COMMISSION OF THE EUROPEAN COMMUNITIES

medicine

Childhood deafness in the European Community

1979 EUR 6413 DA/DE/EN/FR/IT/NL

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Childhood deafness in the European Community

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STEERING COMMITTEE

CEC STUDY ON DEAFNESS IN CHILDREN, 1977

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Dr. W.J. Moore (European Coordinator)

Prof. G.A. Roda (Italy) and Dr. Catrien van Leeuwen-Helders (Netherlands) attended some of the meetings of the Steering Committee in their roles as national coordinators.

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INTRODUCTION

CEC STUDY ON DEAFNESS IN CHILDREN 1977

The importance of deafness, whether in the newborn child, or acquired in the first few years of life, cannot be gauged by the extent of the hearing loss. It is the effect which deafness has on the development of communication ability which is of crucial importance. In most countries, those involved with deaf children are aware of the necessity to provide suitable educational facilities for this special group of handicapped children. The current methods of education of deaf children have their origins in the works of Abbé Charles Michel de l'Epée, born at Versailles in 1712, (based on sign language) and in his near contemporary Samuel Heinecke, born in 1729 in Saxony (based on oral language). Thus there has been a long tradition in Europe of education of the deaf based on these differing methods.

A detailed study of deafness was published by the World Health Organization in 1968 as a World Health Statistics Report. J.-P. de Reynier commenting on the study in the W.H.O. Chronicle (1970) noted the wide variations in the methods used in assessing hearing and queried whether any valid conclusions could be drawn from the report. Because of the lack of information on the results of differing teaching methods and the dearth of medical data on hearing loss, the numbers of deaf children, aetiology, hearing aid use, etc., it was decided that further studies on deafness should be instituted. The Commission's Medical Research Committee (C.R.M.) set up an Ad Hoc Working Group on Deafness, which first met at the end of 1974 and amongst various research proposals was one on deafness in children.

The objective of the Study was:

> " To determine the prevalence of hearing loss of 50 dB or worse, in all children born in 1969 in the nine member countries of the Community and to obtain information on the cause of deafness, the type of education received and the communication ability of each child. "

The outline research protocol was approved by C.R.M. and Dr. J.A.M. Martin was appointed by the Commission as Principal Investigator. A Steering Committee was set-up to supervise the Study and met three or four times a year, usually in association with the meerings of the plenary Ad Hoc Working Group on Deafness (Chairman Dr. M. Chr. Siim). Five member countries were initially represented on the Steering Committee, and it was realized that it was necessary to include a specialist in Epidemiology (Professor J.R.T. Colley). With this exception, all the members of the Steering Committee are actively involved in childhood audiology and, apart from the Luxembourg representative, are medical doctors. Each has been responsible for the organization of the Study in his own country (See National Studies, pp 19-39) and in some instances acted as the National Coordinator. It was unfortunately not possible for the representatives of France and Germany to be appointed by their national research organization until shortly before the Study was due to begin on 1st January 1977. Those studies where liaison and collaboration are the responsibility of the Commission, but where individual countries organize their own research project, are known as "concerted actions".

Direct financial support for the Study was provided by the Commission to permit the part-time appointments of the European Coordinator (Dr. W.J. Moore), the statistical assistant (Miss Janet Wingfield) and the secretary (Mrs. Pauline McGill). Funds were also made available to meet the costs of computer time, the travelling expenses of the Coordinator and certain meetings of the Steering Committee which were held separately from those of the plenary Ad Hoc Working Group.

The design of the Study was based on the use of a questionnaire for each child identified. The format of the questionnaire was such as to include as much information as possible, but with the understanding that this was an international study and that some data were either not available, or not relevant to several of the member countries.

It is the earnest and unanimous hope of the members of the Steering Committee that this document will prove valuable as a source book for data on certain aspects of hearing-impaired children living in the European Community; and that it will provoke further discussion and research in order to improve the diagnosis, assessment, management and education of children with this major handicap with the overall objective of achieving optimal communication ability.

OBJECTIVES

1. Epidemiology - To determine, in the member countries of the C.E.C., the prevalence of deafness in 8-year-old children who have a hearing loss which averages 50 dB or worse in the better ear at the frequencies of 500, 1000 and 2000 Hz.

2. Aetiology - a) To determine the causes of deafness in these children and to define the size of the group in which the cause is reported as being unknown.
   b) To consider the implications these findings have for prevention of deafness in children.

3. Associated Handicaps - To examine the patterns of multiple handicaps in these children.

4. Auditory Threshold - To determine the range and extent of hearing loss and attempt to relate the audiogram pattern to the cause of deafness.

5. Detection - To establish the approach and timing of the detection of deafness in children in each member country.

6. Hearing Aid Provision - To determine when hearing aids are first supplied and to report on the pattern of hearing aid usage.

7. Maternal Care - To see if there is any association between the working habits of mothers of deaf children and the child's acquisition of language.

8. Education - To determine national patterns of education for the hearing impaired child.

9. Communication Ability - To assess the relationship between auditory threshold and the child's communication ability.

METHODS

DESIGN OF STUDY

As has been noted earlier there is little published information on the numbers of deaf children in the C.E.C. In the preliminary discussions on the Study it became clear that there was no common, readily accessible source of data on deaf children for all member countries. This led the working party to support a study in which children, who had already been found to be deaf, would be the subjects. This had the advantage that a population survey, with the high costs that this would entail, was not required, but had the disadvantage of only including deaf children who had already been identified.

Eight-year-olds were selected because by this age the majority of children affected by deafness should have been identified, documented and some special provision arranged. By choosing to study children with hearing loss of 50 dB or worse the chances of them being undetected at this age, when the issue of hearing aids and specialised teaching were required, would be minimized.

The working group assumed, for children with this degree and type of disability, that extensive documentation on major aspects of clinical, educational, social and other relevant factors would have been collected. For this reason it was thought sufficient to use a questionnaire in order to collect the major items required to cover the objectives of the Study.

DEFINITION OF HEARING LOSS

Hearing loss is defined as an average loss of 50 dB or worse for the three pure tone frequencies 500 Hz, 1000 Hz and 2000 Hz affecting the better ear.

POPULATION

The Study was to identify all children (boys and girls) residing within the C.E.C. in 1977 who were born between 1st January 1969 and 31st December 1969 and who have a hearing loss as defined above.

The sources used to identify such children would not include a population survey. Use would be made of registers of deaf children, schools for the deaf, special units for the deaf, etc. These sources vary from country to country.

TIMING

The field work for the Study was to start in January 1977 and be completed by December 1977. The time required for field work varied between the smaller countries and those with large and/or widely dispersed populations. In the event Denmark and Ireland completed their Study by August 1977, whilst the U.K. finished in May 1978, and Italy and Germany in July 1978.

DATA COLLECTION

Questionnaire

A standard questionnaire was the method used to collect data on each deaf child. This questionnaire had been drafted in English and a translation made into the national language(s), but without changing the sequence of questions, their meaning or the general format of the questionnaire. Checks were made that the translations retained, as far as possible, the original meaning of the questions.

In the development of any questionnaire, and especially one to be used internationally, it is inevitable that difficulties are experienced in arriving at a final choice for those items of information to be collected. Major constraints were:

i) The need to limit the items to those that were
   (a) essential
   (b) likely to be available for all, or nearly all children.

ii) The items should be relevant for all countries. For example there was no point in asking for items that might be useful for the investigation of deafness in one country if they had no relevance in another.

iii) A large range of people, doctors, teachers, clerks and others might be involved in completing the questionnaires. Thus the questions had to be made as simple as possible.

The final version in English is given in Appendix 2 . It can be seen that a limited range of items were included. These were considered to be sufficient to describe the major features, both clinical and educational, of the children in the Study. It will be for future studies to investigate particular aspects in more detail.

Quality Control

As well as describing certain features of the clinical and educational circumstances of deaf children within a country, comparisons between countries were envisaged as providing information on how different methods of management might contribute to the status of deaf children.

Such comparisons can only be made with a high degree of certainty if the basic data are comparable. The definition, for example, of population and of methods for collecting data was a necessary preliminary to achieve comparability.

A European Coordinator was appointed as it was essential to ensure that:

a) There was comparability of data collection.
b) The definition of the population studied was identical throughout the member countries.
c) The questionnaires when translated into different languages, had the same format and meaning as the original.
d) In those questions which were open-ended, e.g. father's occupation that standard lists were provided with code numbers which could be used instead of the definition given in the native language.
e) Inconsistencies in the reporting of data, e.g. hearing usage was standardized.
f) All the questionnaires were checked before and after being transcribed onto a punch document.

In addition, the European Coordinator visited each country at least once during the period of the Study to advise on methods of collection of data, standard of completion of the questionnaires and to try and resolve any problems that might have arisen.

NATIONAL STUDIES

NATIONAL STUDIES

Introduction

Because of the variation in the size and complexity of the problems in collecting data within member countries, as well as the necessity for an intimate knowledge of local conditions, it was agreed that it was essential to have national coordinators.

In some countries the representative on the Ad Hoc Working Group undertook this responsibility, e.g. Belgium, Denmark, France, Germany, Ireland and Luxembourg, but in Italy, Netherlands and U.K. a separate, either full-time or part-time, coordinator was appointed.

The sources and methods used to identify those children who were eligible for inclusion in the Study varied between countries - e.g. the data reported in the United Kingdom Study was supplied from purely medical sources in contrast with the majority of the other countries who, on the whole, derived their data from educational services.

The funding of the national studies was undertaken by each member country but no financial support was forthcoming for two of the studies for whom it had been requested.

Owing to the variation in number and quality of the services offered and the lack of centralised registration of deaf children in most countries, there were major problems in the identification of eligible children for the Study and thus in the collection of the data. This is in marked contrast to other member countries, where the identification of deaf children and the supply of hearing aids are coordinated by a single agency.

The confidentiality of the data was ensured by not recording the name of the child but by allocating, to each of them, a serial number. This was the sole means of identifying individual children in the Study and in this way strict anonymity was maintained.

In the following section of the report the methods used by the individual countries to obtain the necessary information to complete the Study are detailed.

PERSON COMPLETING QUESTIONNAIRE

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
Doctor	865	797	9	72	68	0	0	119	0	1	596
Teacher	831	639	19	1	192	263	58	147	0	1	150
Nurse/Health Visitor	115	115	3	0	0	0	0	96	0	0	16
Hearing Centre	55	54	0	20	1	0	0	34	0	0	0
More than one person	618	554	26	0	64	419	0	10	0	38	61
Other persons	565	480	30	4	85	15	0	190	4	149	88
Speech Therapist	246	219	9	0	27	1	0	204	0	5	0
Missing Data	167	130	9	8	37	9	0	63	0	33	8
Total	3462	2988	105	105	474	707	58	863	4	227	919

BELGIUM

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BELGIUM

The National Coordinator was a member of the Ad Hoc Working Group on Deafness and of the Steering Committee.

Introduction

1. There is no central body concerned with registration of deaf children.
2. There are two communities, one French speaking and one Dutch speaking. Data collected on these two communities tend to be kept separate.
3. Five different Ministeries are involved with deaf children:
   a) Ministry of Public Health
   b) Ministeries of Education (Culture Francaise and Nederlandse Cultuur). The education system is very decentralized.
   c) Ministry of Social Security
   d) Ministry of Employment and Labour, which funds the Audiological Centres.

Sources and Methods

1. Schools for the Deaf (total of 12): these were contacted by letter and they all cooperated and supplied the majority of the data for the Study.

2. Audiological Centres (total of 32) : only seven centres replied to the explanatory letter and of these, four stated that they had no eligible children, as did the Institutes for handicapped children (total of 57).

3. Centres Psycho-médicaux Sociaux (Ministry of Education - Culture Française): 50 centres were contacted by letter but only one child was identified. It was hoped to use these sources to identify deaf children attending normal schools.

4. Institut National d'Assurance Maladie-Invalidité (Ministry of Social Security): supplies funds for hearing aids but was unable to help.

5. Fonds National de Reclassement Social des Handicapés (Ministry of Employment and Labour): all eligible children identified from this source had been previously reported to the coordinator by the Schools for the Deaf.

6. Other sources approached included the Belgian Ear, Nose & Throat Society and the major hearing aid suppliers: in the latter case the information supplied had been already collected (from the Schools and Institutes) and in the former there was no spontaneous reply from any of the members.

The data obtained on the total of 105 children identified in the Study were collected from the Schools for the Deaf and the Institutes for Handicapped Children. This might account for possible under enumeration and bias in the data owing to the fact that very few children who attended normal schools were identified.

DENMARK

National Coordinator: Dr. Ole Bentzen
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DENMARK

The National Coordinator was a member of the Ad Hoc Working Group on Deafness and of the Steering Committee.

Sources

1. State Hearing Centres - a total of 3, in Copenhagen, Odense and Århus.

2. Hearing Clinics attached to Ear, Nose and Throat departments in hospitals (total of 12).

Methods

The policy in Denmark, since 1950, has been that every child needing hearing aids &/or special training, because of a hearing impairment has been sent to an Audiologic Centre. It is here that further guidance and, if necessary, treatment with aids are provided.

The directors of the centres and clinics were contacted and asked to identify from their records all those children who were thought to be eligible for the Study. The records are very comprehensive and this resulted in the Study being completed by September 1977. A total of 105 children were identified which is approximately 50% greater than the expected number.

FRANCE

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FRANCE

The National Coordinator was a member of the Ad Hoc Working Group on Deafness and of the Steering Committee.

Introduction

There is no central register of handicapped children either at national or departmental level. The Coordinator received no financial support from his Government and no assistance until almost the end of the Study.

Sources

1. List of schools for deaf children (ONISEP)
2. The educational and social welfare authorities in each département (total 95), of which 28 claimed to have no centres for the education of deaf children.

Methodology

Each centre or institution (total 160) was contacted by post requesting their cooperation in identifying eligible children for the Study. There was a very poor response to the initial letter and the Coordinator had to resort to further letters and telephone calls but even so 4 centres never replied. At the time of the dead-line for the Study the situation was as follows:

1. Number of centres contacted - total 160
   a) Responses 156
   b) No response 4

2. Total number of eligible children identified	474	(56.3%)
Estimated total (rate 1/1000 - live births 1969)	842	(100%)

It appeared that the deaf children who fulfilled the criteria for inclusion in the Study had either not all been identified or information had not been supplied about them. To overcome this problem a simplified questionnaire (See Appendix III) was produced and sent to centres who had not initially responded. Seven centres replied and a further 50 children were identified but could not be included in the Study as these data arrived after the deadline for completing the Study.

A further attempt to identify eligible children was made by contacting 3 major Audiologic Centres in Lyon, Besançon and Montpelier. They were asked to search their medical records for any children who were born in 1969 and who had a hearing loss suitable for the Study. In this way 78 children were identified and it appeared (where the information was supplied) that the majority attended normal schools .

There were, therefore, at least 128 children who had not been identified using the Centres as a source of information. It appeared that a large number of these children attended normal schools. The only way to identify such children would be to contact every single school in France as there is no centralized registration of deaf children at either local (départemental) or national level. This was clearly a task of formidable size and beyond the facilities made available to the National Coordinator.

GERMANY

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W. GERMANY

The National Coordinator was a member of the Ad Hoc Working Group on Deafness and of the Steering Committee.

Introduction and Sources

The Länder (or States) of the Federal Republic of Germany have the same laws and regulations, which provide, in principle, obligatory schooling for all children, including those who are handicapped. In Germany it is, therefore, compulsory that hearing impaired children are registered with special schools for the deaf or with their pedo-audiologic centres ("Pädaudiologischen Beratungsstellen"), which are responsible for pupils who are integrated in normal schools or in centres for multiple handicapped children. The special schools or pedo-audiologic centres collect all the medical data from the different disciplines, which made it unnecessary to seek additional data from either medical doctors, clinics or hearing-aid-services.

Methods

The Study in Germany did not begin until almost the end of 1977 owing to the fact that:

a) The Coordinator was not appointed until December 1976.
b) West Germany consists of 11 states with their own identities and regulations which caused major administrative problems for the Study.

Despite these very major difficulties, the accessibility of the relevant data enable the completion of the Study in a short time.

GERMANY

In West Germany almost all children with this degree of deafness attend special schools for the deaf. The "Arbeits-auschuss Sonderschule" of the "Ständige Kulturminister-konferenz" agreed to help the Study. Via the Department of "Abteilungen Sanderschule", the individual States authorized the Study and instructed the schools concerned to assist with it, with the proviso that this was not compulsory.

The headmasters of the schools for the deaf were contacted and asked to identify those children born in 1969, whereupon appropriate numbers of questionnaires (previously piloted in Freiburg, Nürenberg and Hamburg) were forwarded to them.

The headmasters and specialized teachers were supervised by the project leader and a documentary assistant where necessary. All data referring to the identity of the child was coded so that there was complete anonymity.

Despite major difficulties re: time, problems with translation of the questionnaire, verbal misunderstandings between the European Coordinator and the German Coordinator's staff, a total of 707 eligible children were identified. Because of the problems mentioned above it was felt that there was some degree of under-enumeration by at least 100 cases.

IRELAND

National Coordinator: Dr. Oliver McCullen
3 Clyde Road,
Dublin 4
Eire.

The representative on the Ad Hoc Working Group on Deafness and the Steering Committee acted as the National Coordinator for the Study.

The services for deaf children are channelled through the National Rehabilitation Board (N.R.B.) based in Dublin, and are supervised by the National Coordinator. All deaf children are referred for final assessment, diagnosis and provision of hearing aid(s) to the Board by the local developmental assessment clinics, hospital clinics and school medical services.

The 58 children reported in the Study were identified using the records of the Audiology Section of the N.R.B. and each child was re-examined by the National Coordinator. The questionnaires were completed by the Teachers of the Deaf concerned with the individual child and returned to the National Coordinator in order to check the details. In a few cases there was a lack of information re Q. 16 - Cause of Perceptive Loss, so the medical services were contacted personally to ensure that these data provided from the child's medical records were as accurate as possible.

ITALY

National Coordinator: Prof. G.A. Roda
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20125 MILAN

Professor S. Iurato who was a member of the Ad Hoc Working Group on Deafness and of the Steering Committee, cooperated with the National Coordinator, Professor G.A. Roda, in organizing the Study in Italy with the part-time assistance of:

1. Dr. Fernanda Evolvi (North Italy)
2. Dr. Irene Buzzi-Donato (Central Italy)
3. Dr. Marina Baldassari (South Italy)
4. Mrs. Anna-Maria Cereda (Secretary)

The Study was funded by:

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Introduction

The Study coincided in Italy with a period of major reorganization of the social and community services, in association with a revision of the laws at local and national levels. There was, between 1976 and 1978, transfer of many functions from a national to a local level. The organization of social and community services at both local and national level sometimes lacks efficiency and the situation varies greatly within and between regions.

All these factors caused great problems in the identification and collection of the data for the Study and, as it progressed, others

ITALY

appeared, e.g.:

1. There is no central register of handicapped or deaf persons.
2. At regional level there is often a lack of knowledge of the identity of deaf children; at a provincial level, this was known, however, their records lack information on some medical problems.

Sources

1. Every institution dealing with the diagnosis and/or special education for deaf children was contacted, as there is no official record of handicapped children in any area.

2. No cooperation was forthcoming from the educational administrative authorities.

Methodology

A preliminary search was made to identify all institutions (institutes, special schools and centres) dealing with deaf children but, as there is no official list of these and many of them are small (only 10-15 children), it was very difficult to find them all. 116 institution were identified in the North, 186 in the Centre and 118 in the South of Italy. Each institution was contacted by a letter explaining the Study, which included an offer of cooperation through visits by the personnel undertaking the research. All the institutions not responding to the first letter received a second letter and/or telephone call. 70% of the institutions were visited once, 20% twice and 10% three times by the person responsible for that geographical area. There were many problems in doing this because of the poor postal services and the difficulty in identifying the responsible person(s) in the institutions.

The information supplied from the records was often incomplete. There was a lack of cooperation between the different services involved in the care of deaf children and this caused major difficulties in collecting missing information, particularly when these data had been supplied from several different sources.

Progress

The Study was completed in July 1978 and despite the major problems that had to be overcome, a total of 863 eligible children were identified (estimated numbers based on 1969 live births and rate of 1/1000 was 933).

LUXEMBOURG

National Coordinator: Monsieur Luc Meyer
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The National Coordinator was the representative on the Ad Hoc Working Group on Deafness and Steering Committee.

The Services Audiométrique et Orthophonique (SAO) of the Public Health Ministry are responsible for organizing screening tests at different age levels, for advising parents and educators of hearing impaired children, and for the provision of hearing aids.

Regular and general audiometric screening tests are made at birth, at the age of 21-24 months (compulsory since 1978), at the age of 5 years, at the age of 9 and finally 12 years; pupils attending special classes are seen annually.

For those who fail the screening test, pure-tone audiometry is undertaken to assess the level of hearing: a very small number miss the screening, being absent at the time of the audiometrician's visits to the school.

As a rule, hearing impaired children are thus known to the SAO. In order to collect the CEC Study data, this office had to pick out from the children noted two years ago, i.e. at 5-year-old screening, all those whose hearing loss corresponded to the CEC Study criteria.

A. 1974/75 Screening Cycle

In five cases found in kindergarten children two years previously, important hearing losses of more than 50 dB average had improved spontaneously or following surgery. One child noted as probably deaf, had returned to his home-country before further investigations could be made.

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The four remaining cases, included in this Study were found in a total of 4,131 tested children born in 1969 and out of 219 suspected cases.

B. 1977/78 Screening Cycle

The children seen two years previously while attending kindergarten classes were retested again in the 1977/78 cycle.

Up to the CEC Study deadline, 2,262 of these children had been retested and 93 cases were noted to have significant hearing losses but these were all less than 50 dB average.

C. Hearing-aided Children

As the SAO are also responsible for supplying hearing aids to children, the data given by the screening tests were compared to the lists of children with aids and no more eligible cases were identified.

D. Special investigations

Special investigations were made at the Centre de Logopédie, at the Institut pour Anarthriques and in some schools for mentally handicapped children. These investigations did not provide any more eligible children.

A total of 4 children were identified in Luxembourg which is the same as the estimated number.

NETHERLANDS

National Coordinator: Dr. Catrien M. van Leeuwen-Helders
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2300 AC LEIDEN

The National Coordinator was appointed on a half-time basis and attended the Steering Committee meetings in the role of an observer.

Sources

1. Day schools for the deaf
2. Institutes for the profoundly deaf
3. Audiologic Centres
4. Institutes for the multiple and/or mentally handicapped.

Methodology

A meeting was arranged by Dr. G.A. de Jonge (Dept. of Child Health, Netherlands Institute for Preventive Healthcare - NIPG) between the chairman of the board of directors for the day schools for the deaf, the chairman of the board of directors of institutes for the profoundly deaf, the chairman of the board of audiologic centres, the director of the Dutch Institute for Children with a Hearing Impairment, and Mr. H.E. Lindeman, M.Sc., Member of the Ad Hoc Working Group on Deafness. A national Steering Committee including the above mentioned persons was formed and met four times.

The National Coordinator was then invited to discuss the Study with the board of directors for schools of the deaf (20) and the board of directors for institutes for the profoundly deaf (5).

NETHERLANDS

In addition every school and institute was personally visited to explain the Study and the details of the questionnaire.

A special letter explaining the Study briefly, accompanied by a short questionnaire for the parents, was composed in answer to problems encountered by the schools and institutes in completing parts of the questionnaire, and this was used as the situation required.

Once a response was received from these sources, the Audiologic Centres (16) briefed by their chairman (member of the National Steering Committee) were asked to participate in the Study in August 1977. First they were asked to identify the names of the appropriate children (all but one have done so), later when the children already known through the schools and institutes were identified, information was asked for the remaining children (January 1978). These were located in normal primary schools, special medical day schools and institutes for multiple and/or mentally handicapped children. Both the Audiologic Centres and the schools where the children were located, were asked to fill in the questionnaire.

Six schools for multiple and/or mentally handicapped children with 1742 inmates (total no. in Holland (1975) 46.369) were asked to identify eligible children and complete questionnaires on them. Four children met the requirements of the Study.

The following persons were notified of the Study:

1. Directors of day schools for the deaf.
2. Director(s) of institutes for the profoundly deaf.
3. Dutch Institute for Children with Hearing Impairment.
4. Audiologic Centres
5. Six institutes for multiple and/or mentally handicapped children.
6. FOSS (Federation of parents with children with a hearing impairment).
7. A short note was published in the journal Omega.
8. Dutch society of the deaf.

NETHERLANDS

The policy in Holland is that every child needing a hearing aid and/or special training is sent to an Audiologic Centre. The schools and institutes usually assume responsibility for guidance and the provision of hearing aids after referral from Audiologic Centre.

Questionnaires

The questionnaires received from the schools and institutes were of a high standard of completion.

The questionnaires obtained through the Audiologic Centres were completed at a much lower standard than those above.

The 6 institutes for the multiple and/or mentally handicapped, notified of the Study, returned the questionnaires well completed.

Progress

All schools and institutes not responding to the first visit were repeatedly contacted until they replied. The returned questionnaires were checked by the Coordinator and where necessary, additional information was requested, if found missing. The standard of the questionnaires from the various schools, institutes and audiologic centres varied but all cooperated except one audiologic centre which was unable to participate owing to administrative problems. On four occasions a request for payment was made to cover the costs of the searches in the records, and in one instance the Coordinator personally did the searches.

The Study was completed in May 1978 and a total of 227 eligible children were identified which is slightly less than the estimated numbers.

UNITED KINGDOM

National Coordinator: Dr. Bill Moore,
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The European Coordinator acted half-time as the National Coordinator. Funding for the Study was provided by the Medical Research Council.

SOURCES

Area Health Authorities: each Area Specialist in Community Medicine (Child Health) (A.S.C.M. (C.H.)), has a statutory obligation to know of all handicapped children in their area. It was, therefore, decided to approach them and ask for their assistance in identifying eligible children and in completing the questionnaires.

METHODOLOGY

A. ENGLAND

In England each of the 90 Area Health Authorities has an A.S.C.M. (C.H.).

Discussions were held with A.S.C.M.s (C.H.) in Avon and Kensington, Westminster and Chelsea to discuss the best ways to contact the A.S.C.M.s (C.H.) and it was finally decided that the coordinator should be invited to discuss the Study at a meeting of the Association of Specialists in Community Medicine (Child Health) in March, 1977. Present at the meeting were approximately 60% of all the British A.S.C.M.s (C.H.). The A.S.C.M.s (C.H.) decided that it was not necessary to involve the Education Departments in the identification of eligible children as in all cases the liaison between the Health and Education Authorities was very good. Some areas suggested that they ought to contact the parents of the children in the Study using a letter asking for their cooperation. This parent-letter was only sent when requests were made for it by individual Health Authorities. The Education Departments were informed of the Study and asked to cooperate with their medical colleagues.

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B. WALES

In Wales there are a total of 9 Area Health Authorities, each of which has an A.S.C.M.(C.H.).

An approach was made to the Senior Medical Officer (Child Health) at the Welsh Office in Cardiff for advice and help, as a consequence of which the Coordinator met and discussed the Study with the Chief Education Officer for Wales and all the Welsh A.S.C.M.s (C.H.) in March and April 1977.

C. SCOTLAND

The Health Boards have Community Medicine Specialists (C.M.S.) who are responsible for child health services (total 15).

The initial approach was made to the Principal Medical Officer (Child Health) at the Scottish Home and Health Department in Edinburgh who after discussing the Study with the Coordinator, agreed to help and organized a meeting between the Coordinator and the majority (11 out of 15) of the C.M.S.s involved with child health services. Because of the different organization of the Health Boards in Scotland, it was suggested that the Chief Administrative Medical Officer (C.A.M.O.) in each Health Board should be informed of the Study and their help requested. Greater Glasgow Health Board was not represented at this meeting (it being the largest in Scotland) and the Coordinator arranged to meet the five C.M.S. in June 1977 to discuss the Study. It was agreed that the Chief Education Officers be informed of the Study and a request was made for them to help their medical colleagues in any way possible.

D. NORTHERN IRELAND

Northern Ireland has its own Health Boards but there was not always a Community Specialist for child health services.

The Chief Medical Officer (C.M.O.) at the Department of Health (Northern Ireland) (D.H.S.S. - N.I.) arranged a meeting in February 1977 in Belfast between the Coordinator, the C.M.O., a Senior Medical Officer for Child Health Services (D.H.S.S. - N.I.), Assistant Chief Administrative Officer (Child Health Services) Eastern Area Health Social Services Board, Ulster, and the Principal Inspector for Special Education, Department of Education Ulster. At this meeting the Study was discussed and a Steering Committee was set up including all the above with the Senior Medical Officer acting as coordinator.

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E. PILOT STUDIES

With the cooperation of the A.S.C.M.s (C.H.) in Avon and Somerset Area Health Authorities two pilot studies were undertaken on the questionnaire. These revealed that it was satisfactory and that approximately half of the data might have to be furnished by the Education Authorities (usually Teachers of the Deaf). The time needed to identify eligible children and to complete the questionnaires was approximately 8 - 10 weeks and not the 4 - 6 weeks that had been expected. Finally it became apparent that the Education Services were a better source of information for identifying the children than were the Health Authority records.

F. COOPERATION

1. The following were notified of the existence of the Study:

British Association of Otolaryngologists
British Society of Audiologists
Royal National Institute for the Deaf
Spastics Society
National Deaf Children's Society.
Senior Principal Medical Officer (Child Health), Department of Health and Social Services (London).

2. With the kind of cooperation of the Association of the Teachers of the Deaf a short research note explaining the Study was published in their journal "Teacher of the Deaf".

3. Mentally handicapped, deaf children: Discussions were held with audiologists and specialists in mental handicap and it was felt that the majority of children in subnormality hospitals would be identified through the channels that were being already used. No special effort was made, therefore, to contact individual hospitals asking them to identify eligible children.

4. Independent and private schools: An attempt was made to identify children attending these institutions through the services of the

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Medical Officers of Schools Association. This was not successful and it was decided that approaches to independent/private schools should not be made because the local Health Authority should have knowledge of eligible children.

G. IDENTIFICATION

1. A letter was sent to all S.C.M.s (C.H.) and C.M.S.s on 20th May, 1977, explaining the Study and asking them to identify all children eligible for the Study. They were also requested to contact the Coordinator so that the appropriate number of questionnaires could be forwarded to them.

2. On the same day individual letters were sent to all C.A.M.O.s in Scotland asking for their help and also to each Chief Education Officer in the United Kingdom.

3. The names and addresses of the persons approached in 1 and 2 above had previously been double-checked to ensure that every appropriate individual had been contacted.

4. The Coordinator of the Study in Northern Ireland was contacted at the same time.

PROGRESS

The deadline for completion of the Study was set for 31st December, 1977 which was met by the great majority of the Areas, but owing to staffing problems in a few Areas some questionnaires were not received until May 1978. The National Coordinator personally identified and collected the data on eligible children in two of the Areas. It was estimated (using the live births in 1969 and a rate of 1/1000) that there would be a total of 920 children in the United Kingdom who would be eligible for the Study and, in fact, 889 were identified using the methods described. There were at least 11 other children who fulfilled the criteria but for reasons of migration or parent refusal, were not included in the Study. In order to ensure that all children had been

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traced, one of the major Children's Audiology Centres in the U.K. searched its own records and discovered 266 eligible children for the Study, 30 of whom had not been previously identified. A final total of 919 children were included in the Study.

RESULTS

IDENTIFICATION OF THE STUDY CASES

To obtain information on the size of the projected Study, it was necessary to make an estimate of the number of children who would be eligible for inclusion in the Study. Data were obtained of the number of live births in 1969, from the statistical offices of each member country. Two pilot national studies in Denmark and Ireland, in seven-year-olds, gave respectively, rates of 0.53/1000 and 1.03/1000 at that age. It was decided to use a prevalence rate of 1/1000 in eight-year-old children to estimate the possible number of cases in each country. The results of these calculations are listed below and in addition the live births in 1969 and estimated total populations.

	COUNTRY	ESTIMATED NUMBER OF CASES	TOTAL LIVE BIRTHS IN 1969 *	ESTIMATED TOTAL POPULATION IN 1969 (MEAN OR MID YEAR) **
1.	Belgium	142	142,466	9,646,000
2.	Denmark	71	71,298	4,891,000
3.	France	840	839,511	50,315,000
4.	Germany (incl. W. Berlin)	903	903,456	60,848,000
5.	Ireland	63	62,912	2,921,000
6.	Italy	934	934,278	53,170,000
7.	Luxembourg	4	4,503	338,000
8.	Netherlands	248	247,588	12,878,000
9.	United Kingdom	920	920,256	55,535,000
Total (C.E.C.)		4,125	4,126,268	250,542,000

* Statistical Offices of each member country

** World Health Statistics Annual - 1969 - Volume 1 - Vital Statistics and Causes of Death.

Listed below are the actual number of cases identified in each country and these are also expressed as a percentage of the estimated numbers.

COUNTRY	ACTUAL NUMBER OF CASES IDENTIFIED	%
1. Belgium	105	73.9
2. Denmark	105	147.9
3. France	474	56.3
4. Germany	707	78.2
5. Ireland	58	92.1
6. Italy	863	92.5
7. Luxembourg	4	100.0
8. Netherlands	227	91.5
9. United Kingdom	919	100.0
TOTAL (C . E . C .)	3 462	83.9

These data represent the total number of cases identified in each country using the methods discussed previously (Section on methods of collection of the information) but in two of the countries, United Kingdom and France, further validation of the data was undertaken after the final date of completion of the Study using a separate source of information from those used previously. An approach was made to the major Audiology Centres who were asked if they could supply details, from their medical records. of any children who fulfilled the criteria for inclusion in the Study. In the United Kingdom, no significant additional information was obtained and it was assumed that the majority of the eligible children, if not all, had been identified. In France, a further 128 suitable cases (15.2% of the estimated number) were identified of which the majority (where the information was supplied) appeared to attend normal schools, in contrast with the Study data (83.6% attend Special Schools for the Deaf - See page 142 - French Chapter). These 128 were found to have a mean hearing loss which was better than that of the reported cases and this could account for the differences in distribution of the mean loss between the C.E.C. and French data (see page 147 French Chapter). It would appear that the number of cases identified in France did not

represent the total because:

a) At least 15% of eligible children were not identified.

b) Those new cases identified in the validation study appeared to have a less severe hearing loss than those identified by the Study.

c) The validation study cases were attending normal schools in contrast to the Study cases who attended special schools for the deaf.

It was, therefore, decided that the information supplied by France would not be included in the pooled data of the C.E.C. Study because of the inherent biases noted above. For these reasons the French data have been reported as a separate chapter using the pooled C.E.C. data for comparison.

ANALYSIS

During the preliminary discussions on the Study it was decided that analysis of the data should be centralized. The centre chosen to undertake this task was the Department of Community Health at the University of Bristol, United Kingdom.

The questionnaires, or copies of questionnaires, were sent to Bristol where they were checked by the Coordinator to ensure that the essential information, e.g. the year of birth and hearing loss, was satisfactorily completed. The information was then transcribed onto a punching document using a previously agreed coding schedule (See Appendix 4). The data were punched onto cards and analysed by computer using an integrated system of computer programs designed for the analysis of social science data (Statistical Package for the Social Sciences - S.P.S.S.).

QUESTIONNAIRE ITEMS TO BE EXCLUDED

Those questions which have been excluded are listed below and the reasons for their omission given where appropriate.

1. Q. 4 & 5 - Address at birth and present home address of the child's parents.

Comment It was hoped to obtain information on the migration, if any, of the families of deaf children within and between countries. It was found to be impossible to interpret these data as there is very little information on the migration of people in the member countries.

2. Q. 6 - Occupation of father (or guardian)

Comment These data were requested in order to investigate whether social and economic factors affect the prevalence of deafness in children. The only international classification that is available is the International Labour Office "International Standard Classification of Occupation". This classification was found not to be suitable for comparing the socio-economic groupings of the families of deaf children.

3. Q. 10 - Distance from home to school.

Comment There might be a relationship between this question and the type of school the child attends, but the results did not show that any existed.

4. Q. 11 - Date admitted present school.

Comment It was anticipated that the questionnaire would be completed using information from the child's records and that these data would be more readily available than the date of the child's first attendance at school. The data from this question were found to be of doubtful value.

5. Q. 12 - Language used at school and home

Comment - The information supplied in answer to this question is of possible importance to the individual member countries e.g. the difficulties that might arise in the acquisition of speech, if the languages used at home and school were different. It is not relevant when reporting the combined results of the member countries.

6. Q. 30 - Date of completion of questionnaire.

Comment These data were excluded as the individual national studies were undertaken and completed at different periods during 1977 and 1978.

7. Q. 29 - Persons completing form

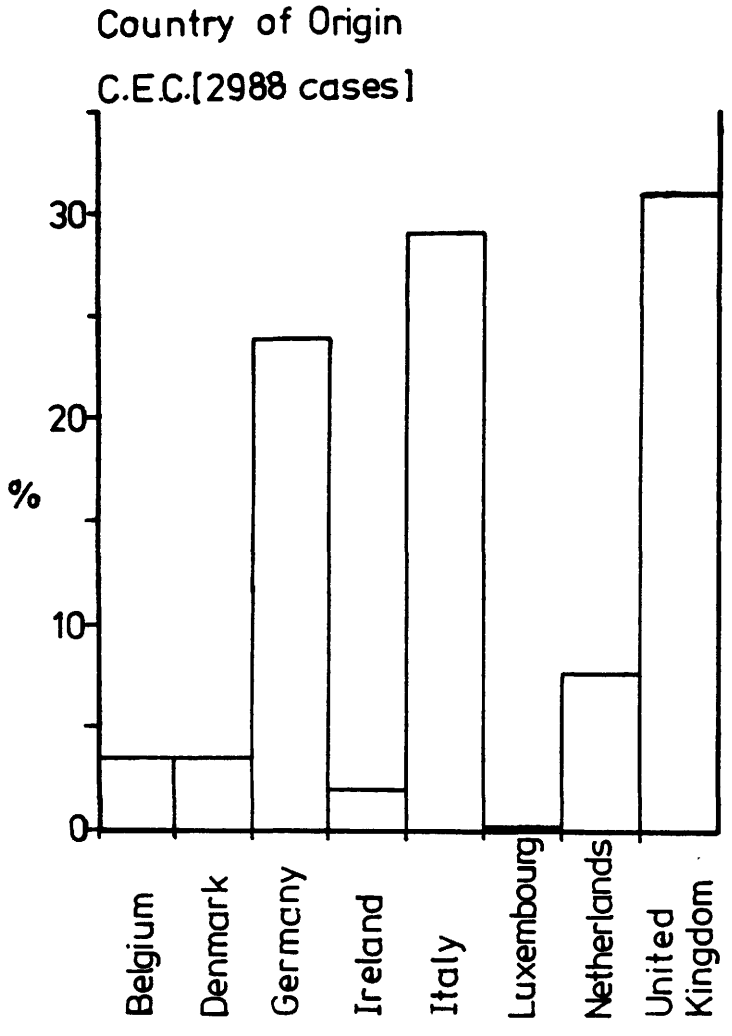
Comment Information concerning this question will be found in the section on methods used to identify deaf children in individual member countries on page 22.

NUMBER OF CASES IDENTIFIED BY THE STUDY AND THE PREVALENCE RATES

C.E.C.		
Total number	-	2988
Prevalence rate	-	0.9/1000
BELGIUM		
Total number	-	105
Prevalence rate	-	0.7/1000
DENMARK		
Total number	-	105
Prevalence rate	-	1.5/1000
GERMANY		
Total number	-	707
Prevalence rate	-	0.8/1000
IRELAND		
Total number	-	58
Prevalence rate	-	0.9/1000
ITALY		
Total number	-	863
Prevalence rate	-	0.9/1000
LUXEMBOURG		
Total number	-	4
Prevalence rate	-	1.0/1000
NETHERLANDS		
Total number	-	227
Prevalence rate	-	0.9/1000
U.K.		
Total number	-	919
Prevalence rate	-	1.0/1000

PREVALENCE RATES AND NUMBERS

C.E.C. : These rates were estimated using as denominators the numbers of live births in 1969 supplied by the statistical offices for each country. As can be seen these rates differ and it is not possible to determine how far these prevalence rates reflect true national variations in the occurrence of deafness rather than differences in the extent of enumeration. It is inevitable that children will be missed and this will, in part, explain the differences in prevalence.



SEX (Q.2) (NUMBER OF CASES AND %)

	C.E.C.		BELGIUM		DENMARK		GERMANY	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%
BOY	1614	54.0	59	56.2	60	57.1	390	55.2
GIRL	1353	45.3	46	43.8	45	42.9	305	43.1
MISSING DATA	21	0.7	0	0.0	0	0.0	12	1.7
TOTAL	2988	100.0	105	100.0	105	100.0	707	100.0

C.E.C. : In the C.E.C. there appears to be a predominance of affected boys.

In individual countries there is a male predominance except for the Netherlands and Ireland where there is virtually no difference in the sex ratio.

The table below shows the male : female ratios for the Study cases and the population of eight-year-olds for each country.

COUNTRY	STUDY POPULATION MALES : FEMALES	8-YEAR OLD POPULATION * MALES : FEMALES	
C.E.C.	1.19 : 1	1.05 : 1	**
Belgium	1.28 : 1	1.05 : 1	
Denmark	1.33 : 1	1.06 : 1	
Germany	1.28 : 1	1.05 : 1	
Ireland	1.07 : 1	1.05 : 1	
Italy	1.21.: 1	1.05 : 1	
Luxembourg	1.0 : 1	1.04 : 1	
Netherlands	0.97 : 1	1.05 : 1	
United Kingdom	1.16 : 1	1.05 : 1	

IRELAND		ITALY		LUXEMBOURG		NETHERLANDS		U.K.	
Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
30	51.7	469	54.3	2	50.0	111	48.9	493	53.6
28	48.3	388	45.0	2	50.0	114	50.2	425	46.2
0	0.0	6	0.7	0	0.0	2	0.9	1	0.1
58	100.0	863	100.0	4	100.0	227	100.0	919	100.0

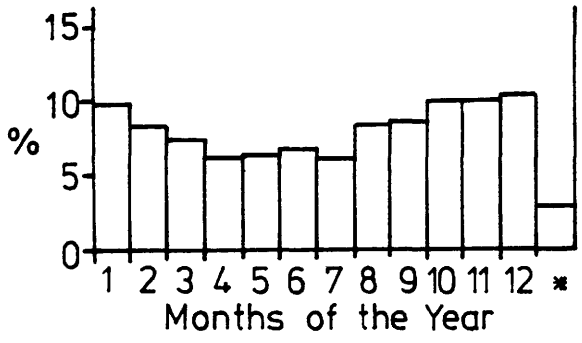
SEX

** These data were obtained by using the sum total of 8-year old males and females of all the countries stated above.

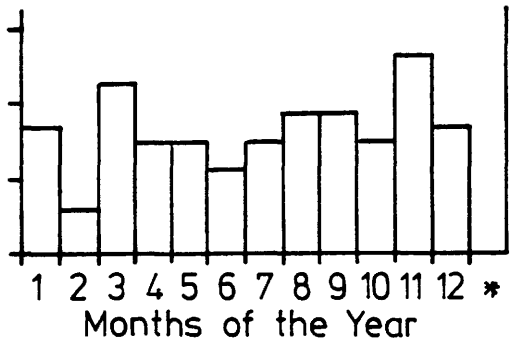
* These data were obtained from the following sources:
Belgium, Germany, Netherlands - Demographic Statistics, Statistical Office of the European Communities - 8-year-old population estimates at 1.1.1977.
Italy - estimates as at 1.1.1976
Denmark - Danmarks Statistik - 8-year-old population estimates as at 1.1.1978.
Ireland - Central Statistics Office, Dublin - based on 1971 census - population of 8-year-olds.
Luxembourg - Service Central de la Statistique et des Etudes Economiques 8-year-old population estimates at 31.12.1977
U.K. -. Office of Population Censuses and Surveys, England and Wales; Registrar General, Northern Ireland: Registrar General, Scotland - 8-year-old population estimates at 30.6.1977.

Distribution by month of birth - 1969 [Q.3]

C.E.C. [2988 cases]

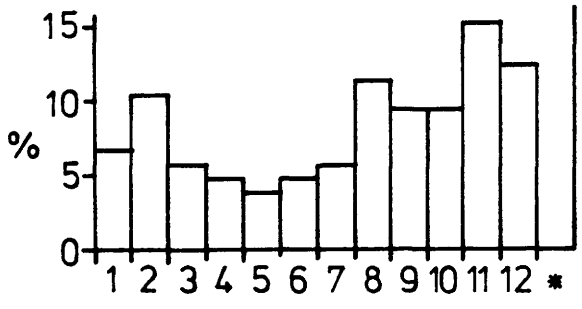


Belgium [105 cases]

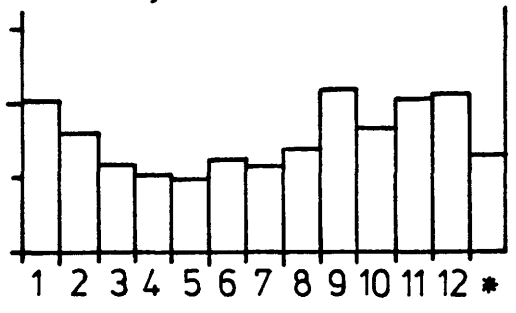


* Missing data

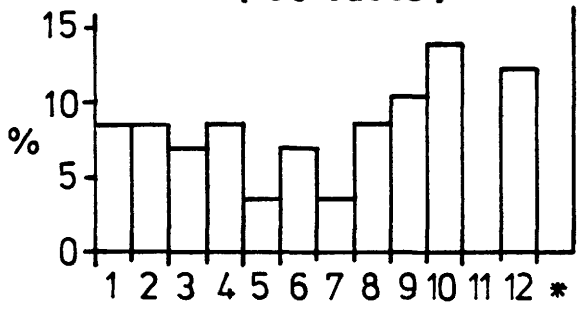
Denmark [105 cases]



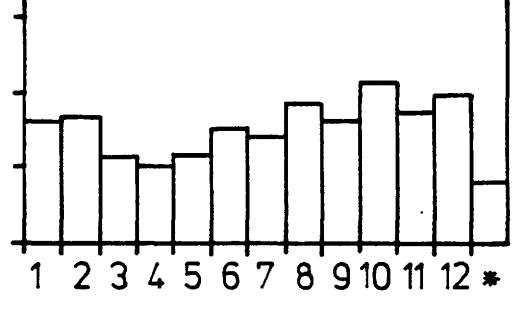
Germany [707 cases]



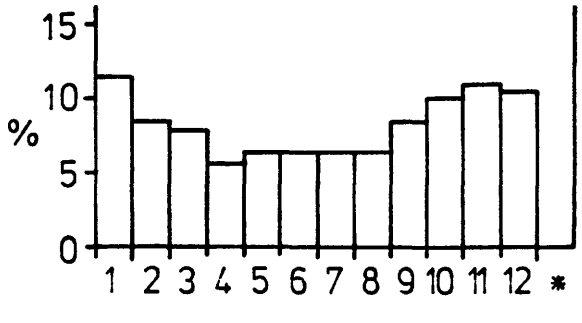
Ireland [58 cases]



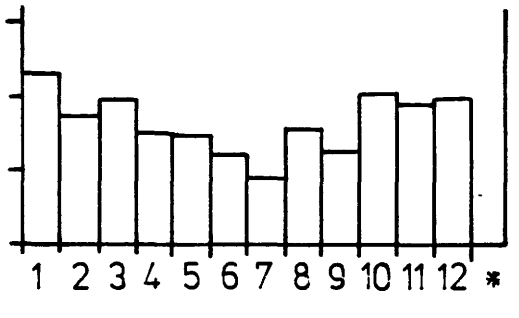
Italy [863 cases]



Netherlands [227 cases]



United Kingdom [919 cases]



Luxembourg [no. of cases] - 1 in June, 2 in August, 1 in Sept.

