the talent is utilized in the way it should be utilized or not.

The results of the study indicated that out of 69 teaching hospitals, nine did not have audiometers. Twenty-five had one audiometer each but not in working condition and thirtyfive did not have any facilities for audiological evaluation. Only eighteen out of sixtynine hospitals had sound treated rooms and only five of them have had their ambient noise level measured and eight hospitals had speech training instruments.

Five teaching hospitals had qualified speech pathologists and four hospitals had audiometricians and those audiometricians learned the audiometry through informal training.

One of the first surveys in the field of speech and hearing was published by American Speech and Hearing Association (1961). It reported on the survey of public school speech and hearing services.

The goals of the study were:

(1) To find out the technical procedures used for the assessment of disorders of speech and hearing. Also to know the professional procedures used in the field.

(2) To provide Authoritative information to the administrators.of the clinicians in speech and hearing.

(3) To assess the significance of those problems which could not be resolved and to supply modern methods of research to solve their problems.

The information was collected through questionnaires about the clinical practice, program management, number of staff and students in each institution. The responses from the clinicians and supervisors indicated that all public schools provided the facilities for audiological screening.

Thus, the study indicated the need for strengthening the speech and hearing work force and also include the training facilities for specialists.

The next study was reported by Curlee (1975). Actually during the early part of 1972 the National Institute of Neurological Diseases and stroke (NINDS) initiated a contract with American Speech and Hearing Association (ASHA) to study the utilization distribution and future needs for speech pathologists and audiologists in research, teaching and clinical care.

The specific purposes of this study were to describe:

(1) The demographic tad professional characteristics of the speech pathology/audiology work force.

(2) To identify the current pattern of man-power utilization in speech pathology aad audiology.

(3) To estimate the need for additional speech pathologists and audiologists in the areas of teaching, research and elient care.

(4) To specify those man-power resources or needs that require additional study and analysis.

(5) And to recommend appropriate goals for meeting the needs of the communicatively handicapped and to suggest means for meeting these goals.

The major recommendations of this study included the following:

(1) A comprehensive man-power planning and placement system for speech pathologists and audiologists should be created.

(2) An effective system of continuing education should be created to assist the maintainanee of clinical competency for individuals Whose patterns of employment restrict their professional and informational growth.

(3) Aa increase in the research work force is necessary if the erosion of theoretical and scientific basis of the profession is to be prevented.

(4) Many comprehensive studies should be undertakes as soon as possible to establish the prevalence of communication disorders, determine the patterns of attrition characteristics of the speech pathology/ audiology work force and assess the efficiency and effectiveness of various service delivery systems in speech Pathology/audiology.

Health survey planning committee (Mudaliar, 1961) reported that there were inadequate facilities for hearing evaluation and rehabilitation and communicatively handicapped people in India. The committee report indicated the need for development of training facilities for Audiologists and Speech Pathologists. The importance of indigenous manufacturer of diagnostic and rehabilitationinstruments like audiometers and hearing aids was stressed by the reports. Uniform education of specialists and improving facilities for diagnosis and treatment were some of the recommendation made following the survey.

ASHA published a report on survey of school Audiologists in 1978 in attempt to identify audiological services currently provided for school age hearing impaired children within the regular school environment. For the study six hundred and ninetyseven questionnaires were mailed. The conclusion was as follows:

Respondents represented a wide geographic area. The majority were required to hold a state teaching credential and a master's degree as conditions of their employment. Most were employed by school systems and worked primarily with elementary school age children for assentially the same salary as certificated teaching personnel. The testing facilities and equipment were supplied by the employer.

The average respondents spent one quarter of time administering puretone threshold tests and site of lesion test batteries. An additional 25% of work time was spent in consulting with other professionals, parents and children and other part of time was used in report writing and keeping records. Another possible indication of change is concerned with the audiologists involvement inidentification audiometry. Although this is typically considered to be a chief concern of the audiologists it appeared as though the responsibility for conducting audiometric screening program is being delegated to some other person. Overall the ratings suggested that audiologists planning to meet the needs of the school age, hearing impaired child should prepare themselves with course work and practical experiences related to learning and communication problems of the hearing impaired child as well as audiological assessment.

A special survey is reported in ASHA (1978) about the Speech Pathology and Audiology in Brazil. It is reported that speech pathology and audiology has existed in Brazil for ten years. The speech pathology and audiology services are concentrated in cities. Speech and hearing services in Brazil are a low priority foroaudiology receives a diploma for completion of the course of study rather than an academic degree. Problem areas are lack of communication among fonoaudiologists in different physical settings, no professional organizations or publications that reach the practicing clinician, minimum encouragement for scholarly activity and continuing education and no means of preparing future faculty members fonoaudilogia training program.

Punch reported a survey in 1981 about employment characteristics in the area of speech and hearing. The characteristics were as follows:

(1) Full-time employment as contrasted with part-time employment, was highest for administrators, teachers in colleges and universities and teachers of the communicatively handicapped.
(2) Respondents who were engaged primarily in clinical speech-language pathology were typically engaged in this as a single professional activity. Respondents who performed

other primary activities, however, were typically engaged in multiple job activities. Overall 65% of the respondents were engaged in multiple activities.

(3) Approximately 68% of the unemployed respondents were unemployed on a temporary basis compared with other groups, a greater percentage of the administrators and college/university teachers stated they were permanently unemployed suggesting relatively high rates of attition among these two groups.

(4) No more than one-fourth of the temporarily unemployed respondents were actively seeking employment in the profession. Of these 61%preferred part time over full-time employement. The large percentage of temporarily unemployed who were not seeking employment in the profession suggests that substantial number of ASHA members were leaving the speech pathology and audiology profession and that more part time job opportunities should be made available.

In this total 6,970 questionnaires were mailed, 3, 717 were returned and 210 of these were excluded due to improper completion of the forms. The questionnaires included the questions on employment status, geographic areas, primary employment setting contract length, age, sex, race or ethnic

origin, number of years of professional experience, highest degree and certification status.Respondents were also asked to indicate whether or not they were employed in more than one employment setting or engaged in more than one employment activity although they were not asked to specify the secondary settings or activity.

Lewis (1988) conducted a survey of hospital audiology and heating aid dispensing programmes. The purpose of the study was to determine the availability of audiology services in hospitals and concurrent practice of hearing and dispensing by those departments and their perceptions of the viability of offering this particular services.

So a questionnaire consisting of twentyfour questions was constructed for this study. The hundred and thirty three hospitals were selected for this study. Sixtynine of the one hundred and thirtyfour questionnaires sent were completed and returned. This represented 51+5% of the total number of hospital samples,of the total sample of sixtynine respondents fourtyseven had currently functioning audiology program at their hospital. Three of the remaining twentytwo hospitals did not have audiology departments and were planning to begun audiology services within two years.

Finally, the author has reported that more research is needed and future surveys should be redesigned and expanded

to allow the collection of data from organizations other than hospitals that provide similar services, such data might reveal a relationship between these organisations reflecting a growth in the quality of audiology services offered in communities and therefore might reduce inherent biases favouring hospital operations. The availability of a computer based statistical tabulating system could greatly facilitate the use of this and follow up studies. Data base management systems would permit storage and retrieval of item-by-item responses and would have the potential to access more in depth demographic data. On its own, the study reported here is not significant enough to allow one to draw scientific conclusions but it can serve as an impetus for further more in depth research into a potentially critical area of health care management and service delivery.

Strohfeldt and Anderson (1989) conducted a study to find out the speech pathology services in North anf far North of Queensland. Questionnaires were sent to fiftynine speech pathologists. The survey dealt with three key issues pertinent to speech pathology services in remote areas. These were:

(1) Biographical information about speech pathologists living in the area.

