AN ANALYSIS OF 1000 CONSECUTIVE CASES SEEN AT THE ALL INDIA INSTITUTE OF SPEECH AND HEARING

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It is the purpose of this paper to analyse 1000 cases seen at the All India Institute of Speech and Hearing, for variables like sex, age, number of siblings in the family, position of the case among the siblings, family history, consanguinity, who referred the case to our Institute, whether he was advised therapy or not, and if so, whether he attended therapy or not.

Population: 1000 consecutive cases who came to the All India Institute of Speech and Hearing for examination during the period 1st January 1970 to 26th November 1970. During the same period 601 cases were seen at KRH and are not included here because (1) they are not first seen by us and (2) they are numbered under a separate series. Excluding those who were found to have no speech and hearing problem or a speech and hearing problem other than the five categories we have considered, left us with 854 cases. Similarly during analysis of the factors for number of siblings, position of siblings the number of cases analysed are less than 1000, and differing from 854, because of exclusion of those for whom such information was not available. Ages of the cases seen by us range from 3 months to 84 years.

Sex Distribution : The male population of the cases was found to be 70.8 per cent and female population was 29.2 per cent that is approximately a ratio of 2.4:1 between male and female, as shown in Table 1.

Relation between Speech and Hearing Problems and Number of Siblings

The cases were divided into three groups for analysis. (Please refer Table 1 and 2 and Graph 1 and 2), that is (A) 0 to 10 years ; (B) 10 to 20 years ; and finally (C) 20 years and above.

In these graphs, with a few exceptions, the probability of a person having a speech and hearing disorder is very small when he is a singleton. As the number of siblings gradually increases from 1 to 6 and above, the probability that one of them will be handicapped due to speech and hearing problems also gradually increases. However, in group A i.e., 0 to 10 years range though generally there was an increase in the percentage of occurrence of the disorder with increasing number of siblings, the maximum percentage of occurrence was not found to be in the six siblings and above groups.

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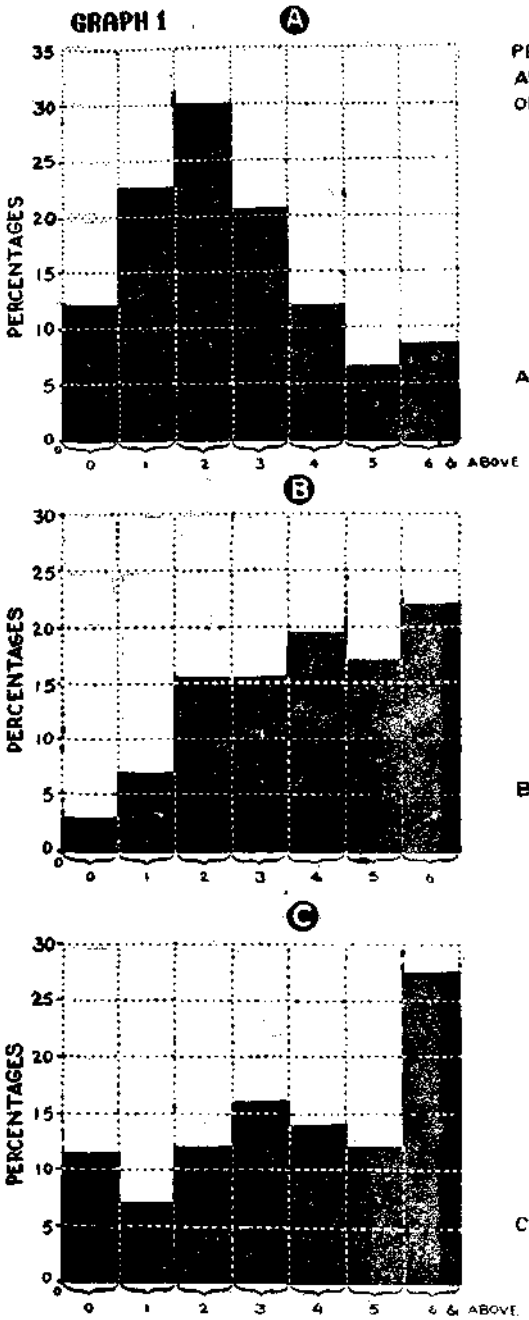
Table 1. *Analysis of cases for number of siblings and, position of the cases in the siblings, age and sex*