MONTH OF BIRTH

C.E.C. : There is a general pattern for more deaf children to be born in the winter as opposed to the summer months. In contrast, the distribution of live births by month for 1969 in each member country shows no seasonal variation.

OCCUPATION OF MOTHER (Q.7) (NUMBER OF CASES AND %)

	C.E.C.		BELGIUM		DENMARK		GERMANY	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%
FULL-TIME HOUSEWIFE	1872	62.7	62	59.0	47	44.8	450	63.6
PART-TIME OUTSIDE HOUSE	530	17.7	7	6.7	23	21.9	114	16.1
FULL-TIME OUTSIDE HOUSE	242	8.1	29	27.6	14	13.3	72	10.2
OTHER	53	1.8	2	1.9	0	0.0	19	2.7
NO MOTHER / MOTHER FIGURE	26	0.9	0	0.0	0	0.0	9	1.3
MISSING DATA	265	8.9	5	4.8	21	20.0	43	6.1
TOTAL	2988	100.0	105	100.0	105	100.0	707	100.0

IRELAND		ITALY		LUXEMBOURG		NETHERLANDS		U.K.	
Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
53	91.4	599	69.4	4	100.0	167	73.6	490	53.3
2	3.4	124	14.4	0	0.0	26	11.5	234	25.5
2	3.4	39	4.5	0	0.0	2	0.9	84	9.1
0	0.0	13	1.5	0	0.0	6	2.6	13	1.4
1	1.7	11	1.3	0	0.0	0	0.0	5	0.5
0	0.0	77	8.9	0	0.0	26	11.5	93	10.1
58	100.0	863	100.0	4	100.0	227	100.0	919	100.0

OCCUPATION OF MOTHERS

C.E.C. : Approximately two-thirds of mothers are full-time housewives in contrast to only 8% who work full-time outside the home. It should be noted that in 9% of the cases no information was available about the mothers' occupation.

There is a wide variation between countries in the pattern of occupation of mothers. For example, in Ireland 91% of mothers are full-time housewives, in comparison with 45% in Denmark. On the other hand in the Netherlands less than 1% of mothers were in full-time occupation outside the house in contrast with 27.6% in Belgium.

ATTENDANCE AT SCHOOL (Q.8) (NUMBER OF CASES & %)

	C.E.C.		BELGIUM		DENMARK		GERMANY	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%
YES	2890	96.7	105	100.0	104	99.0	707	100.0
NO	9	0.3	0	0.0	1	1.0	0	0.0
MISSING DATA	89	3.0	0	0.0	0	0.0	0	0.0
TOTAL	2988	100.0	105	100.0	105	100.0	707	100.0

IRELAND		ITALY		LUXEMBOURG		NETHERLANDS		U.K.	
Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
56	96.6	791	91.7	4	100.0	222	97.8	901	98.0
2	3.4	5	0.6	0	0.0	1	0.4	0	0.0
0	0.0	67	7.8	0	0.0	4	1.8	18	2.0
58	100.0	863	100.0	4	100.0	227	100.0	919	100.0

C.E.C. : The majority, at least 96.7%, of these children attend school. The proportion of cases with missing data is small - only 3%.

DAY OR BOARDING SCHOOL (Q.12) (NUMBER OF CASES AND %)

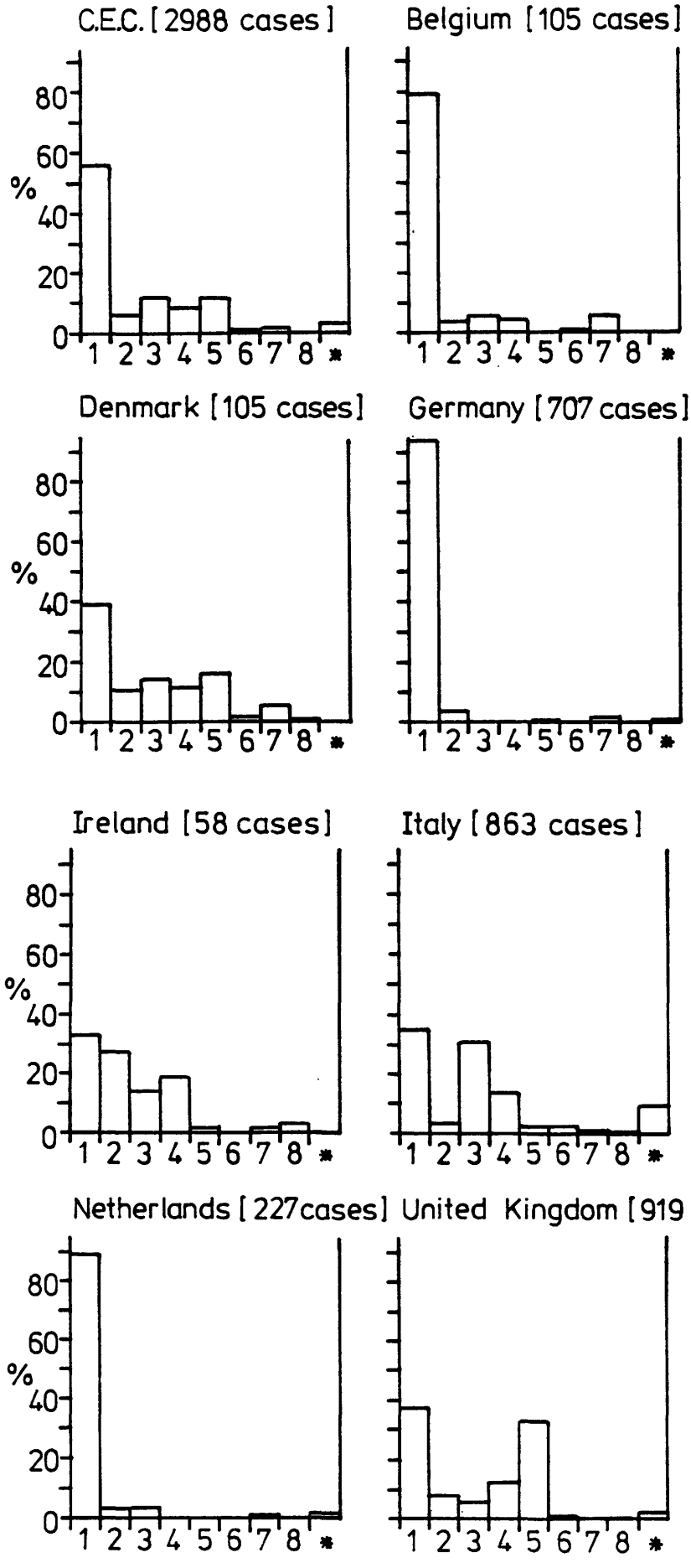
	C.E.C.		BELGIUM		DENMARK		GERMANY	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%
DAYS ONLY	2046	68.5	70	66.7	89	84.8	393	55.6
BOARDER	760	25.4	34	32.4	11	10.5	312	44.1
INAPPLICABLE	9	0.3	0	0.0	1	1.0	0	0.0
MISSING DATA	173	5.8	1	1.0	4	3.8	2	0.3
TOTAL	2988	100.0	105	100.0	105	100.0	707	100.0

IRELAND		ITALY		LUXEMBOURG		NETHERLANDS		U.K.	
Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
33	56.9	540	62.6	4	100.0	162	71.4	766	82.2
23	39.7	182	21.1	0	0.0	55	24.2	143	15.6
2	3.4	5	0.6	0	0.0	1	0.4	0	0.0
0	0.0	136	15.8	0	0.0	9	4.0	21	2.3
58	100.0	863	100.0	4	100.0	227	100.0	919	100.0

C.E.C. : The majority of children, i.e. 68%, attend day schools.

The pattern, however, varies. For example, in Denmark and in the United Kingdom, over 80% attend day schools, in contrast with Germany where approximately 44% attend boarding schools.

Type of School [Q.13]



LUXEMBOURG : (No. of cases)

2 - Ordinary Class
2 - Ordinary Class + Special teaching

SCHOOL CODE:

1 = Deaf only) Special
2 = Deaf + Other handicaps) Schools

3 = Ordinary Class)
4 = Ordinary Class + Special Teaching) Ordinary
5 = Special Class Deaf) Schools

6 = Class Unknown

7 = Other School

8 = Do not attend School

* = Missing data

TYPE OF SCHOOL

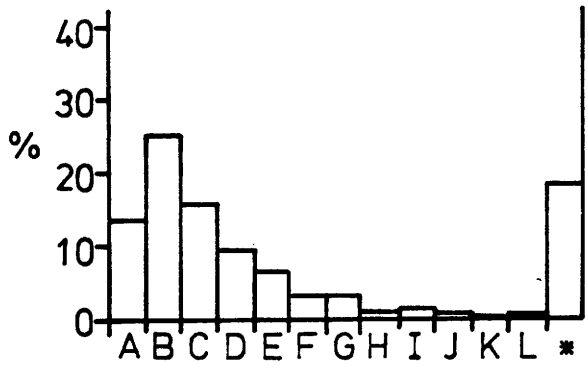
C.E.C. : Approximately two-thirds of the children attend special schools for the deaf and the remainder attend ordinary schools.

There are marked differences between countries in the types of school these children attend. For example, in Germany and in the Netherlands over 90% of the children attend special schools, in contrast to Italy and the U.K. where about 50% of the children attend ordinary schools.

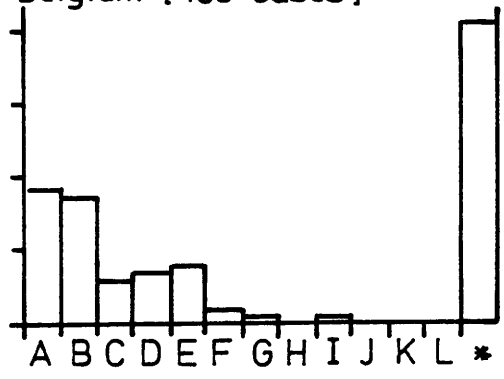
	C.E.C. %	Belg. %	Den. %	Germ. %	Ire. %	It. %	Lux. %	Neth. %	U.K. %
Special Schools for the Deaf	61.3	82.8	49.5	98.2	60.4	38.9	0.0	92.1	45.3
Ordinary Schools	33.6	11.5	43.8	0.0	34.5	50.1	100.0	7.0	52.1
Inapplicable	1.6	5.7	6.7	1.6	5.1	1.6	0.0	1.7	0.4
Missing Data	3.5	0.0	0.0	0.1	0.0	9.2	0.0	2.2	2.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Difference between age loss suspected and age loss confirmed [Q.14 + 15]

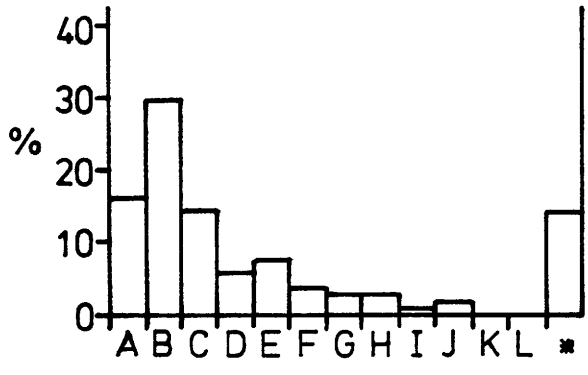
C.E.C. [2988 cases]



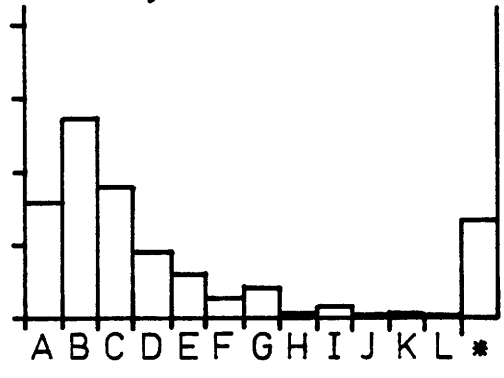
Belgium [105 cases]



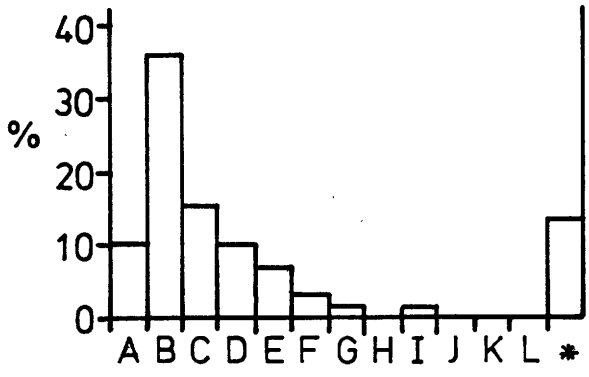
Denmark [105 cases]



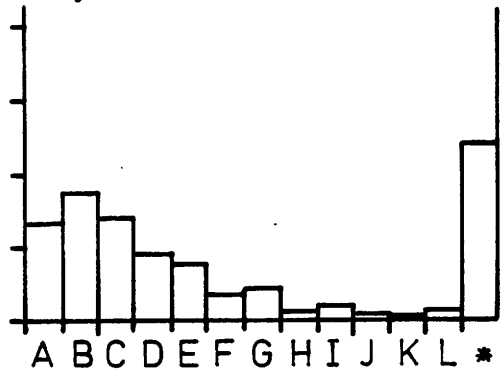
Germany [707 cases]



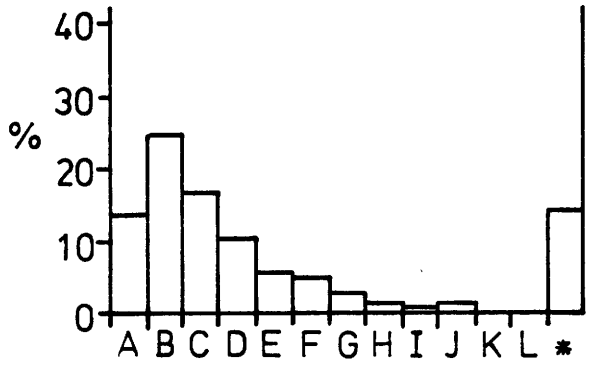
Ireland [58 cases]



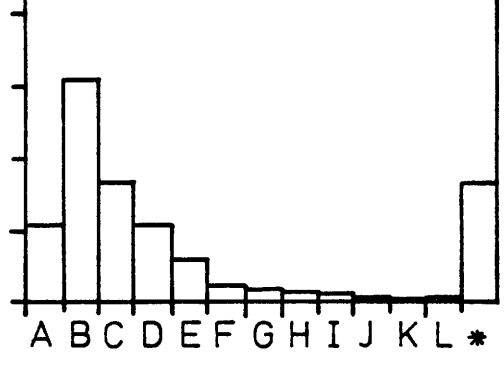
Italy [863 cases]



Netherlands [227 cases]



United Kingdom [919 cases]



LOSS SUSPECTED - LOSS CONFIRMED

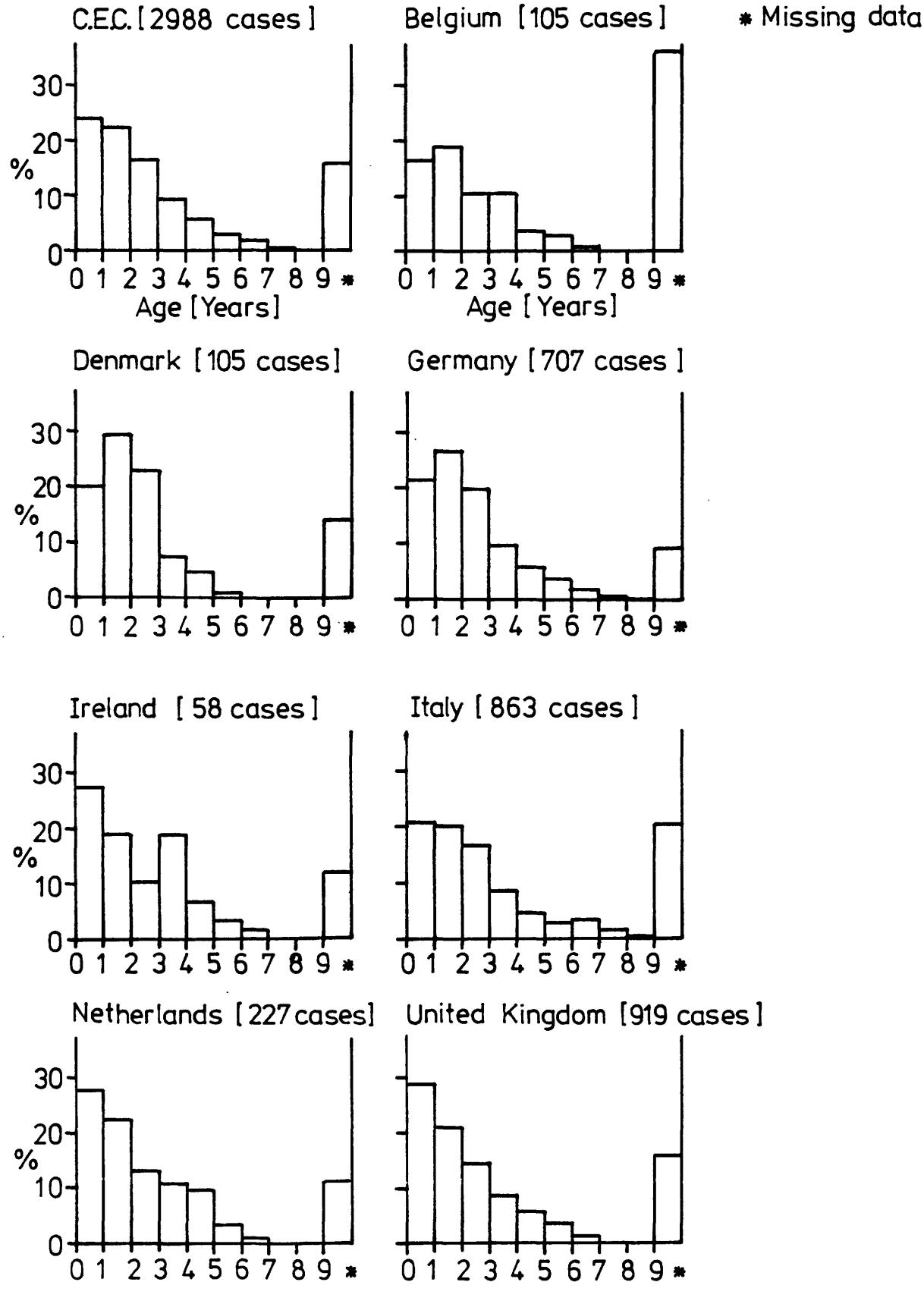
C.E.C. : For 13.5% of children there was no apparent delay between the time the loss was suspected and the time the loss was confirmed. The possible interpretation for this is that these are very young children whose parents suspected a hearing loss which was confirmed without further delay. The other possibility is that these are older children in whom the diagnosis of deafness is made without the parents having previously suspected it. In 25% of the children there was up to a six-month delay between the deafness being suspected and it being confirmed, in 15.5% there was a delay of 6 to 12 months, and in approximately 1% the diagnosis of deafness was not made for some five years after it was first suspected. Attention should be drawn, however, to the 18% of the children where there was no information available.

In the majority of countries the pattern is similar in that most children are confirmed in their deafness within the 12 months of it being suspected. There remains an important number of children who are diagnosed up to and beyond five years after the parents" first suspicions of deafness. However, in comparing the pattern in different countries, once again, attention must be drawn to the relatively large proportion of children (for example in Belgium 40%) where no information was available.

CODE: -

A	=	0	months
B	=	1-6	"
C	=	7-12	"
D	=	13-18	"
E	=	19-24	"
F	=	25-30	"
G	=	31-36	"
H	=	37-42	"
I	=	43-48	"
J	=	49-54	"
K	=	55-60	"
L	=	61 +	"
*		Missing Data	

Age loss first suspected [Q.14]



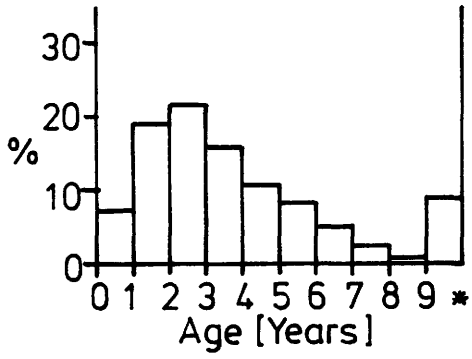
AGE LOSS FIRST SUSPECTED

C.E.C. : Almost 24% of children have been suspected of being deaf before the age of one year and approximately two-thirds by the time they reach their 3rd birthday. Some of the children did not have a hearing loss suspected until they were at least 6 years old (3%). There are a large number of children where these data were not reported (16.0%).

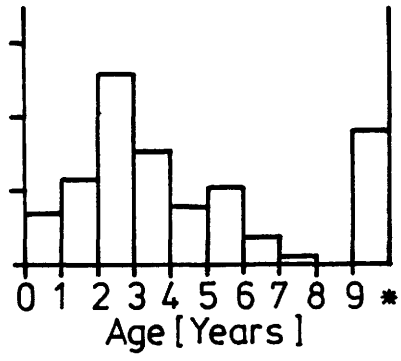
In the member countries the majority (approximately two-thirds) of children were suspected as being deaf by the time they reached 3 years but there is a large amount of missing data (ranging from just less than 10% in Germany to over 35% in Belgium).

Age loss confirmed [Q. 15]

C.E.C. [2988 cases]

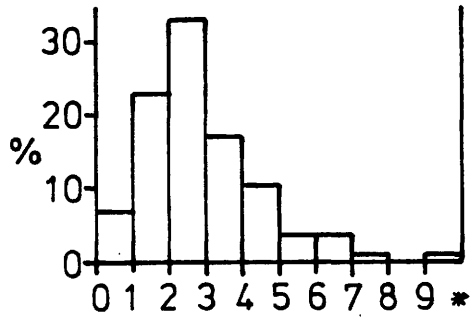


Belgium [105 cases]

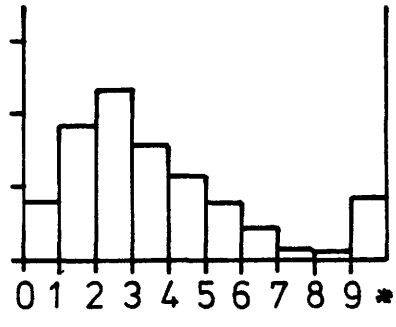


* Missing data

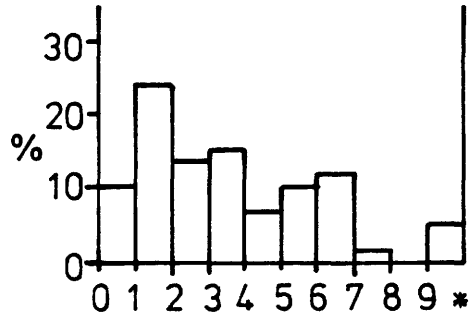
Denmark [105 cases]



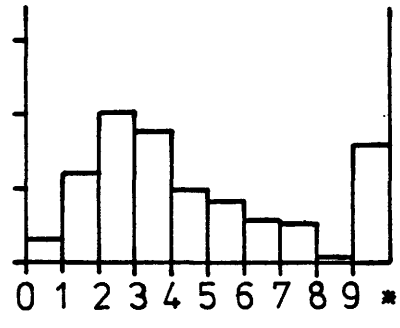
Germany [707 cases]



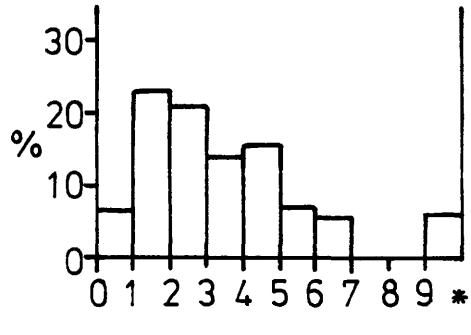
Ireland [58 cases]



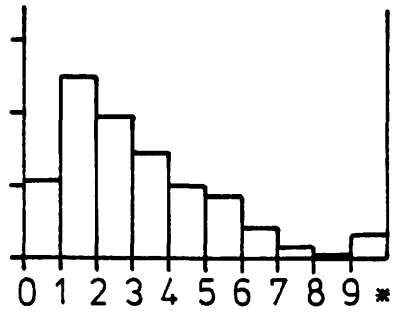
Italy [863 cases]



Netherlands [227 cases]



United Kingdom [919 cases]

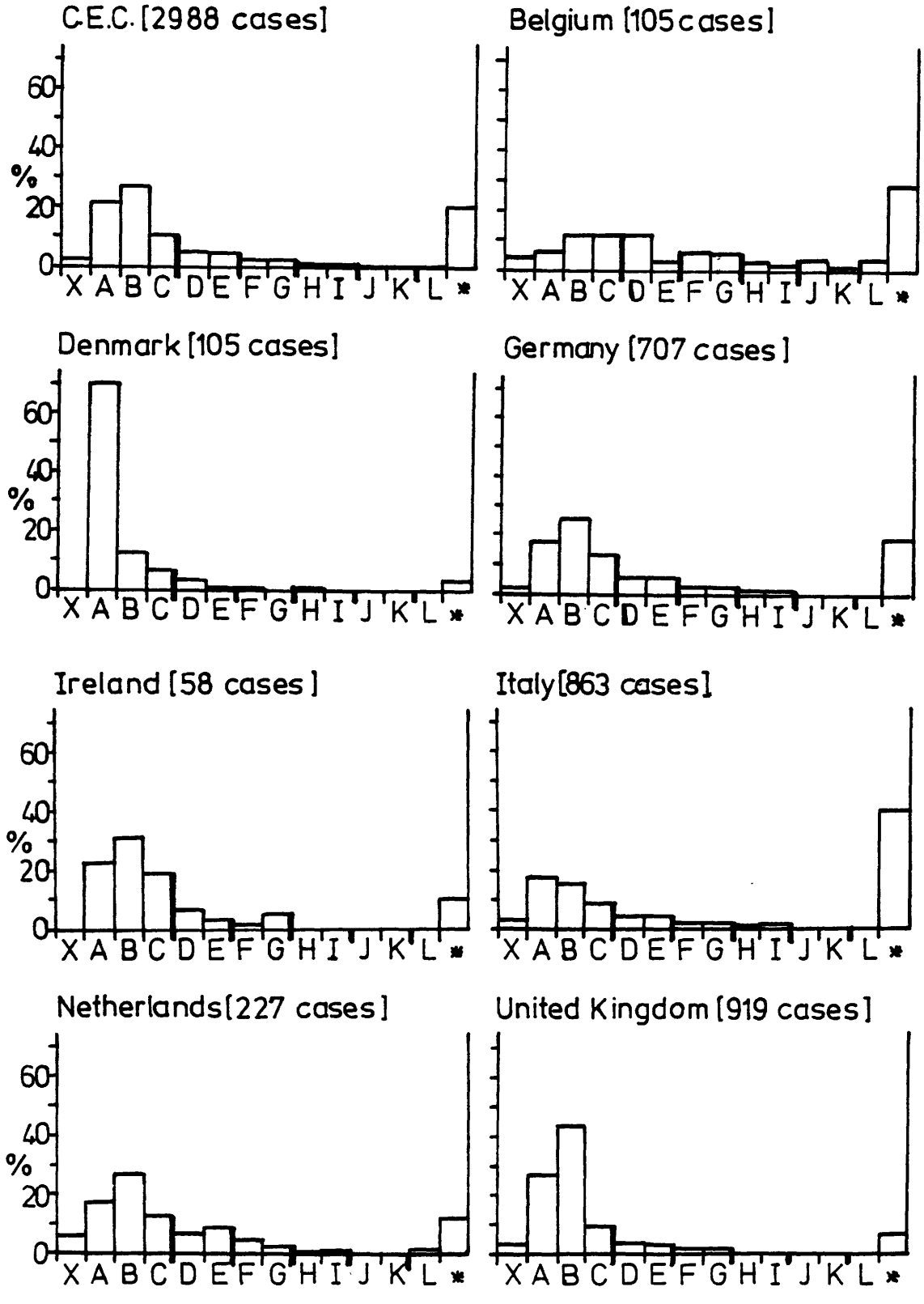


AGE LOSS CONFIRMED (Q. 15)

C.E.C. : Almost 50% of the children have had their hearing loss confirmed by their 3rd birthday. By 6 years of age 91.2% have been diagnosed as being deaf.

There is a similar pattern in the distribution of the age when the loss was confirmed for the member countries but in some countries, e.g. Italy (16%) and Belgium (18%), there were relatively large amounts of missing data.

Difference between age loss confirmed and age hearing aid issued [15+20]



LOSS CONFIRMED - HEARING AID ISSUED

C.E.C. : For 21.8% of the children there were no delay between the time the loss was confirmed and the time the hearing aid was issued. In 37.8% of the children the delay between confirming the hearing loss and issuing the hearing aid was up to 12 months. 1% of the children did not have a hearing aid provided until at least 5 years after their deafness was confirmed.

In the member countries there are marked differences between the time the hearing loss was confirmed and the time the hearing aid was issued. In Denmark 70% of the children received hearing aids at the time of diagnosis of their hearing loss in contrast to 5.7% of the children in Belgium. These differences may be explained by the fact that in some countries deaf children and their parents undergo a period of "education" prior to the child being issued with a hearing aid.

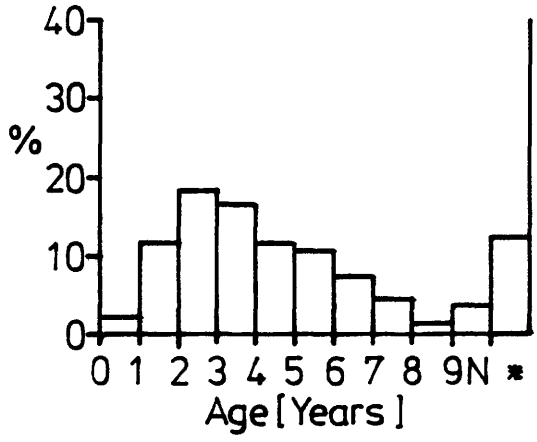
CODE : -

X	=	Aid issued before loss confirmed
A	=	0 months
B	=	1- 6 "
C	=	7-12 "
D	=	13-18 "
E	=	19-24 "
F	=	25-30 "
G	=	31-36 "
H	=	37-42 "
I	=	43-48 "
J	=	49-54 "
K	=	55-60 "
L	=	61 + "

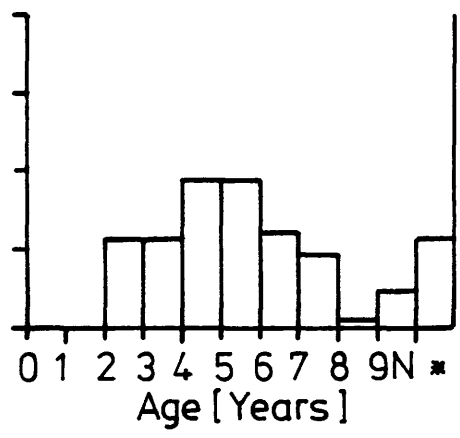
* Missing Data

Age first issue of hearing aid [Q. 20]

C.E.C. [2988 cases]

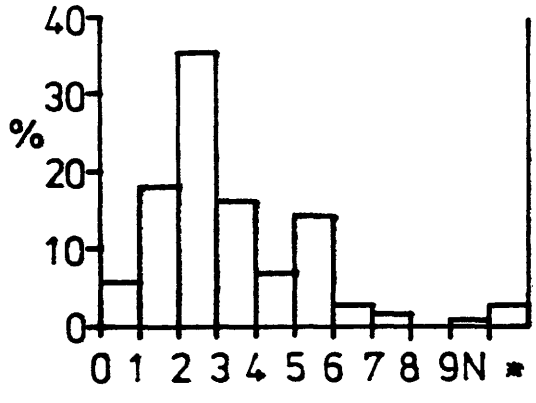


Belgium [105 cases]

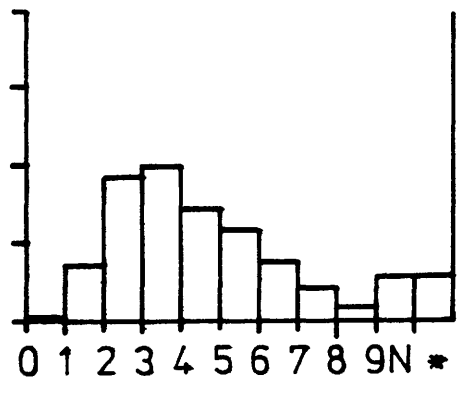


*Missing data
N - No aid

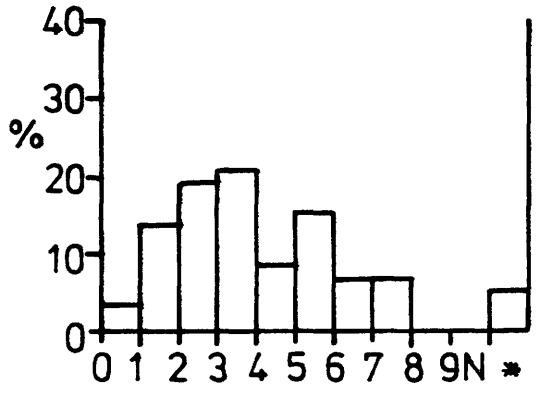
Denmark [105 cases]



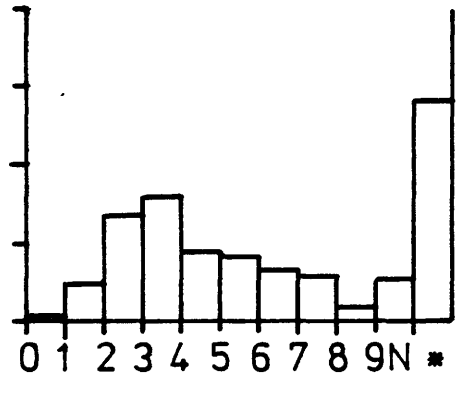
Germany [707 cases]



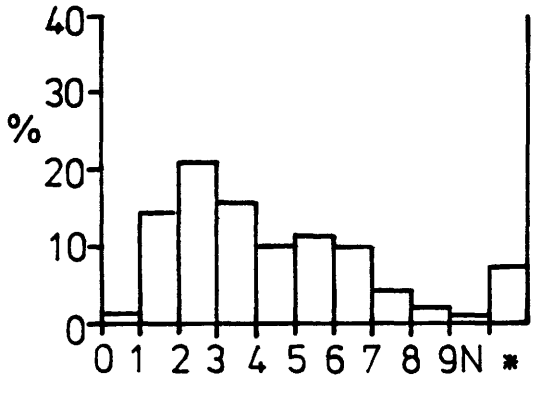
Ireland [58 cases]



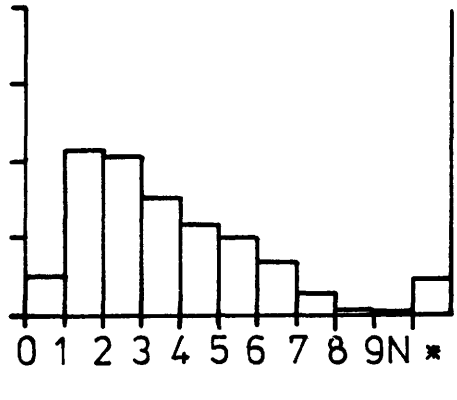
Italy [863 cases]



Netherlands [277 cases]



United Kingdom [919 cases]



AGE FIRST ISSUE OF HEARING AID (Q. 20)

C.E.C. : By the time they have reached their 6th birthday 70.6% of the children have been issued with a hearing aid. 3.6% are reported as not having been issued with hearing aid(s). There were 12.4% of the children where no information was available.

Within the majority of member countries the pattern seen in the distribution of the C.E.C. data is similar. The slightly odd distribution in Belgium may be explained by the fact that the children and their families usually undergo a period of special education before a hearing aid is issued. The lack of information supplied for this question varies between countries, from 3% in Denmark to 28% in Italy.

TYPE OF HEARING LOSS (Q.16) (NUMBER OF CASES AND %)

	C.E.C.		BELGIUM		DENMARK		GERMANY	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%
PERCEPTIVE	2749	92.0	100	95.2	101	96.2	638	90.2
CONDUCTIVE	79	2.6	2	1.9	2	1.9	14	2.0
PERCEPTIVE AND CONDUCTIVE	115	3.8	3	2.9	2	1.9	45	6.4
MISSING DATA	45	1.5	0	0.0	0	0.0	10	1.4
TOTAL	2988	100.0	105	100.0	105	100.0	707	100.0

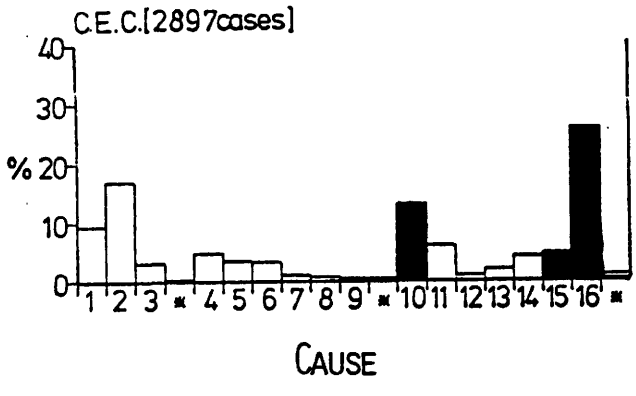
IRELAND		ITALY		LUXEMBOURG		NETHERLANDS		U.K.	
Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
56	96.6	791	91.7	3	75.0	212	93.4	848	92.3
1	1.7	20	2.3	1	25.0	8	3.5	31	3.4
1	1.7	25	2.9	0	0.0	3	1.3	36	3.9
0	0.0	27	3.1	0	0.0	4	1.8	4	0.4
58	100.0	863	100.0	4	100.0	227	100.0	919	100.0

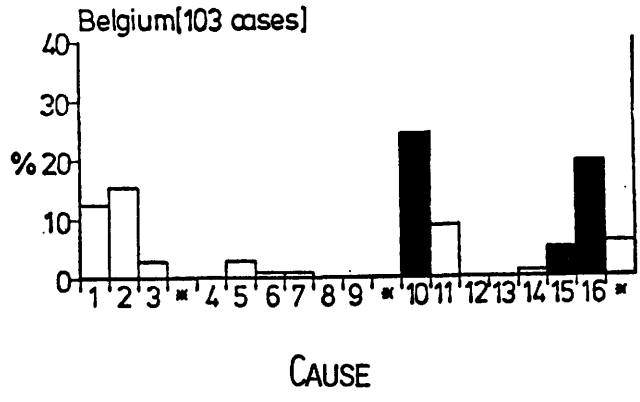
TYPE OF HEARING LOSS (Q. 16 and 17)

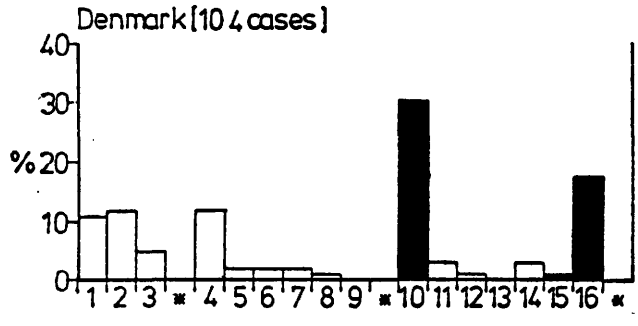
C.E.C. : Perceptive hearing loss accounts for about 92.0% of all the causes of deafness. 3.8% of the children have a mixed perceptive and conductive loss.

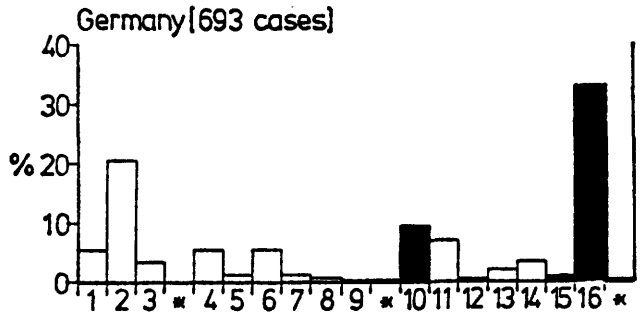
The proportions reported in the member countries show a similar pattern.

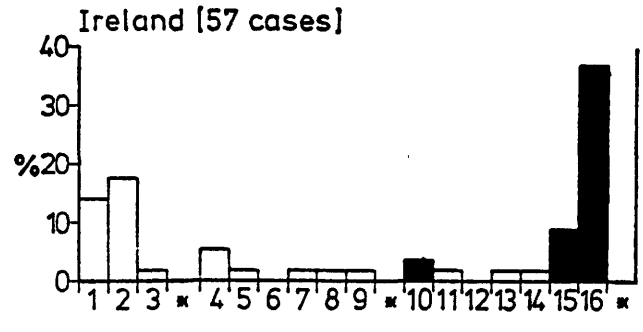
PERCEPTIVE LOSS BY CAUSE (Q.16)

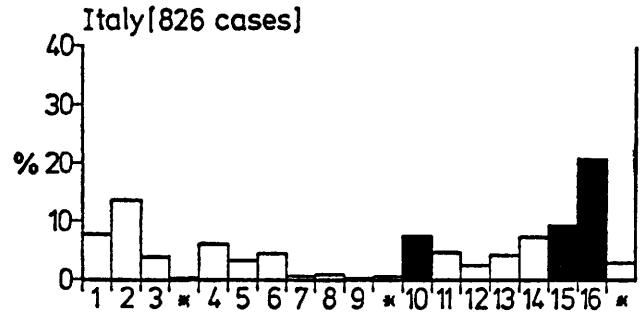


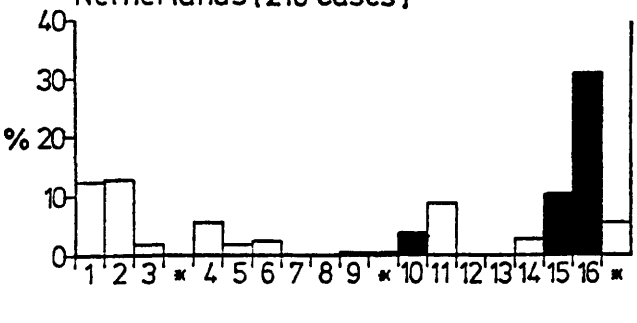


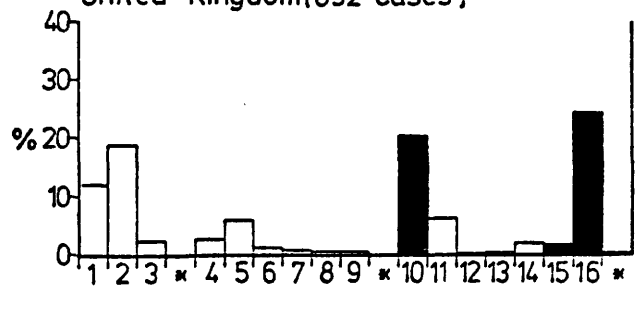












LUXEMBOURG (No. of cases):
1 Congenital, Genetic
1 Perinatal, Anoxia
1 Acquired, Unknown cause
1 Unknown Congenital/Acquired

CODE FOR CAUSE

CONGENITAL

1. Genetic

Intrauterine

2. Rubella
3. Other cause
* Missing data

Perinatal

4. Anoxia
5. Jaundice
6. Other cause
7. Anoxia/Jaundice
8. Anoxia/Other
9. Jaundice/Other
* Missing data
10. Cause unknown

ACQUIRED

11. Meningitis
12. Ototoxic drugs
13. Hereditary
14. Other cause
15. Unknown cause
16. UNKNOWN CONGENITAL or ACQUIRED

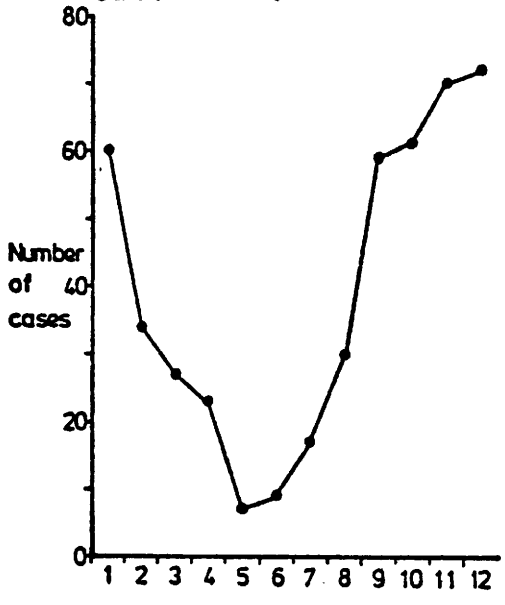
* Missing data for Perceptive Loss, where the cause was NOT stated

PERCEPTIVE LOSS BY CAUSE (Q. 16)

C.E.C. : Of the known causes, numerically the largest single cause is Rubella (16%) which is followed by genetic causes (9%). Where the deafness was identified as being congenital in origin it was not possible to assign a cause in 13% of cases. If perceptive deafness is considered as a whole, in 42% of the children (i.e. columns 10, 15 and 16) no cause was reported. In all the countries Rubella stands out as the single largest identifiable cause of deafness. This varies from 12% in Denmark to 20% in Germany.

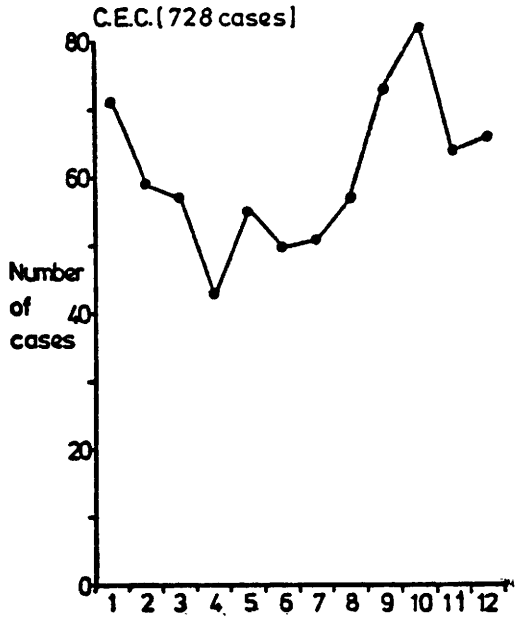
Distribution by month of birth for all cases of Perceptive Deafness due to Rubella

C.E.C. (469 cases)



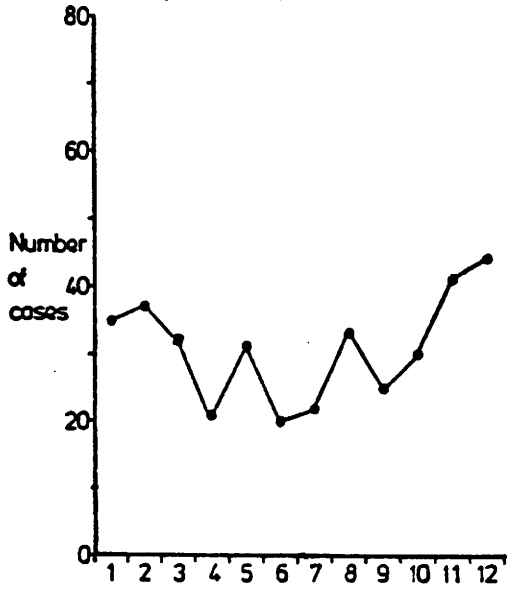
Distribution by month of birth for all cases of Perceptive Deafness due to Unknown Congenital or Acquired causes

C.E.C. (728 cases)



Distribution by month of birth for all cases of Perceptive Deafness due to Unknown Congenital causes

C.E.C. (371 cases)



RUBELLA / MONTH OF BIRTH

In those cases where Rubella in pregnancy was identified as the cause of the child's deafness it may be seen that there is a marked seasonal variation in the month of birth; fewer cases were born in spring and summer than in autumn and winter.