(2) The attitude of speech pathologists towards clinical training of students.

(3) Profiles of clinics in North Queensland.

Implications of the survey were numerous.Some of them are: work history, education facilities, employers and professional development and supports.

Clinical profiles:

Very few clinics worked solely with adults. This raises the issue of each access by adults to speech pathology clinics in North Queensland. There are also no specialist clinics for people with problems such as head injury and multiple sclerosis. Therapists listed child language disorders as major area of work. No work was being done with dysphagia. The survey team felt the survey has invaluable in providing information on speech pathology services An North Queensland. Finally, the survey team felt that the survey has invaluable in providing information about speech pathology. Thus 90% of the questionnaires were returned suggesting high interest in providing input to such studies. Findings from the study provided valuable information for submission for staffing and resources. It highlighted the needs of speech professionals in rural and remote areas and implications for employees training bodies, professional organizations and professionals themselves.

METHODOLOGY

The aim of the study was to investigate the professional services available in different part of the country in the field of speech and hearing which would in turn indicate the further needs and requirements of this field.

1. Design of study:

The data was obtained through a questionnaire, a sample of which is given in Appendix-A. It included a letter requesting the respondent to duly filled the questionnaire after following informations confidentiality of the questionnaire was assured to the subject.

2. Preparation of questionnaire:

It was designed to obtain information from audiologist and speech pathologist. It included ten major questions including the aspect of demographic information,academic information, employment, interaction with other professionals, private practice, instrumentation, information on hearing aids, sound treated rooms, access of library and area of work.

a) Demographic data: It consisted of name, age, sex, reglion, mother tongue and other language known.

(b) Academic history: It comprised of professional qualifi-ction, the year of passing, and the institutions/universities where they got degrees.Qualificatlons other than speech and heating professions were also included in this section.

3. Employment history:

The following information was sought in this section. The institution where employed, nature of employment, years of employment, designation, salary, grade, total years of employment and unemployment. The employment setting whether in the rural or urban area, whether in central government, state government, private practice or self employed. In this the information was collected about the designation given to the professionals and question was asked whether they preferred it with reference to their duties or not. If not, then information collected above what designation would they prefer with reference to their duties.

4. Employment Setting:

This section included questions about the setting where they were employed i.e. industrial, university/college, medical institutions, special school, speech and hearing clinics or institutions and others.

5. Nature of duties:

This section included questions regarding the nature of duties i.e. whether they are in the teaching profession in the college or university or whether they are in special schools or research work, administration or clinical supervision, they and diagnosis.

6. Interaction with other professionals:

Information regarding professionals with whom they interact in discharging their professional; duties and also with the same professionals were sought in this section.

7. Instrumentations:

This section dealth with availability of the instruments. They are as follows:
i) Type of audiometers (ii) type of immittence meter (iii) instruments for carrying out eleetrophysiological tests (iv) instruments for carrying out electrophysiological characteristics (v) Instruments for carrying out audiometric calibration. Along with this, information about model and numbers of instruments available was also obtained.

8. Availability of hearing aid:

In this section,the questions were related to the hearing aids whether hearing aid was recommended in the centre, how many

different types of hearing aids were available in the centre and whether hearing aid repair is carried out in the center or not.

9. Sound treated rooms:

This part was about the availability of the sound treated rooms, if they are available then the question about the numbers and types of room was asked. Along with this the ambient noise level in the sound treated rooms had to be given.

10. Area of work:

In this the questions were about the area where they work whether they work in rural area or urban area and if urban, whether they visit to the rural area or not and if they visit how many times they visit.

11. Library facilities: This section dealt with the facilities available in the institute or nearby institute for keeping up latest development in the field.

Covering letter: On the first page of the quesionnaire a covering letter was enclosed which included, the purpose of the study and instructions to the respondent.

Selection of subjects: About two hundred and fifty speech pathologists and audiologists were selected for study. Those

who possessed a degree or diploma in speech pathology/ audiology and were requested to complete the questionnaire. As two hundred and fifty subjects were there, then sampling controls were not used.

Confidentiality: Emphasis was given on personnel anonymetry and confidentiality of the information obtained through the questionnaire.

Mailing procedure: A total of two hundred and fifty questionnaires were mailed to the professionals in the field of speech and hearing. A self-addressed stamped envelop was enclosed with the questionnaire, mailed to each respondent for early return.

Reminders: After 15-20 days of the despatch of the questionnaires a reminder was sent to those people who did not return the questionnaires.

Questionnaires then were reviewed and analyzed incomplete questionnaires were kept aside.

This chapter deals with the Bomber of questionnaires returned back from the respondents, findings of survey and graphical presentation of the data. In this each part of the questionnaire is analyzed and is tabulated.

Distribution of questionnaires:

There were 250 questionnaires sent to the professionals all over India, totally 131 questionnaires were obtained from them, so the distribution is as follows:

Table-1:

Number of mailed questionnaires	Number of que-stionaires obtained	Percentage
250	13i	52.4%

Data obtained from all questionnaires is analyzed under different headings. Wherever appropriate the data is repre-sented in teras of graphs and tables. Bat major emphasis is given to the description and analysis of information.

A. Demographic data:

1) Aget This data deals with the age group of professionals i.e. how they are distributed on the basis of age range. The age range and the percentage of professional is given in the following table.

Table-2: Distribution of professionals on the basis of age range.

SI.No.	Age group	Total	Percentage of professionals
1.	20 - 25	27	20.6
2.	25 - 30	41	31.2
3.	30 - 35	28	21.3
4.	35 - 40	21	16.0
5.	40 - 45	9	6.8
6.	45 - 50	1	0.76
7.	50 and above	4	3.0
	Total	131	100

2. Sex: This shows the distribution of males and females in the field of speech and hearing.

Table-3: Distribution of professionals on the basis of sex.

Sl.No.	Sex	Total	Percentage
1.	Males	59	45.3
2.	Females	72	54.9
	Total	131	100

The above table indicates that there are more number of females in the field of speech and hearing than males.