SI. No.	Age range	Sex Male	Sex Female	Cases with following number of siblings: Single tone	1	2	3	4	5	6 and above	No. of siblings unknown	Position of the sibling unknown	'Position of the case among the siblings: 1	2	3	4	5	6	7	8 and above
1.	0-2 yrs	13	9	8	1	6	5	2	1	—			8	2	5	5	2	1	-	-
2.	2-4 yrs	71	36	18	35	23	14	6	4	4			34	27	22	8	5	2	2	2
3.	4-6 yrs	52	41	5	28	24	17	10	4	5			33	22	12	13	6	2	1	2
4,	6-8 yrs	55	34	3	10	31	18	9	7	11			24	18	25	4	3	5	4	4
5.	8-10 yrs	62	22	7	4	20	16	14	6	10			26	22	11	8	4	3	-	5
6.	10-15 yrs	102	53	4	9	29	27	26	28	31			48	25	26	16	16	12	-	5
7.	)5-20yrs	109	20	5	11	15	18	29	20	31			44	25	13	13	10	6	2	6
8.	20-30 yrs	107	26	9	3	11	21	19	23	45			35	23	17	19	14	4	1	2
9.	30-50 yrs	90	42	12	10	15	23	18	13	35			38	17	16	7	9	6	1	1
10.	50 yrs and above	47	9	14	8	12	5	6	1	5			27	8	3	2	1			
Total		708	292	85	119	186	164	139	107	j77	23	100	317	189	150	95	70	41	11	27

GRAPH 1



PERCENTAGE OF OCCURRENCE OF SPEECH AND HEARING DISORDERS AS THE NO. OF SIBLINGS INCREASES:

X-AXIS 1C.M. = 1 SIBLING

Y-AXIS 1C.M = 10%

A = 0 TO 10 YEARS

B = 10 TO 20 YEARS

C = 20 YEARS & ABOVE

Table 2. *Table showing distribution of cases with siblings in different age groups*

Sl. No.	Age range	Single tone	Cases with the following number of siblings 1	2	3	4	5	6 and above	Total
1.	0-10 yrs	41	78	104	70	41	22	30	386
	A	10.6%	20.2%	26.9%	18.1%	10.6%	5.7%	7.9%	100%
2.	10-20 yrs	9	20	44	45	55	48	62	283
	B	3.2%	7.4%	15.5%	15.6%	19.4%	17%	21.9%	100%
3.	20 yrs & above	35	21	38	49	43	37	85	308
	C	11.4%	6.8%	12.3%	15.9%	14%	12%	27.6%	100%

Note : The total number of cases in the 3 age groups (A, B, and C) add upto only 977 because we excluded such of those cases for whom the number of siblings in the family are not known.

Position of the case among the siblings

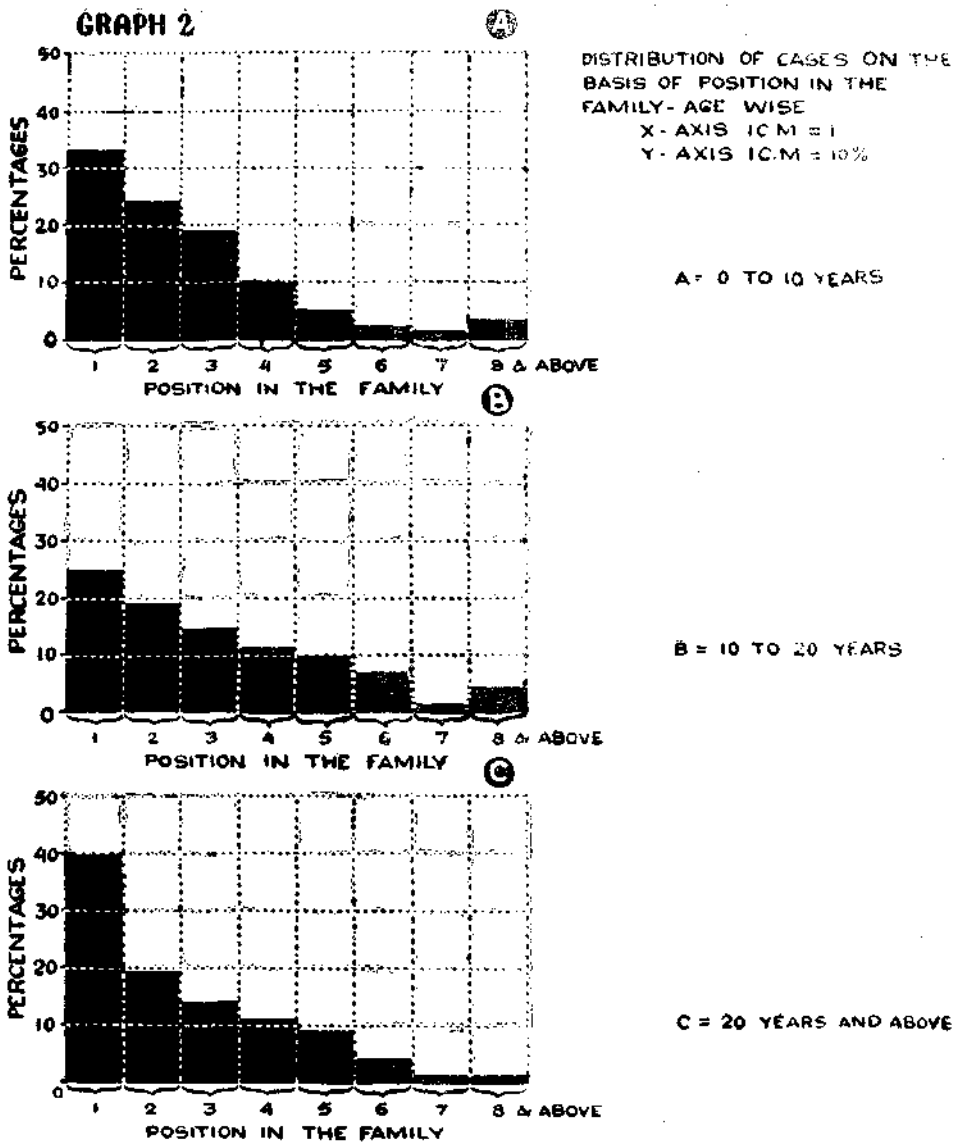
Here also the cases were divided into three age groups of (A) 0-10 years (B) 10 to 20 years, and (C) 20 years and above (Table 3 and graph 2)