UNKNOWN CONGENITAL AND UNKNOWN CONGENITAL AND ACQUIRED CAUSES / MONTH OF BIRTH

There appears to be a similar, but less well marked, seasonal variation in the month of birth of those children whose cause of perceptive deafness is reported as unknown. This is in comparison to those children where Rubella in pregnancy was reported as being the cause of their perceptive deafness.

CONDUCTIVE LOSSES (Q.17) (NUMBER OF CASES AND %)

	C.E.C.		BELGIUM		DENMARK		GERMANY	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%
RIGHT CONGENITAL CONDUCTIVE DEFORMITY	3	1.5	0	0.0	0	0.0	1	1.7
LEFT CONGENITAL CONDUCTIVE DEFORMITY	2	1.0	0	0.0	0	0.0	0	0.0
R & L CONGENITAL CONDUCTIVE DEFORMITY	69	35.6	4	80.0	1	25.0	22	37.3
RIGHT CHRONIC MIDDLE EAR DISEASE	6	3.1	0	0.0	0	0.0	1	1.7
LEFT CHRONIC MIDDLE EAR DISEASE	4	2.1	0	0.0	0	0.0	2	3.4
R & L CHRONIC MIDDLE EAR DISEASE	77	39.7	1	20.0	2	50.0	19	32.2
MISSING DATA	33	17.0	0	0.0	1	25.0	14	23.7
TOTAL	194	100.0	5	100.0	4	100.0	59	100.0

IRELAND		ITALY		LUXEMBOURG		NETHERLANDS		U.K.	
Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
0	0.0	1	2.2	0	0.0	0	0.0	1	1.5
0	0.0	1	2.2	0	0.0	0	0.0	1	1.5
1	50:0	10	22.2	0	0.0	4	36.4	27	40.3
0	0.0	1	2.2	1	100.0	1	9.1	2	3.0
0	0.0	1	2.2	0	0.0	0	0.0	1	1.5
1	50.0	19	42.2	0	0.0	1	9.1	34	50.7
0	0.0	12	26.7	0	0.0	5	45.5	1	1.5
2	100.0	45	100.0	1	100.0	11	100.0	67	100.0

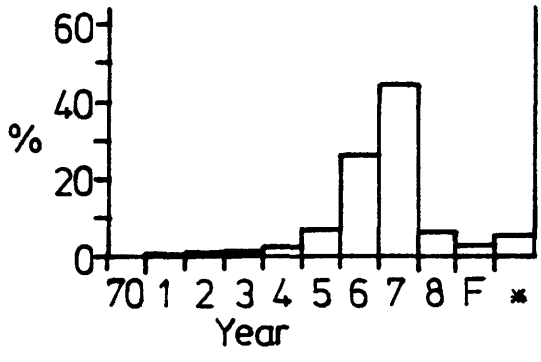
CONDUCTIVE LOSS

C.E.C. : The types of conductive loss are evenly distributed between bilateral congenital conductive deformity (35.6%) and bilateral chronic middle ear disease (39.7%). In those cases in the Study where there is bilateral perceptive loss.

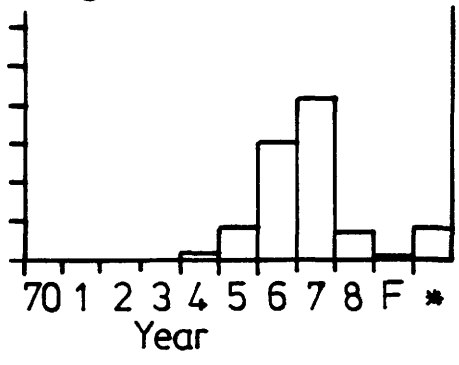
The types of conductive loss vary within the member countries but in many cases the numbers are so small as to make the interpretation of these data difficult.

Date most recent Audiogram [Q. 18]

C.E.C. [2988 cases]



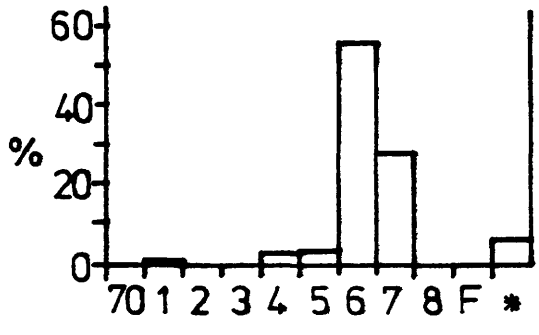
Belgium [105 cases]



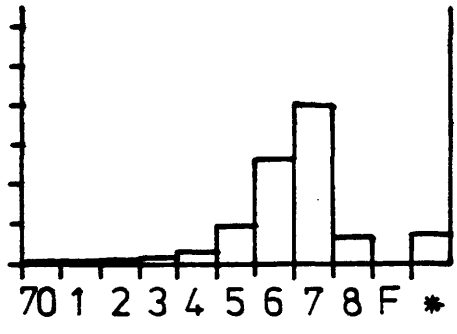
* Missing data

F - Free Field

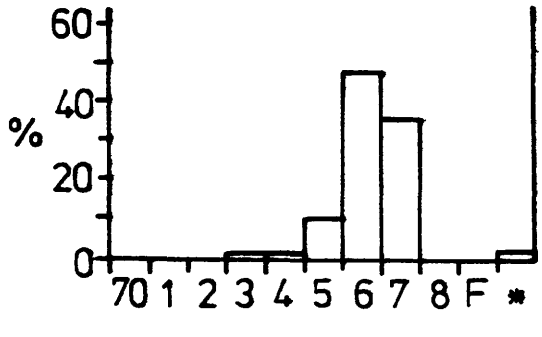
Denmark [105 cases]



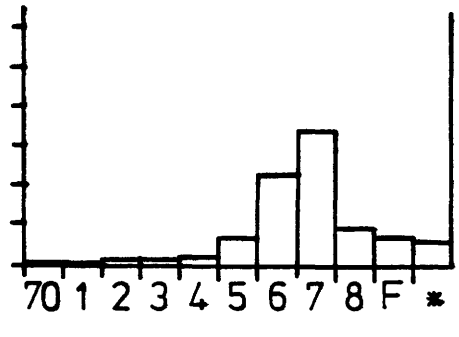
Germany [707 cases]



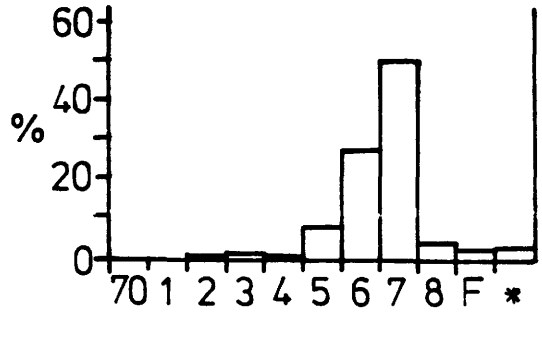
Ireland [58 cases]



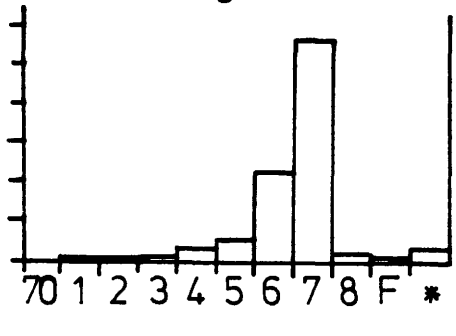
Italy [863 cases]



Netherlands [227 cases]



United Kingdom [919 cases]



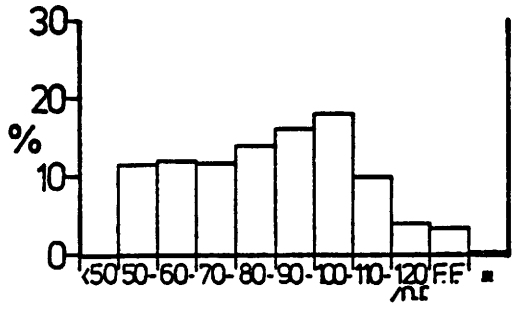
Luxembourg [no. of cases] - 3 in 1977, 1 in 1978

AUDIOGRAM

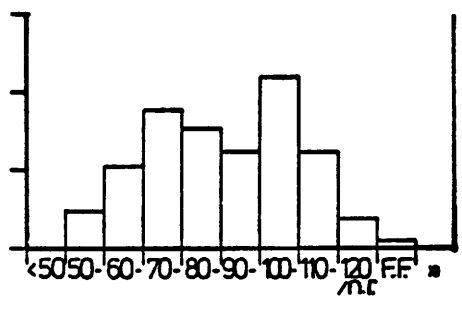
C.E.C. : The year in which the last audiogram was recorded is set out in the histograms. It was intended that the Study be carried out in all countries in 1977; however, in some countries, the collection of data was not completed until the first half of 1978. In Denmark and Ireland the Study was completed by the middle of 1977. Approximately 50% of the children had had audiometry carried out one year or less prior to the termination of the Study in all the member countries.

Hearing Loss [Q.18] - distribution of the mean loss [in dB] at 500, 1000 and 2000 Hz. for the better ear [or, if the loss is equal, in the Right ear]

C.E.C. [2988 cases]

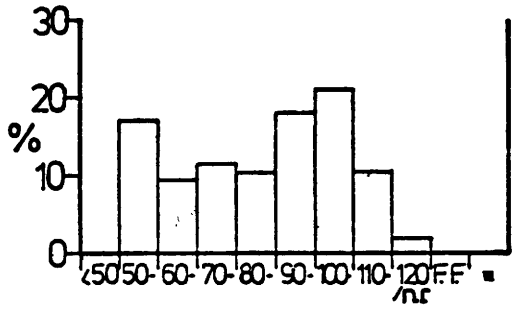


Belgium [105 cases]

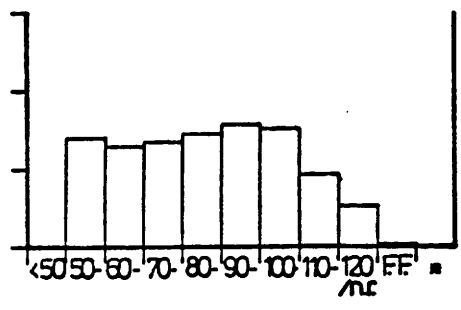


Code :-
n.r. - no response
F.F. - Free Field
▪ - Missing data

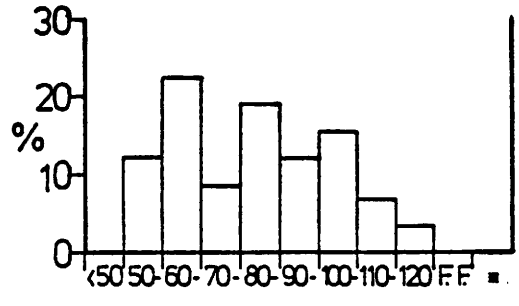
Denmark [105 cases]



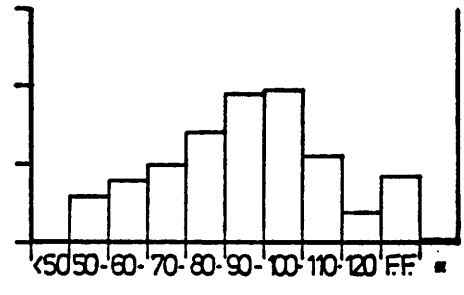
Germany [707 cases]



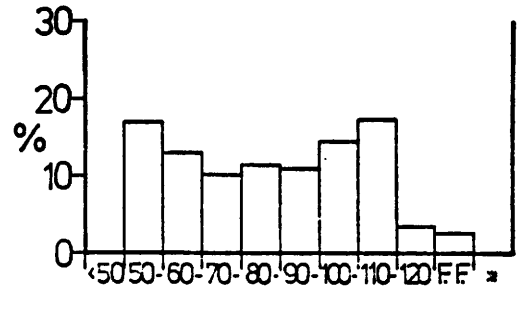
Ireland [58 cases]



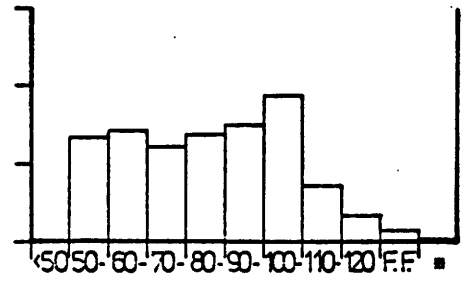
Italy [863 cases]



Netherlands [227 cases]



United Kingdom [919 cases]



Luxembourg [no. of cases]:-

2 cases - 50-
2 cases - 60-

HEARING LOSS - DISTRIBUTION OF MEAN LOSS

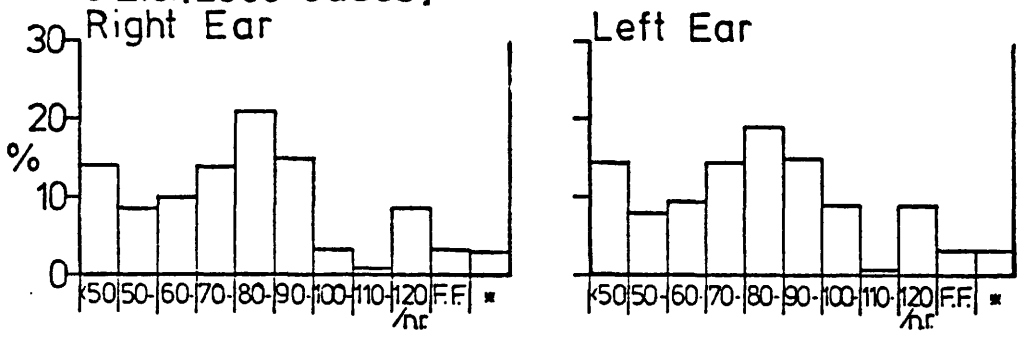
C.E.C. : For each child the mean loss in dB has been calculated for the 3 frequencies, 500, 1000, 2000 Hz for each ear separately. The mean loss of the better ear (or if the loss is equal, in the right ear) has been used in the analysis. The distribution of the hearing losses shows that in 33% of the children there was a hearing loss of at least 100 dB or more.

In Italy and Belgium there are fewer children with a mean loss of less than 70 dB in contrast to the other countries.

** The following pages of histograms, pp 90 - 99 show the distribution in each ear of the hearing loss at the individual frequencies of: 250 Hz, 500 Hz, 1000 Hz, 2000 Hz, 4000 Hz.

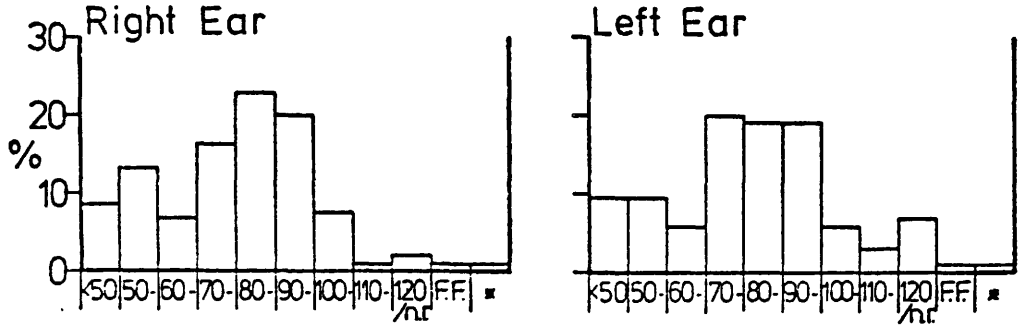
Hearing Loss in dB. at 250 Hz. [Q.18]

C.E.C. [2988 cases]

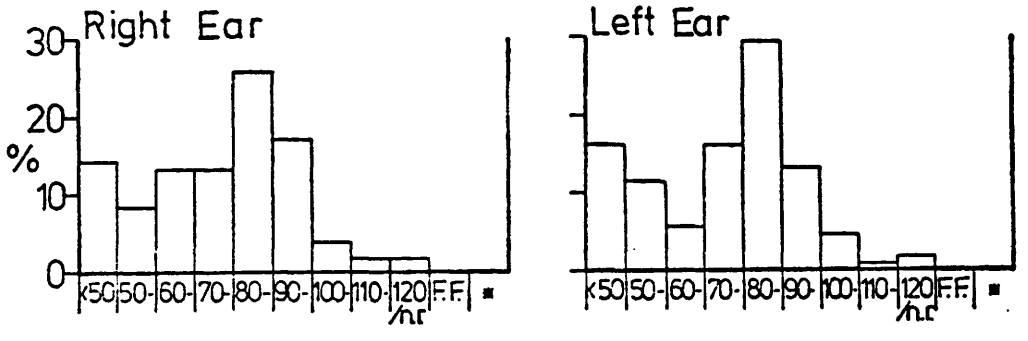


Code :-
n.r - no response
F.F - Free Field
* - Missing data

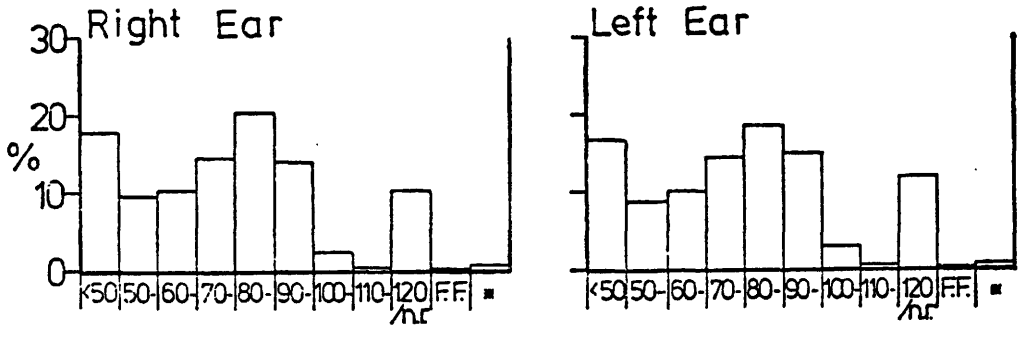
Belgium [105 cases]



Denmark [105 cases]



Germany [707 cases]

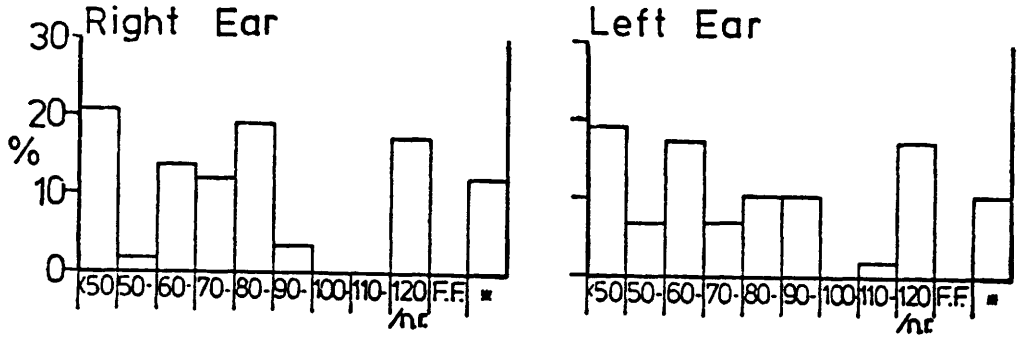


Luxembourg [no. of cases]:-

Right Ear	Left Ear
30 - 2 cases	30 - 2 cases
50 - 2 cases	45 - 1 case
	50 - 1 case

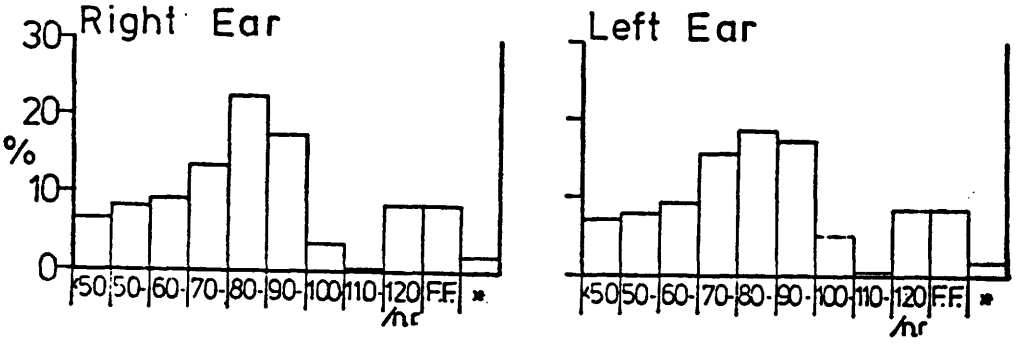
Hearing Loss in dB at 250 Hz. [Q.18]

Ireland [58 cases]

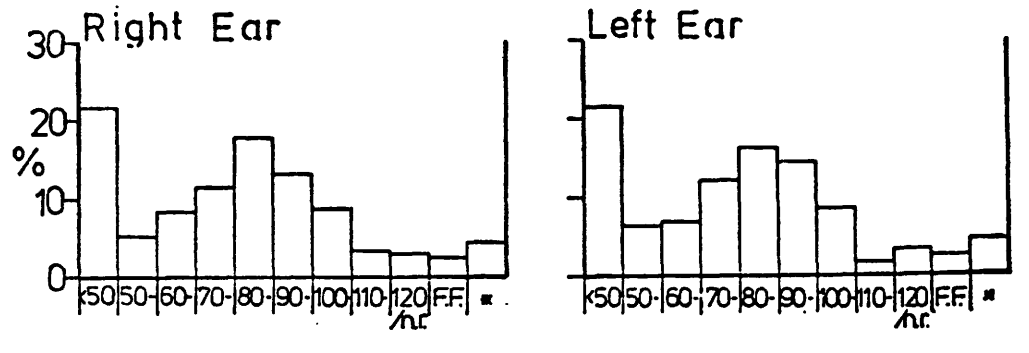


Code :-
n.r. - no response
F.F. - Free Field
* - Missing data

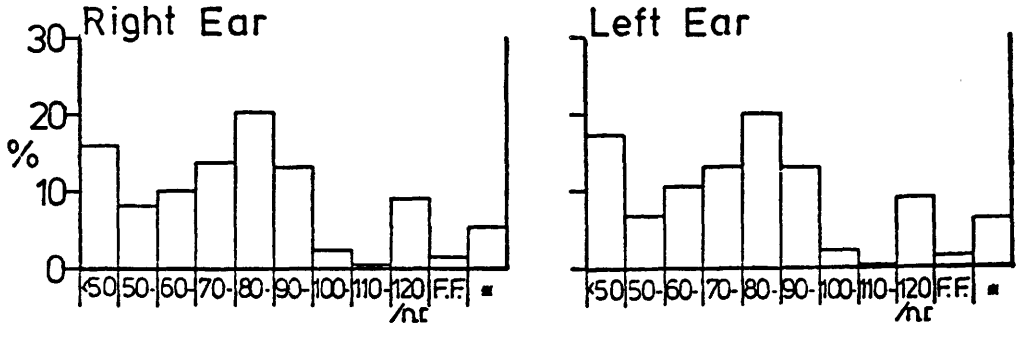
Italy [863 cases]



Netherlands [227 cases]

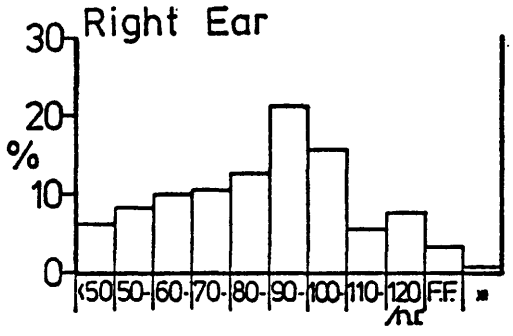


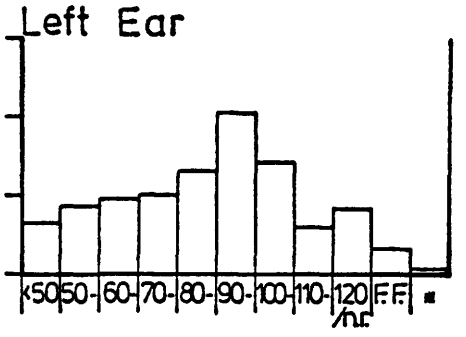
United Kingdom [919 cases]



Hearing Loss in dB. at 500 Hz [Q.18]

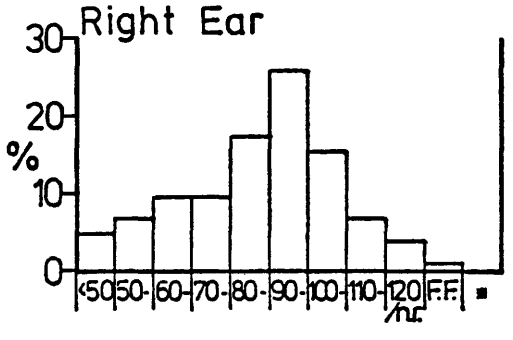
C.E.C. [2988 cases]

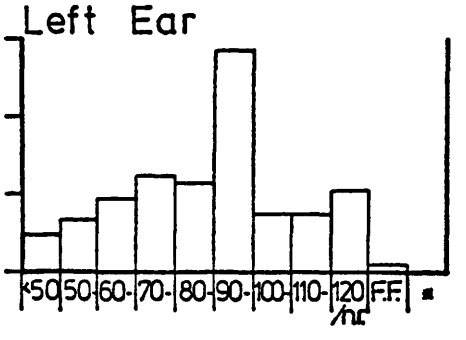




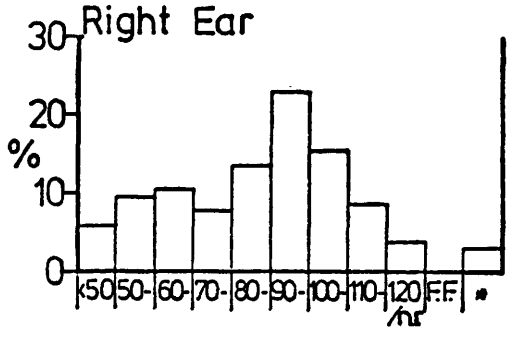
Code :-
n.r - no response
F.F. - Free. Field
* - Missing data

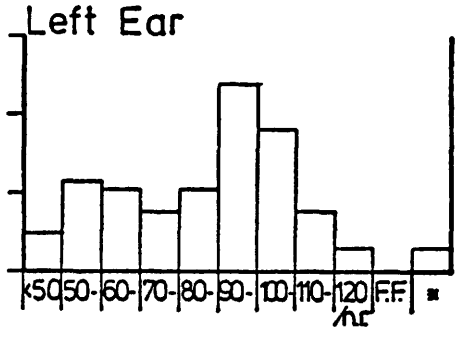
Belgium [105 cases]



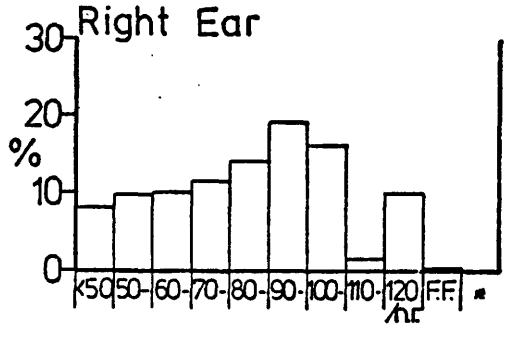


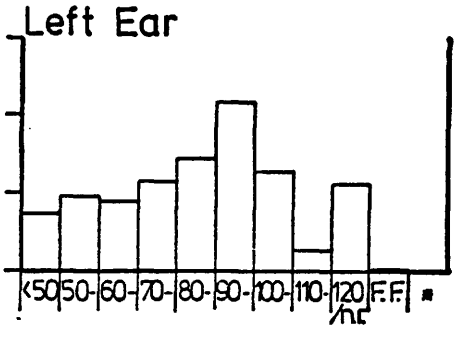
Denmark [105 cases]





Germany [707 cases]



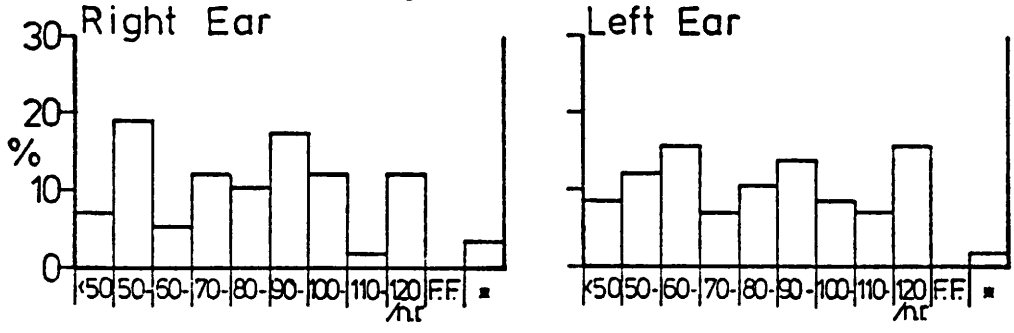


Luxembourg [no. of cases]

Right Ear	Left Ear
35 - 1 case	35 - 1 case
50 - 1 case	50 - 1 case
65 - 2 cases	60 - 1 case
	65 - 1 case

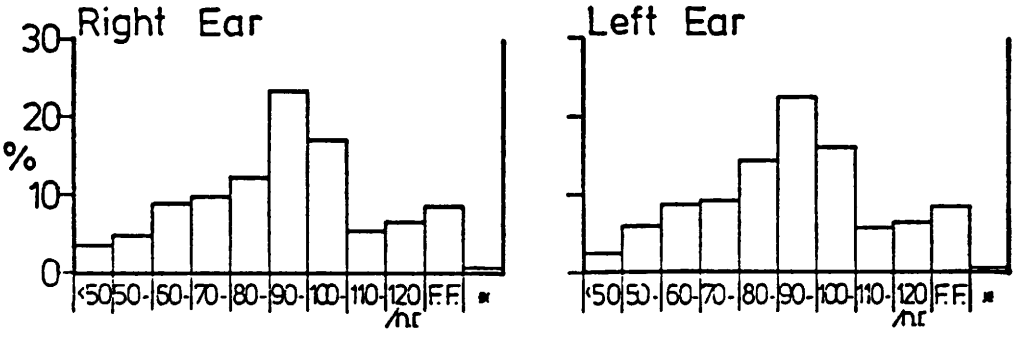
Hearing Loss in dB. at 500Hz.[Q.18]

Ireland[58 cases]

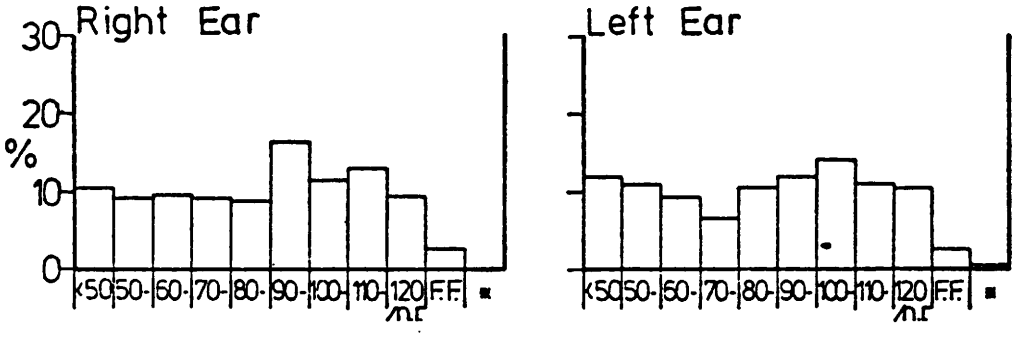


Code :-
n.r - no response
F.F - Free Field
* - Missing data

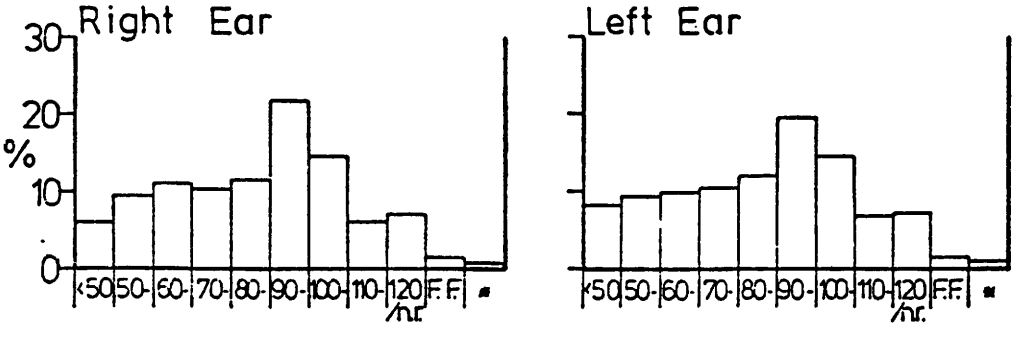
Italy[863 cases]



Netherlands[227 cases]

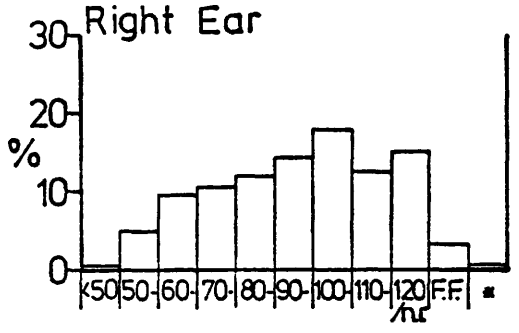


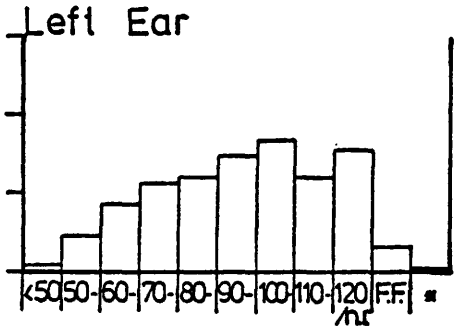
United Kingdom[919 cases]



Hearing Loss in dB. at 1000 Hz. [Q.18]

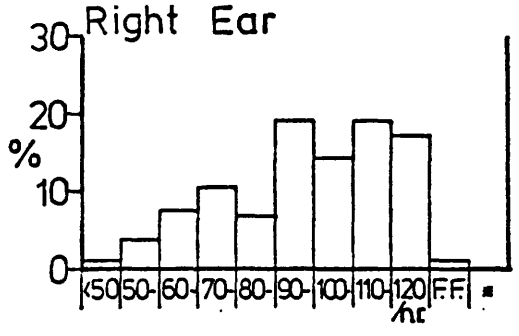
C.E.C. [2988 cases]

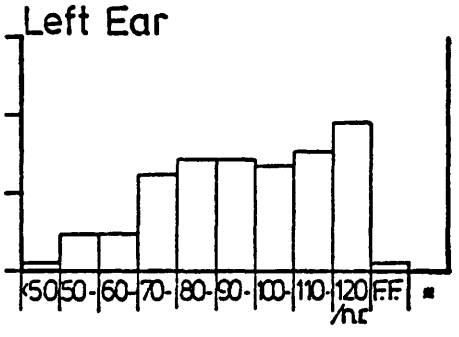




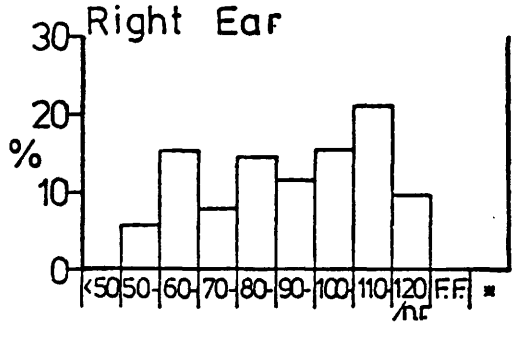
Code :-
n.r. - no response
F.F. - Free Field
* - Missing data

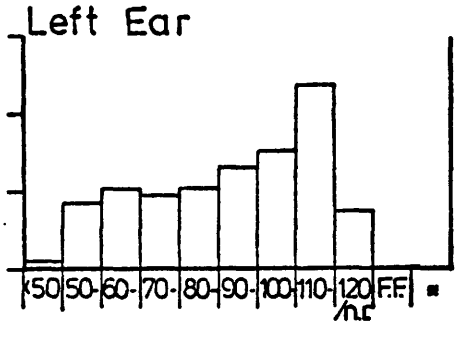
Belgium [105 cases]



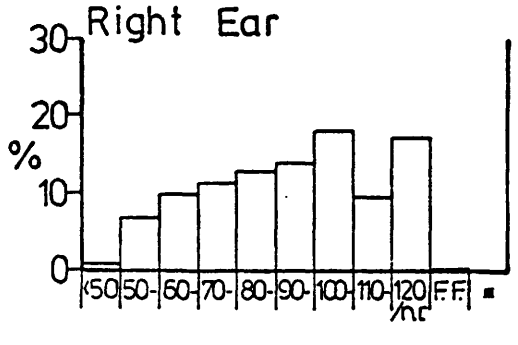


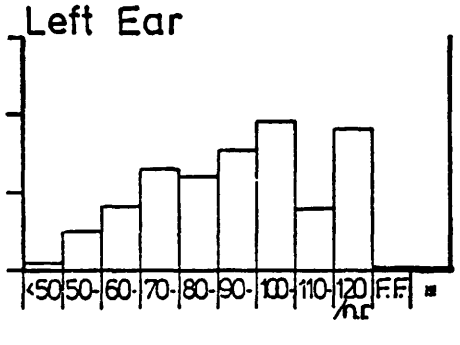
Denmark [105 cases]





Germany [707 cases]



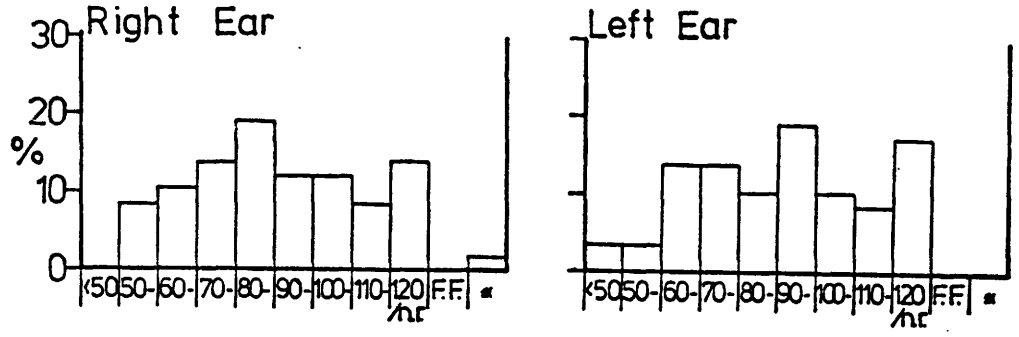


Luxembourg [no. of cases]:-

Right Ear	Left Ear
60 - 3 cases	60 - 1 case
80 - 1 case	65 - 2 cases
	75 - 1 case

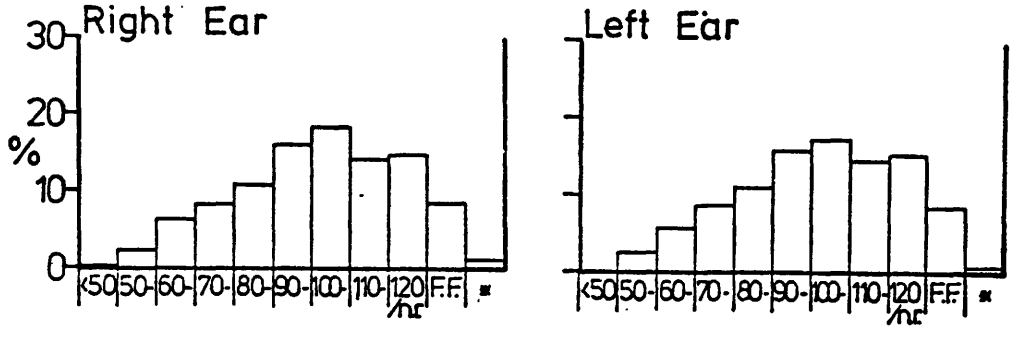
Hearing Loss in dB. at 1000 Hz. [Q.18]

Ireland [58 cases]

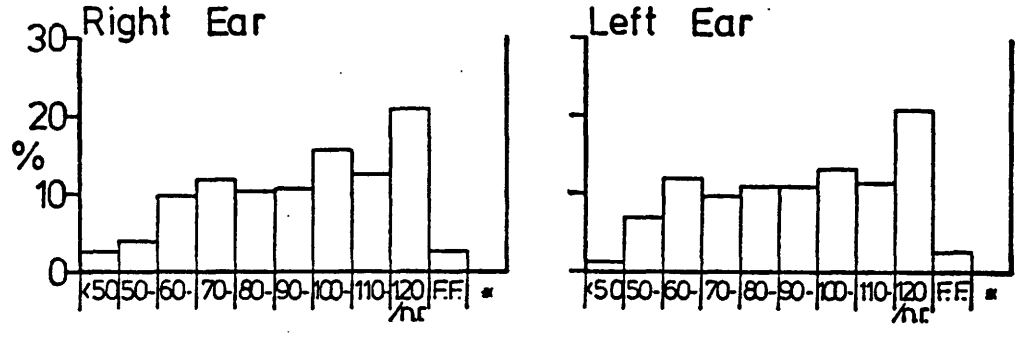


Code :-
n.r - no response
F.F - Free Field
* - Missing data

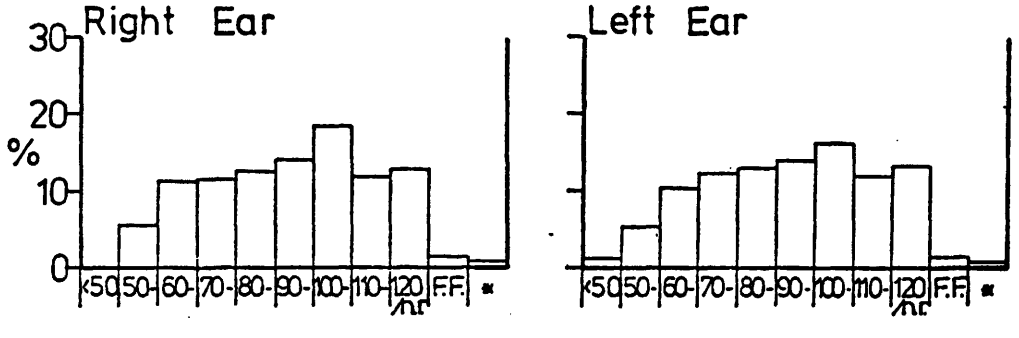
Italy [863 cases]



Netherlands [227 cases]

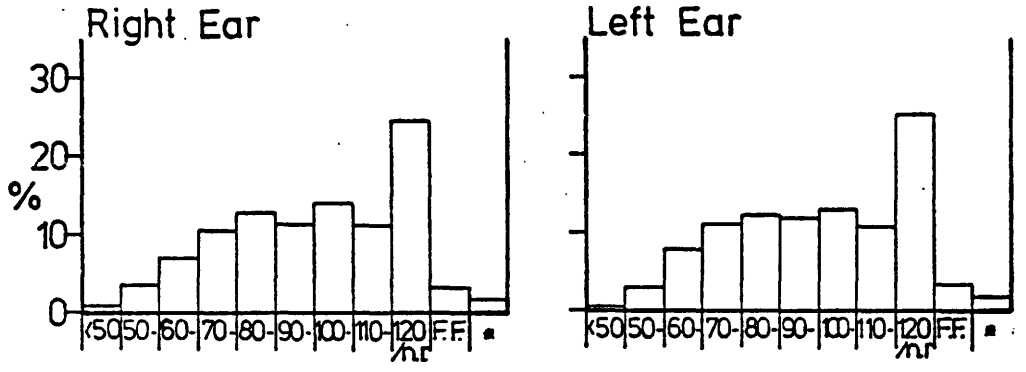


United Kingdom [919 cases]



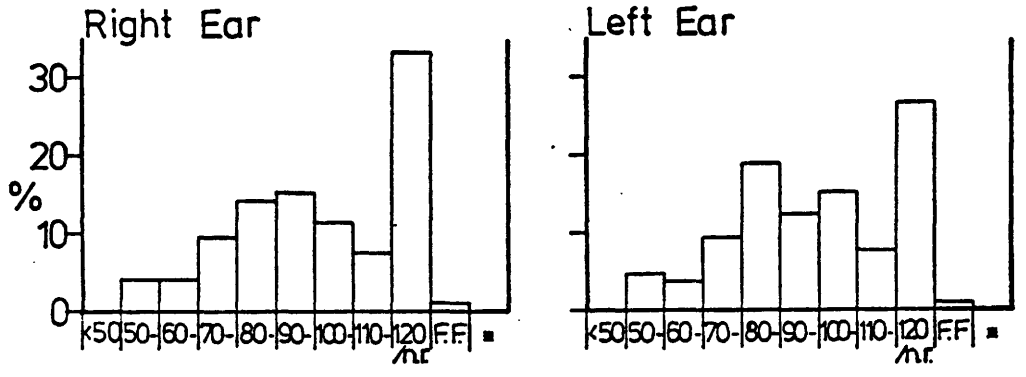
Hearing Loss in dB. at 2000 Hz. [Q.18]

C.E.C. [2988 cases]