3. Religion: This indicates the religion of the professionals.

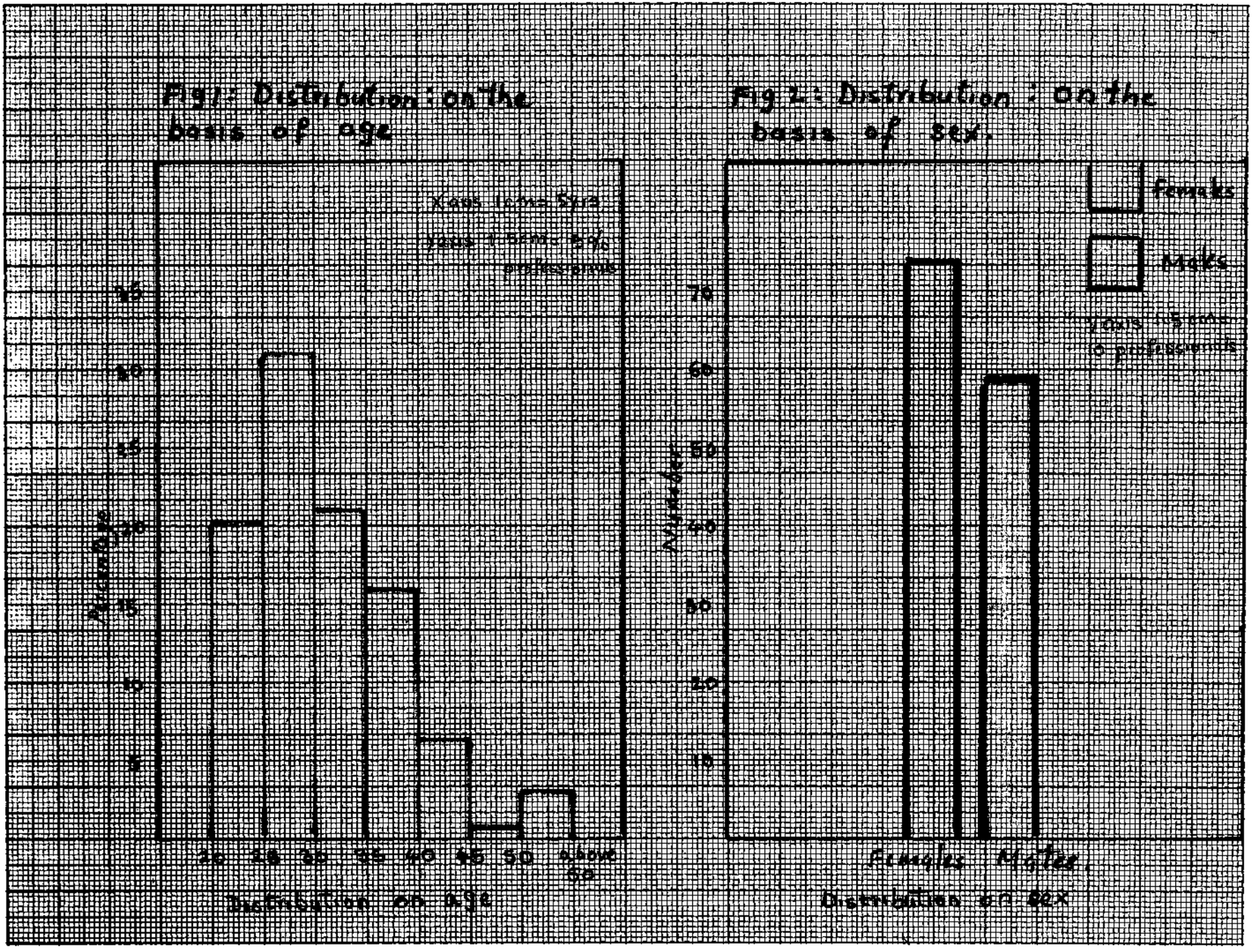


Fig 1: Distribution on the basis of age
Years (Semi Syrs)
Years (Semi &/o professionals)
Percentage
25
20
15
10
5
20 25 30 35 40 45 50 above 60
Distribution on age
Fig 2: Distribution on the basis of sex.
Females
Males
Years (Semi-Syrs)
Professionals
Number
70
60
50
40
30
20
10
Females Males
Distribution on sex

Table-4: Distribution of professionals on the basis of religion.

Sl.No.	Religion	Total	percentage
1.	Hindu	125	95.4
2.	Muslim	1	0.75
3.	Christian	4	3.05
4.	Parsis	1	0.75
	Total	131	100

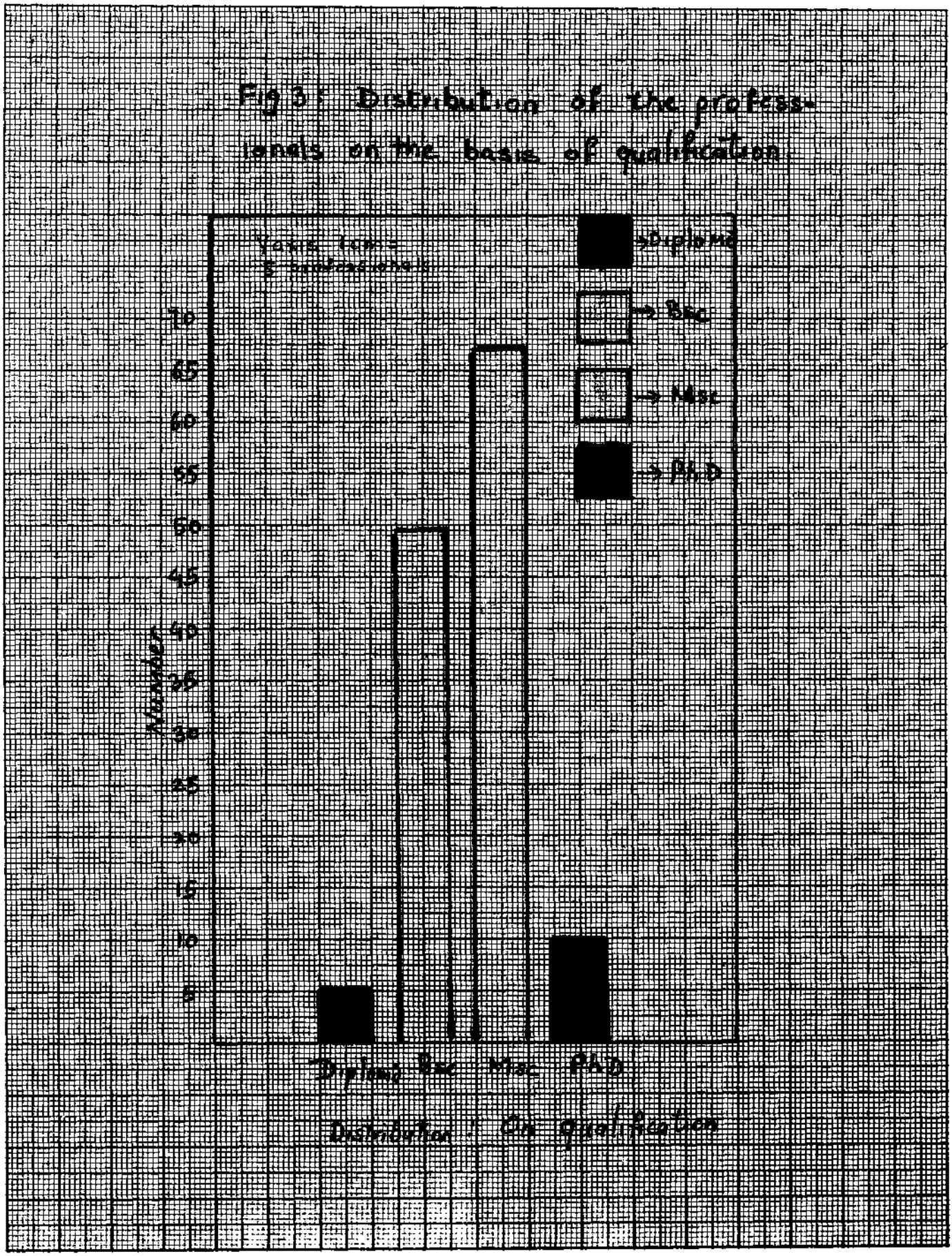
4. Language: This gives information about the mother tongue and the other languages known. The following table shows the mother tongue and the degree held by the respective professionals. It is seen that different languages are seen as mother tongue.

Table-5: Distribution on the basis of mother tongue and qualification.

Si.No.	Languages	Total	BSc.	MSc.		Diploma
1.	Bengali	3	1	2	—	
2.	English	1	1	—	—	—
3.	Gujarathi	9	7	2	—	—
4.	Hindi	19	8	9	-	2
5.	Kannada	30	2	21	7	—
6.	Kodagu	2	-	1	1	—
7.	Konkani	5	—	5	—	—
8.	Malayalam	5	1	4	-	-
9.	Marathi	26	19	4	1	2
10	Oriya	4	3	1	-	-
11.	Sindhi	2	2	—	—	—
12.	Tamil	17	3	13		1
13.	Telugu	7	3	4	—	-
14.	Urdu	1	1	-	--	-
	Total	131	50	68	10	5

It was also found that each professional in the field knew more than two languages in addition to their mother tongue and English.