Table 3. *Distribution of cases on the basis of position in the family —age wise*

Sl. No.	Age range	Position of the case among the siblings 1	2	3	4	5	6	7	8 &above	Tota
1.	0-10 yrs	125	91	75	38	20	13	7	13	382
	A	32.72 %	23.83 %	19.64 %	9.95 %	5.23 %	3.40 %	1.83 %	3.40 %	100 %
2.	10-20 yrs	92	50	39	29	26	18	2	11	267
	B	34.46 %	18.74 %	14.61 %	10.87 %	9.74 %	6.74 %	0.75 %	4.12 %	100 %
3.	20 yrs & above	100	48	36	28	24	10	2	3	251
	C	39.85 %	19.12 %	14.34 %	11.15 %	9.56 %	3.98 %	0.80 %	1.20 %	100 %

Note : The total number of cases in the 3 age groups (A, B, and C) add upto 900 only because the rest did not give details as to their position in the family.

The average percentage of the probability of the first born child being handicapped is 35.6. The average percentage of possibility of the 2, 3.. .8 child and above in the family being handicapped are less than that of the first born. The results of Tables 2 and 3 appear to be contradictory at the first instance. However, they are not, since they refer to two different things. One refers to the probability of any one person in all the siblings being handicapped as the family size increases and the second



refers to the probability of a given sibling being handicapped as his position in the family varies from 1 to 8 and above or to put it more briefly in the cases seen by us (1) larger the family greater the chances of any one child being handicapped seems to be (2) and also they indicate that the chances of the first born being handicapped are more than that of the later born ones.

It is possible that we have seen more first born ones and used a biased population. Though these points seem to be very obvious we have presented them with a

view that they may help in arriving at risk criteria and for bringing all the children for a check up.

Speech and Hearing handicaps and Presence of Family History and Consanguinity

55.3 per cent of the 1000 cases seen (Table 4) were having a hearing problem.

Table 4. *Distribution of the cases on the basis of family history and consanguinity for various problems*

Sl. No.	Problem	Presence of family history & consan-guinity	Presence of family history & absence of consan-guinity	Presence of consan-guinity and absence of family history	Absence of both family history & consan-guinity	Total	Presence of the problem as seco-ndary to other problems
1.	Hearing loss	43 7.7%	93 16.9%	114 20.6%	303 54.8%	553 53.5%	33 5.9%
2.	Stuttering	22 15.4%	39 27.2%	13 9.5%	69 48.3%	143 14.3%	11 7.6%
3.	Mental Retardation	3 2.1%	7 4.9%	39 27.5%	93 65.5%	142 14.2%	60 42.25%
4.	Cleft palate	1 7.1%	1 7.1%	3 21.5%	9 64.3%	14 1.6%	1 7.1%
5.	Cerebral Palsy	—	—	—	2 100%	2 0.2%	—
				Total 854			

Note: The remaining 146 came under other Speech and Hearing problems not mentioned in these categories or those who were found to have no problem.