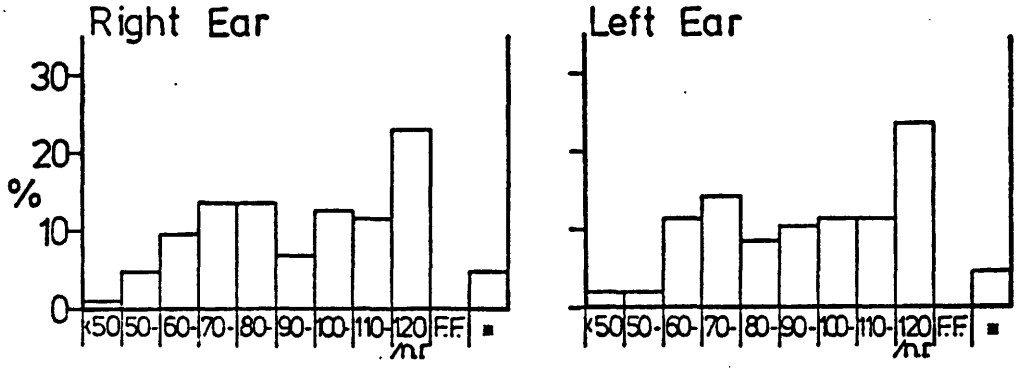


Code:-
n.r. - no response
F.F. - Free Field
▪ - Missing data

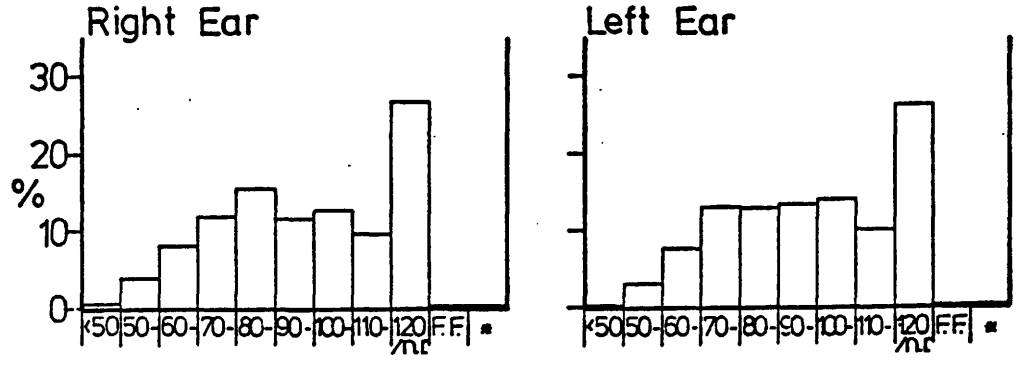
Belgium [105 cases]



Denmark [105 cases]



Germany [707 cases]



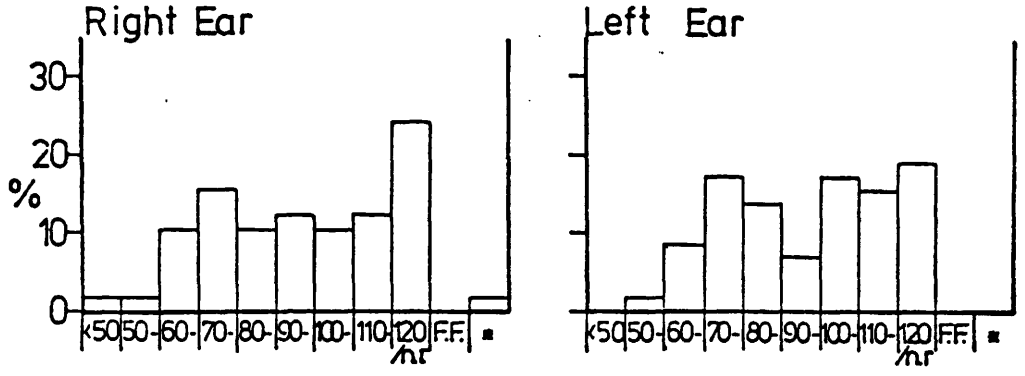
Luxembourg [no. of cases]

Right Ear
60 - 2 cases, 65 - 1 case,
70 - 1 case

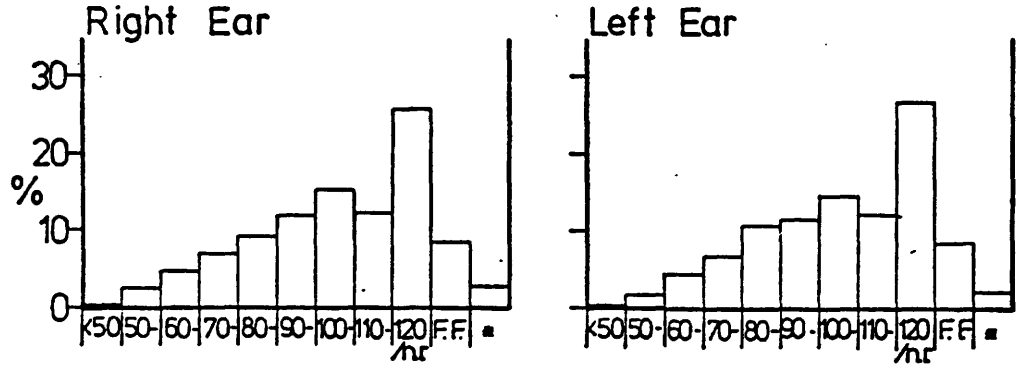
Left Ear
65 - 1 case, 70 - 2 cases,
75 - 1 case

Hearing Loss in dB. at 2000Hz [Q.18]

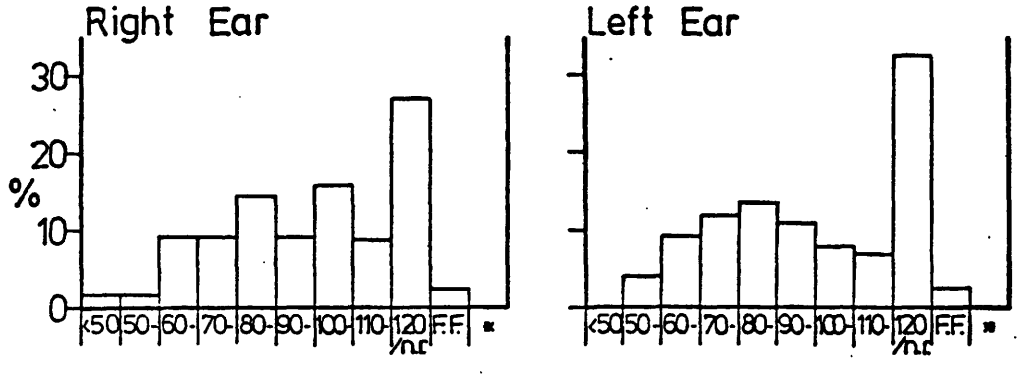
Ireland [58 cases]



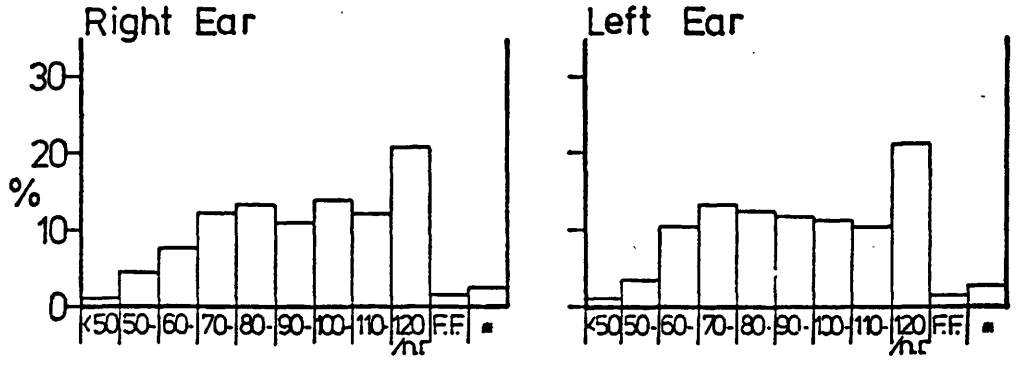
Italy [863 cases]



Netherlands [277 cases]

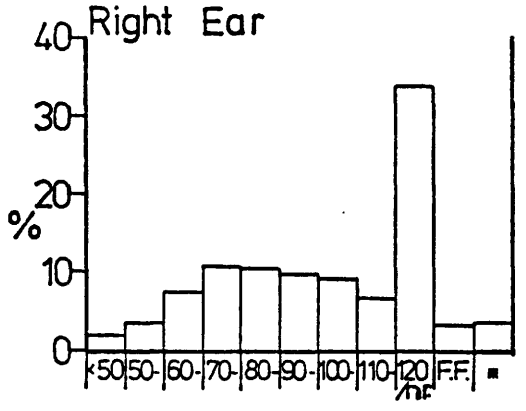


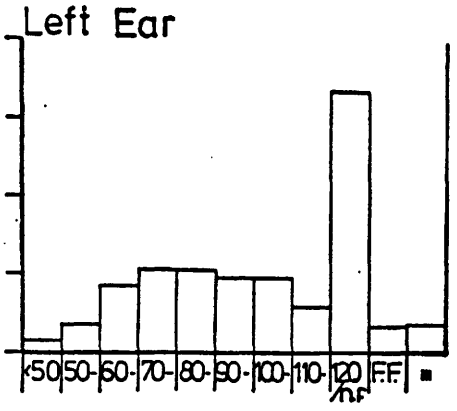
United Kingdom [919 cases]



Hearing Loss in dB at 4000 Hz. [Q.18]

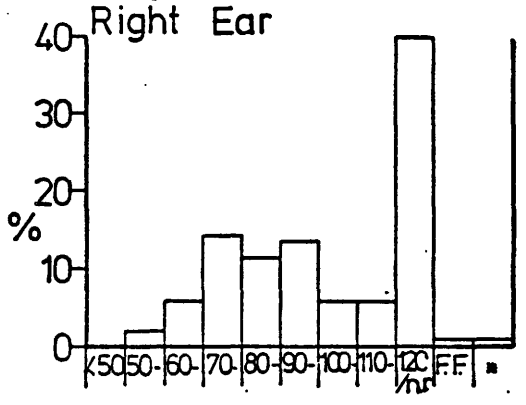
C.E.C. [2988 cases]

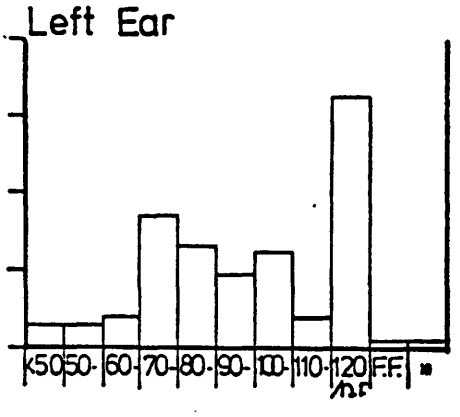




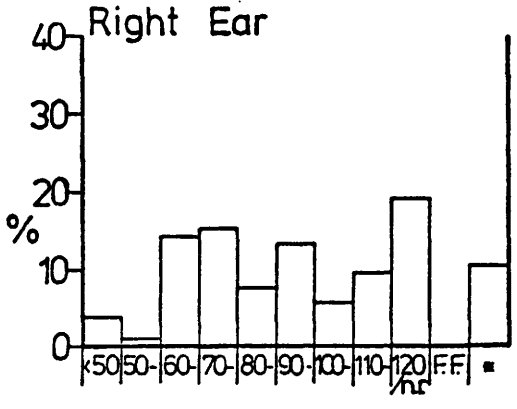
Code:-
n.r - no response
F.F - Free Field
* - Missing data

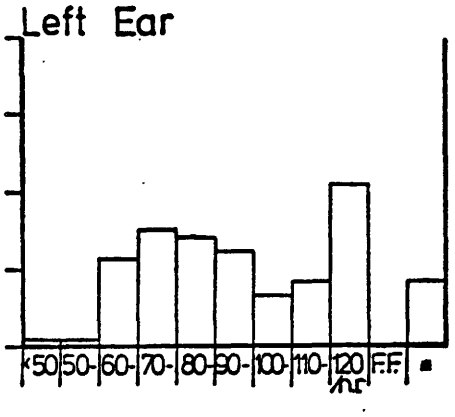
Belgium [105 cases]



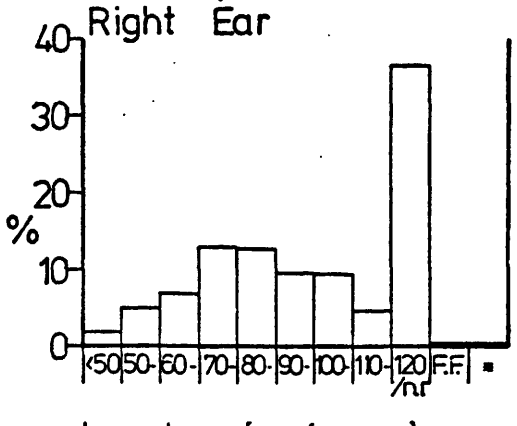


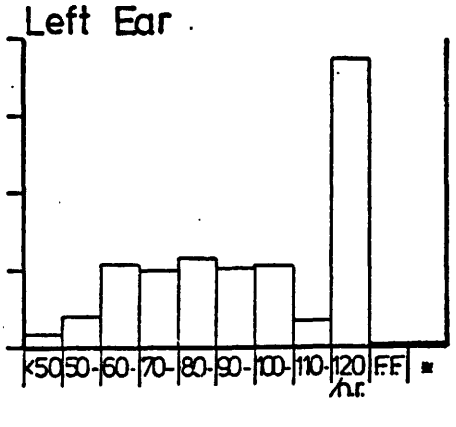
Denmark [105 cases]





Germany [707 cases]





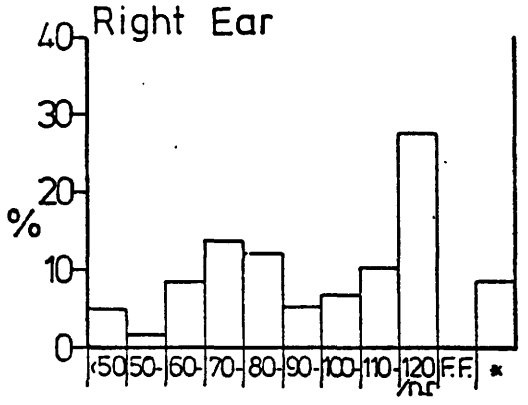
Luxembourg [no. of cases]

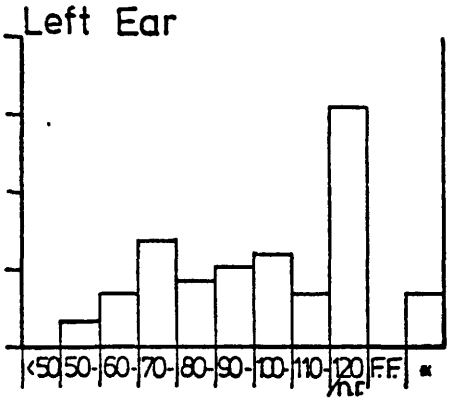
Right Ear:- 60 - 1 case, 65 - 1 case, 80 - 1 case, 95 - 1 case.

Left Ear:- 55 - 1 case, 60 - 1 case, 75 - 1 case, 85 - 1 case.

Hearing Loss in dB. at 4000 Hz. [Q.18]

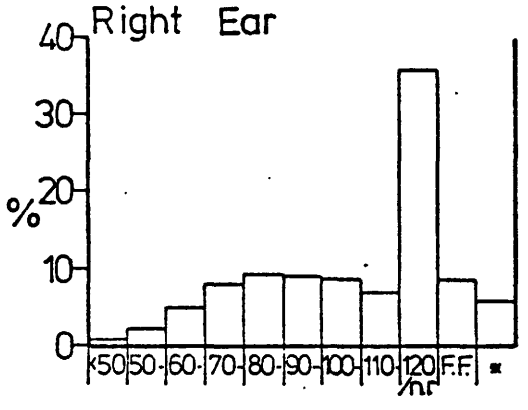
Ireland [58 cases]

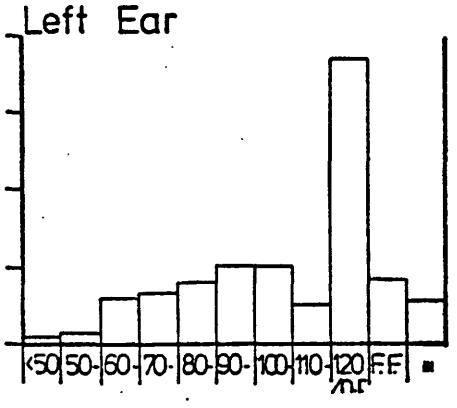




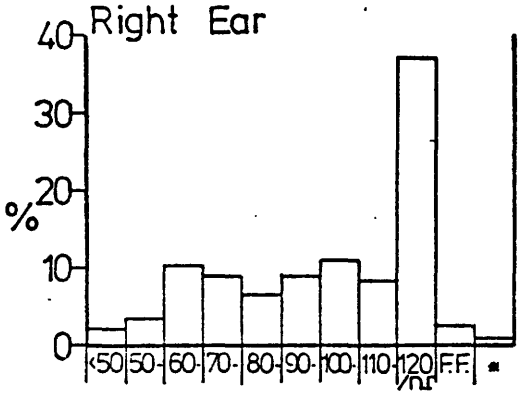
Code:-
n.r. - no response
F.F - Free Field
* - Missing data

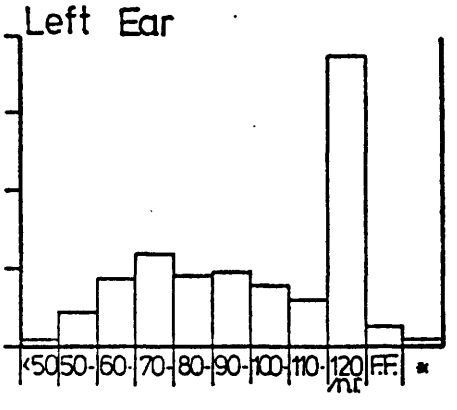
Italy [863 cases]



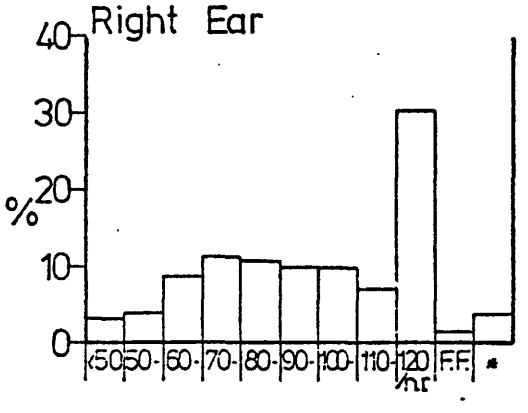


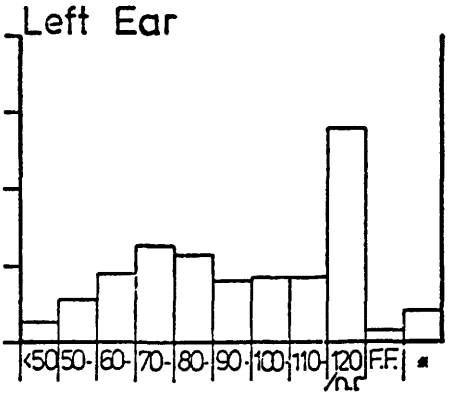
Netherlands [227 cases]





United Kingdom [919 cases]

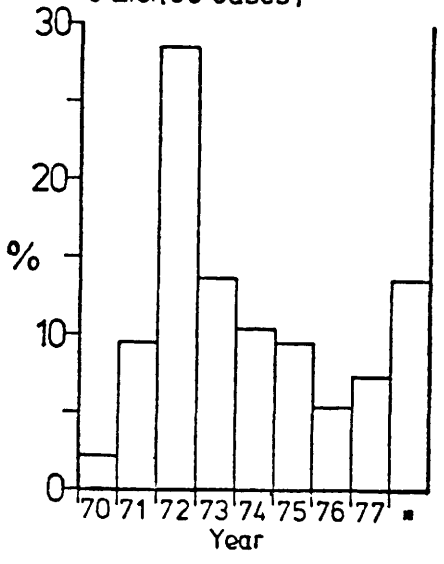




FREE FIELD AUDIOMETRY [Q.18]

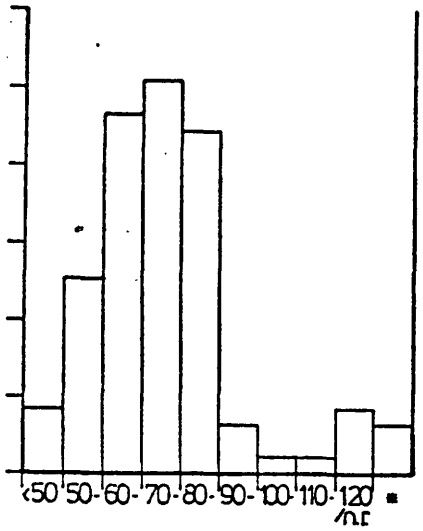
Date most recent Audiogram

C.E.C. [95 cases]



Hearing Loss in dB. at 250 Hz

C.E.C. [95 cases]

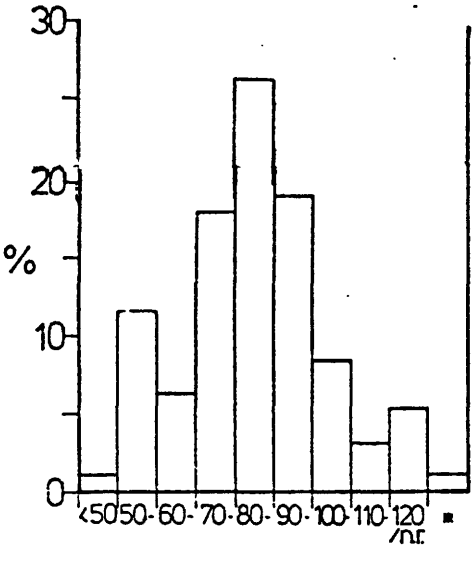


Code :-

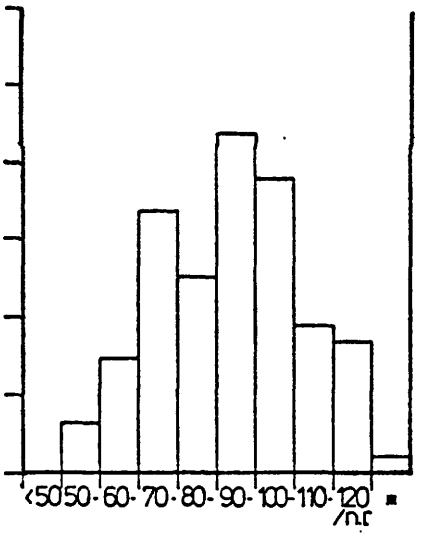
* - Missing data

n.r. - no response

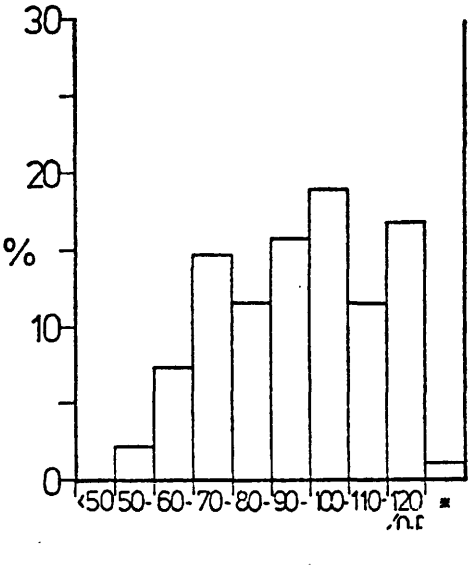
Hearing Loss in dB. at 500 Hz.



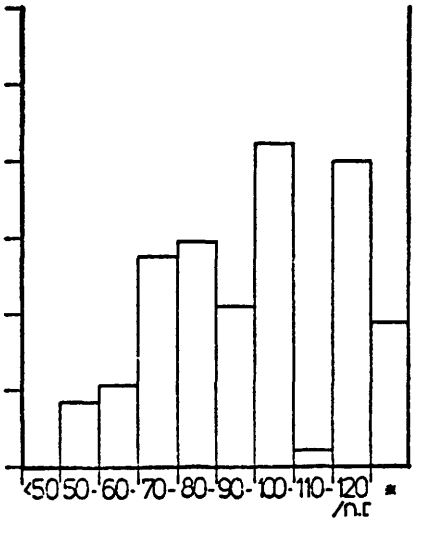
Hearing Loss in dB. at 1000 Hz



Hearing Loss in dB. at 2000 Hz.



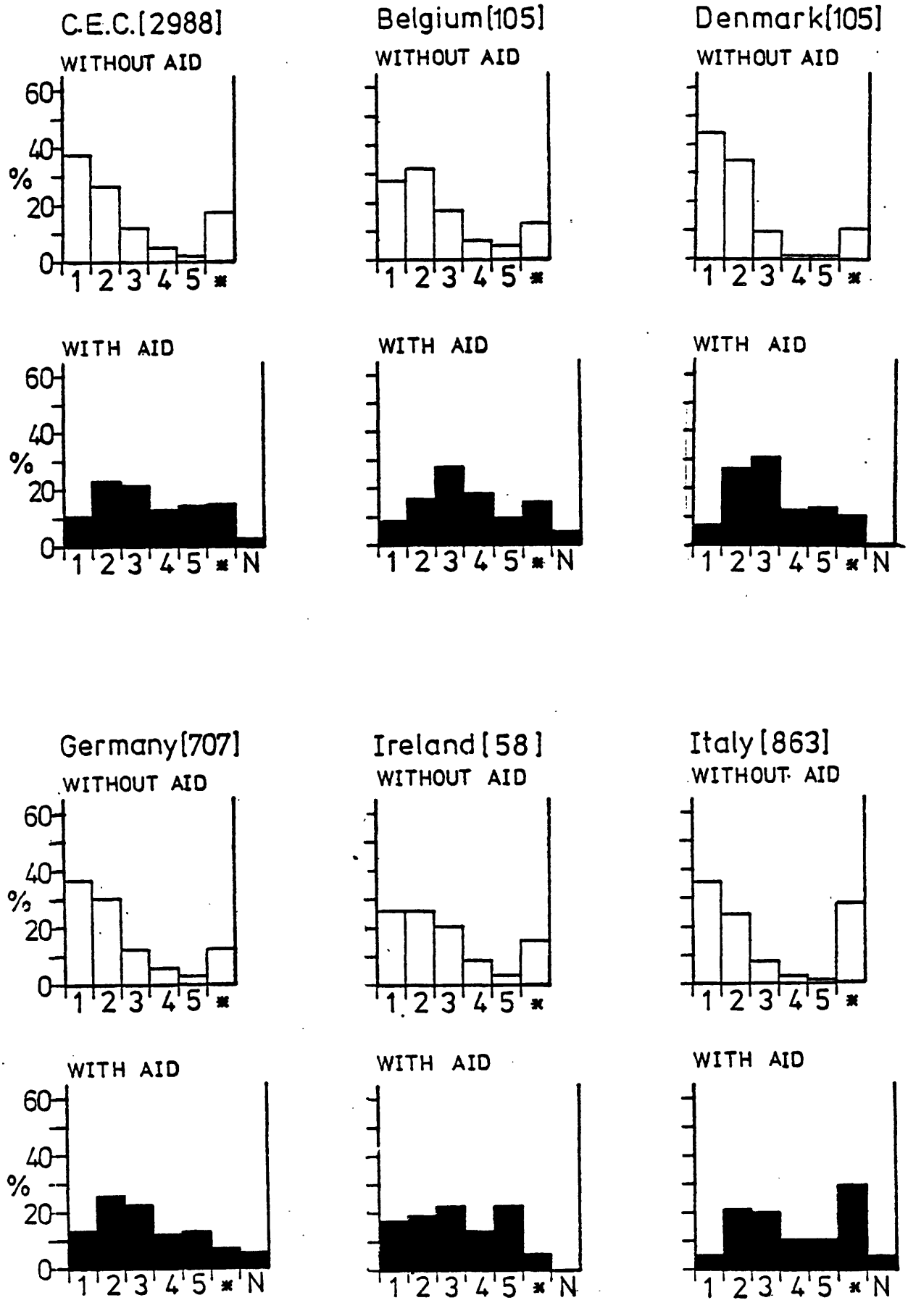
Hearing Loss in dB. at 4000 Hz.

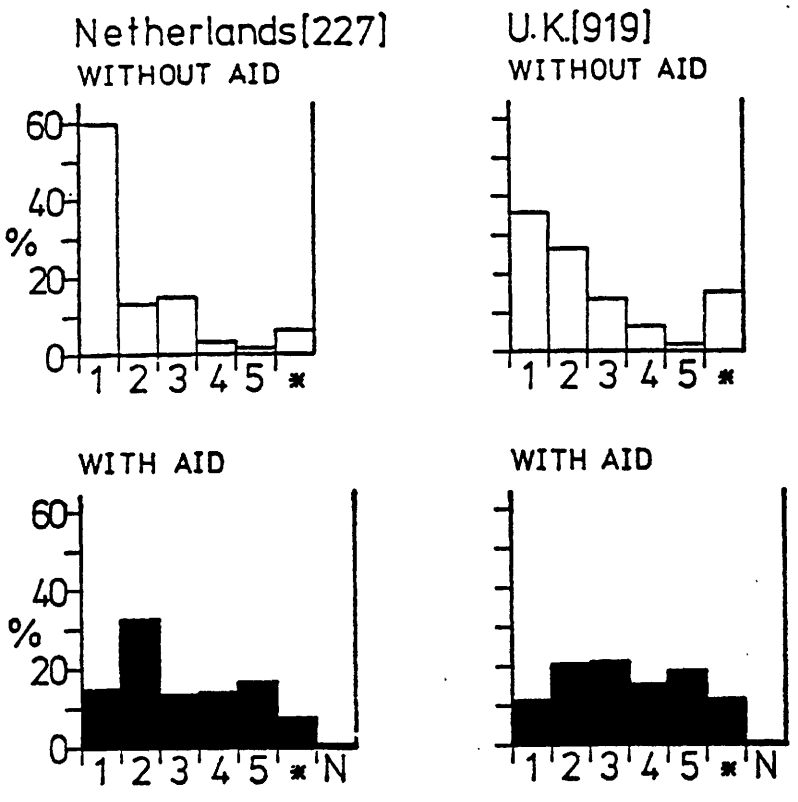


FREE FIELD AUDIOMETRY

C.E.C. : In those children for whom it was not possible to complete pure tone audiometry using headphones because of other handicaps, hearing was measured instead with pure tone free-field audiometry (95 cases - 3.2%).

Hearing Capacity without/with Aid [Q.19]





LUXEMBOURG (NO. OF CASES)

a) without aid:
   2 cases - 3
   2 cases - 2

b) with aid:
   2 cases - 5
   1 case - 4
   1 case - 3

CODE FOR HEARING CAPACITY:

1. No evidence of hearing
2. Loud shout at 3 metres
3. Simple requests at 1 metre
4. Normal conversation at 1 metre
5. Normal conversation at 3 metres

* Missing data

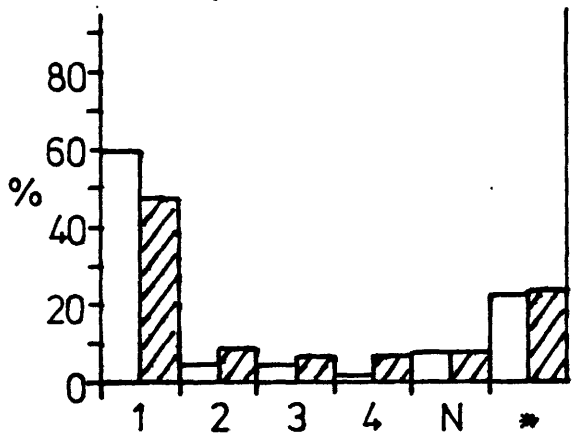
N No aid

HEARING CAPACITY WITHOUT/WITH AID

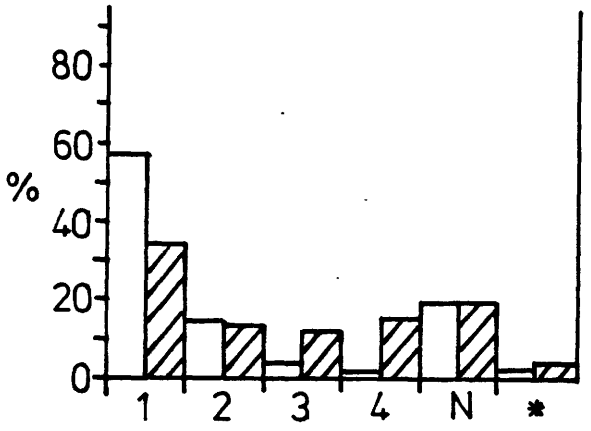
C.E.C. : In these histograms the child's hearing capacity has been classified, firstly without instrumental assistance to hearing and, secondly, with the hearing aid in situ. When not using a hearing aid, nearly 40% of children show no evidence of hearing and only 1% or 2% can hear normal conversation at a distance of 3 metres. When using hearing aids there is a marked decrease in the number of children who show no evidence of hearing, i.e. only 10% are unable to hear when using an aid in contrast to 40% when not using an aid. With a hearing aid the number who can hear a normal conversation at 3 metres rises to 12%. There are some 18% of children for whom no data were available. In interpreting these findings it must be born in mind that individual informants may vary in their interpretation of the question and thus in their response. Consequently, caution needs to be exercised in comparing the results from diffirent countries.

Aid use in and out of School [Q. 21] Right Ear only.

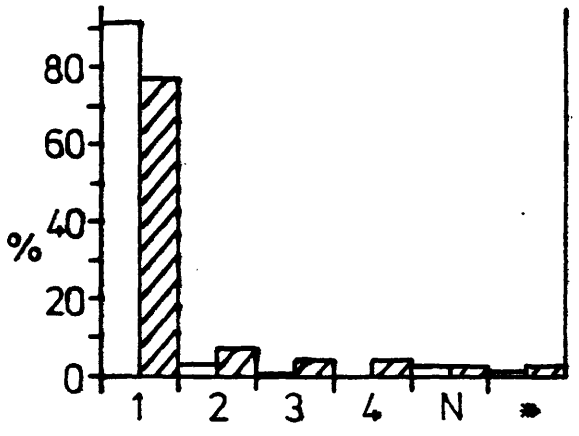
C.E.C. [2988 cases]



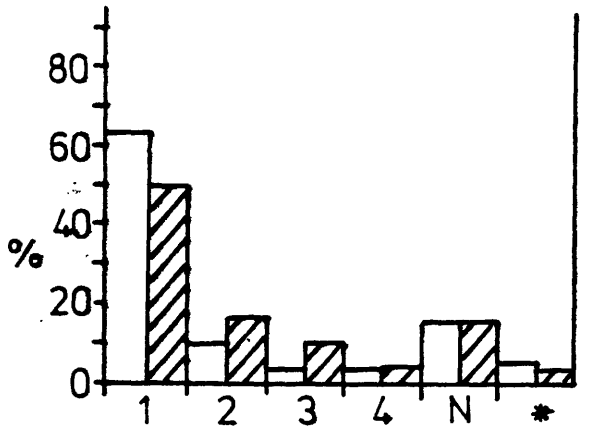
Belgium [105 cases]



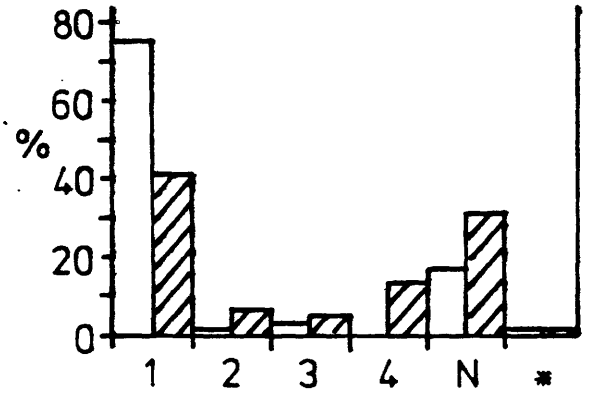
Denmark [105 cases]



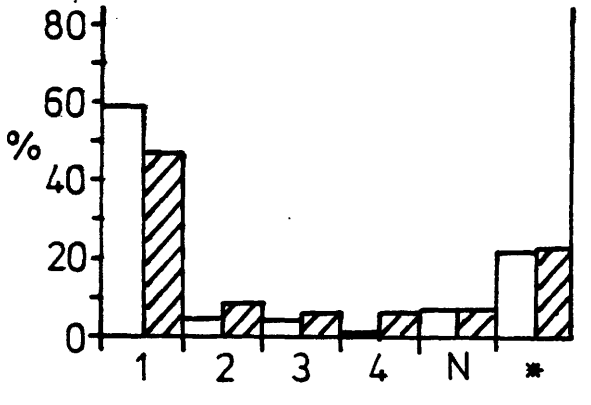
Germany [707 cases]



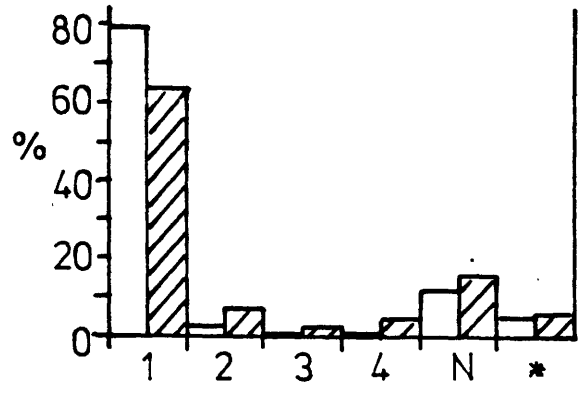
Ireland [58 cases]



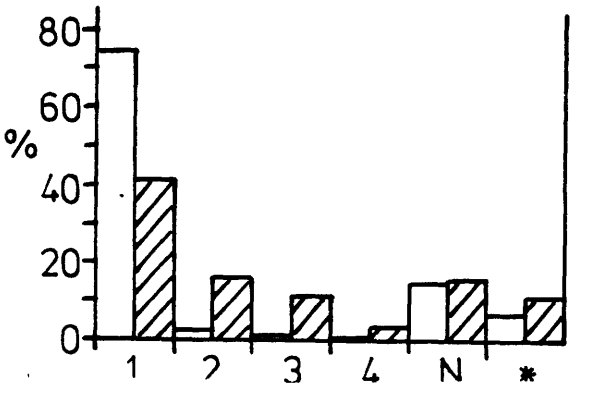
Italy [863 cases]



Netherlands [227 cases]



United Kingdom [919 cases]



LUXEMBOURG

3 cases - Right 1 + 1
Left 1 + 1

1 case - Right 3 + 2
Left N

CODE

1 = Always
2 = Often
3 = Seldom
4 = Never
N = No aid
* = Missing data

☐ - in school

▨ - out of school

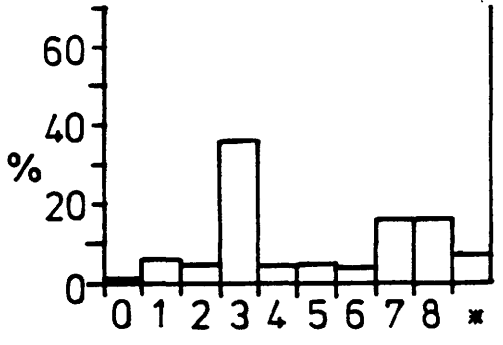
C.E.C.: As there is no apparent difference in the aid use "in" and "out of" school between ears, hearing aid usage has been reportec only in the Right ear.

A comparison has been made between the use of the hearing aid "in" and "out of" school. In every case it can be seen that 60% of children always use an aid in school, in contrast to 47% who always use an aid out of school. However, it must be noted that about 8% of children never use their hearing aid "out of" school in contrast to only 2% who never use an aid "in" school. No information was available for approximately 20% of the children identified.

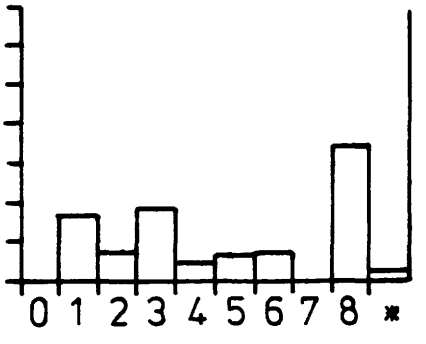
In some countries, e.g. Denmark and Netherlands, a high proportion of children always used hearing aids both "in" and "out of" school, in comparison with the United Kingdom and Ireland where some 70% of children always used hearing aids "in" school but only 40% always used them "out of" school.

Aid Arrangement [Q. 22]

C.E.C. [2988 cases]



Belgium [105 cases]

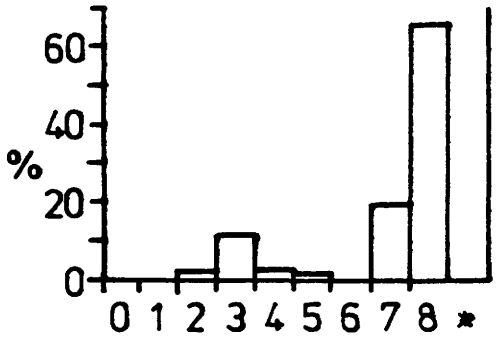


LUXEMBOURG :

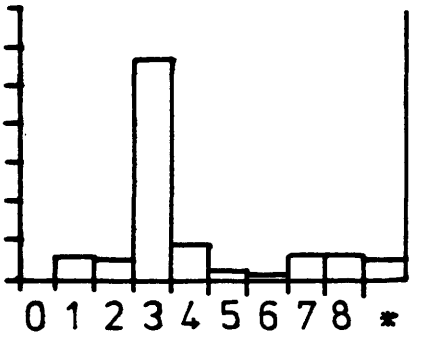
(No. of cases)

1 case - 0
1 case - 1
2 cases - 3

Denmark [105 cases]



Germany [707 cases]

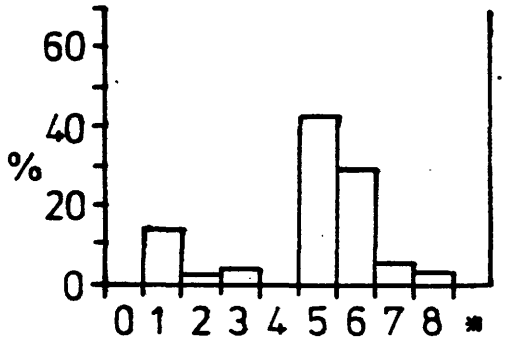


CODE FOR AID

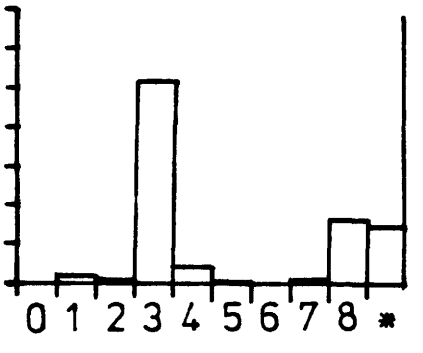
0 = Other arrangements
1 = R. ear level
2 = L. ear level
3 = R+L ear level
4 = No aid
5 = R.chest level
6 = L.chest level
7 = R+L chest level
8 = R+L Y-chest level

* = Missing data

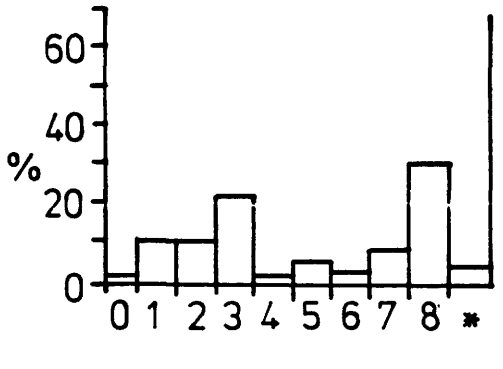
Ireland [58 cases]



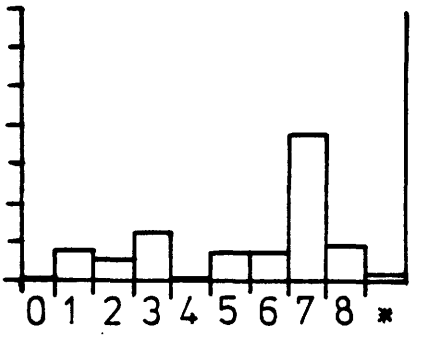
Italy [863 cases]



Netherlands [227 cases]

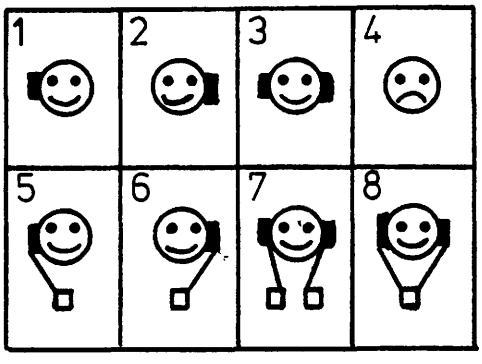


United Kingdom [919 cases]



AID ARRANGEMENT

C.E.C. : There are no less than eight basic arrangements for hearing aid and these are shown in the diagram below, but there are other combinations.

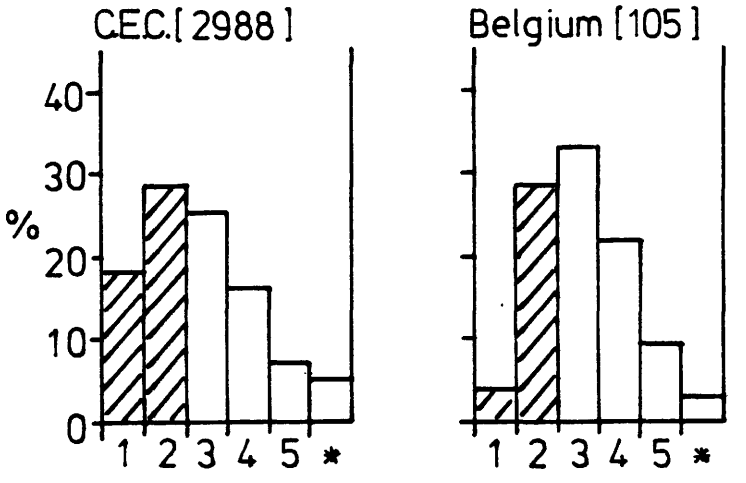


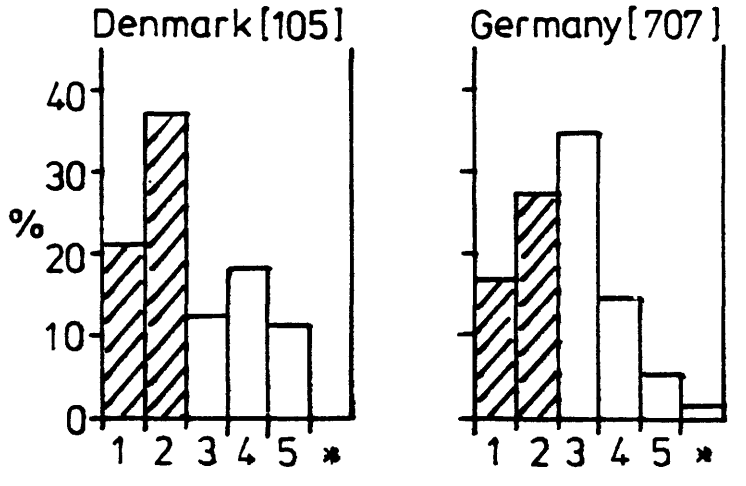
51.4% of children (combining categories 3 & 7) wear bilateral aids.