Fig 3: Distribution of the profess-
ionals on the basis of qualification



B. Academic history:

This section deals with the professional qualification. It shows the number of M.Sc., degree holders,the number of B.Sc. degree holders and number of Ph.D. degree holders and diploma holders.

1) Professional qualification: The data indicates that M.Sc. degree holders are more in numbers than the BSc. degree holders. The following table indicates the distribution of diploma/ degree among the professionals.

Table-6: Distribution of professionals on the basis of qualification.

Degree/Diploma	Males			Females	
	Total	Total	Percentage	Total	Percentage
Diploma	5	5	3.8	-	-
B.Sc.	49	9	6.8	40	30.5
M.Sc.	67	40	30.5	27	20.6
Ph.D.	10	6	4.5	4	3
Total	131	60	45.6	71	54.1

2. Other qualifications: This indicates that some of the professionals have the other qualification i.e. qualification other than a degree in speech and hearing. The following table indicates what other qualifications they have and how it is distributed.

Table-7: Distribution of professionals on the basis of other degrees other than speech and hearing.

Profe-ssional degrees.	B.Sc. Ph, Mi		B.A. Psy.		M.a. Ling.		M.A. Psy		M.Bd.		M S.	
	M	F	M	F	H	F	M	F	M	F	M	F
Diploma	1	-	3	-	-	-	-	-	—	-	-	-
B.Sc.	1	1*	-	-	-	3	1	-	-	-	2	-
M.Sc.	-	—	-	-	-	-	-	1	-	-	1	-

Ph - Physics: Mi - Microbiology; Psy - Psychology

* - This indicates B.sc. with microbiology.

3. <u>Emplovement history;</u>

From this it is evident that total number of unemployments are very less. Also number of years unemployed since graduation are less.

The following table indicates the period of unemployment and employment of the professionals since graduation. About 69.4% of than were unemployed for less than one year since graduation. However, only small percentage of them had to wait for job for more than two years.

The maximum number of professionals have experience for more than one year. About 34.95 percentage of them have experience of more than ten years and about 15.86 percent of professionals have experience for more than fifteen years.

Table-8: Distribution of professionals on the basis of period of employment and unemployment.

Period of employment in years.	No.of persons	Percentage	Period of unemployment in years since graduation	No.of persons	Percentage
1 year; and less	25	19	1 year and less	91	69.46
1 - 3	22	16.79	1 - 3	4	3.04
3 - 5	17	12.9	3 - 5	-	-
5 - 8	21	16	5 and abov		-
8 - 11	15	11.4	-	-	-
11 - 14	10	7.6	-	-	-
14 - 17	12	9.1	-	-	-
17 - 20	4	3.05	-	-	-
20 and above	5	3.8	-		

The table indicates that about 69 percent of the professionals got their jobs within an year after graduation while 12 percent got within two years. However, only small percentage of them had to wait for their jobs for more than two years.

ii) This part collected the information about the designation given to them and whether they preferred it with reference to their duties or not. so 77.8% of them were satisfied with their

designations while 15.3% of them were not satisfied and suggested other designations and 6.8% of them were partially satisfied with it. The other designations suggested by them are as follows:

Table-9: Distribution of designation suggestede by professionals

SI.No.	Designation suggested	Total
1.	Co-ordinator of speech and hearing services	1
2.	Clinician and lecturer	2
3.	Scientists with different grades	1
4.	Speech and hearing specialists	3
5.	speech and language pathologist and audiologist.	3
6.	Clinical and research assistant	2
7.	Faculty designation	1
8.	Assistant professor	9
9.	Speech Pathologist with different grades	1
10.	Dean and professor	1
11.	Junior Speech pathologist and Audiologist	2

The designation junior speech pathologist and audiologist was suggested by diploma holders. Those who suggested the designations of asst. professor were involved in teaching activities.

iii) Employer: This part gives the information about the employer of the professionals, i.e. whether they are employed by central government, state government, quasi government, private agency or self-employed. Private agency indicates either private institutes, private speech and hearing clinics, special school or private hospitals while self employed indicates private practice i.e. how many of them do private practice.

Table-10: Distribution of professionals on the basis of employer.

Employer	Percentage
Central Government	41
State Government	20
Quasi Government	6
Private agencies	25
Self-employee	8
Total	100

The above table indicates that more number of profe-ssionals are employed by eentral government followed by private agencies and then followed by State governments.

iv) The following data indicates distribution of the pro-fessional on the basis of the place where they work. The

data indicates that some of them work at more than one place i.e. they work in industry as well as in speech and hearing clinics.

Table-11: Distribution of the professionals on the basis of the place where they work.

Employer	Total	B.Sc.		M.Sc		Ph.D.		Diploma		Percentage	
		M	F	M	F	M	F	M	F	M	F
Speech & Hearing Cllaic	66	3	18	18	15	5	4	3	-	22	28
Industry	4	2	-	1	1	-	-	-	-	2.2	0.7
Univers-ty/colle-ge	e	3	1	3	1	-	—	-	-	4.5	1.5
Special school	13	1	4	3	2	-	-	4	-	6	4.5
Medical Institu-tions	35	5	9	12	7	1	1	—	-	13.7	12.9
Others	15	1	5	4	5	-	-	-	-	3.8	7.6

4. Nature of duties:

Professionals in the field of speech and hearing deal with different types of activities. The different types of professional activities are - teaching in college/university, teaching in special school, research,administration, clinical work, diagnosis, therapy, counselling, guidance, clinical supervision and others.

Fig 6(a): Distribution of male professionals on the basis of place of work.