45.2 per cent of these cases were having either family history and/or consanguinity. 14.3 Per cent of the 1000 cases were stutterers and of these 51.7 per cent had either family history and/or consanguinity. Similarly figures were obtained in the cases of mental retardation, cleft palate and cerebral palsy and are shown in Table 4. In finding out whether these problems and the presence of family history and/or consanguinty are related or not, these results have to be compared with the results obtained with a population which is matched in all respects excepting for the presence of the handicap. At the time this paper is going to press, the results of that study with normal population are not ready for comparison. So definite conclusions cannot be drawn regarding the significance of relation between consanguinity and/or

family history and the occurrence of a speech and hearing problem. However, the available evidence goes to show that the occurrence of a speech and hearing problem is greater when there is a family history of that problem and/or when there is consanguinity. Public education may prove to be useful in this regard. It may go a long way as a preventive measure of speech and hearing problems if the public is educated not to marry among blood relatives, at least, when there is a family history of speech and hearing problems in either of the families.

Another significant fact from this study seems that 42.25 per cent of mentally retarded have mental retardation in addition to other problems like hearing loss etc. So it may be helpful if one carefully looks for the presence of other handicaps in the mentally retarded population.

To the question "Is our institution the first clinic you are seeking advice at" about 44.8 per cent answered yes.

Table 5. *Results of distribution of the answers to the question : "Is our Institution the first clinic you are seeking advice at?"*

Sl. No.	YES	NO	Consulted 1st doctor	Consulted 2nd doctor	Consulted 3rd doctor and above
1.	448	552	356	103	93
	44.8%	55.2%	35.6%	10.3%	9.3%
			Out of 1000 cases		
Total	1000 cases				

Early diagnosis and treatment are the next best to prevention, and public education should be undertaken on a large scale. This is all the more important in view of the enormous population (nearly 6 per cent of the Indian population) who are affected by speech and hearing problems.

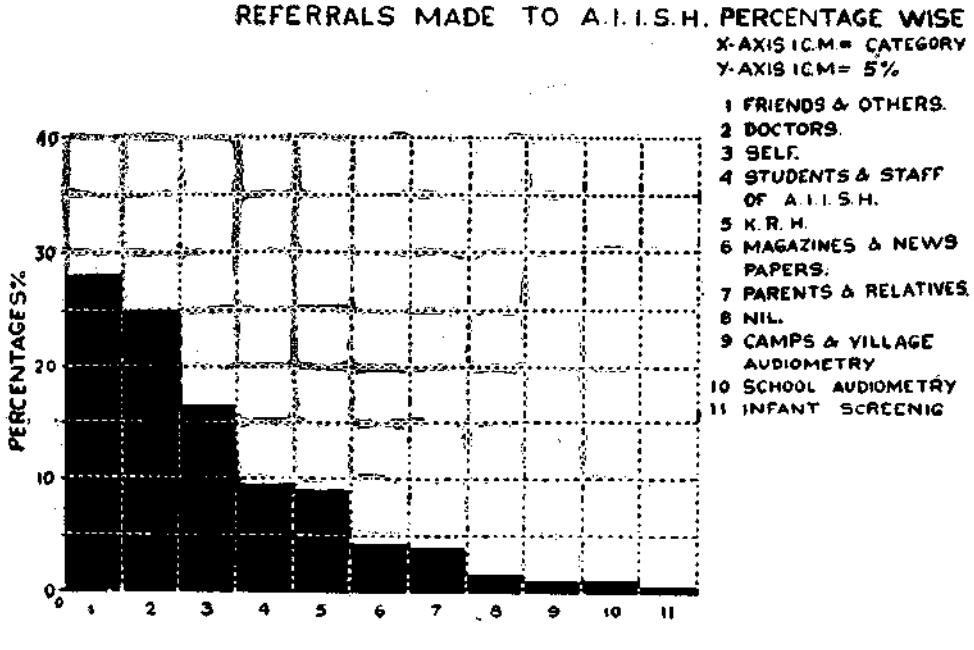
Referrals : As for the referrals who directed the cases to the All India Institute of Speech and Hearing (Table 6 and graph 3) friends and relatives have made the highest number of referrals (27.5 per cent). The cases seen at K. R. Hospital are not included in this analysis. Inclusion of 601 cases seen at K. R. Hospital during this period will, however, increase the total referrals made by them greatly. Doctors and various medical institutions referred 24.5 per cent of the cases followed by the cases coming on their own (16.5 per cent) with a knowledge about the Institute. Information about our Institute in newspapers, magazines and pamphlets distributed by us brought only a 4. 2 per cent of the cases. So is the case with the referrals made from the places where we conducted speech and hearing camps (1.1 per cent). We feel that magazines, newspapers and the village camps have a greater potential for effective