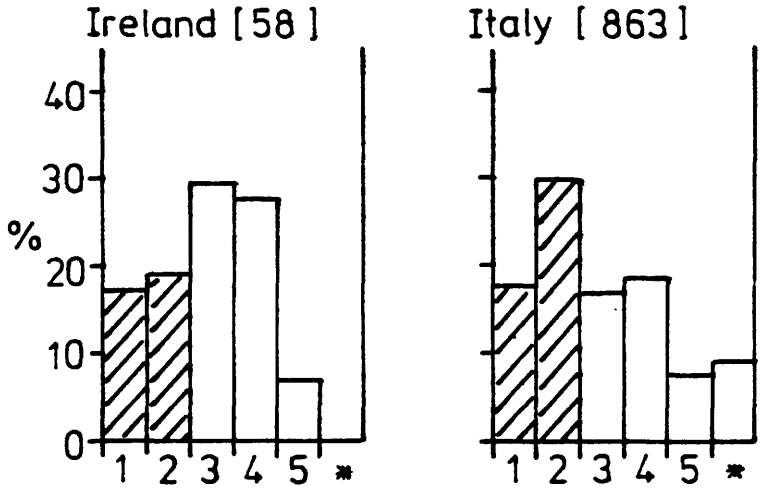
There are major differences in hearing aid arrangements adopted by the different countries. In Germany and Italy over 50% wear bilateral ear level hearing aids - in contrast to Denmark where over 80% wear bilateral chest level or single Y-lead aids (Columns 7 & 8). In Ireland, 87.9% of the children wear unilateral aids.

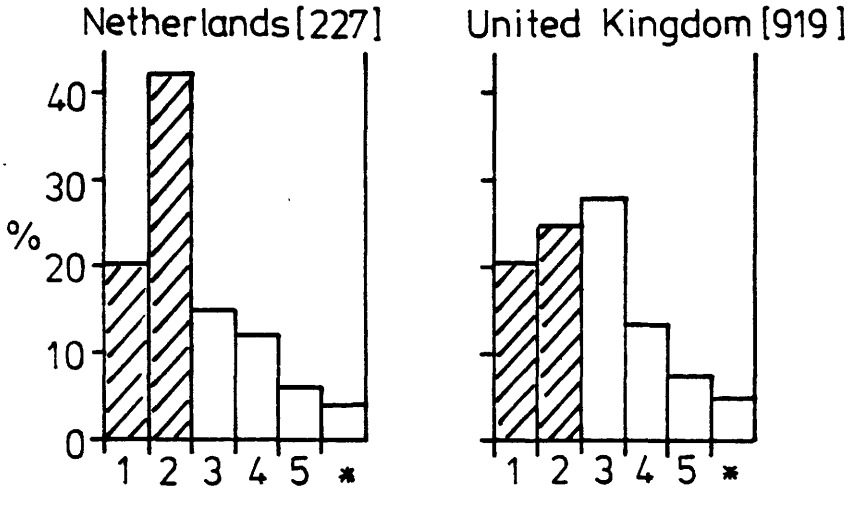
	C.E.C.	Belg.	Den.	Germ.	Ire.	It.	Lux.	Neth.	U.K.
AID(S)	%	%	%	%	%	%	%	%	%
Bilateral (Cols. 3 & 7)	51.4	19.0	30.4	63.5	8.6	55.1	50.0	31.3	52.3
Y-lead (Col. 8)	16.1	34.3	65.7	7.1	3.4	18.0	0.0	31.3	10.7
Unilateral (Cols. 1,2, 5 & 6)	20.0	39.0	1.9	14.3	87.9	4.9	25.0	30.0	31.6
Other (Col. 0)	0.5	0.0	0.0	0.0	0.0	0.0	25.0	0.9	1.2
No aid (Col. 4)	4.6	4.8	1.9	9.6	0.0	5.7	0.0	1.8	0.9
Missing Data	7.6	2.9	0.0	5.5	0.0	16.3	0.0	4.8	3.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Speech [Q. 24]









LUXEMBOURG (No. of cases)

2 cases - 1
1 case - 2
1 case - 3

CODE FOR SPEECH :

1 = Normal speech
2 = Defective - Intelligible to Strangers
3 = Defective - Intelligible to Parents
4 = Defective + single words
5 = Unintelligible/no speech

* = Missing data

SPEECH

C.E.C. : In the histogram, categories 1 & 2 are cross-hatched to identify those children whose speech is normal, or defective but intelligible to strangers. It can be seen that some 46% of children in the C.E.C. have speech that is in these two categories. Some 6% of children have either no speech or what speech they have is unintelligible.

It will be noted that there is some degree of variation in the clarity of speech reported between different countries. As in the assessment of hearing capacity, the reporting of speech quality is a notably subjective measure.

MANUAL COMMUNICATION (Q.25) (NUMBER OF CASES AND %)

	C.E.C.		BELGIUM		DENMARK		GERMANY	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%
DOES NOT USE MANUAL COMMUNICATION	1590	53.2	52	49.5	69	65.7	378	53.5
USES SIGN LANGUAGE	904	30.3	31	29.5	35	33.3	204	28.9
USES FINGER SPELLING	51	1.7	3	2.9	0	0.0	42	5.9
USES SIGN LANGUAGE & FINGER SPELLING	102	3.4	6	5.7	1	1.0	53	7.5
MISSING DATA	341	11.4	13	12.4	0	0.0	30	4.2
TOTAL	2988	100.0	105	100.0	105	100.0	707	100.0

IRELAND		ITALY		LUXEMBOURG		NETHERLANDS		U.K.	
Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
56	96.6	177	20.5	4	100.0	145	63.9	709	77.1
1	1.7	489	56.7	0	0.0	35	15.4	109	11.9
0	0.0	0	0.0	0	0.0	4	1.8	2	0.2
1	1.7	2	0.2	0	0.0	9	4.0	30	3.3
0	0.0	195	22.6	0	0.0	34	15.0	69	7.5
58	100.0	863	100.0	4	100.0	227	100.0	919	100.0

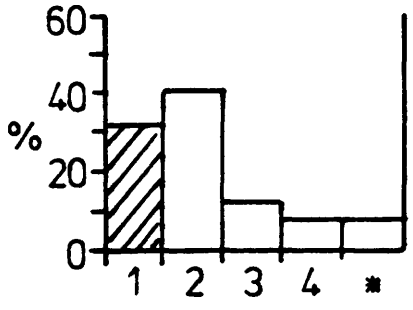
MANUAL COMMUNICATION

C.E.C. : At least 53% of the children are reported not to use manual communication as opposed to 35.4% who do. No information was available on 11.4% of children.

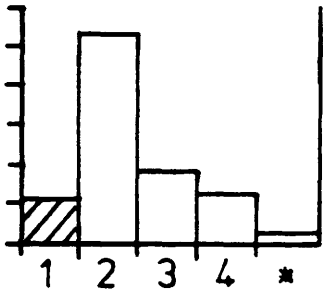
In Ireland 96.6% of children are reported as not using manual communication in contrast to 25% in Italy. However, for 22.6% of children in Italy no information was available on the use of manual communication.

Reading Ability [Q.26]

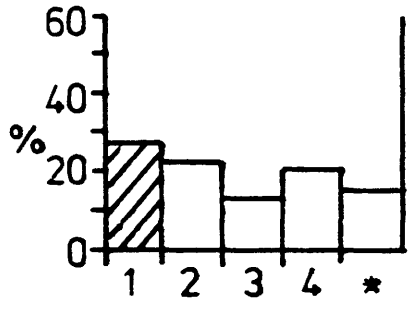
C.E.C. [2988]



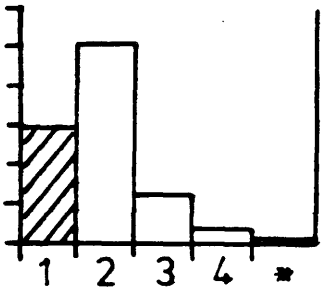
Belgium [105]



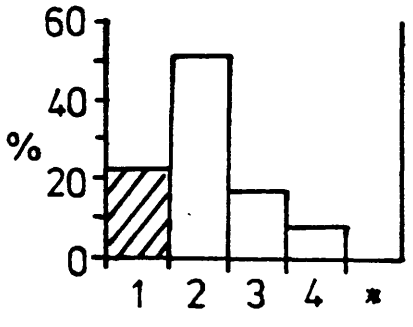
Denmark [105]



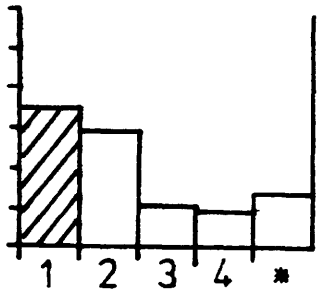
Germany [707]



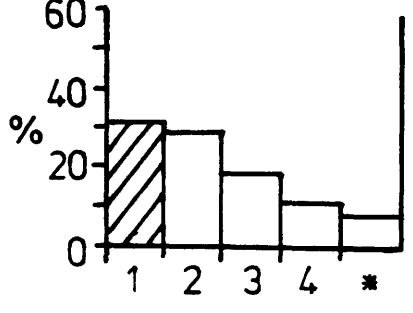
Ireland [58]



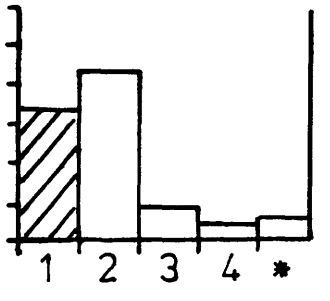
Italy [863]



Netherlands [227]



United Kingdom [919]



LUXEMBOURG : (No. of cases)

1 case - 1
2 cases - 2
1 case - -

CODE FOR READING :

1 = Like normal 8-year-old
2 = Short sentences only
3 = Short words only
4 = Cannot read

* = Missing data

READING

C.E.C. : Category 1 has been cross-hatched to identify those children who are said to read normally. These constitute 32% of the children in the C.E.C. In contrast 10% are reported as being unable to read.

It can be seen that there are differences between countries in the proportion of children who are said to read normally or who cannot read at all. In interpreting these differences it must be realized that assessment of reading ability used in this Study is of a subjective nature. Some of the apparent differences in the reading ability between the countries could thus be accounted for by differences in the criteria used to assess this skill.

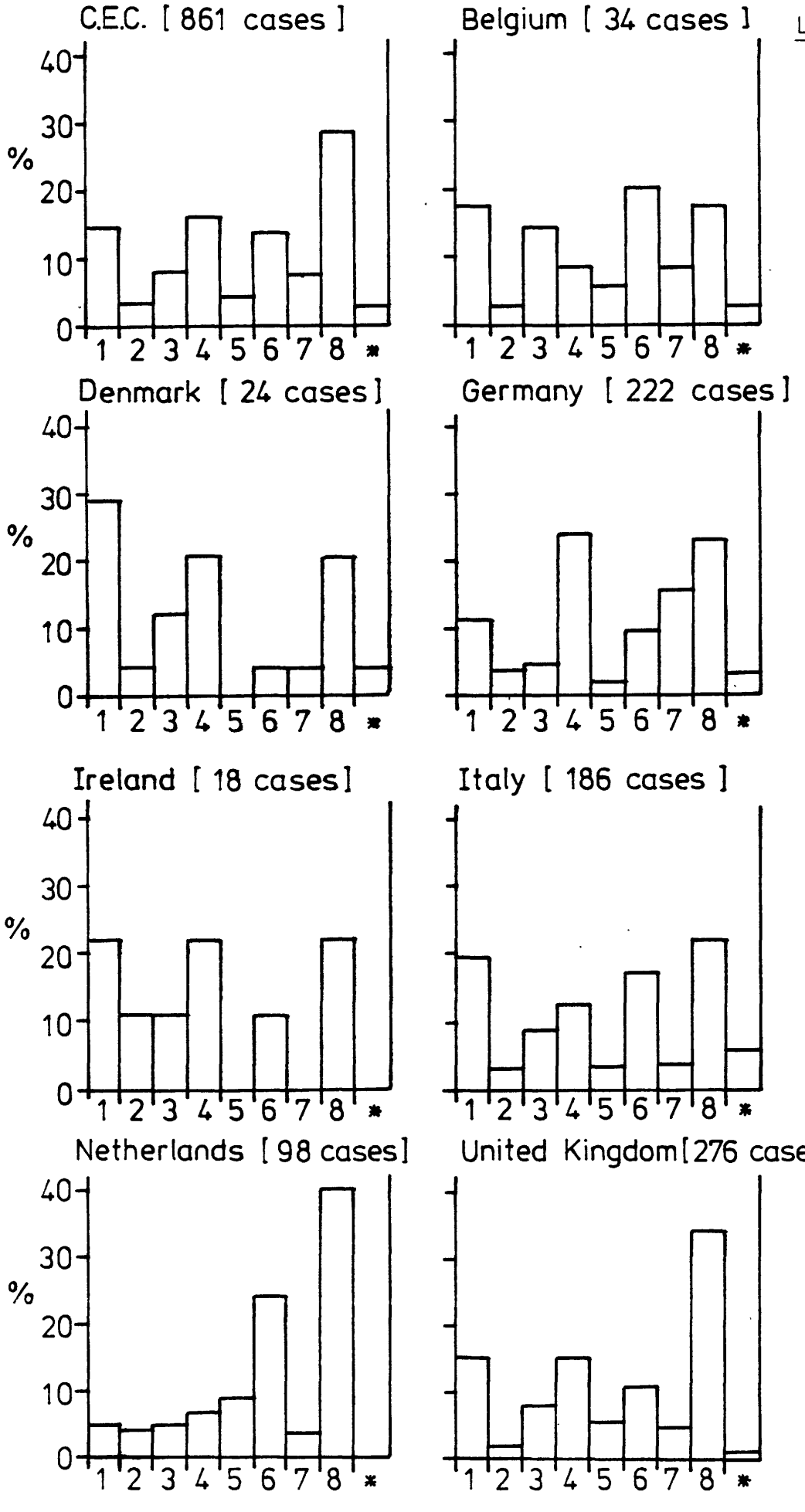
INTELLIGENCE (Q.27) (NUMBER OF CASES AND %)

	C.E.C.		BELGIUM		DENMARK		GERMANY	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%
NORMAL	2510	84.0	90	85.7	91	86.7	621	87.8
SUBNORMAL	269	9.0	13	12.4	11	10.5	63	8.9
MISSING DATA	209	7.0	2	1.9	3	2.9	23	3.3
TOTAL	2988	100.0	105	100.0	105	100.0	707	100.0

IRELAND		ITALY		LUXEMBOURG		NETHERLANDS		U.K.	
Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
50	86.2	673	78.0	3	75.0	187	82.4	795	86.5
8	13.8	63	7.3	1	25.0	19	8.4	91	9.9
0	0.0	127	14.7	0	0.0	21	9.3	33	3.6
58	100.0	863	100.0	4	100.0	227	100.0	919	100.0

C.E.C. : 9% of the children in the Study were reported as not being of normal intelligence. This proportion differs little between the member countries.

Other Handicaps [Q. 28]



LUXEMBOURG (No.of cases)

3 cases - 8
1 case - *

CODE FOR HANDICAPS:

1 = Mental only
2 = Mental + Visual
3 = Mental + Other
4 = Visual only
5 = Visual + Other
6 = Cerebral Dysfunction
7 = Behaviour Disorder
8 = Others **

* = Missing data

** Others include: Language, Cardiac, Renal, Stature, Skeletal, Skin, Gut, Blood, etc., or combined.

OTHER HANDICAPS

C.E.C. : 861 children (28.8% of the total) are reported as having a handicap additional to deafness.

The three major handicaps (either alone or in combination with others) are:

i) Mental retardation
ii) Visual deficits
iii) Cerebral dysfunction (including cerebral palsy, epilepsy, hydrocephalus, etc.).

Interpretation of the differing prevalences of other handicaps between countries is made uncertain owing to the lack of information on the level of assessment in each country.

	Nos.	% of Total Nos.
C.E.C.	861	28.8
Belgium	34	32.4
Denmark	24	22.9
Germany	222	31.4
Ireland	18	31.0
Italy	186	21.6
Netherlands	98	43.2
United Kingdom	276	30.0

COUNTRY OF ORIGIN OF ANY CHILD BORN OUTSIDE THE COUNTRY OF ITS DOMICILE. (Q. 4 & 5) (NUMBER OF CASES AND %)

	C.E.C.		BELGIUM		DENMARK		GERMANY	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%
OTHER E.E.C. COUNTRY	8	0.3	2	1.9	0	0.0	0	0.0
ARAB COUNTRY	9	0.3	3	2.9	1	1.0	0	0.0
INDIA, PAKISTAN	7	0.2	0	0.0	0	0.0	0	0.0
NORTH AMERICA	5	0.2	0	0.0	0	0.0	0	0.0
SOUTH AMERICA	14	0.5	0	0.0	0	0.0	0	0.0
AFRICA	15	0.5	1	1.0	0	0.0	0	0.0
OTHER	15	0.5	3	2.9	0	0.0	1	0.1
INAPPLICABLE	2910	97.4	96	91.4	104	99.0	706	99.9
MISSING DATA	5	0.2	0	0.0	0	0.0	0	0.0
TOTAL	2988	100.0	105	100.0	105	100.0	707	100.0

IRELAND		ITALY		LUXEMBOURG		NETHERLANDS		U.K.	
Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
3	5.2	0	0.0	0	0.0	2	0.9	1	0.1
0	0.0	0	0.0	0	0.0	2	0.9	3	0.3
0	0.0	0	0.0	0	0.0	0	0.0	7	0.8
0	0.0	0	0.0	0	0.0	1	0.4	4	0.4
0	0.0	1	0.1	0	0.0	13	5.7	0	0.0
0	0.0	1	0.1	0	0.0	1	0.4	12	1.3
0	0.0	3	0.3	0	0.0	5	2.2	3	0.3
54	93.1	858	99.4	4	100.0	203	89.4	885	96.3
1	1.7	0	0.0	0	0.0	0	0.0	4	0.4
58	100.0	863	100.0	4	100.0	227	100.0	919	100.0

C.E.C. : Some 2.4% of children were born outside their present country of domicile.

CROSS TABULATIONS

CROSS - TABULATIONS

The Committee agreed that further analysis of the data should be undertaken to investigate the possible relationship between individual groups of information collected in the pooled C.E.C. data. Listed below are the tabulations which were thought to be of value.

When 3-way tabulations are used, the hearing loss is the third factor unless stated otherwise.

a) Speech quality
- v. Mother's occupation
- v. School - day/boarding - 3-way
- v. Type of school - 3-way
- v. Age loss suspected - 3-way
- v. Age loss confirmed - 3-way
- v. Acquired perceptive loss
- v. Functional hearing with and without aid - 3-way
- v. Age first issue of aid - 3-way
- v. Aid use at home
- v. Aid arrangement - 3-way
- v. Other handicaps - 3-way
- v. Hearing loss

b) Manual communication
- v. School - day/boarding - 3-way
- v. Speech quality - 3-way
- v. Hearing loss

CROSS-TABULATIONS

c) Reading ability v. Sex
v. School: day/boarding - 3-way
v. Type of school - 3-way
v. Age loss suspected - 3-way
v. Age loss confirmed - 3-way
v. Functional hearing with/without aid - 3-way
v. Aid use at home & school
v. Aid arrangement - 3-way
v. Speech quality - 3-way
v. Other handicaps - 3-way
v. Hearing loss

d) Congenital genetic perceptive v. Age suspected
Congenital intrauterine perceptive v. Sex
(split into Rubella & other cause) v. Month of birth
Congenital perceptive cause unknown v. Month of birth
All Congenital perceptive v. Age suspected
Meningitis v. Sex
Chronic Middle-Ear disease v. Hearing loss
Congenital conductive v. Hearing loss

e) Aid arrangement v. Hearing loss
v. Aid use

f) Person completing form v. Functional hearing with/without aid
v. Speech
v. Reading ability
v. Missing data

g) Distance Home to School v. School: day/boarding
Day/Boarding v. Other handicaps

h) Functional hearing without aid v. Hearing loss
Functional hearing with aid v. Hearing loss

i) Free-field hearing loss v. Other handicaps

In many of the tabulations the numbers in individual cells were too small to draw conclusions on whether a relationship was present or not. It was, therefore, decided only to include the following tabulations with comments:

1.	Speech quality	v. Type of school - 3-way
		v. Acquired perceptive loss
		v. Age first issue of aid - 3-way
		v. Aid use out of school
		v. Aid arrangement - 3-way
2.	Reading ability	v. Type of school - 3-way
		v. Speech quality - 3-way
3.	Aid arrangement	v. Hearing loss

The hearing loss used in the tables is defined as follows:

The average loss in dB at 500, 1000 and 2000 Hz is taken for both ears - the average for the better ear, i.e. lower average, is taken as the hearing loss for each child.
The distribution of the hearing loss for defined groups was presented in 10 dB intervals.

Speech v Type of School v Hearing Loss

50-59.9 dB

Speech	School: Deaf only	Deaf + others	Ordinary School: normal class	special help	deaf class	class ?	Other School
Normal	49	3	64	31	19	4	3
Intelligible Strangers	52	8	11	17	18	1	1
Intelligible Parents	22	1	1	4	6	0	1
Single Words	5	4	0	1	2	0	0
Un-Intelligible	1	0	0	0	0	0	0

Total - 329 Missing - 13

60-69.9 dB

School: Deaf only	Deaf + others	Ordinary School: normal class	special help	deaf class	class ?	Other School
41	2	38	27	17	3	1
55	4	18	18	21	3	4
29	5	2	5	12	0	1
12	4	5	1	2	1	0
0	6	0	0	1	0	2

Total - 340 Missing - 15

70-79.9 dB

Normal	28	1	22	15	12	0	4
Intelligible Strangers	78	4	22	7	23	1	3
Intelligible Parents	40	6	2	9	13	2	2
Single Words	17	3	4	2	4	0	0
Un-Intelligible	6	0	0	0	0	2	2

Total - 334 Missing - 17

80-89.9 dB

23	1	20	7	10	0	0
68	7	13	11	27	1	1
88	4	4	4	22	2	1
34	13	8	4	8	0	1
5	2	1	1	0	0	0

Total - 391 Missing - 24

90-99.9 dB

Normal	18	2	11	6	3	0	0
Intelligible Strangers	88	5	17	20	16	1	0
Intelligible Parents	105	5	4	4	21	0	2
Single Words	58	13	5	4	7	0	2
Un-Intelligible	13	6	1	2	4	0	1

Total - 444 Missing - 32

100-109.9 dB

21	0	8	5	2	0	0
84	4	14	16	14	0	0
128	1	9	11	22	1	0
94	11	2	3	8	1	1
37	7	2	1	3	1	0

Total - 511 Missing - 24

110-119.9 dB

Normal	3	0	3	0	1	0	0
Intelligible Strangers	42	1	4	2	1	1	0
Intelligible Parents	85	2	9	5	7	0	0
Single Words	60	3	1	3	3	0	0
Un-Intelligible	35	6	0	0	0	0	1

Total - 278 Missing - 17

120+ dB

3	0	1	0	0	0	0
9	0	0	0	0	0	0
27	0	0	1	2	0	0
33	1	1	0	1	0	0
17	5	0	2	2	0	0

Total - 106 Missing - 12

Speech v Hearing Loss

Speech	Hearing Loss in dB. 50-	60-	70-	80-	90-	100-	110-	120+
Normal	174	130	82	61	40	36	7	4
Intelligible Strangers	109	125	139	128	148	132	52	9
Intelligible Parents	37	54	74	125	141	174	109	30
Single Words	12	25	31	69	90	122	70	36
Un-Intelligible	2	9	10	11	31	54	46	27

Total-2767 Missing-221

COMMENTS

There is a relationship between speech quality and hearing loss, i.e. in those children with a hearing loss between 50 and 69.9 dB the majority have speech which is at least intelligible to strangers. The majority of children with a hearing loss greater than 100 dB attend special schools for the deaf.

Speech v Age first issue of Aid v Hearing Loss

50-59.9dB.

Speech \ Age (in years)	0-	1-	2-	3-	4-	5-	6-	7-	8-
Normal	1	2	8	15	20	41	27	16	14
Intelligible Strangers	0	1	9	12	12	22	20	16	6
Intelligible Parents	2	0	1	6	4	10	3	3	0
Single Words	0	0	1	3	2	3	1	1	0
Un-Intelligible	0	1	0	1	0	0	0	0	0

Total-284 Missing-58

60-69.9dB.

0-	1-	2-	3-	4-	5-	6-	7-	8-
1	2	7	16	24	28	19	16	1
0	1	9	23	21	24	27	8	2
0	1	6	10	12	5	5	8	1
0	0	3	0	1	4	6	3	2
0	1	2	0	0	3	2	0	0

Total-304 Missing-51

70-79.9 dB.

Normal	0	4	12	18	11	12	10	5	1
Intelligible Strangers	0	12	25	27	25	20	10	7	1
Intelligible Parents	1	5	6	18	14	9	12	2	1
Single Words	0	0	6	5	5	5	2	2	0
Un-Intelligible	0	0	3	2	0	2	1	1	0

Total-302 Missing-49

80-89.9dB.

2	6	8	8	18	9	1	1	1
2	16	27	30	20	7	9	2	2
6	13	26	23	22	13	7	5	0
0	7	9	20	4	9	2	4	1
0	0	5	1	1	0	0	0	1

Total-348 Missing-67

90-99.9 dB.

Normal	3	5	10	8	5	4	1	0	0
Intelligible Strangers	6	16	42	30	8	15	5	3	0
Intelligible Parents	3	32	29	36	15	8	2	1	1
Single Words	2	11	20	15	12	6	8	3	3
Un-Intelligible	0	1	7	7	3	1	1	1	0

Total-389 Missing-87

100-109.9dB.

5	6	6	6	2	5	2	0	0
4	26	39	31	7	6	1	1	0
9	40	54	25	17	8	3	4	0
6	19	32	13	14	10	5	5	1
2	16	14	6	1	2	2	1	0

Total-456 Missing-79

110-119.9 dB.

Normal	0	3	1	0	0	0	0	0	0
Intelligible Strangers	0	15	16	5	4	3	0	0	0
Intelligible Parents	3	19	24	18	15	6	4	2	0
Single Words	0	19	17	5	4	3	4	4	0
Un-Intelligible	2	9	11	3	3	1	5	1	0

Total-229 Missing-66

120+dB.

1	0	1	1	0	0	0	0	0
0	1	0	1	1	0	1	0	0
1	4	11	3	2	1	0	1	0
0	9	7	6	1	1	2	0	0
0	6	5	6	3	0	1	0	0

Total-77 Missing-41

SPEECH V. AGE FIRST ISSUE OF AID V. HEARING LOSS

COMMENTS

There is a relationship between speech quality and hearing loss and between hearing loss and age of first issue of aid i.e. the worse the hearing loss, the younger the children are when first issued with a hearing aid.

Speech v Aid Arrangement v Hearing Loss

50-59·9 dB

Speech \ Aid Arrangement	Other	R Ear	L Ear	R+L Ear	No Aid	R Ch.	L Ch.	R+L Ch.	R+LY Ch.
Normal	3	39	16	70	12	2	7	9	0
Intelligible Strangers	0	7	15	64	4	2	3	4	7
Intelligible Parents	0	3	2	18	2	2	1	5	2
Single Words	1	2	1	4	1	1	2	0	0
Un-Intelligible	0	0	1	0	0	1	0	0	0

Total - 313 Missing - 29

60-69·9 dB

Other	R Ear	L Ear	R+L Ear	No Aid	R Ch.	L Ch.	R+L Ch.	R+LY Ch.
1	17	17	59	3	9	6	9	3
3	12	12	54	2	6	10	9	11
0	4	4	17	1	8	8	6	5
0	4	2	10	2	1	0	1	1
0	0	1	0	4	0	1	1	2

Total - 326 Missing - 29

70-79·9 dB

Normal	0	6	4	51	2	3	0	7	5
Intelligible Strangers	1	11	9	65	4	5	6	15	17
Intelligible Parents	0	7	6	29	3	4	7	11	4
Single Words	0	0	3	9	0	2	1	7	8
Un-Intelligible	0	1	0	3	1	1	0	0	4

Total - 322 Missing - 29

80-89·9 dB

	0	2	4	32	3	4	1	8	3
	1	5	5	61	1	3	8	23	20
	0	8	3	46	0	11	4	33	16
	1	4	1	18	2	10	7	9	15
	0	0	1	5	0	0	1	0	2

Total - 381 Missing - 34

90-99·9 dB

Normal	0	0	1	27	0	1	0	5	5
Intelligible Strangers	1	5	2	67	5	2	3	30	30
Intelligible Parents	0	7	1	46	5	6	6	41	26
Single Words	0	5	2	24	2	3	2	17	28
Un-Intelligible	0	0	1	4	4	2	3	5	6

Total - 430 Missing - 46

100-109·9 dB

	0	2	0	18	0	0	0	6	7
	0	7	4	48	5	6	1	31	26
	0	10	2	58	3	6	10	51	31
	0	2	5	24	6	10	2	28	36
	0	1	2	7	2	4	3	17	13

Total - 494 Missing - 41

110-119·9 dB

Normal	0	0	0	0	2	0	0	0	3
Intelligible Strangers	0	2	5	11	7	6	3	3	13
Intelligible Parents	0	0	2	26	12	3	2	24	34
Single Words	1	4	1	11	7	9	4	11	20
Un-Intelligible	0	1	0	3	3	6	2	12	12

Total - 265 Missing - 30

120+ dB

	0	0	1	0	0	0	0	0	1
	0	0	1	3	3	0	1	0	1
	0	0	0	4	4	2	2	7	11
	0	1	2	8	10	1	0	5	8
	0	3	1	4	5	2	2	5	5

Total - 103 Missing - 15

SPEECH V. AID ARRANGEMENT V. HEARING LOSS

COMMENTS

Children with bilateral ear-level aids tend to have better speech quality than those with bilateral chest or Y-chest aids. However, it must be noted that this latter group are under-represented in those groups where the hearing loss is less than 90 dB.

Speech v Aid use out of School

Aid use out of School

RIGHT EAR

Speech	Always	Often	Seldom	Never	Inapplicable
Normal	313	56	37	16	80
Intelligible Strangers	493	110	43	30	117
Intelligible Parents	365	121	96	35	91
Single Words	190	68	56	45	65
Un-Intelligible	55	27	31	22	39

Total - 2601 Missing - 387

LEFT EAR

Always	Often	Seldom	Never	Inapplicable
302	51	33	11	106
500	114	52	22	104
349	114	95	34	113
178	60	56	46	87
57	31	28	18	41

Total - 2602 Missing - 386

Aid Arrangement v Hearing Loss

Hearing Loss in dB.

Aid Arrangement	50-	60-	70-	80-	90-	100-	110-	120+
Other	4	4	1	2	1	0	1	0
Right Ear Level	51	39	25	19	17	22	7	4
Left Ear Level	35	36	23	14	7	13	8	5
Right+Left Ear Level	157	143	161	166	175	158	53	19
No Aid	19	12	10	6	16	17	32	24
Right Chest Level	8	24	16	30	14	26	25	5
Left Chest Level	13	25	14	21	14	16	11	5
Right+Left Chest Level	18	26	41	77	100	136	52	17
Right+Left Y Chest Level	9	23	39	58	98	114	83	29

Total - 2695 Missing - 293

SPEECH V. AID USE OUT OF SCHOOL

COMMENTS

There is a relationship between aid use out of school and speech quality, i.e. speech that is at least intelligible to strangers is reported more often in those children who always use their hearing aid(s) out of school than those in the remaining categories.

AID ARRANGEMENT V. HEARING LOSS

COMMENTS

There is a positive relationship between hearing loss and bilateral ear level aid such that those children with a loss of less than 100 dB use bilateral ear level aids in contrast to those using bilateral chest or Y-chest level aids.

Reading Ability v Type of School v Hearing Loss

50-59.9 dB.

Reading Ability	School: Deaf only	Deaf + others	Ordinary School: normal class	special help	deaf class	class ?	Other School
Like 8 year old	47	1	63	38	19	5	1
Short Sentences	55	5	6	8	23	0	2
Short Words	21	3	2	5	1	0	0
Cannot Read	3	5	0	1	0	0	1

Total-315 Missing-27

60-69.9 dB.

Deaf only	Deaf + others	Ordinary School: normal class	special help	deaf class	class ?	Other School
58	3	44	27	29	3	2
57	4	6	20	19	1	2
18	5	4	0	1	1	0
4	7	7	3	2	1	4

Total-332 Missing- 23

70-79.9 dB.

Like 8 year old	59	1	32	12	24	0	3
Short Sentences	76	5	13	16	22	3	4
Short Words	26	5	1	4	4	0	1
Cannot Read	9	1	1	1	1	2	2

Total-328 Missing-23

80-89.9 dB.

61	3	31	16	21	0	0
109	10	9	7	36	0	2
37	8	2	4	7	3	0
8	8	2	1	2	0	1

Total-388 Missing-27

90-99.9 dB.

Like 8 year old	67	4	24	17	19	1	0
Short Sentences	158	11	7	9	25	0	1
Short Words	41	2	5	5	4	0	4
Cannot Read	14	12	2	2	2	0	0

Total-436 Missing-40

100-109.9 dB.

80	1	17	17	12	0	0
202	10	10	9	33	1	1
50	4	4	8	2	0	0
19	8	1	1	2	1	0

Total- 493 Missing- 42

110-119.9 dB.

Like 8 year old	38	1	9	3	2	1	0
Short Sentences	119	4	6	5	9	0	1
Short Words	41	3	1	1	0	0	1
Cannot Read	19	4	1	1	1	0	0

Total- 271 Missing-14

120+ dB.

17	0	1	1	1	0	0
40	0	0	0	1	0	0
16	1	1	0	2	0	0
16	5	0	2	1	0	0

Total- 106 Missing- 12

READING ABILITY V. TYPE OF SCHOOL V. HEARING LOSS

COMMENTS

There appears to be a positive relationship between reading ability and the child's attendance at an ordinary school in contrast to those children who attend special schools for the deaf.

READING ABILITY V. HEARING LOSS

	HEARING LOSS IN DB							
READING ABILITY	50-	60-	70-	80-	90-	100-	110-	120+
Like 8-yr old	175	166	132	132	132	127	55	20
Short Sentences	100	109	139	173	211	267	145	41
Short Words	32	29	41	61	61	69	47	20
Cannot Read	12	29	18	24	37	37	29	25

TOTAL - 2697 MISSING - 291

COMMENTS

There is a positive relationship between reading ability and less severe hearing loss.

Reading Ability v Speech v Hearing Loss

Speech 50-59·9 dB

Reading Ability	Normal	Intel'ble Stranger	Intel'ble Parents	Single Words	Un-Intel'ble
Like 8 year old	137	34	3	1	0
Short Sentences	21	52	22	4	1
Short Words	4	16	8	4	0
Cannot Read	3	3	2	3	1

Total - 319 Missing - 23

60-69·9 dB

Normal	Intel'ble Stranger	Intel'ble Parents	Single Words	Un-Intel'ble
103	49	11	1	0
17	55	29	8	0
2	5	12	10	0
4	11	2	4	8

Total - 331 Missing - 24

70-79·9 dB

Like 8 year old	61	54	14	2	0
Short Sentences	13	68	40	15	2
Short Words	5	12	13	9	2
Cannot Read	0	1	5	5	6

Total - 327 Missing - 24

80-89·9 dB

45	51	32	4	0
13	59	70	27	1
1	14	18	26	2
0	2	4	9	7

Total - 385 Missing - 30

90-99·9 dB

Like 8 year old	26	71	24	9	1
Short Sentences	13	61	99	31	6
Short Words	1	7	16	29	3
Cannot Read	0	1	1	15	20

Total - 434 Missing - 42

100-109·9 dB

27	64	31	3	2
8	58	112	72	15
0	6	20	30	13
0	0	2	13	21

Total - 497 Missing - 38

110-119·9 dB

Like 8 year old	6	25	20	3	1
Short Sentences	1	22	78	36	8
Short Words	0	0	7	25	14
Cannot Read	0	2	0	4	20

Total - 272 Missing - 23

120 + dB

3	4	12	1	0
1	5	14	16	5
0	0	3	9	6
0	0	0	9	16

Total - 104 Missing - 14

READING ABILITY V. SPEECH V. HEARING LOSS

COMMENTS

There is a positive relationship between all these factors, i.e. the better the speech quality, the better the reading ability and the less severe the hearing loss.

SPEECH V. ACQUIRED, PERCEPTIVE LOSS

	ACQUIRED, PERCEPTIVE LOSS					
SPEECH	NOT Acquired Perceptive	Meningitis	Ototoxic Drugs	Hereditary Cause	Other Cause	Cause Unknown
Normal	240	26	3	7	25	28
Intelligible to Strangers	457	54	9	14	21	41
Intelligible to Parents	406	40	6	18	28	28
Single Words	275	32	5	11	23	22
UNintelligible	135	19	1	0	12	5

TOTAL - 1991 MISSING - 997

COMMENTS

There is no relationship between the type of acquired perceptive loss and the speech quality.

FRANCE

FRANCE

Number of cases identified and prevalence rate

	C.E.C.	FRANCE
Total number of cases	2988	474
Prevalence rate	0.9/1000	0.6/1000

Sex Ratio (Q.2) - Number of cases and percentage.

	C.E.C.		FRANCE	
	Nos.	%	Nos.	%
Male	1614	54.0	262	55.3
Female	1353	45.3	212	44.7
Missing Data	21	0.7	0	0.0
Total	2988	100.0	474	100.0

Male : Female ratios for the Study population and the 8-year-old population of France.

	STUDY POPULATION MALE : FEMALE	8-YEAR-OLD POPULATION MALE : FEMALE
C.E.C.	1.19 : 1	1.05 : 1 **
France	1.24 : 1	1.04 : 1 *

** - estimated as for the C.E.C. Study.

* - Institut National de la Statistique et des Etudes Economiques - 8-year-old population estimated as at 1.1.78.

COMMENT - The male predominence seen in other studies is also present in France.

Occupation of Mother (Q.7)

	C . E . C .		F R A N C E	
	Nos.	%	Nos.	%
Full-time Housewife	1872	62.7	273	57.6
Part-time outside home	530	17.7	25	5.3
Full-time outside	242	8.1	111	23.4
Other	53	1.8	9	1.9
No mother	26	0.9	6	1.3
Missing data	265	8.9	50	10.5
Total	2988	100.0	474	100.0

COMMENT :

The proportion of mothers working full-time outside the house is much greater in France than in the C.E.C.

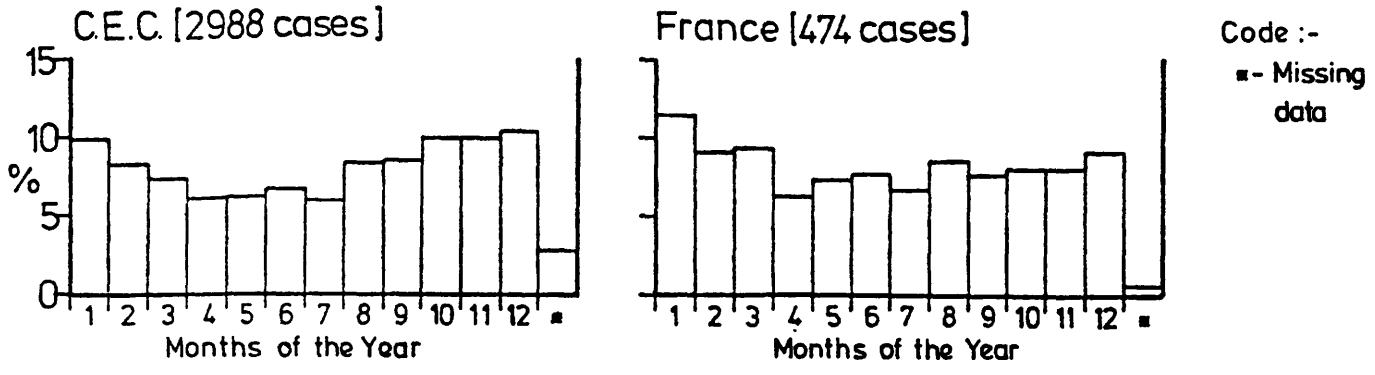
Attends School (Q.8)

	C . E . C .		F R A N C E	
	Nos.	%	Nos.	%
Yes	2890	96.7	473	99.8
No	9	0.3	1	0.2
Missing Data	89	3.0	0	0.0
Total	2988	100.0	474	100.0

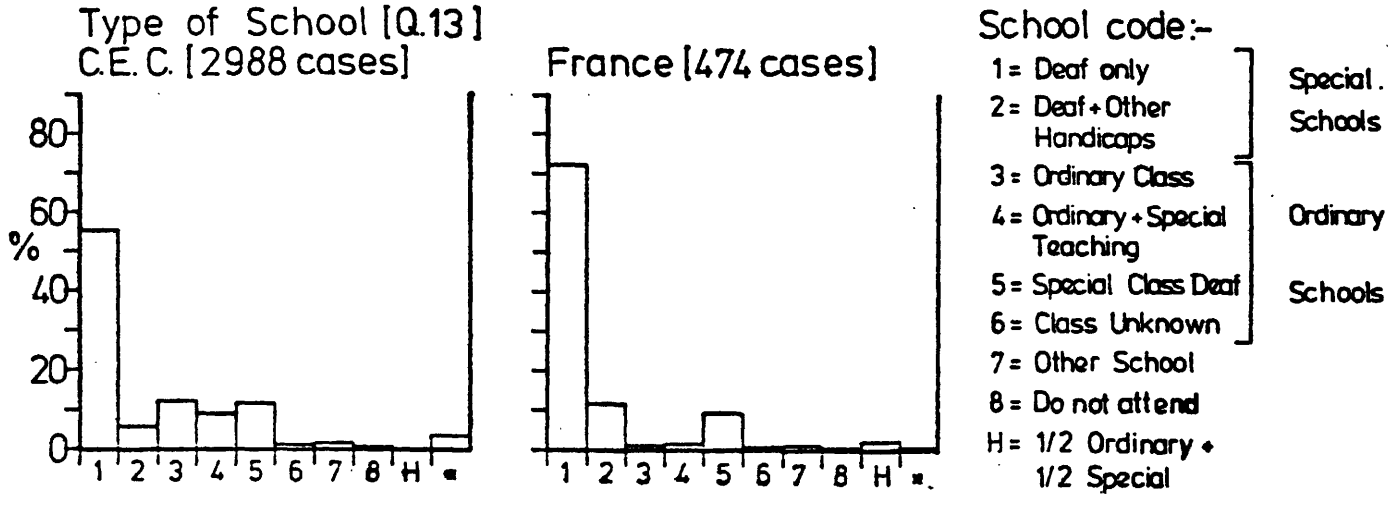
Attendance at Day or Boarding School (Q. 12)

	C . E . C .		F R A N C E	
	Nos.	%	Nos.	%
Days only	2046	68.5	190	40.1
Boarder	760	25.4	282	59.5
Inapplicable	9	0.3	1	0.2
Missing data	173	5.8	1	0.2
Total	2988	100.0	474	100.0

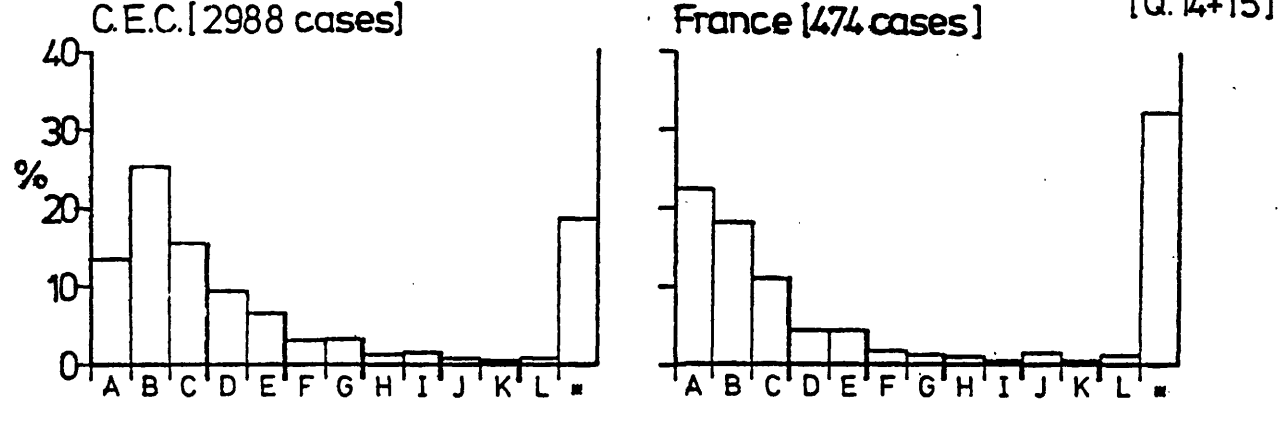
Distribution by month of birth-1969 [Q.3]



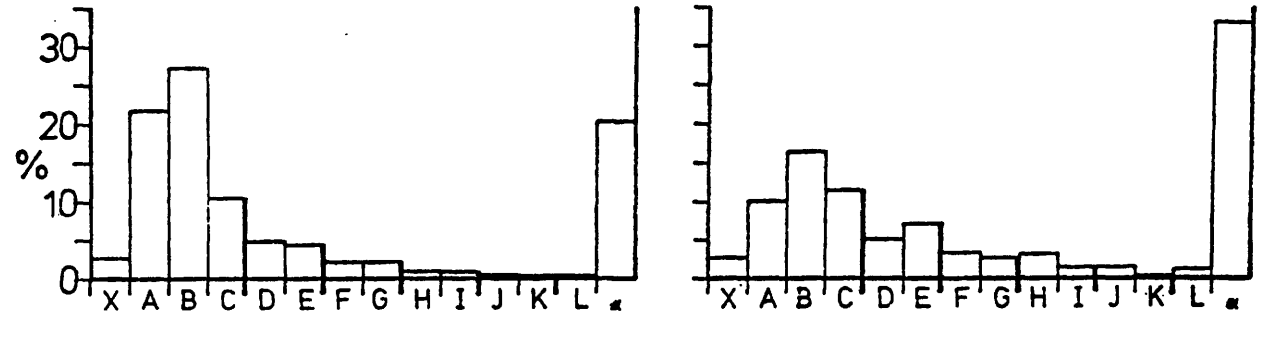
Type of School [Q.13]



Difference between age loss suspected and age loss confirmed [Q.14+15]



Difference between age loss confirmed and age aid issued [Q.15+20]



Distribution by Month of Birth in 1969 (Q. 3)

There are proportionately more deaf children born in the Autumn and Winter months than in the Spring and Summer months.

Type of School (Q. 13)

The 83.5% of children attend Special Schools but there are a small number (2.1%) who attend half-day at a normal school and a half-day at a special school. This situation is not found in the other member countries.

Difference between Age Loss Suspected and Loss Confirmed (Q. 14 & 15)

In 51% of cases the difference between confirming the loss after it was first suspected is one year or less. As with the other C.E.C. countries there are still some children who are not diagnosed as being deaf until 5 years or more after it was first suspected. In almost one third of the cases no information was supplied for this question.

Difference between Age Loss Confirmed and Hearing Aid Issued (Q. 15 & 2)

As there is a large amount of missing data (33%), it is difficult to interpret these results but it must be noted that it is common practice in France not to supply hearing aids until the child and his family have undergone a period of special training.