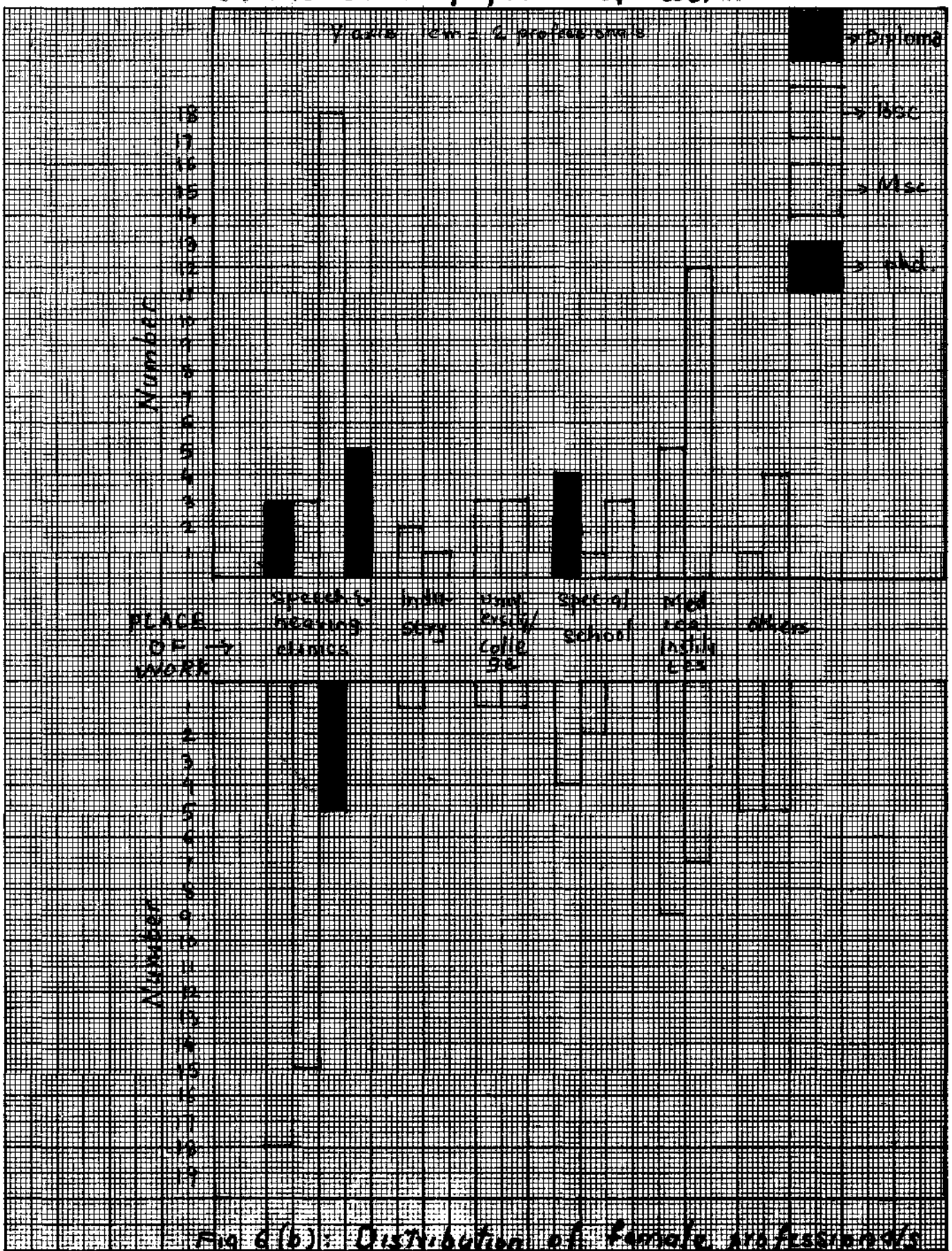


Fig 6(b): Distribution of female professionals on the basis of place of work.

Tsble-12: Distribution of professionals on the basis of nature of duties on percentage and in degrees.

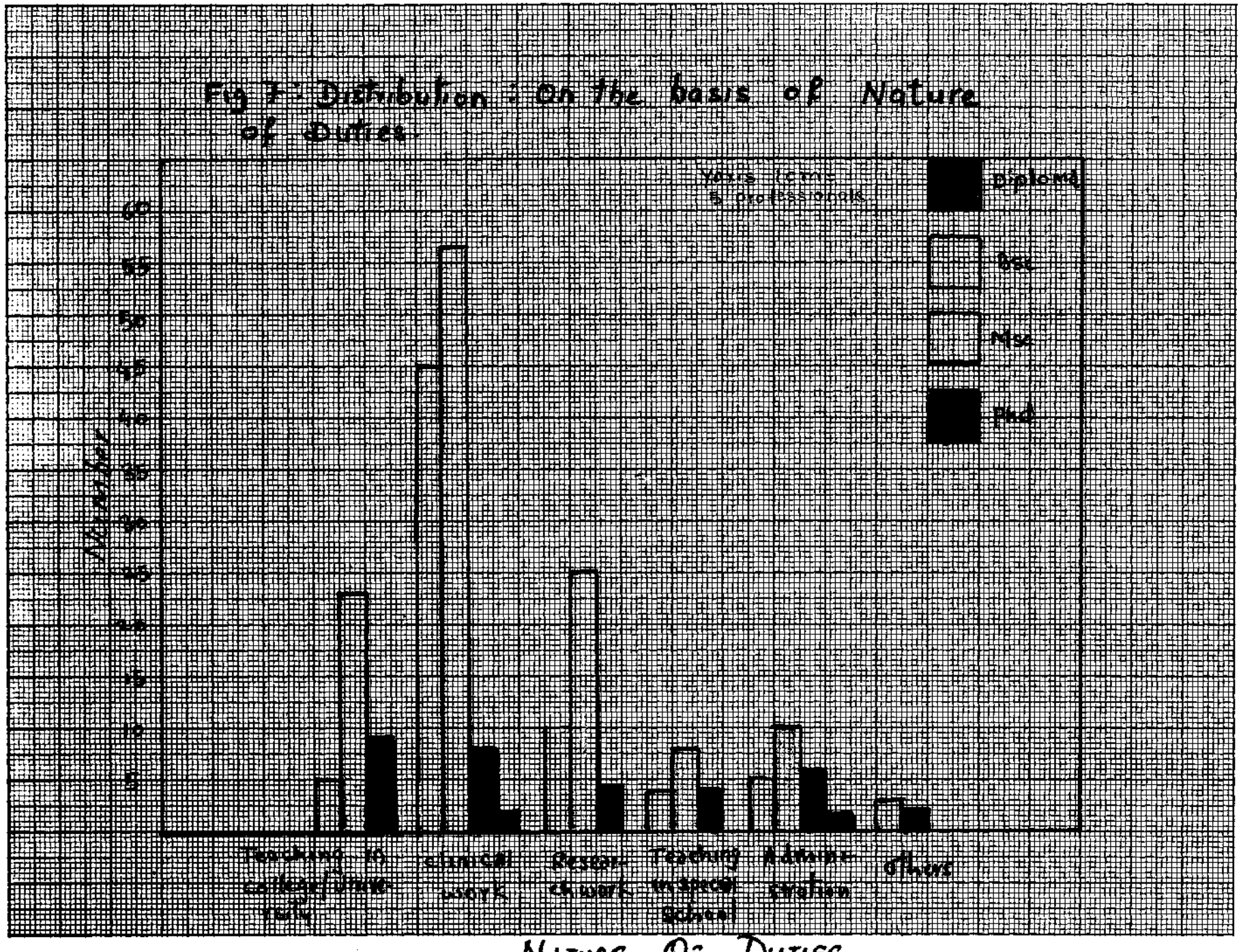
Nature of chltiQH	Total	B.Sc.		5c.		PhL.D.		Diploma	
		M	F	M	F	M	F	M	F
Teaching in college/ university	35	1	2	14	9	6	3	-	-
Clinical work	114	11	34	33	26	5	3	2	-
Research work	42	6	4	12	13	4	3		-
Teaching in special school	14	2	2	6	1	-	—	4	-
Administra-tion	22	4	1	6	4	4	2	1	-
Others	5	2	1	-	-	1	1	-	-

The above table indicates that more number of them are involved in clinical work followed by research work, followed by teaching in college/university. Others include monitoring the project, school visits, orientation to teachers and parents, training the short term coarse students and so on.

5. <u>Professional interaction:</u>

This indicates the data about the interaction of speech and hearing professionals with other allied professionals

Fig 7: Distribution on the basis of Nature of Duties.



such as otorhinolaryngologist, neurologist, general physician and psychologist.

From the data collected it is seen that medical professionals are involved more than that of the non-medical professionals i.e. the speech and hearing professionals interacted more with medical professionals than with non-medical professionals. The following table shows the interaction pattern of the professionals in speech and hearing.

Table-13: Distribution of professionals on the basis of interaction with the other professionals.

Sl. No.	Other professionals	Percentage	SI. No.	Other professionals	Percentage
1.	Otorhinolaryngologist	11.9	8.	Psychologist	10.9
2.	Paediatrician	9.7	9.	Physiotherapist/Occupational therapist.	8.9
3.	General Physician	6.8	10.	Social worker	10.1
4.	Neurologist	9.1	11.	School teachers	7.4
5.	Dentist/orthodontist	3.6	12.	Teachers of the deaf.	7.5
6.	Psychiatric	4.6	13.	Others	6.3
7.	Orthopaedics	3.2			

From the above table, it is seen that professionals deal more with otorenolaryngologists followed by paediatricians and so on.