Table 6. *Distribution of the referrals made*

Sl. No.	Referral made by	Number	Percentage
1.	Friends and others	279	27.9
2.	Doctors	248	24.8
3.	Self	165	16.5
4.	Students and staff of All India Institute of Speech and Hearing	95	9.5
5.	Krishna Rajendra Hospital	91	9.1
6.	Magazines and Newspapers	42	4.2
7.	Parents and relatives	41	4.1
8.	No referral information	13	1.3
9.	Camps and Village Audiometry	11	1.1
10.	School Audiometry	10	1.0
11.	Infant Screening	5	0.5
	Total	1000	100

Note : The cases seen at K.R. Hospital (601) during the same period are not included in the referrals.

GRAPH 3



public education. Information about the speeeh and hearing institutions and what problems are treated there etc., should be made more freely available to the public through intensification of advertisements, publication offeatures about our Institute and the problems diagnosed and treated here in various leading newspapers and magazines. Village camps should be conducted more frequently even in 'not so near Mysore' places and in other states as well. Qualified and interested persons who (irrespective of the state in which they are) are ready to conduct village camps to deal with speech and hearing problems must be encouraged by way of financial assistance and equipment and if possible personnel from our Institute to assist. We observed from our experiences in our Institute, that effective public education could be carried out by participating in exhibitions. Exhibitions can provide knowledge about the speech and hearing problems and the rehabilitation services available to deal with them to a very large population in a relatively short time. So every available opportunity should be made use of to participate in national as well as state level exhibitions by setting up well organised stalls in them.

Two effective media of public education which have not been exploited successfully, and which we keep off mentioning till now intentionally, are the school teacher and the social worker. Speech and hearing problems are effectively identified at an early age by the school teacher in several countries. As school education is compulsory for every boy and girl in India, the school teacher comes into contact with almost all the children in the country. So immediate steps should be taken to inform about the speech and hearing problems to the school teachers as to how a child with such a problem could be identified, how he can be helped in the classroom, and where he should be referred for treatment etc. It may be useful to have the services of a trained speech and hearing therapist available to every school or group of schools. The best place to inform and educate the teachers about the speech and hearing problems in children and what they can do about them would be in colleges and institutions which train teachers. The authorities should be made impressed with the significance and importance of speech and hearing problems, how to identify and where to refer such children in classroom as part of a teacher's curriculum during his or her training. As a first step in this direction all the teachers training institutions and colleges in India should be sent with information about speech and hearing problems and what they can do to help them. Also, to meet the growing needs of the public, more and more speech and hearing clinics should be started, at least one clinic in each district to start with.

The other medium that we referred to earlier was the social worker. We are aware that about 70 per cent of our population is in villages. The social worker gets to visit almost every house in every village and town. So all the social welfare departments, social workers, the institutions which train these social workers should

be well informed about the speech and hearing problems and what they should do when they come across such cases and where they should refer them etc

Therapy : Finally, the results (Table 7) show that only 34 per cent of the cases who are advised therapy did actually attend for therapy sessions.

Table 7. *Shows the distribution of the cases for the variable—therapy*

Sl. No.	No. of cases willing to attend therapy	No. of cases who were required to attend therapy	How many said 'yes' to column *one* and attend therapy	How many said 'no' to column *one* and attended therapy
1.	446 44.6%	335 33.5%	96 28.6%	18 5.4%
			114 or 34.00% attended therapy	

This figure seems to be rather low in view of the fact that the cases have taken the trouble of coming to the Institute and getting their problems diagnosed. This low figure may be mainly due to (1) the inability of the cases to stay in Mysore and get treatment, a solution for which will be starting of more and more speech and hearing clinics which can cater to the needs of even the people in far off places, and (2) lack of sufficient motivation, for which the solution would be public education. The cases, their parents or guardians should be impressed upon with the significance of getting therapy as early as possible and the possible difficulties that arise if treatment is delayed.

It has been our intention throughout this paper to analyse the results and view them critically and offer suggestions which may help not only some of the existing speech and hearing clinics but also to the ones which will be set up in the near future, as a guide. Before concluding the paper we would like to say a few words of caution. The results we have obtained are essentially what we have observed only in those 1000 cases that are seen at our Institution and analyzed by us. We do not take any liberties in generalizing these results.

REFERENCE

Morley, M. E. (1965) *The Development and Disorders of Speech in Childhood,* Edinburgh, E and S Livingstone.