CODE :

X	=	Aid issued before loss confirmed
A	=	0 months
B	=	1 - 6 "
C	=	7 - 12 "
D	=	13 - 18 "
E	=	19 - 24 "
F	=	25 - 30 "
G	=	31 - 36 "
H	=	37 - 42 "
I	=	43 - 48 "
J	=	49 - 54 "
K	=	55 - 60 "
L	=	61 + "
*		Missing Data

Perceptive Loss by Cause (Q. 16)

	C.E.C.		FRANCE	
	Nos.	%	Nos.	%
Congenital				
Genetic	272	1.7	70	15.2
Intra-uterine				
Rubella	484	16.7	42	9.1
Other cause	92	3.2	20	4.3
Missing data	1	0.03	0	0.0
	577	19.9	62	13.4
Perinatal				
Anoxia	138	4.8	10	2.2
Jaundice	97	3.7	13	2.8
Other cause	96	3.3	13	2.8
Anoxia/Jaundice	25	0.9	0	0.0
Anoxia/Other	16	0.6	3	0.7
Jaundice/Other	8	0.3	0	0.0
Missing data	5	0.2	0	0.0
	385	13.3	39	8.5
Cause unknown	372	12.8	105	22.8
Acquired				
Meningitis	174	6.0	31	6.7
Ototoxic drugs	24	0.8	1	0.2
Hereditary	51	1.8	1	0.2
Other causes	114	3.9	14	3.0
Cause unknown	133	4.6	12	2.6
Not known congenital/ acquired	749	25.8	118	25.6
Missing data	48	1.7	8	1.7
	2899	100.0	461	100.0

Comments on Perceptive Loss by Cause (Q. 16)

For those children reported to have a known aetiology for their deafness, genetic causes accounted for the highest percentage (15.2%), followed by Rubella (9.1%). This is in contrast to the C.E.C. data. In 51% of cases the cause of the deafness was reported as unknown.

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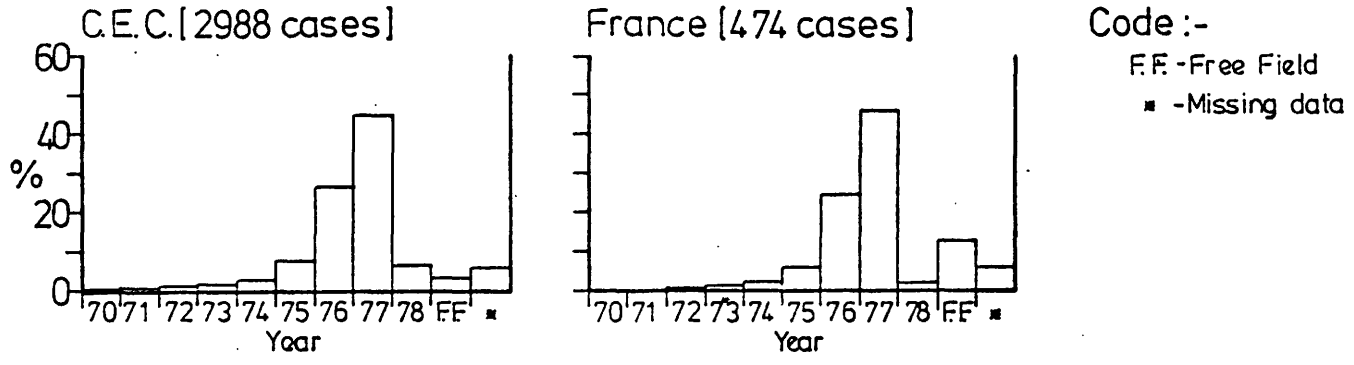
10. Type of Hearing Loss (Q. 16 & 17)

	C . E . C .		F R A N C E	
	Nos.	%	Nos.	%
Perceptive	2794	92.0	453	95.6
Conductive	79	2.6	10	2.1
Perceptive & Conductive	115	3.8	8	1.7
Missing Data	45	1.5	3	0.6
Total	2988	100.0	474	100.0

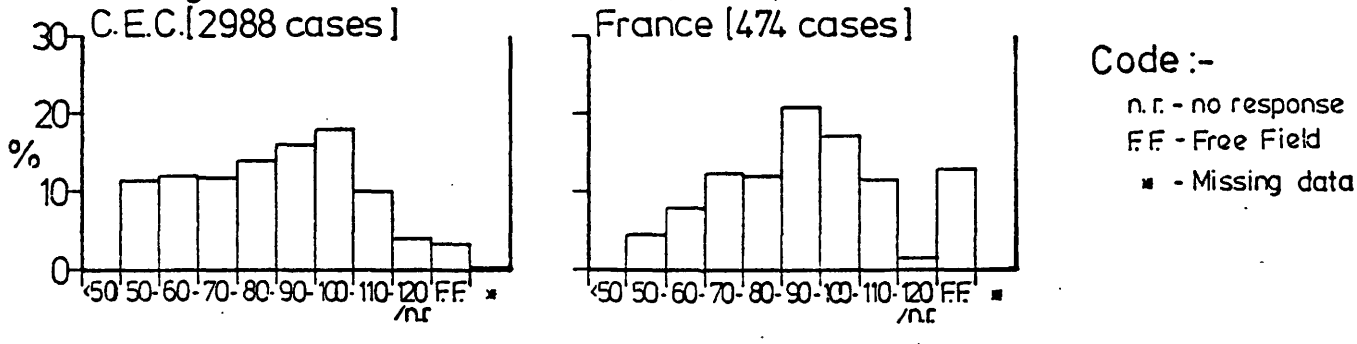
COMMENT

The great majority of these children have a perceptive type of hearing loss.

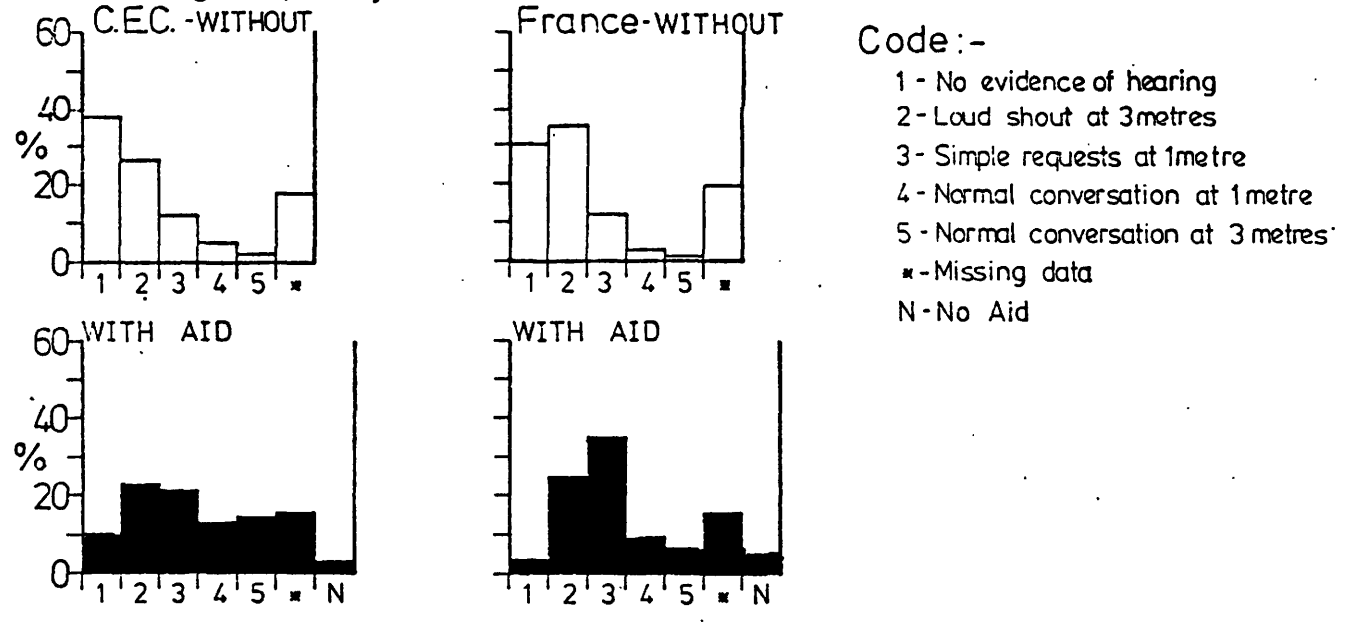
Date most recent Audiogram [Q.18]



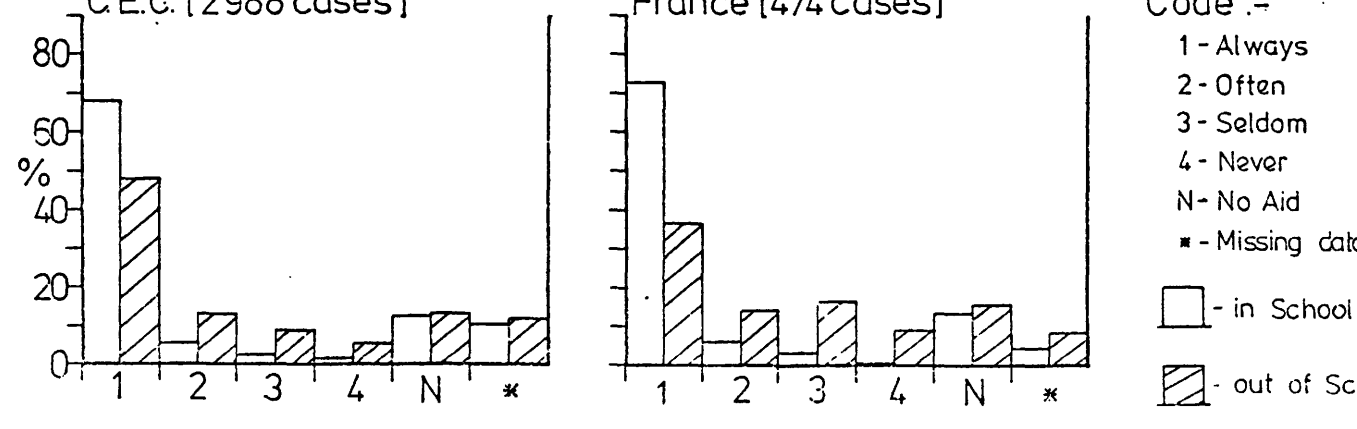
Hearing Loss [Q.18] - mean loss [in dB.] at 500, 1000 + 2000 Hz. for the better ear



Hearing Capacity without/with Aid [Q.19]



Aid use in and out of School - Right Ear ONLY [Q.21]



Date more recent Audiogram (Q. 18)

The proportions of deaf children in France who had had their hearing loss assessed by pure tone audiometry within one year of completion of the Study, is very similar to that in the C.E.C. There is a significant proportion (12.7%) who had had their hearing tested using pure tone, free-field audiometry.

Mean Hearing Loss

Approximately 50% of the deaf children in France have a mean hearing loss of 90 dB or more and there are proportionately fewer than in the C.E.C. with a mean hearing loss less than 70 db.

Hearing capacity without / with aid (Q. 19)

The proportion of deaf children in France who had no evidence of hearing without an aid falls from 30% to 3.4% when hearing aids are used. There is a large proportion of missing data in the reporting of hearing capacity without and with hearing aids.

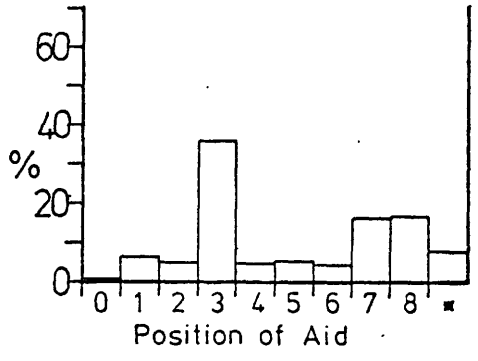
Aid use "in" and "out of" School (Q. 21)

The histograms opposite are for aid use "in and "out of" school for the right ear only as there is no difference in hearing aid usage between the right and left ears.

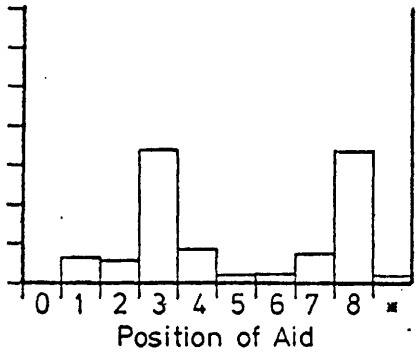
The proportion of deaf children in France always using a hearing aid "in" school is similar (approximately 70%) to those in the C.E.C., but there are proportionately fewer deaf children in France (37%) who always use an aid "out of" school compared to those in the C.E.C. (48%). Also the proportion of deaf children in France who never use an aid "out of" school (9.1%) as opposed to the "in" school (0.6%) is greater than in the C.E.C.

Aid Arrangement [Q. 22]

C.E.C. [2988 cases]



France [474 cases]

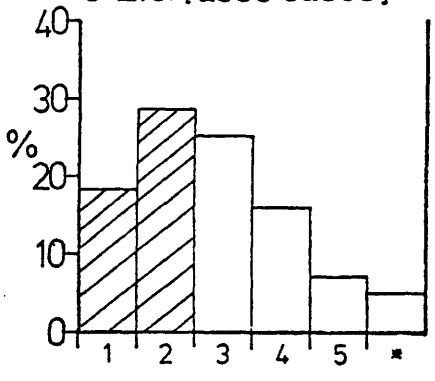


Code :-

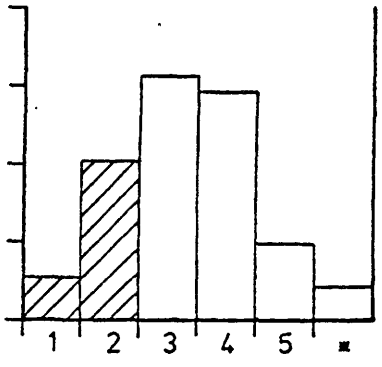
- 0 - Other
- 1 - R. ear level
- 2 - L. ear level
- 3 - R.+L. ear level
- 4 - No Aid
- 5 - R chest level
- 6 - L. chest level
- 7 - R+L chest level
- 8 - R+L.Y chest level
- * - Missing data

Speech [Q. 24]

C.E.C. [2988 cases]



France [474 cases]

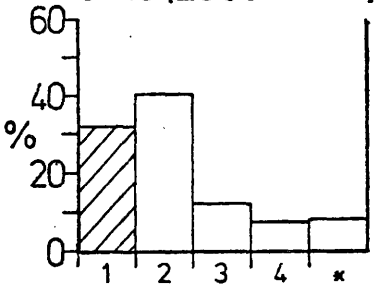


Code :-

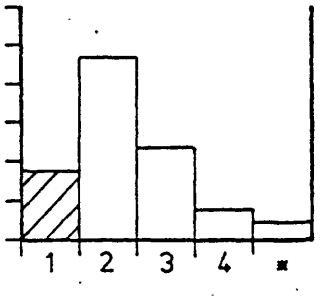
- 1 - Normal speech
- 2 - Defective - Intelligible to Strangers
- 3 - Defective - Intelligible to Parents
- 4 - Defective + single words
- 5 - Unintelligible/No speech
- * - Missing data

Reading Ability [Q. 26]

C.E.C. [2988 cases]



France [474 cases]

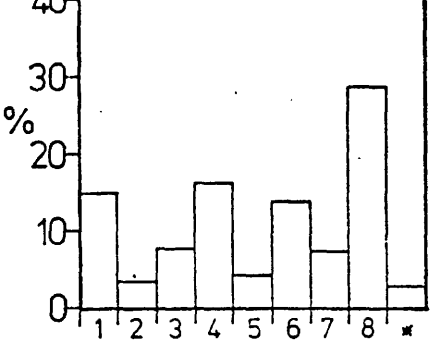


Code :-

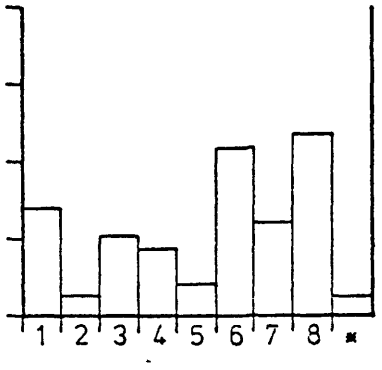
- 1 - Like normal 8 year old
- 2 - Short sentences only
- 3 - Short words only
- 4 - Cannot read
- * - Missing data

Other Handicaps [Q. 28]

C.E.C. [861 cases]



France [115 cases]



Code :-

- 1 - Mental only
- 2 - Mental + Visual
- 3 - Mental + Other
- 4 - Visual only
- 5 - Visual + Other
- 6 - Cerebral Dysfunction
- 7 - Behaviour Disorder
- 8 - Others *
- * - Missing data

* Others include :- Language, Cardiac, Gut, Renal, Skin etc. or in combination

Aid Arrangement (Q. 22)

Approximately two thirds of the deaf French Children use bilateral hearing aids - either ear level (33.8%) or chest level (33.3%).

Speech (Q. 24)

Categories 1 & 2 are cross-hatched to identify those children whose speech is at least intelligible to strangers. In only 25.8% of the French cases does the speech quality attain this standard as opposed to 48.6% of the C.E.C. cases in the histograms opposite.

Reading Ability (Q. 26)

The cross-hatched category No. 1 is to identify those children who can read like normal 8-year-olds. There are almost twice as many children in this category in the C.E.C. (31.9%) in comparison with the children in France (17.5%).

Other Handicaps (Q. 28)

In common with the other reported data the three main handicaps associated with deafness were:

i) Mental, alone or in combination with others.
ii) Visual, alone or in combination with others.
III) Cerebral dysfunction (i.e. cerebral palsy, epilepsy, hydrocephalus, etc.), accounting for 21.7% of the reported associated handicaps.

18. Manual Communication (Q. 25)

	C.E.C.		FRANCE	
	Nos.	%	Nos.	%
Does not use manual communication	1590	53.2	164	34.6
Uses sign language	904	30.3	262	55.3
Uses finger spelling	51	1.7	0	0.0
Uses finger spelling and sign language	102	3.4	4	0.8
Missing data	341	11.4	44	9.3
Total	2988	100.0	474	100.0

In France, deaf children use sign language as a form of communication in 55.3% of the cases (c.f. Italy 56.7%) in contrast to 30.7% in the C.E.C.

20. Intelligence (Q. 27)

	C.E.C.		FRANCE	
	Nos.	%	Nos.	%
Normal	2510	84.0	425	89.7
Subnormal	269	9.0	39	8.2
Missing data	209	7.0	10	2.1
Total	2988	100.0	474	100.0

COMMENT

The proportion of deaf children reported as being of subnormal intelligence is similar to that of the children in the C.E.C.

CONCLUSIONS

AND

RECOMMENDATIONS

CONCLUSIONS

1. EPIDEMIOLOGY

Prevalence Rate

(a) The overall prevalence of hearing loss of 50 dB or worse in the better ear at 500, 1000 and 2000 Hz, was found to be 0.9/1000 in the 8-year-old child population of the European Community in 1977. It had been the intention to compare differences in prevalence between countries. There is always the possibility of under-enumeration in this type of study; comparisons can be made using the data in this report, but it is doubtful if useful conclusions can be drawn.

(b) The prevalence found for children born in 1969 may not be the same as that for children born in other years, as relevant aetiological factors may vary from year to year.

2. AETIOLOGY

(a) Rubella. Nearly one in 6 (16%) of the reported cases in the Study were said to have deafness that was secondary to rubella infection during the mother's pregnancy. In the reported cases, positive serological confirmation of rubella infection was not the rule. In one centre which participated in the Study, where serological investigation is done routinely, 24% of the deaf children were found to have rubella as the cause; in only 40% of the mothers of these children was there a history of rubella illness with a rash during pregnancy (Peckham, Martin, Marshall and Dudgeon, 1979).

It has already been noted that there is a marked seasonal variation in the month of birth distribution for those children reported as having rubella deafness. There is a similar, but

less well marked seasonal variation for those cases of deafness where the cause was unknown, suggesting that rubella might account for some of these.

(b) Cause Unknown. 42% of the Study children come into this group. It is generally assumed that in the majority of these cases the origin of their deafness is due to a genetic factor (Fraser, 1976). The evidence available from this Study does not lend support for or against this hypothesis.

(c) Conductive Deafness. It is interesting to note the small proportion of children reported as having deafness due to chronic middle ear disease, in contrast with the pattern which used to be seen in the past and may still be seen in developing countries.

The pattern of aetiology of deafness in children born in 1969 and reported by this Study does not necessarily reflect that which might be found today.

3. ASSOCIATED HANDICAPS

Approximately one in three (29%) of the Study children are reported as having associated handicaps; in the Netherlands this figure reaches 43%. These associated handicaps have important implications for the aetiology of deafness, and for the nature of the educational provision made for each child.

4. AUDITORY THRESHOLD

Those children who have a mean hearing loss of at least 100 dB account for 33% of the total. It might be reasonable to assume that there is a gradient of susceptibility of deafness. This would be demonstrated by finding many more children with less severe loss, and relatively few with more severe loss of hearing. The data provide no support for this hypothesis, even if allowance is made for a degree of under-enumeration of less severely deaf children.

5. DETECTION

The findings indicate that the parents' suspicion of deafness was an important pointer to its earlier diagnosis, and that there is delay in the confirmation of the deafness.

6. HEARING AID PROVISION

(a) There is a delay of several months on average between confirmation of the hearing loss, and the provision of a hearing aid. This delay cannot be entirely explained by a period of counselling prior to the issue of hearing aids in those countries which might adopt this approach.

(b) There is surprising variation in the prescribing patterns of individual countries with regard to ear-level aids and body-worn aids.

7. MATERNAL CARE

It is reasonable to assume that the greater the time spent by the mother at home with her deaf child, the better the spoken language. No relationship was found between the time spent at home by mothers and their children's acquisition of language. It should be remembered that the pattern of work shown by 'occupation of mother' refers to 1977 rather than to the pre-school period of the child. Nevertheless, the finding suggests the possibility that full use is not being made of the mother as a partner in the management team during the pre-school and early school years.

8. EDUCATION

The pattern of educational provision varies greatly between individual countries in the Community. The data does not support the notion that one type of educational provision is better or worse than another. It would appear from the results that, making due allowance for hearing loss, the reading ability of children in special schools for the deaf is of a lower standard than those in ordinary schools.

9. COMMUNICATION ABILITY

(a) Hearing loss is associated with severe impairment of communication ability by spoken language. Less than half the children (47%) were intelligible to strangers. A quarter of all children were only able at best to talk in single word utterances, developmentally equivalent to a child of less than 2 years old.

(b) From the data obtained it was not possible to draw any conclusions on the efficacy of the various forms of manual communication. Marked differences were found between countries in their attitude to manual communication as an alternative to spoken language.

RECOMMENDATIONS

1. CAUSATION OF DEAFNESS

(a) Rubella

It will have been seen in Conclusions (2,a) that rubella accounted for nearly one in 6 (16%), and probably more, of the total number of deaf children. The two summers (of 1968 and 1969) in which the mothers of the children in the Study would have been at an early stage of pregnancy were not considered as being epidemic years in most countries. Rubella is a preventable disease, and the prevention of rubella embryopathy by immunisation of the potential child-bearing population is essential if this cause of deafness is to be eliminated.

(b) Cause Unknown

In 42% of the children (Conclusions 2,b) it was not possible to give any indication of the cause of deafness. This is very high. The possibility of a recessive cause for deafness is of considerable concern to parents because of the greatly increased risk of further deaf children. In conditions such as sensorineural deafness for which there is at present no curative treatment, the importance of prevention is all the greater. Research into the aetiology of the deafness in those children presently classed as 'cause unknown' is urgently required.

(c) Associated Handicaps

The finding (Conclusion 3) that 29% of the children have additional handicaps is evidence of the widespread nature of the neurological and other changes which occur in association with deafness. Deafness in the child can no longer be regarded as an isolated lesion but rather as part of a more generalised pathological process. The importance of full paediatric and developmental assessment cannot be overemphasised, and these findings must be conveyed to those responsible for the child's educational management. Close liaison between the medical and educational professions is essential.

2. HEARING AID PROVISION

(a) Time and issue of hearing aids

If early detection and diagnosis is important, it would seem that the earliest possible provision of hearing aids following the confirmation of deafness is equally important. This Study cannot, on the basis of the data obtained, confirm or deny the validity of these views. Accurate studies of the relation of time of hearing aid issue to communication skills and pattern of educational provision are required.

(b) Hearing aid management

There is no evidence from this Study to suggest that one type or arrangement of hearing aids is better than another. This cannot be accepted as the final statement on the relative merits of different arrangements; the information available is not sufficiently precise to answer this specific question. Further investigation is required in which other factors are looked at, such as child preference and emotional response to body-worn or ear-level aids.

3. TYPE OF SCHOOL

The marked variation of educational provision has been noted in Conclusions (8). There is little, if any, relationship between the nature of educational provision and the educational attainment of the deaf child. It is clearly necessary for further work to be carried out on the type of school placement; the degree of integration with normally hearing and speaking children; and the efficacy of specialized teaching techniques.

4. COMMUNICATION ABILITY

The finding (Conclusions 9) that less than half (47%) the children in the study were able to speak intelligibly to strangers by the age of eight is profoundly disturbing. It should be remembered that the children were not all severely deaf.

(a) Maternal care

The possibility that full use is not being made of the mother (Conclusion 7) requires detailed examination. The normal child learns spoken language primarily through his mother and his immediate family, and it is necessary to develop techniques of training which will enable parents of deaf children to fulfil their naturalistic and fundamental role in child care.

(b) Alternatives and supplements to Hearing Aids

The immense advances in electronics engineering and hearing aid technology have blinded many parents and teachers to the limitations of hearing aids. Study of the data reveals the probability that a significant minority of children find no improvement in speech perception whilst wearing aids.

(c) Speech and Reading

Language and speech are not synonymous. The act of speaking is on many occasions the natural and most convenient medium for verbal expression. The urgent requirement in deaf children is that they are enabled to learn language at as near the normal developmental rate as possible. The intelligibility of their speech needs also to be greatly improved.

5. ORGANIZATION OF SERVICES

The Study highlights the fragmentation of services involved in the detection, management and education of deaf children. There needs to be a greatly increased level of integration and liaison between medical and educational services. This needs to be planned with due consideration to the numbers of deaf children and the services which can be made available in particular areas and regions.

6. PUBLIC AND PROFESSIONAL AWARENESS

Deafness remains one of the least understood of handicaps, and there needs to be an increased awareness of the existence and nature of the problem if its effects are to be diminished. This could be achieved by health education services becoming more actively involved, and by judicious use of the press, television and radio.

POSTCRIPT

It is the opinion of the Steering Committee that concerted action studies, involving close collaboration between representatives of different countries are not only possible, but necessary, and can provide information which is of a different order of value from similar studies conducted on a purely local or even national basis.

"Døvhed i barnealderen i de Europæiske Fællesskaber".

Rapporten er resultatet af en epidemiologisk undersøgelse over udbredelsen af døvhed i barnealderen i de ni lande i de europæiske fællesskaber. Undersøgelsen omfattede alle børn, med et gennemsnitligt høretab for det bedste øre på 50 dB eller derover, født i året 1969. Størstedelen af børnene blev registreret i 1977, da de var 8 år gamle. Spørgsmålene omfattede årsagen til og graden af høretabet og hyppigheden af ledsagende handicap. Barnets alder da diagnosen blev stillet og behandlingen indledt. Oplysninger blev indsamlet om typen af høreapparater, former for specialskoler og barnets evne til at gøre sig forståelig med talesprog eller tegnsprog samt barnets læsefærdighed. Undersøgelsen var baseret på spørgeskema med standardiserede spørgsmål og hver af de ni lande havde til opgave at finde børnene i deres område, indsamle og færdiggøre spørgeskemaerne, før de blev sendt til analyse hos den europæiske coordinator. De metoder, som de enkelte lande har anvendt ved indsamlingen af materialet, findes beskrevet i rapporten.

I rapporten er hovedpunkterne i spørgeskemaet analyseret. Dens vigtigste resultat er opgørelsen over det samlede talmateriale, der repræsenterer alle lande i de europæiske fællesskaber sammenlignet med resultaterne for det enkelte land. Hver gruppe af histogrammer eller tabeller er ledsaget af korte oplysende kommentarer. Der er foretaget en række kryds-tabuleringer til belysning af indbyrdes relationer som f.eks. graden af hørenedsættelse, barnets alder, da diagnosen blev stillet og kvaliteten af barnets talesprog. Rapporten afslutter med en række konklusioner udledt af undersøgelsen og de forslag, disse giver anledning til.

Konklusioner:

1. EPIDEMIOLOGI.

Udbredelseshyppighed.

(a) Udbredelsen af høretab på 50 dB eller mere i det bedste øre for frekvenserne 500, 1000 og 2000 Hz blev fundet til 0,9/1000 hos 8-årige børn bosiddende 1977 i de Europæiske Fællesskaber. Det havde været hensigten at sammenligne forskelle i udbredelsen i de forskellige lande. Der er altid, i studier af denne art, en risiko for utilstrækkelig optælling. Sammenligninger kan foretages på grundlag af tallene i denne rapport, men det er tvivlsomt, om der kan drages endelige konklusioner.

(b) Udbredelsen for børn født i 1969 behøver ikke at være den samme som for børn født i andre år, da relevante ætiologiske faktorer kan veksle fra år til år.

2. ÆTIOLOGI.

(a) Rubeola. Hos omkring een ud af 6 (16 %) af tilfældene i undersøgelsen var det angivet, at døvheden kunne føres tilbage til en rubeola-infektion under moderens graviditet. I de registrerede tilfælde fandtes der som regel ikke en positiv serologisk diagnose af rubeola-infektionen. I et center, der deltog i undersøgelsen, hvor den serologiske undersøgelse blev foretaget systematisk, fandt man, at 24 % af børn var blevet døve efter rubeola, men kun hos 40 % af deres mødre var der oplyst tilfælde af rubeola-infektion med udslet under graviditeten (Peckham, Martin, Marshall and Dudgeon 1979).
Man har allerede bemærket, at der findes en udtalt sæson-variation i fordelingen af fødselsmåneden for børnene med rubeola-døvhed. Der findes en tilsvarende, men mindre markeret, sæson-variation for de tilfælde af døvhed, hvor årsagen var ukendt, hvilket kunne tyde på, at rubeola kunne være ansvarlig i nogle af disse tilfælde.

(b) Ukendt årsag. 42 % af materialet tilhører denne gruppe. Det er en almindelig antagelse, at døvheden for størstedelen af disse tilfælde er forårsaget af en arvelig faktor. (Fraser, 1976). Materialet fra herværende undersøgelse tillader ingen vurdering for eller imod denne hypotese.

(c) Lydledningslidelse. Det er bemærkelsesværdigt at notere sig det lille antal børn, hvor årsagen til døvheden er angivet som kronisk mellemørebetændelse. Dette i modsætning til hvad man tidligere fandt og stadig kan finde i udviklingslandene.

Fordelingen af de ætiologiske faktorer, ved døvhed hos børn født i 1969 og opført i denne undersøgelse, behøver nødvendigvis ikke at svare til, hvad man ville finde i dag.

3. LEDSAGENDE HANDICAP.

For omkring een af tre (29 %) af de opgjorte børn er det angivet, at de har ledsagende handicap. For Hollands vedkommende er det 43 %. Disse ledsagende handicap siger noget væsentligt om døvhedens ætiologi og er bestemmende for de undervisningsmæssige forholdsregler, der må træffes for det enkelte barn.

4. HØRENEDSÆTTELSENS OMFANG.

Børn med et gennemsnitligt høretab på mindst 100 dB udgør 33 % af det totale antal. Det ville være rimeligt at antage, at der findes en variation i følsomheden for døvhed. Dette kunne demonstreres, hvis man fandt mange flere børn med mindre høretab og relativt få med mere udtalt høretab. Undersøgelsens data giver ikke holdepunkt for denne hypotese, selv med det forbehold, at der kan være tale om en utilstrækkelig optælling af børn med mindre høretab.

5. DØVHEDENS KONSTATERING.

Resultaterne tyder på, at forældrenes mistanke om døvhed var af afgørende betydning for dens tidlige erkendelse, og at der findes en forsinkelse i konstateringen af døvheden.

6. FORSYNING MED HØREAPPARAT.

(a) Der er en gennemsnitlig forsinkelse på adskillige måneder mellem døvhedens konstatering og forsyningen med høreapparat. Denne forsinkelse kan ikke alene forklares ved den vejledning, der gives til forældrene, før barnet bliver udstyret med høreapparater i de lande, hvor en sådan metode finder anvendelse.

(b) Der er en overraskende variation med hensyn til ordination af hovedbårne og kropsbårne høreapparater i de forskellige lande.

7. MODERENS OMSORG.

Det er rimeligt at antage, at desto mere tid moderen tilbringer i hjemmet med sit døve barn, desto bedre vil talesproget blive. Der er ikke fundet nogen relation mellem den tid, mødrene har tilbragt i hjemmet og deres børns sprogudvikling. Det må erindres, at angivelse af arbejde ved "moderens beskæftigelse" refererer til 1977 og ikke til barnets tilværelse før skolealderen. Imidlertid tyder undersøgelsen på, at man ikke fuldt ud har udnyttet moderen som partner i behandlingsgruppen omkring Barnet hverken i legealderen eller i de første skoleår.

8. UNDERVISNING.

Billedet af den undervisningsmæssige omsorg varierer meget betydeligt fra land til land. Resultaterne tillader ikke at fastslå, at den type af undervisning er bedre eller dårligere end en anden.
Det fremgår af resultaterne, med forbehold for høretabet, at læsefærdigheden hos børn i døveskolerne er mindre end hos børn i de almindelige skoler.

9. EVNEN TIL AT KOMMUNIKERE MED ANDRE.

(a) Nedsat hørelse er ledsaget af store vanskeligheder med at kommunikere med andre ved hjælp af talesproget. Mindre end halvdelen af børnene (47 %) kunne gøre sig forståelige for fremmede. En fjerdedel af alle børn var højst i stand til at tale med enkelte ord, udviklingsmæssigt svarende til et barn under 2 års alderen.

(b) Det var ikke muligt, på grundlag af de indsamlede data, at drage nogen konklusion om effektiviteten af de forskellige former for tegnsproget. Mellem de forskellige lande fandt man udtalte forskelle i deres holdning over for tegnsprog som alternativ til det talte sprog.

ANBEFALINGER.

1. ÅRSAGER TIL DØVHED.

(a) Rubeola.

Som det fremgår af konklusionerne (2,a), tegner rubeola sig for omkring een af 6 (16 %) og muligvis flere af det totale antal af døve børn. De to somre (i 1968 og 1969) , i hvilken mødrene til de undersøgte børn ville have befundet sig i det tidlige stadium af deres graviditet, blev ikke i de fleste lande betragtet som år med epidemier af rubeola. Rubeola er en sygdom, der kan forebygges, og forebyggelse af affektion af fostrene gennem immunisering af den potentielle kvindelige del af befolkningen er afgøronde, hvis man skal eliminere rubeola som arsag til døvhed.

(b) Ukendt årsag.

Blandt 42 % af børnene (konklusion 2) var det ikke muligt at finde frem til årsagen til døvheden. Det er meget højt. Muligheden for en recessiv årsag til døvhed er af betydelig interesse for forældrene på grund af den betydeligt øgede risiko for yderligere fødsel af døve børn. I tilfælde med sensorineural døvhed, for hvilke der i dag ikke findes nogen behandling, er betydningen af forebyggelse særdeles væsentlig. Forskning af ætiologien til døvhed for de børn, der i dag klassificeres "årsag ukendt", er meget påtrængende.

(c) Ledsagende handicap.

Påvisningen af (konklusion 3), at 29 % af børnene frembyder ledsagende handicap, er udtryk for det omfang, i hvilket neurologiske og andre forandringer optræder i forbindelse med døvhed. Døvhed hos børn bør ikke længere betragtes som en isoleret læsion, men som en del af en mere generaliseret patologisk proces. Man kan ikke overvurdere betydningen af den fulde pædiatriske og udviklingsmæssige vurdering, og disse fund må indregnes blandt de øvrige, der er bestemmende for barnets udviklingsmæssige muligheder. Dette, kræver tæt samarbejde mellem den medicinske og undervisningsmæssige sagkundskab.

2. FORSYNING MED HØREAPPARAT.

(a) Tidspunktet for forsyning med høreapparat.

Hvis tidlig erkendelse og diagnose er vigtig, er det indlysende, at den tidligst mulige forsyning med høreapparat bør finde sted, så snart døvheden er fastslået. Denne undersøgelse kan ikke på grundlag af de indhentede data understøtte eller afvise betydningen af disse synspunkter. Det kræver indgående studier af relationen mellem tidspunktet for forsyningen med høreapparat på den ene side og evnen til kommunikation og arten af undervisningen på den anden side.

(b) Valg af høreapparat.

Der er ikke i denne undersøgelse fundet holdepunkt for, at den ene type af høreapparåt er bedre end en anden. Dette kan ikke betragtes som den endelige konklusion af de relative fordele ved de forskellige former for høreapparater. Den indsamlede information er ikke tilstrækkelig eentydig til at besvare dette spørgsmål. Yderligere undersøgelse med belysning af andre faktorer som barnets holdning til og reaktion på brug af kropsbårent eller hovedbårent høreapparater er nødvendige.

3. ARTEN AF SKOLEN.

Den udtalte forskel i den undervisningsmæssige forsorg fremgår af konklusion (8). Der er en ringe, muligvis ingen, forbindelse mellem arten af den undervisningsmæssige indsats og graden af det døve barns indlæring. Der er et klart behov for en fremtidig undersøgelse over de forskellige typer af skoler. Graden af integrationen med normalt hørende og normalt talende børn og effekten af forskellige former for specialundervisning.

4. EVNEN TIL KOMMUNIKATION.

Resultatet (konklusion 9), at mindre end halvdelen (47 %) af de undersøgte børn i 8 års alderen var i stand til at udtrykke sig forståeligt for fremmede, er højest foruroligende. Det må erindres, at ikke alle børnene var udtalt døve.

(a) Moderens omsorg.

Den omstændighed, at man ikke har gjort fuld brug af moderens rolle (Konklusion 7), kræver detaljeret undersøgelse. Det raske barn lærer først og fremmest at tale gennem kontakt med moderen og sin nærmeste familie, og det er nødvendigt at udvikle træningsmetoder, som sætter forældrene til døve børn i stand til at udfylde deres naturlige og fundamentale rolle for barnets omsorg.

(b) Alternativer og suppleringer til høreapparater.

Den vældige udvikling i elektronik og høreapparatets teknologi har fået mange forældre og lærere til at glemme høreapparatets begrænsninger. Undersøgelsens data afslører, at en signifikant minoritet af børnene sandsynligvis ikke opnår nogen forbedring af sprogopfattelsen til trods for anvendelse af høreapparater.

(c) Sprog og Læseevne

Sprog og tale er ikke synonymer. Talefunktionen er i mange tilfælde den naturlige og nemmeste form for verbale udtryk. Det absolutte krav til døve børn er, at de bliver i stand til at lære at beherske sproget så nær ved det normale som muligt. Forståeligheden af deres tale må også forøges væsentligt.

5. ORGANISATIONEN AF SERVICEFUNKTIONERNE.

Undersøgelsen illustrerer utilstrækkeligheden af servicefunktionerne vedrørende erkendelse, behandling og undervisning af døve børn. Der kræves en betydelig forøgelse af integrationen og samarbejdet mellem de medicinske og undervisningsmæssige servicefunktioner. Dette må planlægges med hensyn til antallet af døve børn og de servicefunktioner, der kan stilles til rådighed i de forskellige områder og regioner.

6. BEFOLKNINGENS OG DE PROFESSIONELLES OPMÆRKSOMHED.

Døvhed er fortsat eet af de mest oversete handicap, og det er nødvendigt at øge opmærksomheden på dets eksistens og dets problemer, hvis man vil gøre sig håb om at afbøde døvhedens konsekvenser. Dette kan opnåes ved at aktivere sundhedsoplysningen og gennem den rette anvendelse af presse, fjernsyn og radio.

EFTERSKRIFT.

Det er undersøgelseskomiteens opfattelse, at fællesstudier, med tæt samarbejde mellem repræsentanter for de forskellige lande, ikke alene er mulige, men også nødvendige, da de kan tilvejebringe information af en ganske anden værdi end den, man kan opnå ved studier på lokal og endog national basis.

R E S U M E

Ce rapport est le résultat d'une enquête épidémiologique poursuivie dans les neuf pays de la Communauté Européenne pour déterminer la fréquence de la surdité infantile.

Etaient à noter les enfants, nés en 1969, dont la perte auditive moyenne était égale ou supérieure à 5o dB à la meilleure oreille.

La majorité des enfants furent recensés en 1977, alors qu'ils avaient huit ans. Le questionnaire concernait la nature et la cause de la perte auditive, le degré de surdité et l'existence de handicaps associés. L'âge de l'enfant au moment du diagnostic et celui du début du traitement ont été pris en considération. Le type de prothèse auditive, son mode d'application et la nature de l'intervention pédagogique étaient examinés, de même que les possibilités de l'enfant de lire, de communiquer par la parole et le geste.

Les réponses au questionnaire standardisé furent recueillies dans chaque pays sous responsabilité nationale, notées et transmises ensuite au coordonnateur européen. Les méthodes employées dans chacun des pays pour conduire l'enquête sont décrites dans le rapport.

Le rapport comporte l'analyse de facteurs essentiels des réponses reçues. Les résultats sont donnés tant pour l'ensemble de la Communauté Européenne que pour chacun des pays, la comparaison devenant ainsi possible. De brefs commentaires accompagnent chaque groupe de graphiques ou de tableaux pour en faciliter l'interprétation. Des corrélations sont développées, telles que l'âge de l'enfant au moment du diagnostic en fonction du degré de surdité et de son retentissement sur la qualité du langage oral.

Le compte-rendu termine sur des conclusions se rapportant à l'objet de l'enquête et formule des recommandations.

C O N C L U S I O N S

1. EPIDEMIOLOGIE

a) Dans la Communauté Européenne, en 1977 et dans la population d'enfants de 8 ans, on a constaté une fréquence de o,9/1ooo porteurs d'une perte auditive à la meilleure oreille, supérieure ou égale à 5o dB, moyenne de 5oo, 1ooo et 2ooo Hz. L'intention avait été de comparer entre elles les fréquences trouvées dans les différents pays. Or, ce type d'études comporte toujours une possibilité de sous-estimation; des comparaisons peuvent donc être faites à partir des résultats de ce rapport, mais les conclusions qui en seraient tirées pourraient être incertaines.

b) La fréquence trouvée pour les enfants nés en 1969 pourrait ne pas être la même que celle que l'on obtiendrait pour des enfants nés en d'autres années, parce que les facteurs étiologiques peuvent varier d'une année à l'autre.

2. ETIOLOGIE

a) La rubéole

Près d'un sur six (16 %) des cas rapportés dans cette étude ont une surdité consécutive à une infection rubéolique survenue au cours de la grossesse de la mère. Dans les cas rapportés, la confirmation sérologique n'a pas été la règle. Dans un Centre qui participait à l'enquête et auquel les investigations sérologiques sont faites systématiquement, 24 % des enfants sourds ont été trouvés porteurs d'une surdité rubéolique; pour seulement 4o % des mères de ces enfants, l'interrogatoire faisait noter dans les antécédents une rubéole avec éruption durant la grossesse (Peckham, Martin, Marshall et Dudgeon, 1979).

Il a déjà été relevé que des variations saisonnières marquées existaient dans la répartition des mois de naissance des enfants notés comme porteurs d'une surdité rubéolique. Le fait est semblable, bien que moins marqué, pour les cas de surdité de cause inconnue, ce qui suggère que la rubéole peut être soupçonnée en

être la cause chez l'un ou l'autre de ces enfants.

b) Causes inconnues

42 % des enfants notés dans ce travail sont compris dans ce groupe. On suppose généralement que dans la majorité des cas l'origine de la surdité relève d'un facteur génétique (Fraser-1976). Les résultats de cette étude ne permettent pas d'affirmer ou d'infirmer cette hypothèse.

c) Surdités de transmission

Il est intéressant de noter la petite proportion d'enfants trouvés porteurs d'une surdité due à une infection chronique de l'oreille moyenne, contrairement aux répartitions que l'on avait l'habitude de voir au passé et qui peuvent encore être observées dans les pays en voie de développement.

Les facteurs étiologiques des surdités des enfants nés en 1969, consignés dans ce travail, ne reflètent pas nécessairement ce qui pourrait être trouvé aujourd'hui.

3. HANDICAPS ASSOCIES

Approximativement un sur trois (29 %) des cas rapportés dans ce travail ont été trouvés porteurs de handicaps associés; aux Pays-Bas ce pourcentage atteint 43 %. L'existence de ces handicaps associés a une importante implication dans les étiologies de la surdité et pour l'orientation de l'éducation de chacun de ces enfants.

4. SEUIL AUDITIF

Les enfants dont la moyenne de la perte auditive était de loo dB approchaient 33 % du nombre total. Il serait logique d'admettre une sensibilité échelonnée à la surdité. Ce fait pourrait être démontré par la découverte d'un nombre important d'enfants à surdité moins sévère et d'un nombre relativement moindre d'enfants à surdité plus grave. Les données de l'enquête n'apportent pas de confirmation à cette hypothèse, même si considération est faite du taux de sous-estimation du nombre d'enfants à surdité moins importante.

5. DECOUVERTE DE LA SURDITE

Les résultats indiquent que la suspicion de la surdité par les parents était un indice facilitant un diagnostic précoce, et qu'il y a ensuite retard pour la confirmation de la surdité.

6. APPAREILLAGE AUDITIF

a) Il existe un délai de quelques mois en moyenne entre la confirmation de la surdité et l'adaptation de la prothèse auditive. Ce délai ne peut pas être expliqué entièrement par la période de guidance qui précède l'application prothétique dans les pays qui adoptent ce système.

b) Il existe des variations étonnantes entre les pays en ce qui concerne la prescription de prothèses auditives de type contour d'oreille et de type boîtier.

7. EDUCATION MATERNELLE

Il est raisonnable de supposer que plus le temps accordé par la mère à son enfant chez eux est grand, meilleur sera le langage oral. Aucune relation n'a été trouvée entre le temps que la mère passe à son domicile avec l'enfant et l'acquisition du langage de ce dernier. Il est bon de rappeler que l'occupation à indiquer dans la rubrique "occupation maternelle" se rapportait à l'année 1977 et non à la période préscolaire de l'enfant. Néanmoins, les résultats suggèrent que la possibilité d'utiliser pleinement la mère comme artisan de l'éducation dans le cadre de l'équipe thérapeutique, pendant la période préscolaire et les premières années scolaires, n'est pas complètement épuisée.

8. EDUCATION

Les caractéristiques de l'éducation varient beaucoup entre les pays de la Communauté Européenne. Les données recueillies ne permettent pas d'affirmer qu'un type d'éducation est meilleur ou plus mauvais qu'un autre. Il apparaît, d'après les résultats et considération faite de la perte auditive, que la lecture des enfants ayant suivi une éducation spécialisée dans les écoles pour sourds est moins

bonne que celle des élèves qui ont reçu leur instruction dans une école pour entendants.

9. APTITUDES A LA COMMUNICATION

La surdité est associée à un handicap sévère de la possibilité communicative par langage oral. Moins de la moitié des enfants (47 %) parlaient de façon intelligible pour les étrangers. Un quart des enfants étaient seulement capables au mieux de prononcer des mots-phrases, ce qui correspond au développement linguistique d'un enfant de moins de deux ans.