Percentage
Psychometrics
Psychology
Physiological Psychology
Personnel Psychology
Others
Geriatrics
Psychiatric Clinic
Counselling
Educational Psychology
Industrial Psychology
Experimental Psychology
Clinical Psychology
Social Psychology
Developmental Psychology
Abnormal Psychology
Cognitive Psychology

6. Instrumentation:

Instruments are an integral aspect of the field of speech and hearing. This part provides the information received with regard to the number of diagnostic instruments utilized by the professionals in the field.

i) Type of audiometers: This provides the information about availability of audiometers, types of audiometers, models and total number of audiometers used by the 131 professionals in the field.

Table-14: Distribution of availability of audiometers in the field.

Type of audiometers	Total	Indigenous	Foreign
Screening audiometers	45	36	9
Diagnostic audiometers	95	59	36

So from the above table, it is seen that there are more number of diagnostic audiometers available than screening audiometers and Indian models are more in number than the foreign models.

ii) Immittance meters: This part deals with the availability of the immittance meters.

Table-15: Distribution of availability of Immittance meter

Type of immittance meter	Total	Indigenous	Foreign
Screening immittance meter	16	-	16
Diagnostic immittance meters.	35	-	35

The above table indicates the availability of immittance meters with the professionals. Also it indicates that there are no Indian models available with the professionals.

iii) Other instruments: This sections deals with instruments for carrying ont electrophysiological tests, electroacoustic characteristics of hearing aids and the instruments for audio-metric calibration.

Table 16: Availability of instrument for carrying out other tests.

Type of instruments	Total	Indigenous	Foreign
Instruments for carrying out electrophysiological tests.	18	—	18
Instruments /For carrying out electro acoustic characteristics of heating aid	19	-	19
Instruments for carrying out audiometric calibration	35	-	35

The above table indicates that there are about 18 instruments for carrying out electrophysiological testa, 19 instruments for carrying out electroacoustic characteristics of hearing aid, and 35 instruments for carrying out audiometric calibration.

iv) Hearing aids: This section gives the information about prescription of hearing aids and repair of hearing aids, prescription means whether they prescribed hearing aid in their centre or not. Whether they carry out major hearing aid repair, minor hearing aid repair, trouble shooting and along with this the information about making the custom earmoulds is also obtained.

In some centres/institutions facilities for only minor hearing aid repair are available. While in well established centres facilities for everything given below in the table are available.

Table-17: Distribution of facilities available for hearing aid repair.

Facilities available	Percentage
Major hearing aid repair	8
Minor heating aid repair	28
Trouble shooting	21
Making custom earmolds	24
None of the above	12

7. Test environment:

1) Sound-treated rooms: This gives the information about the availability of sound-created rooms, type of sound treated rooms and ambient noise level present in the sound-treated rooms. The data revealed that about 51.2% of the clinics have provisions for double room situations, about 14% of the clinics have single room situations and 34.4% of the clinics do not have facilities for sound-treated rooms.

It is also reported that about 10% of the clinics have made arrangements to build sound-treated rooms.

Table-18: Distribution of sound-treated rooms on the basis of types of sound-treated rooms.

Type	Total	Percentage
Single room situation	18	14.4
Double room situation	64	51.2

ii) Noise level: Questionsregarding noise level are answered by 37% of the respondents. It is seen that the average ambient noise level at the test environment is within the range, of 20-40 dB sound pressure level.

iii) Consultancy received for sound treated rooms: This question obtained information about the consultancy received for sound treated rooms. This question was not answered by

57.6% of the professionals and those who have received it from where they received it but they did not know/were about 7% . Those who are received are shown in the following table. Others includes either self or the ones who received help from ENT surgeons.

Table-19 : Distribution of consultancy received for S.T.rooms

Consultancy received	Total percentage
Professionals (acoustic engineers)	25.8
Speech and hearing institutes	7.6
Others	3.3

S.T. - Sound treated

8. Work area:

i) Rural/urban area: This section deals with the information about about the work area i.e. whether rural or urban, if urban then/ rural area visits and how much area is covered by them.

The following table shows the distribution of the professionals in the rural and urban area.

Table-20: Distribution of professionals on the basis of area of work.

Area of work	Total	Percentage
Urban area	121	92
Rural area	6	4.5
Semi urban area	4	3.45
Total	131	100

The above table indicates that about 92% of them work in urban area, 4.5% of them work in rural area and 3.05% of them work in semi-urban area.

ii) Rural area visits: This questions was deals with the rural area visits by the professionals who are working in urban area. The visits ranges from no visits to once a week visit. The following table gives the clear picture about it.

Table-21: Distribution of professionals on the basis of rural area visits.

Rural area visits	Total	Percentage
No visits	72	54.9
Once a year	21	16
Onee in six months	17	12.9
Onee in three months	9	6.8
Once in a month	5	3.8
Onee in fifteen days	4	3.05
Once a week	3	2.3
Total	131	100

From the above table, it is clear that 54.9% of the professionals do not visit rural area for their professional work. About 16% of them visit rural area once a year for professional work, 12.9% of them visit once in six months, 6.8% of them visit once in three months, 3.8% of them visit

once in a month and only 2.3% visit once a week to the rural area for professional work.

Those who visit the rural area; they cover many villages and it ranges from two villages to 600 villages.

9. Library facilities:

The following table describes the facilities available for Library.

Table-22: Distribution of library facilities for the professionals in the field of speech and hearing.

Library facilities	Total	Percentage
Excellent	50	38.16
Adequate	38	29
Not adequate	25	19.08
Not available	i8	13.7
Total	131	100

The above table shows that only 38.16% of professionals have excellent library facilities. Whereas 19.8% of them do not have adequate library facilities and 13.7% of them do not have library facilities available at all.

Fig 9: Distribution on the basis of rural area visits.

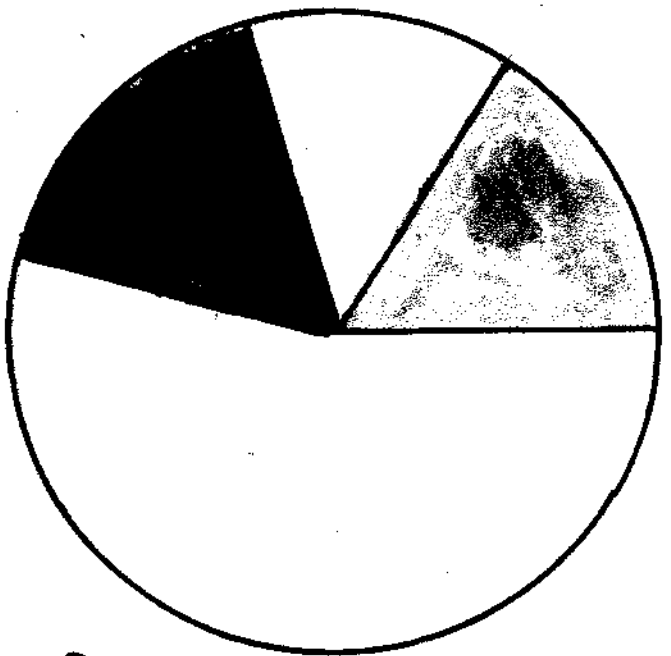
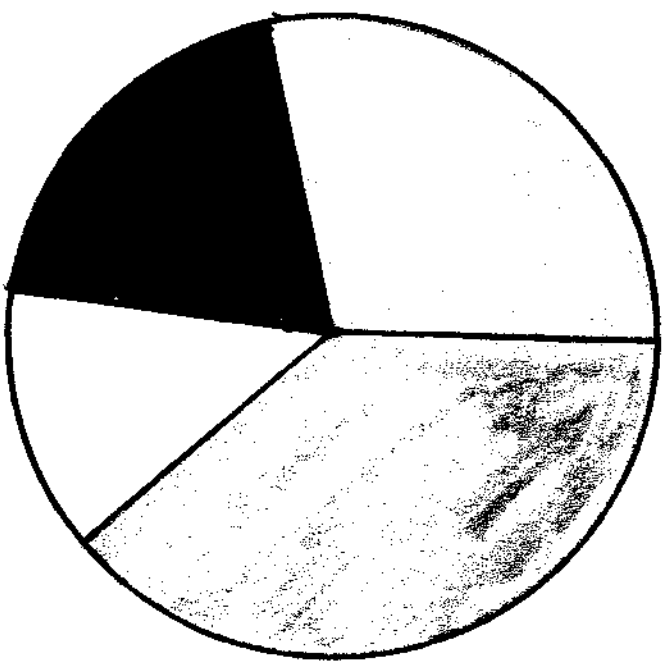