A partir des résultats, il n'a pas été possible de tirer une conclusion sur l'efficience des divers types de communication gestuelle. Les pays différaient beaucoup dans leur acception du langage gestuel comme alternative au langage parlé.

R E C O M M A N D A T I O N S

1. ETIOLOGIE DE LA SURDITE

a) Rubéole

Il a été relevé au paragraphe 2.a des Conclusions que la rubéole était en cause dans près d'un cas sur six (16 %), et probablement plus, du nombre total des enfants sourds. Les deux étés de 1968 et 1969, pendant lesquels les mères des enfants notés par l'enquête se trouvaient à un stade précoce de la grossesse, n'ont pas été considérés comme périodes d'épidémie dans la plupart des pays. La rubéole est une maladie qui peut être prévenue. La prévention de l'embryopathie rubéolique par immunisation de la population susceptible de procréer est essentielle, si cette cause de la surdité doit être éliminée.

b) Causes inconnues

Dans 42 % des cas (Conclusions 2.b), il n'a pas été possible de recueillir une indication sur la cause de la surdité. Ce pourcentage est très élevé. La possibilité d'une cause récessive de la surdité préoccupe surtout les parents à cause du risque accru

d'avoir d'autres enfants sourds. Dans les cas de surdité de perception, pour lesquelles il n'y a pas de traitement curatif actuellement, l'importance de la prévention est d'autant plus grande. Il est urgent de pousser les recherches dans tous les cas de surdité, à classer actuellement encore comme étant dus à des causes inconnues.

c) Handicaps associés

La constation (Conclusions 3) que 29 % des enfants ont un handicap associé, prouve l'étendue des altérations neurologiques et autres qui s'installent avec la surdité. La surdité de l'enfant ne peut plus être considérée comme une lésion isolée, mais comme partie d'un processus pathologique général. L'importance d'une investigation complète pédiatrique et développementale ne peut pas être surestimée, et ses résultats doivent être transmis à ceux qui ont la responsabilité de l'éducation de l'enfant. Des rapports étroits entre les professions médicale et éducative sont essentiels.

2. APPLICATION PROTHETIQUE

a) Age de l'enfant au moment de l'application prothétique

S'il est admis que la détection et le diagnostic précoces sont importants, il peut sembler d'importance égale que l'adaptation prothétique soit réalisée dans les meilleurs délais après la confirmation de la surdité. Cette étude ne peut pas, sur la base des résultats obtenus, confirmer ou infirmer la validité de ces vues. Des études précises sur la relation entre le moment de l'application prothétique d'une part, et la faculté communicative et les modes d'éducation d'autre part, sont nécessaires.

b) Type d'appareillage

Aucune donnée de cette étude ne permet de suggérer qu'un mode d'appareillage auditif vaille mieux qu'un autre. Ceci ne peut toutefois pas être considéré comme appréciation définitive des avantages des différents modes d'application; les renseignements disponibles ne sont pas assez précis pour répondre à cette

question spécifique. Des investigations complémentaires sont nécessaires pour étudier d'autres facteurs, tels que la préférence de l'enfant et ses réactions comportementales à la prothèse contour d'oreille ou boîtier.

3. TYPE D'ECOLE

Les différences marquées des systèmes d'éducation ont déjà été relevées (Conclusions 8). S'il y en a une, la relation entre le type d'école et la réussite de l'éducation de l'enfant sourd est de peu d'envergure. Il est certainement nécessaire que des études soient faites au sujet du type de scolarisation, du degré d'intégration au milieu d'enfants entendant et parlant normalement et de l'efficacité des techniques éducatives spéciales.

4. APTITUDE A LA COMMUNICATION

La constatation (Conclusions 9) que moins de la moitié (47 %) des enfants de huit ans sont capables de parler de façon intelligible pour les étrangers, est profondément troublante. Il convient de rappeler que les enfants notés par l'enquête n'ont pas tous été des sourds profonds.

a) Education maternelle

La supposition que la mère n'a pas été engagée entièrement dans l'éducation de son enfant, demande un examen détaillé. L'enfant normal apprend la parole primairement par sa mère et son entourage immédiat, et il est nécessaire de développer des techniques d'information qui rendent les parents d'enfants sourds capables d'assurer pleinement leur rôle naturel et fondamental auprès de leur enfant.

b) Alternatives et suppléments à la prothèse auditive

Les très grands progrès en électronique et technologie de la prothèse auditive ont aveuglé de nombreux parents et éducateurs quant aux limites des prothèses auditives. L'enquête révèle la probabilité qu'il existe une minorité significative d'enfants qui ne trouvent pas d'amélioration dans la perception de la parole par le port de la prothèse.

c) Parole et lecture

Langage et parole ne sont pas synonymes. L'acte de parler est, en mainte occasion, le moyen naturel et le mieux adapté de l'expression. Le besoin urgent pour l'enfant sourd est qu'il soit mis en mesure d'apprendre le langage de manière aussi proche que possible du développement normal. L'intelligibilité de la parole de l'enfant sourd doit aussi être grandement améliorée.

5. ORGANISATION DES STRUCTURES

Cette étude souligne la fragmentation des services engagés dans le dépistage, la prise en charge et l'éducation de l'enfant sourd. Une plus grande intégration et une meilleure liaison sont indispensables entre services médicaux et éducatifs. Les projets doivent prendre en considération le nombre d'enfants sourds et les structures qui peuvent être rendus disponibles dans des régions particulières.

6. INFORMATION DU PUBLIC ET DES SPECIALISTES

La surdité reste l'un des handicaps les plus méconnus, et l'information sur l'existence et la nature de ce problème doit être poussée afin d'en diminuer les effets. Ceci pourrait être accompli par les services d'éducation sanitaire participant plus activement à cette action, et par l'utilisation judicieuse de la presse, de la télévision et de la radio.

POSTSCRIPTUM

L'opinion du Comité Directeur de l'enquête est que les recherches par accion concertée, comportant la collaboration entre les représentants de différents pays sont non seulement possibles, mais encore nécessaires, parce qu'elles peuvent fournir des informations de valeur différente de celles qui seraient réunies sur la base d'une enquête seulement locale ou même nationale.

Z U S A M M E N F A S S U N G

Der Bericht ist das Ergebnis einer epidemiologischen Untersuchung, durchgeführt in den neun Staaten der Europäischen Gemeinschaft, um die Häufigkeit der Hörstörungen im Kindesalter zu ermitteln.

Der Entwurf der Studie legte fest, dass alle Kinder, die während des Jahres 1969 geboren wurden, einbezogen werden sollten, wenn ihr mittlerer Hörverlust 5o dB oder mehr auf dem besseren Ohr betrug.

Die Mehrheit der Kinder wurde 1977, im Alter von 8 Jahren, erfasst. Der Fragenkatalog bezog sich auf Art und Ursache der Hörstörung, ihren Grad und das Ausmass zusätzlicher Behinderungen. Das Alter des Kindes zum Zeitpunkt der Diagnose und des Beginns der Therapie wurde berücksichtigt. Der Hörgeräte-Typ, die Trageweise des Geräts und die Art der sonderpädagogischen Betreuung waren in die Auswertung eingeschlossen. Die Fähigkeit der Kinder, mit gesprochener Sprache oder manuellen Methoden zu kommunizieren, sowie ihre Lesefertigkeit wurden erfasst.

Die Forschungen wurden durchgeführt, indem die in den Standardfragenkatalog aufgenommenen Fragen abgestimmt wurden; jeder der neun Staaten der Europäischen Gemeinschaft war dann selbst dafür verantwortlich, die Kinder aufzufinden, die Fragebögen auszufüllen und sie an den Europäischen Koordinator zur Computeranalyse weiterzugeben. Die Methoden, deren sich die einzelnen Mitgliedstaaten bedienten, sind im Bericht beschrieben.

Der Bericht enthält Analysen der wesentlichen Faktoren aus dem Fragenkatalog. Die zusammengefassten, nationalen Daten, die in ihrer Gesamtheit die Europäische Gemeinschaft repräsentieren, werden mit den Einzelergebnissen eines jeden Mitgliedstaates verglichen. Jede Gruppe von Histogrammen und Tabellen wird von kurzen Kommentaren erläutert. Korrelationen ermöglichen das Studium der Beziehungen einiger Faktoren untereinander, wie z.B. Grad der Hörstörung, Alter bei der Erstdiagnose und Qualität der gesprochenen Sprache.

Abschliessend werden die, auf die eingangs der Untersuchung festgelegten Zielvorstellungen bezogenen Ergebnisse beschrieben und Empfehlungen ausgesprochen.

E R G E B N I S S E

1. EPIDEMIOLOGIE

a) Die Uberalles-Häufigkeit eines Hörverlusts von 5o dB oder mehr auf dem besseren Ohr bei 5oo, 1ooo und 2ooo Hz ergab für das Jahr 1977 den Wert von o,9/1ooo beim 8-Jahre alten Kind in der Bevölkerung der Europäischen Gemeinschaft. Ursprünglich bestand die Absicht, die Unterschiede in der Häufigkeitsverteilung zwischen den Ländern zu vergleichen. Bei dieser Art von Untersuchung besteht aber immer die Möglichkeit einer Unterbewertung. Bei Verwendung der Daten dieses Berichts können Vergleiche angestellt werden, aber es ist zweifelhaft, ob weiterführende Schlüsse daraus gezogen werden können.

b) Die Häufigkeitsverteilung, wie sie für die 1969 geborenen Kinder festgestellt wurde, muss nicht notwendigerweise die gleiche sein wie bei Kindern anderer Jahrgänge, weil wesentliche ätiologische Faktoren von Jahr zu Jahr ändern können.

2. AETIOLOGIE

a) Röteln

Beinahe bei jedem 6. Kind (16 %) der Studie wurde Schwerhörigkeit als Folge einer Rötelninfektion während der Schwangerschaft der Mutter angegeben. Zu den berichteten Fällen war eine positive serologische Absicherung der Röteln nicht die Regel. In einem Zentrum, das an der Studie beteiligt war, werden serologische Untersuchungen routinemässig durchgeführt; bei 24 % der schwerhörigen Kinder fand man Röteln als Ursache; nur 4o % der Mütter dieser Kinder hatten in der Anamnese eine Röteln-Erkrankung mit Ausschlag während der Schwangerschaft,angegeben (Peckham, Martin, Marshall und Dudgeon, 1979).

Wie schon früher angesprochen, gibt es bemerkenswerte saisonale Unterschiede in der Verteilung des Geburtsmonats bei den Kindern, für welche eine Röteln-Schwerhörigkeit angegeben worden war. Eine ähnliche, aber weniger deutliche, saisonale Häufung ergab sich für solche Fälle von Schwerhörigkeit, bei denen die Ursache unbekannt war; man könnte daraus schliessen, dass einige den Röteln-Fällen zuzuordnen sind.

b) Nicht erkannte Ursachen

42 % der Kinder dieser Studie befinden sich in dieser Gruppe. Allgemein wird angenommen, dass die Mehrheit dieser Fälle die Ursache ihrer Schwerhörigkeit in genetischen Faktoren haben (Fraser, 1976). Die Ergebnisse dieser Studie können diese Hypothese weder stützen, noch widerlegen.

c) Schalleitungsschwerhörigkeit

Interessanterweise wird nur bei einem kleinen Anteil der Fälle von Kindern mit einer durch chronische Mittelohrentzündungen bedingten Schwerhörigkeit berichtet, im Gegensatz zu früheren Feststellungen, und so wie sie heute noch in Entwicklungsländern gemacht werden können.

Die aetiologischen Faktoren der Schwerhörigkeit bei Kindern des Jahrgangs 1969, über die in dieser Studie berichtet wird, spiegeln nicht notwendigerweise den heutigen Stand wieder.

3. MEHRFACHBEHINDERUNGEN

Bei nahezu jedem dritten Kind der Studie (29 %) wird über eine zusätzliche Behinderung berichtet; in den Niederlanden erreicht diese Zahl sogar 43 %. Diese Mehrfachbehinderungen haben grosse Bedeutung für die Aetiologie der Schwerhörigkeit und für die Ausrichtung der pädagogischen Betreuung eines jeden dieser Kinder.

4. HORSCHWELLE

Etwa 33 % der Kinder weisen einen mittleren Hörverlust von wenigstens loo dB auf. Es erscheint sinnvoll, eine gestufte

Anfälligkeit für Schwerhörigkeit zu vermuten. Dies könnte dadurch belegt werden, dass die Studie eine viel grössere Anzahl von Kindern mit einem geringeren als solche mit einem höheren Hörverlust aufweist. Doch kann man diese Hypothese aus den gefundenen Daten nicht stützen, selbst dann wenn man eine gewisse Unterrepräsentanz weniger schwerhöriger Kinder unterstellt.

5. FESTSTELLUNG DER SCHWERHORIGKEIT

Die Untersuchungsergebnisse geben Hinweise darauf, dass der Verdacht der Eltern auf Schwerhörigkeit ihres Kindes ein wesentlicher Faktor für eine frühe Diagnosestellung war, und dass es Verzögerungen bis zur Bestätigung der Schwerhörigkeit gibt.

6. HORGERATE-VERSORGUNG

a) Es besteht eine Verzögerung von im Mittel mehreren Monaten zwischen der Feststellung der Schwerhörigkeit und der Hörgeräteversorgung. Diese Verzögerung kann nicht ganz erklärt werden durch eine Zeitspanne der Erprobung vor der Hörgeräteverschreibung in solchen Ländern, welche dieses Vorgehen vorziehen.

b) Die Verordnung von Hörgräten bietet in den verschiedenen Ländern eine erstaunliche Vielfalt im Einsatz von HdO- und Taschengeräten.

7. ERZIEHUNG DES KINDES DURCH DIE MUTTER

Sinnvoll erscheint es anzunehmen, dass das Sprechen des Kindes umso besser ist, je mehr Zeit die Mutter zu Hause ihrem hörgestörten Kind widmen konnte. Es konnte jedoch keine Relation gefunden werden zwischen der Zeit, die die Kinder bei der Mutter zu Hause verbringen konnten und ihrem Spracherwerb. Es sollte darauf hingewiesen werden, dass der Faktor "Berufstätigkeit der Mutter" sich mehr auf das Jahr 1977 als auf die Vorschulphase des Kindes bezieht. Trotzdem lassen die Untersuchungsergebnisse die Vorstellung aufkommen, dass die Partnerschaft der Mutter im Therapeuten-Team während der Vorschulzeit und den ersten Schuljahren nicht voll genutzt worden ist.

8. BESCHULUNG

Die Charakteristiken der schulischen Einrichtungen unterscheiden sich sehr stark in den verschiedenen Ländern der Europäischen Gemeinschaft. Die erlangten Daten lassen die Vorstellung, dass ein bestimmter Typ einer schulischen Einrichtung besser oder schlechter ist als ein anderer, nicht zu. Auf Grund der Ergebnisse scheint es so, dass, unter gebührender Berücksichtigung des Hörverlusts, die Lesefähigkeit von Kindern in Sonderschulen für Hörbehinderte einen vergleichsweise geringeren Ausbildungsstand hat als in normalen Grundschulen.

9. KOMMUNIKATIONSFAHIGKEIT

a) Der Hörverlust ist mit einer schweren Störung der Kommunikationsfähigkeit durch gesprochene Sprache verbunden. Weniger als die Hälfte der erfassten Kinder (47 %) sprechen für Fremde verständlich. Ein Viertel aller Kinder war bestenfalls in der Lage, in Einwortsätzen zu sprechen, vergleichbar dem Entwicklungsstand eines hörgesunden Kindes unter 2 Jahren.

b) Die Daten der Studie boten keine Möglichkeit irgendeiner Aussage über die Effektivität der verschiedenen Formen manueller Kommunikation zu machen. Deutliche Unterschiede fanden sich nur in der Art und Weise, wie die verschiedenen Länder die manuelle Kommunikation als Alternative zur gesprochenen Sprache bewerten.

E M P F E H L U N G E N

1. URSACHEN DER SCHWERHORIGKEIT

a) Röteln

Unter Ergebnissen (2.a) konnte gezeigt werden, dass bei jedem sechsten Kind (16 %), und vermutlich häufiger, Röteln als Ursache genannt wurden. Die beiden Sommer (1968 und 1969), in denen die Kindsmütter sich in einem frühen Schwangerschaftsstadium befanden, wurden in den meisten Ländern nicht zu den besonders epidemischen Jahren gezählt. Röteln stellen eine vermeidbare Erkrankung dar; die vorsorgliche Vermeidung der Rötelnembryopathie durch Immunisierung der Bevölkerung, welche schwanger werden kann, ist eine vordringliche Massnahme, wenn diese Ursache der Schwerhörigkeit ausgeschlossen werden soll.

b) Nicht erkannte Ursachen

Bei 42 % der Kinder (Ergebnisse 2.b) war es nicht möglich, irgendeinen Anhalt für die Verursachung der Taubheit anzugeben. Dieser Prozentsatz ist sehr hoch. Die Möglichkeit einer rezessiven Verursachung der Schwerhörigkeit ist für die Eltern von grosser Bedeutung wegen des wesentlich höheren Risikos für die Zeugung weiterer hörgestörter Kinder. Bei sensorineuralen Schwerhörigkeiten, für die es bisher keine Heilung gibt, ist die Bedeutung der Vorsorge umso grösser. Die Erforschung der aetiologischen Aspekte jener Fälle, die jetzt noch als durch "unbekannte Ursachen" bedingt, erfasst wurden, ist dringend erfordert.

c) Mehrfachbehinderungen

Die Tatsache (Ergebnisse 3), dass 29 % der Kinder Mehrfachbehinderungen aufweisen, macht die vielfältigen, neurologischen und anders gearteten Veränderungen deutlich, welche in Verbindung mit der Schwerhörigkeit auftreten. Die Schwerhörigkeit im Kindesalter darf nicht länger als eine isolierte Schädigung betrachtet,

sondern muss als Teilerscheinung eines generalisierten pathologischen Prozesses gesehen werden. Die Bedeutung einer kompletten, pädiatrischen und entwicklungspsychologischen Abklärung kann nicht stark genug betont werden. Ihre Ergebnisse müssen den, für die sonderpädagogischen Einrichtungen Verantwortlichen weitergegeben werden, und eine enge Zusammenarbeit zwischen Arzten und Sonderpädagogen ist unabdingbar.

2. HORGERATEVERSORGUNG

a) Zeitpunkt der Verordnung des Hörgeräts

Wenn eine frühe Entdeckung und diagnostische Bestätigung wichtig sind, dann erscheint eine möglichst frühe Hörgeräteanpassung nach der Bestätigung als gleich bedeutend. Diese Studie kann, auf Grund des Datenmaterials, die Validität dieser Anschauungen weder stützen, noch widerlegen. Dazu sind genaue Studien der Beziehung zwischen dem Zeitpunkt der Hörgeräteanpassung zu den kommunikatorischen Fähigkeiten sowie dem Typ der sonderpädagogischen Einrichtung notwendig.

b) Hörgeräte-Typ

Diese Studie bietet keinen Anhalt dafür, dass ein Hörgeräte-Typ oder eine bestimmte Trageweise geeigneter sei als eine andere. Dies kann allerdings nicht als eine abschliessende, definitive Beurteilung gelten; die Unterlagen sind zu unpräzise, als dass sie so spezifische Fragen beantworten könnten. Auch hier sind zusätzliche Untersuchungen notwendig, welche über die bisher erfragten Aspekte hinaus, weitere Faktoren berücksichtigen, wie z.B. des Kindes Wunsch und emotionale Reaktion auf das Angebot von Taschen- oder HdO-Geräten.

3. SCHULTYP

Die deutlichen Unterschiede in der sonderpädagogischen Betreuung wurden in den Ergebnissen (8) dargestellt. Es ist nur eine geringe Beziehung, wenn überhaupt, festzustellen zwischen dem Typ der sonderpädagogischen Einrichtung und den Erfolgen der Bemühungen um das hörbehinderte Kind.

Weitere Untersuchungen sind sicherlich erfordert in Bezug auf den Schultyp, den Integrationsgrad mit normalhörenden und -sprechenden Kindern, sowie die Effektivität der sonderpädagogischen Unterrichtstechniken.

4. KOMMUNIKATIONSFAHIGKEIT

Weniger als die Hälfte (47 %) der in der Studie erfassten Kinder waren im Alter von 8 Jahren in der Lage, für Fremde verständlich zu sprechen, ein Ergebnis (9), das sehr zu denken gibt, zumal nicht alle Kinder hochgradig schwerhörig waren.

a) Erziehung durch die Mutter

Die Möglichkeit, dass die Unterstützung der Sprachanbahnung durch die Mutter nicht in vollem Umfang genutzt wurde, erfordert eine eingehende Untersuchung. Das normale Kind lernt die gesprochene Sprache primär durch seine Mutter und die engere Familie, und so ist es notwendig, Techniken zu entwickeln, die es den Eltern schwerhöriger Kinder ermöglichen, ihre natürliche und wesentliche Aufgabe in der Erziehung des Kindes zu erfüllen.

b) Alternativen und Ergänzungen zum Hörgerät

Die immensen Fortschritte in der Elektronik und in der Technologie des Hörgeräts haben viele Eltern und Lehrer blind gemacht für die Grenzen des Hörgeräts. Beim Datenstudium hat man den Eindruck, dass eine signifikante Minderheit von Kindern durch das Tragen von Hörgeräten keine Verbesserung in der Wahrnehmung der Sprache erzielt.

c) Sprechen und Lesen

Sprache und Sprechen sind keine Synonyma. Der Akt des Sprechens ist das natürlichste und geeignetste Mittel sprachlichen Ausdrucks. Die dringliche Forderung für hörbehinderte Kinder ist, sie in die Lage zu setzen, Sprache möglichst nahe dem normalen Entwicklungsstand zu erlernen. Die Verständlichkeit ihres Sprechens muss ebenfalls wesentlich verbessert werden.

5. ORGANISATION VON VERSORGUNGSDIENSTEN

Die Studie zeigt überdeutlich die starke Aufsplitterung der Versorgungsdienste, welche sich mit der ärztlichen, gesundheitsdienstlichen und sonderpädagogischen Betreuung der hörgestörten Kinder beschäftigen. Hier muss eine weitgehende Verknüpfung zwischen medizinischen und sonderpädagogischen Versorgungsdiensten erreicht werden. Die Planungen müssen die Zahl der hörgeschädigten Kinder und die Anzahl der Versorgungsdienste berücksichtigen, welche in bestimmten Bezirken und Regionen verfügbar gemacht werden können.

6. INFORMATION DER OFFENTLICHKEIT UND DER BERUFSGRUPPEN

Die Hörstörung bleibt eine der am wenigsten verstandenen und durchschauten Behinderungen. Das Bewusstsein für die Existenz und die Natur des Problems muss wesentlich gestärkt werden, wenn die Auswirkungen eingeschränkt werden sollen. Dies kann durch eine stärkere Aktivierung des Dienstes für Gesundheitserziehung erreicht werden, und durch den gezielten Einsatz von Presse, Fernsehen und Rundfunk.

NACHSCHRIFT

Das Steering Committee ist der Meinung, dass Studien in konzertierter Aktion unter enger Zusammenarbeit von Vertretern der verschiedenen Staaten nicht nur möglich, sondern notwendig sind und dass sie anders geartete Informationen als ähnliche Untersuchungen auf ausschliesslich lokaler oder nationaler Grundlage bieten können.

STUDIO C.E.E. 1977 SULLA SORBITA' NEI BAMBINI

RIASSUNTO

"La sordità infantile nella Comunità Europea"

Il rapporto è il risultato di una ricerca epidemiologica svolta nei nove paesi della Comunità Europea per determinare l'incidenza della sordità infantile. Lo studio ha preso in esame tutti i bambini nati nell'anno 1969 affetti nell'orecchio migliore da una perdita uditiva media eguale o maggiore di 50 dB. I bambini sono stati identificati in gran parte nel corso del 1977, all'età, quindi, di 8 anni. Le domande riguardavano anche la natura e la causa della perdita uditiva, il grado di sordità ed altri eventuali handicaps associati. E' stata anche rilevata l'età in cui venne effettuata la diagnosi e quella in cui ebbe inizio il trattamento rieducativo. Lo studio comprende anche informazioni sulle protesi usate, sulle modalità di protesizzazione, sul tipo di scuola frequentata dai bambini e sulla loro capacità di comunicare con il linguaggio verbale o gestuale e di leggere. La ricerca è stata effettuata previo accordo sulle domande da includere nel questionario standard ed ogni paese membro si è occupato della identificazione dei bambini residenti e della compilazione dei questionari. Tutti i questionari sono, poi, stati inviati al Coordinatore Europeo per il controllo e l'analisi. I metodi adottati dai diversi paesi per effettuare lo studio sono descritti nel rapporto.

Il rapporto comprende l'analisi dei punti salienti del questionario. Il quadro base illustra i risultati generali della Comunità, considerata come un tutto unico, messi a confronto e correlati con i dati di ogni singolo paese. Brevi commenti accompagnano ogni gruppo di istogrammi o tabelle per facilitare l'interpretazione dei dati che le stresse presentano. Sono incluse anche alcune tabelle incrociate in modo da poter studiare le correlazioni tra dati diversi come il grado della perdita uditiva, l'età in cui è avvenuta la diagnosi e la qualità del linguaggio verbale. Il rapporto si conclude con alcune conclusioni relative agli obiettivi della ricerca e con alcune raccomandazioni.

CONCLUSIONI

1. EPIDEMIOLOGIA

Incidenza

a) Nel 1977 è stata rilevata une perdita uditiva di 50 dB o più nell'orecchio migliore a 500, 1000 e 2000 Hz nel 0,9/1000 dei bambini di 8 anni appartenenti alla Comunità Europea. L'intenzione originale era di paragonare le differenze di incidenza nelle varie nazioni. Esiste sempre in questo tipo di studi la possibilità di identificare un numero di casi inferiore a quello reale; per questo motivo confronti tra le varie nazioni possono essere effettuati utilizzando i dati di questo rapporto, ma è dubbio che possano essere tratte conclusioni utili.

b) La percentuale ottenuta nei bambini nati nel 1969 potrebbe non essere la stessa per bambini nati in anni diversi, poichè importanti fattori eziologici possono cambiare di anno in anno.

2. EZIOLOGIA

a) Rosolia - Circa un caso di sordità su sei (16%) tra quelli inclusi nella ricerca sembra essere stato provocato da infezione da rosolia durante la gravidanza materna. Nei casi riportati, non c'è stato un regolare controllo sierologico positivo dell'infezione da rosolia. In un centro che ha partecipato alla ricerca, in cui il controllo sierologico viene effettuato di routine, si è riscontrato che il 24% dei casi di sordità infantile era stato provocato dalla rosolia; solo nel 40% dei casi le madri di questi bambini avevano riferito nella storia clinica di aver avuto la rosolia con esantema durante la gravidanza (Peckham, Martin, Marshall e Dudgeon, 1979).

E' gia stato notato che esiste une sostanziale variazione stagionale nella distribuzione del mese di nascita dei bambini la cui sordità è stata provocata dalla rosolia. C'è une variazione stagionale simile, ma meno marcata, nei casi di sordità provocata da cause sconosciute, circostanza che fa pensare che la rosolia possa essere la causa reale di alcuni tra questi casi.

b) Causa sconosciuta - Il 42% dei bambini della ricerca si inseriscono in questo gruppo. Generalmente si presume che la maggioranza di questi casi di sordità sia da attribuire a fattori genetici (Fraser, 1976). I risultati derivati da questa ricerca non propendono nè a favore nè contro questa ipotesi.

c) Sordità di trasmissione - E' interessante notare la bassa percentuale di bambini in cui la sordità viene attribuita a malattia cronica dell'orecchio medio, in contrasto con il quadro che si evidenziava generalmente in passato e che ancora si può riscontrare in paesi in via di sviluppo.

Il quadro dell'eziologia della sordità in bambini nati nel 1969 e inclusi in questa ricerca non rispecchia necessariamente quello che può risultare al giorno d'oggi.

3. HANDICAPS ASSOCIATI

Circa uno su tre (il 29%) dei bambini della ricerca vengono citati come portatori anche di altri handicaps; in Olanda questa cifra raggiunge il 43%. Questi handicaps associati hanno notevoli implicazioni riguardo l'eziologia della sordità e la natura del servizio di rieducazione attuato per ogni bambino.

4. SOGLIA UDITIVA

I bambini che hanno una perdita media di almeno 100 dB raggiungono il 33% del numero totale. Si potrebbe ragionevolmente pensare all'esistenza di un certo gradiente nella predisposizione alla sordità. Questo sarebbe dimostrato se si fosse trovato un numero maggiore di bambini con perdita minore e relativamente pochi con una perdita maggiore di udito. I dati ottenuti non sono a favore di questa ipotesi, nemmeno se si tiene conto che i bambini con minore perdita uditiva possono essere stati identificati in numero inferiore a quello reale.

5. DIAGNOSI

I risultati indicano che il sospetto di sordità da parte dei genitori costituisce un elemento importante per una diagnosi precoce e che c'è ritardo nella conferma della sordità.

6. PROTESIZZAZIONE

a) In media ci sono diversi mesi di ritardo tra la conferma della sordità e la protesizzazione. Questo ritardo non può essere completamente giustificato da un periodo di preparazione dei genitori prima della consegna della protesi, in quei paesi che adottano questa prassi.

b) Ci sono sorprendenti differenze nei singoli paesi nelle modalità di prescrizione delle protesi retroauricolari o a scatola.

7. CURE MATERNE

E' ragionevole supporre che quanto più tempo la mamma trascorre a casa con il suo bambino sordo tanto più il linguaggio parlato ne è avantaggiato. Non si è trovata nessuna relazione tra il tempo passato a casa dalle madri e l'acquisizione del linguaggio dei bambini. Deve essere ricordato che il quadro sul lavoro fornito dalla domanda "occupazione della madre" si riferisce al 1977 invece che al periodo prescolare del bambino. Tuttavia i risultati suggeriscono che la mamma non viene sufficientemente utilizzata come partner del gruppo di rieducazione durante il periodo pre-scolare ed i primi anni di scuola del bambino.

8. EDUCAZIONE

Il quadro dei servizi di educazione varia enormemente da paese a paese della Comunità. I dati non danno alcuna indicazione che una certa modalità sia migliore o peggiore di un'altra. Dai risultati sembrerebbe che, tenuta in debito conto la perdita di udito, la capacità di lettura dei bambini che frequentano scuole speciali sia di standard inferiore rispetto a quella dei bambini che frequentano scuole normali.

9. CAPACITA' DI COMMUNICAZIONE

a) La perdita dell'udito si associa ad una grave comprissione della capacità di communicazione attraverso il linguaggio verbale. Meno della metà dei bambini (47%) risultano comprensibili ad un estraneo. Un quarto del totale dei bambini riesce ad esprimersi, nel migliore dei casi, solo balbettando une "parola-frase", cosa che equivale al livello di sviluppo del linguaggio di un bambino minore di 2 anni.

9. CAPACITA' DI COMMUNICAZIONE cont'd

b) Dai dati ottenuti non è stato possibile trarre alcuna conclusione sull'efficacia delle varie forme di communicazione gestuale. Si sono rilevate notevoli differenze, nelle diverse nazioni, a riguardo dell'atteggiamento verso il linguaggio gestuale come alternative al linguaggio parlato.

RACCOMANDAZIONI

1. CAUSE DELLA SORDITA'

a) Rosolia

Si sarà notato nelle conclusioni (2,a) che la rosolia è la causa riferita di quasi un caso su 6 (16%), e probabilmente più, del numero totale di bambini sordi. Le due estati (del 1968 e 1969), in cui le mamme dei bambini inclusi nella ricerca risulterebbero essere state nei primissimi mesi di gravidanza, non sono state considerate come momenti di epidemia nella maggior parte delle nazioni. La rosolia è una malattia che si può prevenire e la prevenzione, tramite immunizzazione della populazione femminile, è essenziale per la eliminazione di questa causa di sordità.

b) Cause sconosciute

Per il 42% dei bambini (conclusioni 2,b) è stato impossibile indicare la causa della sordità. Questa cifra è molto alta. La possibilità di una causa recessiva per la sordità determina particolari preoccupazioni nei genitori a causa del considerevole aumento di rischio di avere altri bambini sordi. Per quello che riguarda le sordità neurosensoriali, per le quali al momento attuale non c'è alcuna possibilità di trattamento, l'importanza della prevenzione è assolutamente essenziale. E' urgente che siano effettuate ricerche sull'eziologia della sordità in tutti i bambini che al momento risultano classificati come sordi per "causa sconosciuta".

c) Handicaps associati

Il fatto che (conclusione 3) il 29% dei bambini sia portatore di altri handicaps dimostra che la sordità è frequentemente associata ad altre lesioni di natura neurologica e non. La sordità nel bambino non può più essere considerata come una lesione isolata, ma piuttosto come parte di un processo patologico più generalizzato. Non si potrà mai sottolineare abbastanza l'importanza di effettuare una completa valutazione pediatrica e di sviluppo generale i cui risultati devono essere messi a disposizione dei responsabili dell'educazione del bambino. E' indispensabile una stretta collaborazione tra personale medico ed educativo.

2. PROTESIZZAZIONE

a) Momento della protesizzazione

Se la scoperta e la diagnosi precoce sono elementi importanti, sembrerebbe che la protesizzazione effetuata il più presto possibile, subito dopo la conferma della sordità, fosse altrettanto importante. Questa ricerca tuttavia non può, sulla base dei dati ottenuti, nè confermare nè negare la validità di questa ipotesi. Sono necessarie ulteriori ricerche sulla relazione tra il momento della protesizzazione, la capacità comunicativa e la struttura dei servizi di educazione.

b) Uso delle protesi

La ricerca non evidenzia che un tipo di protesi sia migliore di un altro. Ciò non può essere accettato come risultato finale circa i meriti relativi ai vari tipi di protesi; le informazioni raccolte non sono sufficientemente precise per dare una risposta specifica a questa questione. Occorrono ulteriori approfondimenti che tengano conto di altri fattori come la preferenza del bambino e la risposta emotiva a portare une protesi retroauricolare o a scatola.

3. TIPO DI SCUOLA

Nelle conclusioni (8) si sono messe in evidenza le notevoli differenze tra i servizi di educazione. C'è poca o addirittura non c'è alcuna relazione tra il tipo di educazione e le acquisizioni del bambino sordo. E' necessario, chiaramente, ulteriore lavoro per verificare il tipo di scuola più adatto in cui inserire il bambino, il grado di integrazione con i bambini normoudenti e l'efficacia di tecniche speciali di rieducazione.

4. CAPACITA' DI COMUNICARE

E' seriamenta preoccupante il dato di fatto (conclusione 9) che meno della metà (47%) dei bambini della ricerca risultino capaci di parlare in maniera intelligibile agli estranei a 8 anni di età. Si deve ricordare che i bambini non erano tutti sordi profondi.

4. CAPACITA' DI COMUNICARE cont'd

a) Cure materne

La possibilità che la madre non venga adguatamente e completamente inserita nel lavoro di rieducazione (conclusione 7) richiede un esame più approfondito. Il bambino normale acquisisce il linguaggio parlato soprattutto attraverso la mamma e la famiglia ed è quindi necessario sviluppare tecniche di rieducazione che diano ai genitori dei bambini sordi la possibilità di svolgere quello che è il loro ruolo più naturale e fondamentale nella cura del bombino.

b) Alternative e supplementi delle protesi

Il grande progresso verificatosi nell'elettronica e nella tecnologia delle protesi acustiche ha impedito a molti genitori ed insegnanti di vedere i limiti delle protesi stesse. I dati di questa ricerca hanno evidenziato che probabilmente una discreta minoranza di bambini non ottiene alcun miglioramento nella comprensione del linguaggio nonostante le protesi.

c) Linguaggio e lettura

Linguaggio e espressione verbale non sono sinonimi. L'atto di parlare è, in molte occasioni, il mezzo più naturale e semplice per l'espressione verbale. La cosa più urgente per i bambini sordi è che essi siano messi in condizione di imparare a parlare seguendo il più possibile da vicino le tappe di sviluppo del linguaggio del bambino normale. Inoltre bisogna cercare di migliorare in maniera determinante l'intelligibilità del loro linguaggio.

5. ORGANIZZAZIONE DEI SERVIZI

Questa ricerca ha evidenziato la frammentarietà dei servizi che si occupano della diagnosi, del trattamento e dell'educazione dei bambini sordi. Bisogna che il levello di integrazione e collaborazione tra i servizi medici ed educativi sia notevolmente migliorato ed è necessario rispondere a tali bisogni tenendo in dovuta considerazione il numero dei bambini sordi e i servizi che possono essere disponibili nelle diverse zone e regioni.

6. CONSAPEVOLEZZA SOCIALE E PROFESSIONALE

La sordità rimane uno degli handicaps meno compresi ed occorre una maggiore consapevolezza dell'esistenza e della natura del problema se si vuole diminuirne gli effetti. Si può raggiungere questo scopo mediante un lavoro di sensibilizzazione dei servizi di medicina sociale ed attraverso un uso adeguato della stampa, televisione e radio.

POST-SCRITTO

E' opinione del Comitato Direttivo che ricerche concertate tra i rappresentanti di diversi paesi, in stretta collaborazione, non solo siano possibili ma necessarie, e possano fornire informazioni di valore completamente diverso da quello di ricerche simili condotte su basi puramente locali o anche nazionali.

SAMENVATTING

Ernstige gehoorstoornissen bij kinderen in de Europese Gemeenschap.

Het rapport is het resultaat van een epidemiologisch onderzoek, uitgevoerd in de negen landen van de Europese Gemeenschap, met als doel het vaststellen van de prevalentie van ernstige gehoorstoornissen bij kinderen.
De opzet van het onderzoek was zo, dat alle kinderen geboren in de loop van het jaar 1969 erin betrokken zouden worden als hun gehoorverlies 50 dB of meer bedroeg aan het besthorende oor.
Het merendeel van de kinderen is geteld in 1977 toen zij 8 jaar oud waren.
De vragen betroffen onder meer aard en oorzaak van het gehoorverlies, de mate van doofheid en de omvang van de bijkomende handicaps. De leeftijd waarop de diagnose werd gesteld en de behandeling werd begonnen, is bestudeerd.
Het soort hoortoestel en de wijze waarop zij geplaatst zijn, ook de aard van de speciale onderwijsvoorzieningen zijn in het onderzoek opgenomen; de vaardigheid van de kinderen in het communiceren door middel van gesproken taal of gebarentaal en de leesvaardigheid zijn vastgelegd. Overeengekomen werd het onderzoek uit te voeren door middel van een standaardvragenlijst, waarin deze onderwerpen waren opgenomen.
Elk van de negen landen was verantwoordelijk voor het opsporen van de kinderen in het eigen land en het invullen van de vragenlijsten. Deze werden vervolgens opgestuurd naar de Europese Coördinator ter bewerking. De methoden die door de verschillende landen gebruikt zijn voor het uitvoeren van het onderzoek worden in het rapport beschreven.

Het rapport bevat analyses van de hoofdonderwerpen uit de vragenlijst. De opmaak van het rapport is zo dat de samengevoegde gegevens, die betrekking hebben op de Europese Gemeenschap als geheel, te zien zijn naast de resultaten voor ieder land afzonderlijk. Een kort kommentaar is opgenomen bij iedere groep histogrammen of tabellen om de gegevens toe te lichten. Een aantal kruistabellen is opgenomen, opdat onderling samenhangende kenmerken bestudeerd kunnen worden, zoals de mate van gehoorverlies, de leeftijd van diagnose en de kwaliteit van de gesproken taal. Aansluitend bij de in het begin van de studie beschreven meervoudige doelstelling worden conclusies geformuleerd en aanbevelingen gedaan.

CONCLUSIES

1. Epidemiologie

Prevalentiecijfer

a. De prevalentie van gehoorverlies van 50 dB of meer aan het besthorende oor bij 500, 1000 en 2000 Herz blijkt 0.9/1000 te zijn onder de 8 jaar oude kinderen in de Europese Gemeenschap in 1977. Het lag in de bedoeling om verschillen in prevalentie tussen de landen te vergelijken. Er is in een dergelijk soort onderzoek altijd de mogelijkheid dat een te laag aantal kinderen gevonden wordt; een vergelijking kan dan ook wel gemaakt worden met behulp van de gegevens van dit rapport, maar het is de vraag of bruikbare conclusies getrokken kunnen worden.

b. Het is mogelijk dat de prevalentie gevonden voor kinderen geboren in 1969 niet dezelfde is als die voor kinderen geboren in andere jaren, aangezien belangrijke aetiologische factoren van jaar tot jaar kunnen verschillen.

2. Aetiologie

a. Rubella (rodehond)

Van bijna 1 op de 6 (16%) van de gerapporteerde gevallen in het onderzoek is vermeld dat de gehoorstoornis een gevolg is van een rubella infectie van de moeder gedurende de zwangerschap.

In de gerapporteerde gevallen, was positieve vaststelling van Rubella infectie niet de regel.

In een centrum dat deelnam aan deze studie, en waar serologisch onderzoek als regel gedaan wordt, werd gevonden dat 24% van deze dove kinderen rubella als oorzaak had. In slechts 40% van de moeders van deze kinderen was er een achtergrond van Rubella met eczeem tijdens zwangerschap (Peckham, Martin, Marshall and Dudgeon, 1979).

Er is eenzelfde, maar minder uitgesproken seizoensvariatie in die gevallen, waar de oorzaak van de gehoorstoornis onbekend was; dit suggereert dat rubella verantwoordelijk zou kunnen zijn voor sommige van die gevallen.

b. Oorzaak onbekend

42% van de onderzochte kinderen vallen binnen deze groep. Algemeen wordt aangenomen dat in de meerderheid van deze gevallen de oorsprong van hun doofheid ligt in genetische factoren (Fraser, 1976). Dit onderzoek heeft geen aanwijzingen voor of tegen deze hypothese opgeleverd.

c. Geleidingsdoofheid

Het is interessant te zien hoe klein het aantal kinderen is bij wie de gehoorstoornis toegeschreven wordt aan een chronische middenoorontsteking, dit in tegenstelling tot het patroon dat vroeger werd gezien en wellicht nog steeds in de ontwikkelingslanden kan worden aangetroffen.

Het patroon van oorzaken van ernstige gehoorstoornissen bij kinderen geboren in 1969 en gerapporteerd in dit onderzoek is niet noodzakelijkerwijs een afspiegeling van de situatie op dit moment.

3. Meervoudige handicaps

Bij ongeveer een op de drie (29%) van de onderzochte kinderen is vermeld dat zij meerdere handicaps hebben; in Nederland is dit aantal 43%. Deze handicaps hebben betekenis voor de aetiologie van de gehoorstoornis en voor de aard van de onderwijsvoorzieningen die voor ieder kind getroffen worden.

4. Gehoordrempel

Het aantal kinderen met een gemiddeld gehoorverlies van tenminste 100 dB bedraagt 33% van het totaal. Het leek a priori te verwachten dat de aantallen kinderen met een bepaalde graad van gehoorstoornis kleiner zouden zijn naarmate de ernst van het gehoorverlies toenam. Deze verwachting kwam niet uit, zelfs niet als rekening werd gehouden met enig tekortschieten van de rapportage van kinderen met een minder ernstige gehoorstoornis.

5. Opsporen

De gegevens wijzen erop dat het door de ouders vermoeden van een gehoorstoornis een belangrijke bijdrage leverde tot snellere diagnose en dat er tussen vermoeden en bevestiging van de gehoorstoornis nogal oponthoud zit.

6. Hoortoestelvoorzieningen

a. Er doet zich in het algemeen oponthoud voor tussen de bevestiging van het gehoorverlies en het voorzien met een hoortoestel. Dit oponthoud kan niet geheel verklaard worden door de gewoonte in sommige landen om het verstrekken van een hoortoestel vooraf te laten gaan door een periode van beraad.
b. Er bestaat een verrassende variatie in het beleid van de verschillende landen met betrekking tot het voorschrijven van oorhangers en kasttoestellen.

7. Moederlijke zorg

Het lijkt redelijk aan te nemen dat hoe meer tijd de moeder thuis doorbrengt met haar gehoorgestoorde kind, hoe beter de gesproken taal. Er is geen relatie gevonden tussen de tijd die moeders thuisbrengen en de

verworven taal van hun kind. Men moet hierbij bedenken dat het werkpatroon dat uit de vraag 'bezigheden van moeder' is verkregen eerder de situatie in 1977 weergeeft dan die van de peuterjaren van het kind. Desalniettemin doet deze bevinding vermoeden dat de moeder een te geringe rol speelt in het begeleidingsteam gedurende de peuterjaren en de eerste schooljaren van haar kind.

8. Onderwijs

Het patroon van onderwijsvoorzieningen verschilt aanmerkelijk tussen de verschillende landen in de Europese Gemeenschap. Uit de gegevens komt geen bepaald type van onderwijsvoorziening als de beste naar voren. Uit de resultaten lijkt te volgen, dat het gehoorverlies in aanmerking genomen, de leesvaardigheid van kinderen in speciale scholen voor gehoorgestoorde kinderen van een lager niveau is dan van kinderen op gewone scholen.

9. Vermogen tot communiceren

a. Gehoorverlies houdt nauw verband met een aanzienlijke belemmering van de communicatie door middel van gesproken taal.
Minder dan de helft van de kinderen (47%) was voor vreemden te verstaan. Een kwart van alle kinderen was ten hoogste in staat in losse woorden te spreken, wat overeenkomt met een ontwikkelingsleeftijd van nog geen twee jaar.

b. Het was niet mogelijk om uit de gevonden gegevens enige conclusies te trekken omtrent de doeltreffendheid van de verschillende vormen van gebarentaal. Opvallende verschillen werden er tussen de landen gevonden in hun houding ten aanzien van gebarentaal als alternatief voor gesproken taal.

AANBEVELINGEN

1. Oorzaken van doofheid

a. Rubella (rodehond)

In de conclusies (2.a) is vermeld dat rodehond verantwoordelijk was voor bijna 1 op de 6 (16%) en mogelijk meer, van het totale aantal ernstig gehoorgestoorde kinderen. De twee zomers (van 1968 en 1969), waarin de moeders van de kinderen uit het onderzoek in het begin van hun zwangerschap waren, waren in de meeste landen vermoedelijk geen epidemiejaren. Rodehond is een ziekte die te voorkómen is en het voorkómen van rodehond-embryopathie door middel van inenting van meisjes en vrouwen voordat er van zwangerschap sprake kan zijn is noodzakelijk om deze oorzaak van ernstige gehoorstoornissen uit te schakelen.

b. Oorzaak bekend

Bij 42% van de kinderen (conclusies 2.b) was het niet mogelijk enige aanwijzing te geven over de oorzaak van de gehoorstoornis. Dit is een erg groot percentage. De mogelijkheid dat de oorzaak van de gehoorstoornis recessief erfelijk is, is van groot belang voor de ouders wegens de sterk toegenomen kans dat volgende kinderen ook ernstig gehoorgestoord zullen zijn. Juist voor aandoeningen als sensorineurale doofheid waarvoor geen curatieve behandeling bestaat, is het belang van preventie des te groter. Research in de aetiologie van gehoorstoornissen bij die kinderen die op dit moment geklassificeerd worden als 'oorzaak onbekend' is dringend noodzakelijk.

c. Meervoudige handicaps

De bevinding (conclusies 3) dat 29% van de kinderen meerdere handicaps heeft wijst op het veelvuldig vóórkomen van andere stoornissen in samenhang met een ernstige gehoorstoornis.