Fig 10: Distribution on the basis of Library Facilities Available.



DISCUSSION

The discussion is mainly for highlighting the major points. The data which is obtained through the questionnaires is analyzed in earlier chapter and it is discussed in this chapter as follows:

1) Demographic and professional characteristics:

This consists of distribution of professionals on the basis of age and sex. The data revealed that the majority of the professionals in the field of speech and hearing fall in the age group of 25-30 years i.e. 31.2% of them fall in this category. Balakrishnan (1978) reported that the profe-ssionals in the field of speech and hearing were found to be of younger age group, the mean age being 29.2 years*

The data revealed that a majority of them were females and this study contradicts the study reported by Balakrishnan (1978), he had reported that there were more number of males in the field than females. Information about the religions indicated that these were more number of Hindus followed by Christians and then Muslims in the field. About the mother tongue, it revealed that different languages were seen as their mother tongue.

Most of the professionals spoke Kannada as their mother-tongue followed by Marathi, Hindi, and then Tamil.

2. Educational characteristics:

Differences in the levels of education was observed. A majority of them had Master's degree in speech and hearing, followed by B.Sc. degree holders,followed by doctorate degree, and finally diploma holders in speech pathology/ audiology.

Apart from these degree there were professionals who had other qualifications, that is some of them had done M.A., in Psychology, M.A., in Linguistics, B.A., B.Sc., (Physics and Microbiology); B.Ed., M.Ed and so on but how this knowledge of their of the different field utilized in the field of speech and hearing was not studied. However, one can presume that knowledge will definetely help for the exchange of ideas and for further research purposes.

3. Employment characteristics:

From the data, it was evident that there was no un-employment seen in the field. However, about 69.4% of them were unemployed for less than one year immediately after graduation i.e. since graduation. Also, the experience of the professionals vary, 19% of them were found to be having experience below 1 year, 3.8% of them were found to be having experience for more than 20 years.

Regarding the designation about 77.8% of them were satisfied with their designations and only 22% of them suggested other designations. In that mainly they suggested the designation of Assistant Professor and they were mainly involved in teaching activities, and the others preferred speech and hearing specialists as a designation while diploma holders suggested Junior Speech Pathologist and Audiologist as their designation.

Also most of the professionals were working in Central Government followed by private agencies followed by State Government.

4. Professional characteristics:

Most of the professionals were working in speech and hearing clinics, followed by medical/institutions and then special schools. Also data revealed that most of them work in more than one place. Fewer professionals were seen in industrial set up.

The speech pathologists and audiologists were involved in a variety of duties ranging from clinical work to research. In teaching and research work person's with Master's degree were found to be more than that of B.sc., degree holders. But most of the professionals were involved in clinical work

which included diagnosis, therapy, counselling, guidance and clinical supervision. Data regarding type of research work and facilities available for doing research work were not obtained.

The nature of administrative duties and qualification of the persons correlated with the status of the professional education.

The reason why speech and hearing clinics and medical institutions absorbed a large majority of services of speech and hearing because the job opportunities would have been better and greater there than anywhere else.

5. Professional interaction:

The professionals in the field of speech and hearing interact with a number of other professionals in their work. The allied professionals were medical and non-medical professionals. Medical professionals were otorhinolaryngologists paediatricians, general physicians, neurologists, dentists, orthopaedics, psychiatric, and non-medical professionals were nocial worker, school teachers and teachers of the deaf. The others included linguists and acoustic engineers. So it was found that the interaction was more with medical professionals. It is clear that to treat a particular disorder

such as cleft palate, delayed speech and language development team work is a must and the make a perfect team,involvement of other professionals is essential.

6. Instrumentation/Facilities:

Instruments is an integral part of the field, let it be a simple noise maker, or a drum to make noise and assess, the nature of the problem. And also the optimum use of one's skill depends upon the availability of instruments and proper environment. The basic necessity for speech and hearing clinic is tuning fork, audiometer, individual hearing aid ana facilities tor testing and diagnosis.

From the analysis of data it was found that about 70% of the clinics had basic facilities,audiometers and hearing aid, about 67% of them had sound-treated rooms. Also facilities for impedance audiometry, speech audiometry and free field testing were less. Balakrishnan(1978) reported somewhat similar findings. Except the availability of sound-treated rooms which is increased other facilities have not changed since 1978.

Not even l/3rd of the clinicians had facilities for instrumental calibration and very few of them had facilities for carrying out electrophysiological tests and electroacoustics characteristics of hearing aids.

Both Indian and foreign instruments were in use. Among the Indian ones Arphi audiometers were found to be more in use than any other instruments. Among the foreign ones Maico and Madsen instrument were found to be more in use. Other instruments such as Immittance meters,instruments for carrying out electrophysiological tests and for carrying out electro-acoustic characteristics were all foreign ones.

The facilities for personnel and equipment were inadequate in teaching hospitals and other medical institutions (Balakrishnan, 1978). Most of them did not have audiometers, wherever available they were not test worthy. A periodical evaluation of facilities in the field of speech and hearing may be necessary.

About 55% of them prescribed hearing aid in their centers, but facilities for hearing aid repair were found to be limited. Only 8% of the clinics had facilities for major hearing aid repair, about 28% of them had facilities for minor hearing aid repair. And for making custom earmould,the facilities available were not adequate, only 24% of them had facilities for it.

7. **Test environment:**

To obtain better and reliable results in hearing testing one should have a better type of sound treated room.

The availability of sound treated rooms is increased since 1978. Balakrishnan (1978) reported that only 45% of the clinics had sound treated rooms. But now the percentage is definately increased. About 51.2% of double rooms (type) available and 14.4% of single rooms are available in the field. The ambient noise level in the test environmentis within the range of 20-40 dB sound pressure level.

Consultancy for sound treated room was received by professionals such as acoustic engineers, by major speech and hearing institutions and some of them designed it by themselves with the helpreceived from ENT surgeons.

8. <u>Work area:</u>

Major portion of the Indian population is in the rural area. So it is expected that the higher professionals should also be located in the rural area but it was not found so. About 92% of them were located in urban area and only 6.5% of them were in rural areas while 3% of them were in semi—urban areas.

The data revealed that 52.9% of them do not visit the rural area for professional work and very few of them visit regularly, the rural area for professional work. Eventhough they are not located in rural area the visits should be made frequently, but this is not so+ in the field of speech and hearing.

9. Library facilities:

Library facility is a must to keep in touch with latest developments and findings and to utilize them for our population and for improvement too. Excellent library facilities are an imperative need for such improvement. The analysis indicated that 32% of speech and hearing personnel were devoid of adequate library facilities. While 39% of them had excellent library facilities and only 13% of them did not have library facilities.

This picture is improved since 1978. Balakrishnan (1978) reported that the majority of them did not have any library facilities.

SUMMARY AND CONCLUSION

The survey was designed to determine the distribution of utilization of man power resources in the field of speech and hearing.

For the study totally 250 questionnaires were sent and response obtained was 52.4%.

The questionnaires collected the information about demographic characteristics, personnel characteristics of speech and hearing professionals, technical and other facilities available for their professional work, professional interaction, work area, rural area visits and library facilities available.

Data were analyzed,computed in appropriate percentage, tables and showed by graphs wherever essential.

The following conclusions seem warranted:

1. A majority of the professionals were found to be of younger age group. About 52% of them were within the age group of 30 and a majority of them were females.
2. About 70% of them got their jobs within an year after the graduation and 78% of them preferred the designation which was given to them. The commonest designation preferred by the professional was Speech Pathologist and Audiologist.

3. A large number of professionals were employed by speech and hearing clinics and medical institutions.
4. Nature of duties varied from teaching in college to research and a majority of them were involved in clinical work such as diagnosis, therapy, counselling, guidance and clinical supervision.
5. The interaction of speech and hearing professionals was more with medical professionals.
6. Technical and instrumentation facilities available were not adequate and not even equally distributed. Commensurate with the level of training.
7. There were more number of professionals concentrated in urban area than in rural area and very few of them visited rural area frequently for their professional work.
8. Adequate library facilities were available for about 67% of the professionals.

Suggestion for further research:

1. A periodic survey of this kind would be useful to get the clear picture of speech and hearing field in India.
2. A survey of what kind of research work is being done in the field of speech and hearing will also be helpful.

BIBLIOGRAPHY

Balakrishnan, E.P.(1978): Man-power resources and needs in the field of speech and heating. A Master degree dissertation submitted to the University of Mysore, Mysore.

Curlee, R (1975): Man-power resources and needs in speech pathology and audiology. Journal of American Speech and Hearing Association, 18, 265-272.

Garstecki, D.C. (1978): Survey of school audiologists. Journal of American Speech and Hearing Association, 20(4), 291-296.

Indian Speech and Hearing Association Director/of members, 1989.

Johnson, W.A. and H*nly, T.D. (1959): Research needs in speech pathology and audiology. Journal of Speech and Hearing Disorders, Monograph Supplement-5.

Kapoor, Y.P. (1968): Survey of personnel equipment and facilities available in speech and hearing in hospitals in India. In Balkrishnan (1978) Dissertation.

Kerlinger, F.N. (1964): Foundations of behavioural research. Chapter 1, Bolt, Rinehard and Winston Inc.

Lakshmanaswami Mudliar (1961): Report on health survey and development committee. In Balakrishnan (1978), Master degree dissertation.

Lewis, D.A. (1988): A survey of hospital audiology and hearing aid dispensing programs. Hearing Journal, 41(3), 14-19.

Lin Nan (1976): Foundation of Social research. McGrew Hill Book Co. New York.

Moore, P. and Raster, D.G. (1953): Historical notes on speech correction in the pre-aasociation era. Journal of Speech and Hearing Disorders, 18, 48-53.

Punch, J.L., (1981): special Survey. Journal of American Speech and Hearing Association.

Research Committee of American Speech and Hearing Association (1981) Monograph, 8. In Balakrishna (1978) Master degree dissertation, submitted to the University of Mysore.

Sherley, s. (1979): Special reports en speech pathology and aadiology in Brazil. Journal of American Speech and Hearing Association, 21(4), 280-282.

Strohfeldt (1989): Speech and Hearing survey in Queensland and NorthQueens land. Journal of Human Communzciation Disorders, 17(1).

Woolman, B.B. (1965): Handbook of clinical psychology, Chaptesl, McGrew Hill Book Co.

APPENDIX

QUESTIONNAIRE

Sir/Madam,

The information sought through this questionnaire ia required for the project undertaken as a part of the fulfilment of the requirements for Masters Degree programme. Hence your co-operation in giving complete and accurate information will be very much appreciated. The information obtained will be kept strictly confidential except for use in studying the trends.

li a.Name

b.Age:

c.Sex:

d.Religion:

e.Mother tongue:

f.ether languages known:

S.No.	Language	Speak	Read	Write
1.				
2.				
3.				

2) Academic history (speech and Hearing)

S.No.	Degree/Diploma	Year passed	Institution & University
1.			
2.			
3.			

3) a. Are you employed full-time/part-time/unemployed? (Strike off which is/are not applicable).

b. If employed, total years of employment:

c. If unemployed, mention total duration:

d. If employed,

i) What designation have you been given?

ii) Does it adequately describe the type of work you do?

iii) What designation would you prefer with reference to your duties?

4) Are you employed by : Please indicate by mark (/)
a) Central Government b) State Government
c) Quasi Government ageney d) Private agency
e) Self-employed (give particulars)

5) In what setting are you employed? (If necessary mark (/) More than once and explain).

a) Industrial

b) University/College

c) Medical Institution

d) Special School (specify)

e) Speech and Hearing clinic/institution

f) Other (specify).

6) Nature of your duties: (please indicate by (/)

a) Teaching in college/university

b) Teaching in a special school

c) Research

d) Administration

e) Clinical vork/Diagnosis/Therapy/Counselling/§uidance/ Clinical Supervision.

f) Others (specify).

7) If you are practicing as an audlologist, thea state the number of instruments you or your set up has:

(i) S.No. Type of Audiometer Model Nos.

1.

2.

3.

(ii) S.No. Type of Immittancr mer. Model Nos.

1.

2.

3.

(iii) Instruments for carrying out electrophysiological teats

S.No. Type of Instrument Model Nos.

1.

2.

3.

(iv) Instruments for carrying out eleetroacoustlc characteristics of hearing aids.

S.No. Type of Instrument Model Nos.

1.

2.

(v) Instruments for carrying out audiometric calibration.

S.No.	Type of Instrument	Model	Nos.
1.			
2.			
3.			

(vi) Do yon prescribe/recommend hearing aid in your centre?

(vii) How many different models of hearing aids do you have?

(viii) Do you have instruments for carrying out (Indicate by (/)

a. Major hearing aid repair

b. Minor hearing aid repair

c. Trouble shooting.

(ix) Do you have facility for making custom ear moulds?

Yes / No.

8) a. How many sound treated zooms do you /your set-up have?

b. Mention the type of sound treated roams.

c. What is the ambient noise level?

d. Give details of consultancy received for sound-treated room construction.

9) How many audiologists and speech pathologists are working with you at present?

10) Other professionals with whom you interact (Indicate with (/)

a) Otolaryngologist
b) Paediatrician
c) General physician
d) Neurologist
e) Dentist/Orthodontist
f) Orthopaedics
g) Psychiatrist.
hi Psychologist
i Physiotherapi/O.T.
j) Social worker
k) School teachers
l) Teachers of the deaf
m) Others

11) *. Are you working in rural/turban area? Yes/No

b. If urban, how frequently do you visit the rural area for professional work?

c. If rural area, how much area do you cover?

12) Library facilities:

What facilities do you have in your institution or nearby for keeping up with latest developments in the field?