Een ernstige gehoorstoornis bij een kind kan niet langer worden opgevat als een op zichzelf staande aandoening, maar veeleer als onderdeel van een meer algemeen pathologisch proces. Op het belang van een volledig kindergeneeskundig onderzoek en van een ontwikkelingsonderzoek, kan niet genoeg de nadruk worden gelegd; de bevindingen dienen medegedeeld te worden aan hen die de opvoeding en het onderwijs van het kind behartigen. Nauwe samenwerking tussen geneeskunde en onderwijs is van groot belang.

2. Hoortoestelvoorziening

a. Tijdstip van het verstrekken van het hoortoestel

Als vroege opsporing en diagnose belangrijk zijn lijkt het van even groot belang dat het kind zo snel mogelijk na de bevestiging van de gehoorstoornis wordt voorzien van een hoortoestel. Dit onderzoek kan op basis van de gevonden gegevens de waarde van deze meningen niet bevestigen of ontkennen.

Gedetailleerd onderzoek naar de samenhang tussen tijdstip van voorzien van een hoortoestel, communicatievaardigheden en het patroon van onderwijsvoorzieningen is vereist.

b. Keuze van het hoortoestel

Uit dit onderzoek blijkt niet welk type en welke plaatsing van hoortoestel de besten zouden zijn. Deze constatering aangaande de relatieve waarden van verschillende hoortoestellen is uiteraard onbevredigend: de verzamelde gegevens schieten echter tekort om op deze specifieke vraag een antwoord te kunnen geven. Verder onderzoek waarin ook andere factoren onderzocht worden zoals de voorkeur van het kind en de emotionele reactie op kasttoestellen en oorhangers, is daartoe vereist.

3. Soort school

De opvallende verscheidenheid in onderwijsvoorzieningen is vermeld in de conclusies (8). Er is weinig of geen verband tussen de aard van de onderwijsvoorziening en het bereikte ontwikkelingsniveau van het ernstig gehoorgestoorde kind. Het is duidelijk dat verder onderzoek nodig is naar het effect van het plaatsen op een bepaalde school; de mate van integratie met normaal horende en sprekende kinderen; en de effectiviteit van de gespecialiseerde onderwijstechnieken.

4. Vermogen tot communiceren

De bevinding (conclusies 9) dat minder dan de helft (47%) van de kinderen in het onderzoek in staat was zich ten opzichte van vreemden verstaanbaar te maken is zeer verontrustend. Men moet hierbij bedenken dat de kinderen niet allemaal doof waren.

a. Moederlijke zorg

De mogelijkheid dat de rol die de moeder zou kunnen spelen niet ten volle benut wordt (conclusie 7) vereist uitvoerig onderzoek. Het normale kind leert de gesproken taal voornamelijk van zijn moeder en naaste familie, en het is noodzakelijk om trainingstechnieken te ontwikkelen die de

ouders van ernstig gehoorgestoorde kinderen in staat stellen om hun natuurlijke en fundamentele rol bij de zorg voor het kind te vervullen.

b. Alternatieven voor en aanvullingen bij hoortoestellen

De geweldige vooruitgang in electronica en technologie van de hoortoestellen heeft vele ouders en onderwijzers de beperkingen van hoortoestellen uit het oog doen verliezen. De gegevens maken het waarschijnlijk dat een belangrijke minderheid van de kinderen door het dragen van een hoortoestel geen verbetering van spraakwaarneming ondervindt.

c. Spraak en lezen

Taal en spraak zijn niet hetzelfde. Spreken is als regel het natuurlijke en meest gemakkelijke middel om zich in woorden uit te drukken. Het is dringend noodzakelijk voor ernstig slechthorende kinderen om taalvaardigheid te verwerven op het niveau van een normale ontwikkeling. De begrijpelijkheid van hun spraak zou ook sterk verbeterd moeten worden.

5. Organisatie van de diensten

Het onderzoek signaleert de verbrokkeling van diensten die betrokken zijn bij het opsporen, de behandeling en het onderwijs van ernstig slechthorende kinderen. De integratie en samenwerking van gezondheidszorg en onderwijs dienen aanmerkelijk toe te nemen. De plannen hiertoe dienen rekening te houden met de aantallen slechthorende kinderen en met de diensten die in de afzonderlijke regio's ter beschikking staan.

6. Bekendheid bij publiek en bij beroepsgroepen

Ernstige slechthorendheid blijft een van de minst begrepen handicaps en er is meer bekendheid nodig over het bestaan van en over de aard van de problemen om de gevolgen daarvan te doen afnemen. Er ligt hier een taak o.a. voor de organen van gezondheidsvoorlichting, met daarbij een weloverwogen gebruik van pers, televisie en radio.

Naschrift

Het is de mening van de 'Steering Committee' dat onderzoekingen die gezamenlijk ondernomen worden in nauwe samenwerking tussen afgevaardigden van verschillende landen niet alleen mogelijk maar ook noodzakelijk zijn. Deze kunnen unieke gegevens opleveren, van een ander gehalte dan gelijksoortige onderzoekingen op locale of nationale basis.

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APPENDICES

APPENDIX I

TABLES OF ABSOLUTE DATA

MONTH OF BIRTH

MONTH	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
JAN	350	296	9	7	54	73	5	71	0	26	105
FEB	290	247	3	11	43	56	5	74	0	19	79
MAR	266	222	12	6	44	42	4	51	0	18	89
APR	213	183	8	5	30	36	5	46	0	13	70
MAY	220	185	8	4	35	35	2	53	0	15	68
JUN	235	198	6	5	37	44	4	66	1	15	57
JUL	209	177	8	6	32	41	2	62	0	15	43
AUG	289	248	10	12	41	49	5	82	2	15	73
SEP	289	253	10	10	36	77	6	70	1	19	60
OCT	333	295	8	10	38	59	8	92	0	23	95
NOV	333	295	14	16	38	72	5	75	0	25	88
DEC	350	307	9	13	43	76	7	86	0	24	92
Missing Data	85	82	0	0	3	47	0	35	0	0	0
TOTAL	3462	2988	105	105	474	707	58	863	4	227	919

OCCUPATION OF FATHER OR GUARDIAN (ILO CLASSIFICATION)

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
No Father	109	90	7	7	19	12	1	14	0	3	46
0/1	282	238	22	13	44	32	5	34	0	34	98
2	93	80	2	4	13	20	0	9	0	9	36
3	222	197	11	4	25	59	1	65	0	22	35
4	196	172	5	5	24	49	3	49	0	13	48
5	157	133	2	1	24	28	2	42	0	10	48
6	231	201	4	10	30	35	15	91	1	12	33
7/8/9	1462	1282	28	52	180	384	21	338	3	81	375
Unclassified	311	248	16	1	63	51	10	45	0	36	89
Missing Data	399	347	8	8	52	37	0	176	0	7	111
Total	3462	2988	105	105	474	707	58	863	4	227	919

DISTANCE FROM HOME TO SCHOOL (KM)

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
< 5	788	717	21	40	71	45	22	260	0	51	278
5 -	403	369	10	8	34	66	4	60	3	29	189
10 -	446	414	19	10	32	129	4	52	0	28	172
20 -	635	551	40	21	84	213	3	81	1	63	129
50 -	370	315	12	17	55	169	7	24	0	27	59
100 -	247	168	0	4	79	68	16	32	0	19	29
1000 +	6	4	0	0	2	0	0	4	0	0	0
Inapplicable (does not attend school)	10	9	0	1	1	0	2	5	0	1	0
Missing Data	557	441	3	4	116	17	0	345	0	9	63
Total	3462	2988	105	105	474	707	58	863	4	227	919

YEAR OF ADMISSION TO PRESENT SCHOOL

YEAR	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
1970	4	2	0	0	2	0	0	1	0	0	1
1971	47	42	3	0	5	0	0	8	0	9	22
1972	295	243	27	2	52	7	7	53	1	37	109
1973	436	328	21	2	108	25	20	41	0	54	165
1974	425	342	12	3	83	32	14	52	1	29	199
1975	916	811	17	41	105	224	10	337	1	34	147
1976	800	732	14	49	68	319	3	168	0	40	139
1977	260	217	4	1	43	78	0	21	1	11	101
1978	5	5	1	0	0	1	0	0	0	1	2
Inap-plicable	10	9	0	1	1	0	2	5	0	1	0
Missing Data	264	257	6	6	7	21	2	177	0	11	34
Total	3462	2988	105	105	474	707	58	863	4	227	919

TYPE OF SCHOOL

SCHOOL	CEC incl France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
½Special ½Ordinary	11	1	0	0	10	0	0	1	0	0	0
Special Deaf Only	1999	1657	83	41	342	668	19	302	0	202	342
Special deaf + other handicaps	226	172	4	11	54	26	16	34	0	7	74
Ordinary Sch + ordinary classes	366	361	6	15	5	0	8	267	2	8	55
Ordinary Sch + special teaching help	273	265	5	12	8	0	11	121	2	0	114
Ordinary Sch + special cl. for deaf	390	345	0	17	45	1	1	23	0	0	303
Ordinary Sch cl.unknown	35	32	1	2	3	0	0	22	0	1	6
Other Sch.	45	40	6	6	5	11	1	9	0	3	4
Inapplicable	10	9	0	1	1	0	2	5	0	1	0
Missing data	107	106	0	0	1	1	0	79	0	5	21
Total	3462	2988	105	105	474	707	58	863	4	227	919

AGE LOSS SUSPECTED

YEARS	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
0	767	713	17	21	54	152	16	179	1	63	264
1	759	670	20	31	89	189	11	175	1	51	192
2	588	490	11	24	98	141	6	146	0	30	132
3	331	280	11	8	51	69	11	76	0	25	80
4	201	173	4	5	28	42	4	41	0	22	55
5	116	98	3	0	18	26	2	24	1	8	34
6	74	63	1	1	11	14	1	29	1	2	14
7	24	20	0	0	4	5	0	14	0	0	1
8	5	4	0	0	1	1	0	3	0	0	0
Missing Data	597	477	38	15	120	68	7	176	0	26	147
Total	3462	2988	105	105	474	707	58	863	4	227	919

AGE LOSS CONFIRMED

YEARS	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
0	234	218	7	7	16	56	6	28	0	15	99
1	622	569	12	24	53	130	14	105	0	53	231
2	731	641	27	35	90	165	8	176	0	48	182
3	550	476	16	18	74	111	9	153	1	32	136
4	363	320	8	11	43	81	4	85	1	36	94
5	292	248	11	4	44	55	6	73	0	16	83
6	173	150	4	4	23	31	7	49	1	13	41
7	88	76	1	1	12	10	1	47	0	0	16
8	26	22	0	0	4	8	0	9	1	0	4
Missing Data	383	268	19	1	115	60	3	138	0	14	33
Total	3462	2988	105	105	474	707	58	863	4	227	919

PERCEPTIVE LOSS BY CAUSE

	CEC inci. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
Congenital GENETIC	342	272	13	11	70	39	8	65	1	27	108
C.I.P. RUBELLA	526	484	16	12	42	141	10	110	0	28	167
C.I.P. OTHER CAUSE	112	92	3	5	20	23	1	34	0	4	22
C.I.P. MISSING DATA	1	1	0	0	0	0	0	1	0	0	0
C.P.P. ANOXIA	148	138	0	12	10	38	3	49	1	12	23
C.P.P. JAUNDICE	110	97	3	2	13	8	1	26	0	4	53
C.P.P. OTHER CAUSE	109	96	1	2	13	39	0	38	0	5	11
C.P.P. ANOXIA/JAUNDICE	25	25	1	2	0	9	1	5	0	0	7
C.P.P. ANOXIA/OTHER	19	16	0	1	3	4	1	7	0	0	3
C.P.P. JAUNDICE/OTHER	8	8	0	0	0	1	1	2	0	1	3
C.P.P. MISSING DATA	5	5	0	0	0	1	0	3	0	1	0
Congenital CAUSE UNKNOWN	477	372	25	31	105	66	2	60	0	8	180
Acquired MENINGITIS	205	174	9	3	31	48	1	38	0	19	56
Acquired OTO-TOXIC DRUGS	25	24	0	1	1	2	0	20	0	0	1
Acquired HEREDITARY CAUSE	52	51	0	0	1	13	1	34	0	0	3
Acquired OTHER CAUSES	128	114	1	3	14	24	1	60	0	6	19
Acquired UNKNOWN CAUSE	145	133	5	1	12	7	5	75	1	23	16
UNKNOWN congen-ital or acquired	867	749	20	18	118	228	21	175	1	68	218
PERCEPTIVE MISSING CAUSE	55	46	6	0	9	2	0	24	0	12	2
TOTAL	3359	2897	103	104	462	693	57	826	4	218	892

C.I.P. = congenital intrauterine perceptive
C.P.P. = congenital perinatal perceptive

YEAR MOST RECENT AUDIOGRAM

YEAR	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
1970	4	4	0	0	0	1	0	3	0	0	0
1971	10	10	0	1	0	4	0	3	0	0	2
1972	30	29	0	0	1	7	0	17	0	1	4
1973	47	42	0	0	5	11	1	17	0	3	10
1974	92	82	2	3	10	22	1	22	0	1	31
1975	255	226	9	4	29	71	6	64	0	19	53
1976	910	795	32	60	115	190	28	206	0	64	215
1977	1560	1343	44	30	217	291	21	308	3	116	530
1978	196	187	8	0	9	52	0	92	1	10	24
Inapplic-able (free field)	155	95	1	0	60	1	0	73	0	6	14
Missing Data	203	175	9	7	28	57	1	58	0	7	36
Total	3462	2988	105	105	474	707	58	863	4	227	919

HEARING LOSS IN dB - RIGHT EAR - 250 HZ

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
<50	464	416	9	15	48	125	12	57	2	49	147
50-	279	251	14	9	28	67	1	71	2	12	75
60-	346	292	7	14	54	72	8	79	0	19	93
70-	509	409	17	14	100	102	7	116	0	26	127
80-	718	625	24	27	93	143	11	193	0	40	187
90-	486	442	21	18	44	100	2	151	0	30	120
100-	115	100	8	4	15	17	0	31	0	20	20
110-	21	19	1	2	2	3	0	2	0	8	3
120+	275	250	2	2	25	72	10	73	0	7	84
Inapplicable (free field)	155	95	1	0	60	1	0	73	0	6	14
Missing Data	94	89	1	0	5	5	7	17	0	10	49
Total	3462	2988	105	105	474	707	58	863	4	227	919

HEARING LOSS IN dB - LEFT EAR - 250 Hz

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
<50	475	429	10	17	46	119	11	61	3	49	159
50-	273	235	10	12	38	62	4	69	1	15	62
60-	326	284	6	6	42	71	10	79	0	16	96
70-	511	428	21	17	83	102	4	135	0	28	121
80-	674	570	20	31	104	131	6	161	0	37	184
90-	492	447	20	14	45	106	6	149	0	33	119
100-	135	117	6	5	18	21	0	44	0	20	21
110-	22	20	3	1	2	4	1	4	0	4	3
120+	299	266	7	2	33	84	10	73	0	8	82
Inapplic-able (free field)	155	95	1	0	60	1	0	73	0	6	14
Missing Data	100	97	1	0	3	6	6	15	0	11	58
Total	3462	2988	105	105	474	707	58	863	4	227	919

HEARING LOSS IN dB - RIGHT EAR - 500 HZ

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
<50	190	181	5	6	9	56	4	29	1	24	56
50-	270	246	7	10	24	68	11	41	1	21	87
60-	330	295	10	11	35	71	3	76	2	22	100
70-	359	306	10	8	53	81	7	84	0	21	95
80-	451	369	18	14	82	100	6	105	0	20	106
90-	733	633	27	24	100	135	10	201	0	37	199
100-	526	461	16	16	65	114	7	148	0	26	134
110-	181	158	7	9	23	10	1	46	0	29	56
120+	250	227	4	4	23	71	7	55	0	21	65
Inapplic-able (free field)	155	95	1	0	60	1	0	73	0	6	14
Missing data	17	17	0	3	0	0	2	5	0	0	7
Total	3462	2988	105	105	474	707	58	863	4	227	919

HEARING LOSS IN dB - LEFT EAR - 500 HZ

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
<50	203	190	5	5	13	51	5	21	1	27	75
50-	277	255	7	12	22	67	7	51	1	25	85
60-	323	281	10	11	42	62	9	75	2	21	91
70-	343	296	13	8	47	81	4	79	0	15	96
80-	464	389	12	11	75	101	6	124	0	24	111
90-	717	616	30	25	101	154	8	193	0	27	179
100-	480	424	8	19	56	90	5	138	0	32	132
110-	204	177	8	8	27	20	4	50	0	25	62
120+	278	247	11	3	31	80	9	55	0	24	65
Inapplic-able (free field)	155	95	1	0	60	1	0	73	0	6	14
Missing Data	18	18	0	3	0	0	1	4	0	1	9
Total	3462	2988	105	105	474	707	58	863	4	227	919

HEARING LOSS IN dB - RIGHT EAR - 1000 Hz

	CEC incl. France	CEC incl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
<50	14	13	1	0	1	5	0	1	0	6	0
50-	154	143	4	6	1	48	5	20	0	9	51
60-	298	280	8	16	18	69	6	54	3	22	102
70-	359	310	11	8	49	79	8	71	0	27	106
80-	411	355	7	15	56	91	11	92	1	23	115
90-	505	427	20	12	78	98	7	137	0	24	129
100-	609	528	15	16	81	128	7	157	0	35	170
110-	408	373	20	22	35	67	5	122	0	28	109
120+	533	448	18	10	85	121	8	127	0	47	117
Inapplicable (free field)	155	95	1	0	60	1	0	73	0	6	14
Missing data	16	16	0	0	0	0	1	9	0	0	6
Total	3462	2988	105	105	474	707	58	863	4	227	919

HEARING LOSS IN dB - LEFT EAR - 1000 Hz

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
<50	28	25	1	1	3	6	2	0	0	3	12
50-	148	138	5	9	10	35	2	22	0	16	49
60-	283	257	5	11	26	59	8	49	3	27	95
70-	376	335	13	10	41	93	8	75	1	22	113
80-	410	357	15	11	53	85	6	96	0	25	119
90-	514	439	15	14	75	109	11	136	0	25	129
100-	576	499	14	16	77	135	6	149	0	30	149
110-	405	363	16	25	42	54	5	126	0	26	111
120+	554	467	20	8	87	129	10	131	0	47	122
Inapplicable (free field)	155	95	1	0	60	1	0	73	0	6	14
Missing Data	13	13	0	0	0	1	0	6	0	0	6
Total	3462	2988	105	105	474	707	58	863	4	227	919

HEARING LOSS IN dB - RIGHT EAR - 2000 HZ

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
<50	20	20	0	1	0	4	1	2	0	4	8
50-	106	102	4	5	4	26	1	21	0	4	41
60-	229	211	4	10	18	56	6	41	3	21	70
70-	350	311	10	14	39	84	9	60	1	21	112
80-	416	377	15	14	39	107	6	80	0	33	122
90-	400	337	16	7	63	82	7	103	0	21	101
100-	481	416	12	13	65	89	6	132	0	36	128
110-	368	331	8	12	37	68	7	105	0	20	111
120+	882	735	35	24	147	189	14	222	0	61	190
Inapplicable (free field)	155	95	1	0	60	1	0	73	0	6	14
Missing data	55	53	0	5	2	1	1	24	0	0	22
Total	3462	2988	105	105	474	707	58	863	4	227	919

HEARING LOSS IN dB - LEFT EAR - 2000 Hz

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
<50	15	14	0	2	1	1	0	2	0	0	9
50-	94	86	5	2	8	20	1	16	0	9	33
60-	248	231	4	12	17	54	5	40	1	21	94
70-	372	335	10	15	37	91	10	58	3	27	121
80-	413	367	20	9	46	91	8	93	0	31	115
90-	410	355	13	11	55	94	4	100	0	25	108
100-	439	385	16	12	54	98	10	126	0	18	105
110-	365	321	8	12	44	70	9	105	0	16	101
120+	899	749	28	25	150	186	11	230	0	74	195
Inapplicable (free field)	155	95	1	0	60	1	0	73	0	6	14
Missing Data	52	50	0	5	2	1	0	20	0	0	24
Total	3462	2988	105	105	474	707	58	863	4	227	919

HEARING LOSS IN dB - RIGHT EAR - 4000 HZ

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
<50	63	61	0	4	2	13	3	7	0	5	29
50-	111	103	2	1	8	36	1	19	0	8	36
60-	243	223	6	15	20	49	5	43	2	23	80
70-	366	322	15	16	44	91	8	69	0	20	103
80-	344	311	12	8	33	90	7	79	1	15	99
90-	334	288	14	14	46	68	3	77	1	20	91
100-	319	273	6	6	46	67	4	75	0	25	90
110-	222	198	6	10	24	33	6	60	0	19	64
120+	1193	1007	42	20	186	258	16	309	0	84	278
Inapplicable (free field)	155	95	1	0	60	1	0	73	0	6	14
Missing Data	112	107	1	11	5	1	5	52	0	2	35
Total	3462	2988	105	105	474	707	58	863	4	227	919

HEARING LOSS IN dB - LEFT EAR - 4000 Hz

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
<50	51	49	3	1	2	12	0	7	0	2	24
50-	121	108	3	1	13	28	2	12	1	10	51
60-	274	252	4	12	22	76	4	53	1	20	82
70-	352	316	18	16	36	71	8	58	1	27	117
80-	350	314	14	15	36	82	5	70	1	21	106
90-	320	284	10	13	36	72	6	87	0	22	74
100-	326	286	13	7	40	75	7	88	0	18	78
110-	213	180	4	9	33	25	4	46	0	14	78
120+	1190	1000	34	22	190	264	18	320	0	85	257
Inapplicable (free field)	155	95	1	0	60	1	0	73	0	6	14
Missing Data	110	104	1	9	6	1	4	49	0	2	38
Total	3462	2988	105	105	474	707	58	863	4	227	919

YEAR OF MOST RECENT FREE FIELD AUDIOGRAM

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
1970	2	2	0	0	0	0	0	0	0	0	2
1971	9	9	0	0	0	0	0	7	0	1	1
1972	27	27	0	0	0	0	0	21	0	2	4
1973	14	13	0	0	1	0	0	12	0	0	1
1974	10	10	0	0	0	0	0	10	0	0	0
1975	14	9	1	0	5	0	0	8	0	0	0
1976	29	5	0	0	24	1	0	3	0	1	0
1977	23	7	0	0	16	0	0	5	0	0	2
1978	1	0	0	0	1	0	0	0	0	0	0
Inapplicable	3305	2891	104	105	414	706	58	790	4	221	903
Missing Data	28	15	0	0	13	0	0	7	0	2	6
Total	3462	2988	105	105	474	707	58	863	4	227	919

FREE FIELD HEARING LOSS IN dB - 250 Hz

	CEC incl. France	CEC excl. France	BEL.	FR.	GER.	ITA.	NETH.	U.K.
<50	9	4	0	5	0	2	0	2
50-	23	12	0	11	0	9	1	2
60-	32	22	0	10	0	20	2	0
70-	40	24	0	16	0	21	1	2
80-	35	21	0	14	0	18	2	1
90-	4	3	0	1	0	2	0	1
100-	1	1	0	0	0	0	0	1
110-	1	1	1	0	0	0	0	0
120+	6	4	0	2	1	1	0	2
Inapplicable	3305	2891	104	414	706	790	221	903
Missing Data	6	5	0	1	0	0	0	5
Total	3462	2988	105	474	707	863	227	919

NB There were no children in Denmark (105 cases), Ireland (58 cases), or Luxembourg (4 cases) who had their hearing tested using pure tone free field audiometry.

FREE FIELD HEARING LOSS IN dB - 500 Hz

	CEC incl. France	CEC excl. France	BEL.	FR.	GER.	ITA.	NETH.	U.K.
< 50	2	1	0	1	0	0	0	1
50-	12	11	0	1	0	6	1	4
60-	13	6	0	7	0	4	2	0
70-	28	17	0	11	0	16	0	1
80-	41	25	0	16	0	22	2	1
90-	32	18	0	14	1	14	1	2
100-	18	8	0	10	0	7	0	1
110-	3	3	1	0	0	2	0	0
120+	5	5	0	0	0	2	0	3
Inapplicable	3305	2891	104	414	706	790	221	903
Missing Data	3	3	0	0	0	0	0	3
Total	3462	2988	105	474	707	863	227	919

NB There were no children in Denmark (105 cases), Ireland (58 cases), or Luxembourg (4 cases) who had their hearing tested using pure tone free field audiometry.

FREE FIELD HEARING LOSS IN dB - 1000 Hz

	CEC incl. France	CEC excl. France	BEL.	FR.	GER.	ITA.	NETH.	U.K.
< 50	0	0	0	0	0	0	0	0
50-	5	3	0	2	0	0	1	2
60-	8	7	0	1	0	4	1	2
70-	21	16	0	5	0	12	1	3
80-	21	12	0	9	0	11	1	0
90-	34	21	0	13	1	18	1	1
100-	31	18	0	13	0	16	0	2
110-	10	9	1	1	0	8	0	0
120+	24	8	0	16	0	4	1	3
Inapplicable	3305	2891	104	414	706	790	221	903
Missing Data	3	3	0	0	0	0	0	3
Total	3462	2988	105	474	707	863	227	919

N.B. There were no children in Denmark (105 cases), Ireland (58 cases), or Luxembourg (4 cases) who had their hearing tested using pure tone free field audiometry.

FREE FIELD HEARING LOSS IN dB - 2000 Hz

	CEC incl. France	CEC excl. France	BEL.	FR.	GER.	ITA.	NETH.	U.K.
< 50	0	0	0	0	0	0	0	0
50-	2	2	0	0	0	0	1	1
60-	9	7	0	2	0	5	1	1
70-	18	14	0	4	0	11	1	2
80-	18	11	0	7	0	7	1	3
90-	25	15	0	10	1	12	1	1
100-	26	18	0	8	0	17	0	1
110-	13	11	1	2	0	10	0	0
120+	42	16	0	26	0	10	1	5
Inapplicable	3305	2891	104	414	706	790	221	903
Missing Data	4	3	0	1	0	1	0	2
Total	3462	2988	105	474	707	863	227	919

NB There were no children in Denmark (105 cases), Ireland (58 cases), or Luxembourg (4 cases) who had their hearing tested using pure tone free field audiometry.

FREE FIELD HEARING LOSS IN dB - 4000 Hz

	CEC incl. France	CEC excl. France	BEL.	FR.	GER.	ITA.	NETH.	U.K.
< 50	0	0	0	0	0	0	0	0
50-	6	4	0	2	0	1	1	2
60-	6	5	0	1	0	4	1	0
70-	18	13	0	5	0	11	1	1
80-	21	14	0	7	1	11	1	1
90-	15	10	0	5	0	9	1	0
100-	24	20	0	4	0	19	0	1
110-	2	1	1	1	0	0	0	0
120+	51	19	0	32	0	15	1	3
Inapplicable	3305	2891	104	414	706	790	221	903
Missing Data	14	11	0	3	0	3	0	8
Total	3462	2988	105	474	707	863	227	919

NB There were no children in Denmark (105 cases), Ireland (58 cases), or Luxembourg (4 cases) who had their hearing tested using pure tone free field audiometry.

HEARING CAPACITY WITHOUT AID

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
No hearing	1261	1119	29	46	142	258	15	306	0	136	329
Loud shout at 3 metres	949	784	33	36	165	212	15	212	2	30	244
Simple requests at 1 metre	415	358	18	10	57	87	12	68	2	34	127
Normal conversation at 1 metre	162	148	7	1	14	42	5	23	0	8	62
Normal conversation at 3 metres	68	63	5	1	5	21	2	14	0	4	16
Missing Data	607	516	13	11	91	87	9	240	0	15	141
Total	3462	2988	105	105	474	707	58	863	4	227	919

HEARING CAPACITY WITH AID

No hearing	321	305	9	7	16	95	10	43	0	34	107
Loud shout at 3 metres	802	684	17	28	118	183	11	182	0	74	189
Simple requests at 1 metre	801	635	29	32	166	161	13	173	1	31	195
Normal conversation at 1 metre	433	388	19	13	45	86	8	87	1	32	142
Normal conversation at 3 metres	461	430	10	14	31	93	13	87	2	38	173
Inapplicable (no aid)	113	89	5	1	24	39	0	38	0	1	5
Missing Data	531	457	16	10	74	50	3	253	0	17	108
Total	3462	2988	105	105	474	707	58	863	4	227	919

AGE AT FIRST ISSUE OF AID

YEARS	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
0	66	63	0	6	3	2	2	4	0	3	46
1	364	348	0	19	16	51	8	42	0	33	195
2	590	544	12	37	46	131	11	116	0	48	189
3	565	497	12	17	68	141	12	137	1	36	141
4	408	346	20	7	62	103	5	78	1	23	109
5	383	313	20	10	70	84	9	71	0	26	93
6	289	220	13	3	69	54	4	59	0	23	64
7	171	135	10	2	36	31	4	50	1	10	27
8	49	42	1	0	7	13	0	16	1	5	6
Inapplic-able no aid	143	109	5	1	34	48	0	47	0	3	5
Missing Data	434	371	12	3	63	49	3	243	0	17	44
Total	3462	2988	105	105	474	707	58	863	4	227	919

AID USE IN SCHOOL

RIGHT EAR

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH	U.K.
Always	2371	2026	60	96	345	446	44	515	3	180	682
Often	187	159	15	3	28	68	1	43	0	6	23
Seldom	93	78	4	1	15	23	2	38	1	1	8
Never	44	41	2	0	3	23	0	10	0	2	4
Inapplicable (no aid)	436	373	21	3	63	109	10	65	0	27	138
Missing Data	331	311	3	2	20	38	1	192	0	11	64
Total	3462	2988	105	105	474	707	58	863	4	227	919

LEFT EAR

Always	2388	1998	53	98	340	428	37	520	3	188	671
Often	178	150	16	3	28	62	1	39	0	4	25
Seldom	84	67	2	0	17	24	0	33	0	1	7
Never	46	43	1	0	3	25	0	12	0	2	3
Inapplicable (no aid)	490	422	30	3	68	125	19	70	1	22	152
Missing Data	326	308	3	1	18	43	1	189	0	10	61
Total	3462	2988	105	105	474	707	58	863	4	227	919

AID USE OUT OF SCHOOL

RIGHT EAR

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
Always	1604	1431	36	81	173	351	24	411	3	145	380
Often	453	386	14	8	67	116	4	76	1	17	150
Seldom	344	266	13	5	78	73	3	55	0	6	111
Never	199	156	16	5	43	30	8	55	0	11	31
Inapplicable (no aid)	471	397	21	3	74	113	18	65	0	35	142
Missing Data	391	352	5	3	39	24	1	201	0	13	105
Total	3462	2988	105	105	474	707	58	863	4	227	919

LEFT EAR

Always	1573	1401	26	83	172	337	17	415	3	138	382
Often	438	375	19	8	63	112	4	75	0	18	139
Seldom	348	266	13	4	82	78	3	50	0	8	110
Never	182	139	12	5	43	29	2	55	0	11	25
Inapplicable (no aid)	539	460	30	3	79	127	31	72	1	41	155
Missing Data	382	347	5	2	35	24	1	196	0	11	108
Total	3462	2988	105	105	474	707	58	863	4	227	919

AID ARRANGEMENT

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
Position 0 (other)	14	14	0	0	0	0	0	0	1	2	11
Position 1	215	185	18	0	30	39	8	17	1	24	78
Position 2	167	141	8	1	26	35	1	16	0	24	56
Position 3	1224	1064	20	12	160	400	2	456	2	51	121
Position 4 (no aid)	176	136	5	2	40	68	0	49	0	4	8
Position 5	157	148	7	1	9	17	25	7	0	13	78
Position 6	132	122	8	0	10	10	17	2	0	7	78
Position 7	505	471	0	20	34	49	3	20	0	20	359
Position 8	639	481	36	69	158	50	2	155	0	71	98
Missing Data	233	226	3	0	7	39	0	141	0	11	32
Total	3462	2988	105	105	474	707	58	863	4	227	919

SPEECH

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH.	U.K.
Normal	569	543	4	22	26	118	10	153	2	46	188
Defective Intelligible to strangers	952	856	30	39	96	193	11	258	1	96	228
Intelligible to parents/ teachers	897	749	35	13	148	245	17	145	1	34	259
Defective Single words	616	478	23	19	138	103	16	162	0	28	127
Unintelligible	259	213	10	12	46	37	4	65	0	14	71
Missing Data	169	149	3	0	20	11	0	80	0	9	46
Total	3462	2988	105	105	474	707	58	863	4	227	919

READING ABILITY

Reads like 8-year-old	1035	952	12	29	83	210	13	308	1	71	308
Reads short sentences only	1426	1204	56	24	222	363	30	258	2	66	405
Reads short words only	476	365	20	14	111	92	10	96	1	43	89
Cannot read	264	227	14	22	37	30	5	79	0	27	50
Missing Data	261	240	3	16	21	12	0	122	0	20	67
TOTAL	3462	2988	105	105	474	707	58	863	4	227	919

OTHER HANDICAPS

	CEC incl. France	CEC excl. France	BEL.	DEN.	FR.	GER.	IRE.	ITA.	LUX.	NETH	U.K.
Mental	144	128	6	7	16	26	4	37	0	5	43
Visual	150	140	3	5	10	54	4	24	0	7	43
Cerebral Dysfunction	145	120	7	1	25	22	2	33	0	24	31
Behaviour Problem	79	65	3	1	14	35	0	8	0	4	14
Language Problem	25	25	0	1	0	3	1	8	1	5	6
Skeletal Anomalies	34	33	0	3	1	4	2	4	0	4	16
Short Stature	4	1	0	0	3	0	0	0	0	0	1
Heart Disease	28	27	0	0	1	5	0	8	0	5	9
Other *	63	58	1	1	5	9	1	11	1	9	25
Mental & Visual	32	29	1	1	3	9	2	6	0	4	6
Mental & one other handicap	79	67	5	3	12	11	2	17	1	5	23
Visual & one other handicap	44	39	2	0	5	5	0	7	0	9	16
Two handicaps not elsewhere classified	31	26	3	0	5	5	0	4	0	3	11
Three or more handicaps of any sort	89	77	2	0	12	26	0	7	0	14	28
Inapplicable	2268	1939	68	80	329	472	38	539	0	122	620
Missing Data	247	214	4	2	33	21	2	150	1	7	27
Total	3462	2988	105	105	474	707	58	863	4	227	919

* other includes renal, skin, haematological, respiratory, gastrointestinal disorders.

APPENDIX II

SERIAL NUMBER

COUNTRY 9

C.E.C. STUDY ON DEAFNESS IN CHILDREN, 1977

All information contained in this questionnaire will be treated as strictly confidential.
Please complete *each* question, and where indicated put a tick ☑ in the appropriate box.
If the information for certain items is not available write "Not known" beside that item.

1. SURNAME of child .....

   FORENAMES .....

2. SEX ☐ Boy ☐ Girl

3. DATE OF BIRTH

   ..... day ..... month ..... year

4. HOME ADDRESS OF CHILD AT BIRTH

   Town/Village .....

   County/Region .....

   Country .....

5. PRESENT ADDRESS OF PARENTS (or guardian)

   No. and Street .....

   District/Town .....

   County/Region .....

   Country .....

6. OCCUPATION OF FATHER (or guardian)

   Kind of work .....

   In what business or industry .....

   .....

7. OCCUPATION OF MOTHER

   ☐ Full-time as housewife

   ☐ Part-time outside the house

   ☐ Full-time outside the house

   ☐ Other (Please specify)

   .....

8. IF ATTENDING SCHOOL GO TO QUESTION 9.

   If not attending school TICK BOX ☐

   and please give details .....

   .....

   .....

   Then go to Question 14.

9. PRESENT SCHOOL

   Name .....

   Street .....

   District/Town .....

   County/Region .....

   Country .....

10. What is the distance from home to school?

    .....

11. Date child admitted to this school

    ..... day ..... month ..... year

12. Does child attend school:

    ☐ days only

    ☐ as boarder

13. TYPE OF SCHOOL

    ☐ Special school for deaf children only

    ☐ Special school for children with impaired hearing and who have other handicaps

    ☐ Ordinary school where the child attends either:

    ☐ Ordinary classes

    ☐ Ordinary classes, but with some special teaching help

    ☐ Special class for deaf children

    ☐ Other type of school
    Please give details .....

    .....

    .....

14. HEARING LOSS

How old was the child when parents first suspected hearing loss?

Age ..... years ..... months

15. How old was the child when hearing loss was confirmed?

Age ..... years ..... months

16. TYPE OF HEARING LOSS

Is hearing loss sensori-neural or perceptive?

☐ YES ☐ NO, go to question 17

If 'YES' was it:

(a) CONGENITAL, was this:

(i) Genetic ☐ YES ☐ NO

If a recognised syndrome,

please give name .....

.....

(ii) Intra-uterine ☐ YES ☐ NO

If 'YES' was this due to:

☐ Rubella

☐ Other cause

(iii) Perinatal
(i.e. within one week before or after birth)

☐ YES ☐ NO

If 'YES' was this due to:

☐ Anoxia
☐ Jaundice
☐ Other cause

Tick those that apply

(iv) Congenital, but cause not known

☐ YES ☐ NO

(b) ACQUIRED later than one week after birth, was this due to:

☐ Meningitis

☐ Ototoxic drugs

☐ Hereditary causes

☐ Other causes

☐ Cause not known

(c) NOT KNOWN if hearing loss is CONGENITAL or ACQUIRED

☐ YES

17. Is hearing loss Conductive?

☐ YES ☐ NO, go to question 18

If 'YES' is this due to:

(a) Congenital Conductive Deformity?

☐ YES ☐ NO

If 'YES' tick affected ear(s)

☐ Right ☐ Left

(b) Chronic Middle Ear Disease?

☐ YES ☐ NO

If 'YES' tick affected ear(s)

☐ Right ☐ Left

18. DEGREE OF HEARING LOSS

Is a pure tone audiograme available?

☐ YES ☐ NO

If 'YES' please give

(a) Date of the most recent audiogram

day ..... month ..... year

(b) Write the air conduction hearing loss in dB or enclose copy of audiogram

	RIGHT EAR	LEFT EAR
250 Hz		
500 Hz		
1,000 Hz		
2,000 Hz		
4,000 Hz		

19. FUNCTIONAL HEARING CAPACITY

Please indicate ability to HEAR and UNDERSTAND without being able to see the speaker's face and hands:

(Tick every box that applies)	*WITHOUT* HEARING AIDS	*WITH* HEARING AIDS
(i) No evidence of hearing	☐	☐
(ii) Can hear a loud shout at 3 metres	☐	☐
(iii) Can understand simple requests if within 1 metre of speaker	☐	☐
(iv) Can understand normal conversation at 1 metre	☐	☐
(v) Can understand normal conversation at 3 metres	☐	☐

20. HEARING AID

How old was the child when first issued with a hearing aid?

Age ..... years ..... months

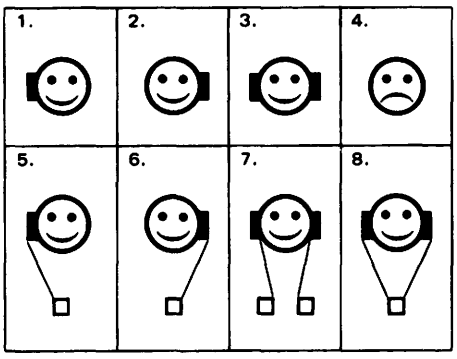
21. (a) Does the child use a hearing aid in school?

RIGHT EAR		LEFT EAR
☐	ALWAYS	☐
☐	OFTEN	☐
☐	SELDOM	☐
☐	NEVER	☐

(b) Does the child use a hearing aid out of school?

RIGHT EAR		LEFT EAR
☐	ALWAYS	☐
☐	OFTEN	☐
☐	SELDOM	☐
☐	NEVER	☐

22. (a) How is/are the hearing aid(s) arranged. Please tick the present arrangement.



(b) Please specify the type(s) of hearing aid the child is using now

RIGHT EAR

Manufacturers name .....

Type or model .....

LEFT EAR

Manufacturers name .....

Type or model .....

23. LANGUAGE

(a) What language is usually spoken at home?

.....

(b) What language is the child usually taught in?

.....

24. SPEECH

Which statement best describes the child?

☐ Speech normal for age or only slightly defective (i.e. can use well formed sentences)

☐ Speech defective but intelligible to strangers

☐ Speech defective, *not* intelligible to strangers, but *is* intelligible to parents and teachers (i.e. able to speak in simple sentences which include a subject, object and verb)

☐ Speech defective and consists only of single words

☐ Speech unintelligible

25. MANUAL COMMUNICATION

Does communication depend on:

(a) sign-language ☐ YES ☐ NO

(b) finger spelling ☐ YES ☐ NO

26. READING ABILITY

Can the child read:

☐ Like a normal 8-year-old

☐ Short sentences only

☐ Short words only

☐ Cannot read

27. ASSESSMENT OF INTELLIGENCE

Is the child of normal intelligence?

☐ YES ☐ NO

If 'NO' what is the child's I.Q. level?

.....

28. OTHER HANDICAPS

Does the child have any other diseases or handicaps (other than the hearing defect)

☐ YES ☐ NO

If 'YES' please give details

.....

.....

29. Name of person completing form

.....

and title/designation

.....

30. Date this form completed

..... month ..... year

Please check through the completed questionnaire.
If you would like to add any additional information or comments, please do so below.

Please send the questionnaire to:

Dr. W. J. Moore
European Study – Deafness in Children
Department of Community Health
University of Bristol
Canynge Hall, Whiteladies Road
BRISTOL BS8 2PR

Telephone: Bristol 38262

THANK YOU FOR YOUR HELP

APPENDIX III

QUESTIONNAIRE SIMPLIFIE

Etablissement :

Nombre d'enfants nés en 1969, porteurs d'une surdité de perception supérieure ou égale à 50 dB sur la meilleure oreille ☐

Type de surdité : Surdité profonde ☐

1/2 Surdité ☐

Les enfants ont-ils une intelligence normale ? ☐ oui ☐ non

ont-ils d'autres handicaps ? ☐ oui ☐ non

Les enfants portent-ils une prothèse auditive ? ☐ oui ☐ non

APPENDIX IV

DATA CODING SHEET

9 = MISSING DATA

COLS

1 - 3 JOB NUMBER 795

COUNTRY CODE [ ]

5 - 8 SERIAL NUMBER (WITHIN COUNTRY) [ ]

9 CARD NUMBER 1

10 - 11 REGIONAL CODE (U.K. ONLY - INAPPLICABLE 88)

12 SEX (Q.2)

1 Boy
2 Girl
9 Missing Data

13 - 18 DATE OF BIRTH (Q. 3)

Day [ ] Month [ ] Year [ ]

(99 99 99 if Missing Data)

19 CHANGE OF ADDRESS - BIRTH COMPARED TO PRESENT (Q.4 & 5)

1 Same Village/Town
2 Not Same Village/Town
9 Missing Data

20 OCCUPATION OF FATHER (OR GUARDIAN I.L.O. CLASSIFICATION OF OCCUPATION (Q.6)

0 No father/guardian present
1 0/1
2 2
3 3
4 4
5 5
6 6
7 7/8/9
8 Unclassified
9 Missing Data

COLS

(Q.7) OCCUPATION OF MOTHER 21

Full-Time Housewife 1
Part-Time Outside House 2
Full-Time Outside House 3
Other 4
No Mother/Mother Figure 8
Missing Data 9

(Q.8) ATTENDS SCHOOL 22

Yes 1
No 2
Missing Data 9

(Q.10) DISTANCE HOME-->SCHOOL (Km) 23

< 5 1
5 - 2
10- 3
20- 4
50- 5
100+ 6
1000+ 7
Inapplicable 9
Missing Data 9

(Q.11) DATE ADMITTED PRESENT SCHOOL 24

Month [ ] Year [ ]

(Missing Data 99 99)
(Inapplicable 88 88)

COLS 28 ATTENDANCE AT SCHOOL (Q.12)

1 Days Only
2 Boarder
8 Inapplicable
9 Missing Data

29 TYPE OF SCHOOL (Q.13)

0 Half Special / Half Ordinary
1 Special School = Deaf Only
2 Special School - Impaired Hearing + Other handicaps
3 Ordinary School - Ordinary Classes
4 Ordinary School - Ordinary Classes +SP Teaching Help
5 Ordinary School - Special Class for Deaf
6 Ordinary School - Class not known
7 Other School
8 Inapplicable
9 Missing Data

30 - 32 HEARING LOSS SUSPECTED (Q.14)

Year Months

(Missing Data 999)
(Not Suspected 888)

33 - 35 HEARING LOSS CONFIRMED (Q.15)

Year Months

(Missing Data 999)

36 TYPE OF HEARING LOSS (PERCEPTIVE) (Q.16)

1 Not Perceptive
2 Perceptive
9 Missing Data

37 TYPE OF HEARING LOSS (CONDUCTIVE) (Q.17)

1. Not Conductive
2 Conductive
9 Missing Data

CONGENITAL, GENETIC PERCEPTIVE (C.G.P.) (Q.16) COLS 38

Not C.G.P. 1
C.G.P. 2
Inapplicable 8
Missing Data 9

(Q.16) CONGENITAL, INTRAUTERINE PERCEPTIVE (C.I.P.) 39

Not C.I.P. 1
C.I.P. Rubella 2
C.I.P. Other Cause 3
Inapplicable 8
Missing Data 9

(Q.16) Congenital, Perinatal Perceptive C.P.P. 40

Not C.P.P. 1
C.P.P. Anoxia 2
C.P.P.Jaundice 3
Other Cause 4
C.P.P. Anoxia/Jaundice 5
C.P.P. Anoxia/Other 6
C.P.P. Jaundice /Other 7
Inapplicable 8
Missing Data 9

(Q.16) CONGENITAL PERCEPTIVE CAUSE UNKNOWN 41

Not Congenital 1
Congenital Cause Unknown 2
Inapplicable 8
Missing Data 9

(Q.16) ACQUIRED PERCEPTIVE 42

Not Acquired Perceptive 1
Meningitis 2
Ototoxic Drugs 3
Hereditary Cause 4
Other Causes 5
Cause not Known 6
Inapplicable 8
Missing Data 9

COLS

43 LOSS CONGENITAL OR ACQUIRED (Q.16)

1 Not known
2 Known
8 Inapplicable
9 Missing Data

(Q.17) CHRONIC MIDDLE EAR DISEASE

R Chronic Middle Ear Disease 1
L Chronic Middle Ear Disease 2
R & L Chronic Middle Ear Disease 3
Inapplicable 8
Missing Data 9

COLS 45

44 CONGENITAL, CONDUCTIVE DEFORMITY (Q.17)

1 R Congenital Conductive Deformity
2 L Congenital Conductive Deformity
3 R & L Congenital Conductive Deformity
8 Inapplicable
9 Missing Data

(Q.18) DATE MOST RECENT AUDIOGRAM 46 - 49

Month [ ][ ] Year [ ][ ]

(Missing Data 99 99)
(Inapplicable - Free field - 88 88)

Q.18 HEARING LOSS IN dB

RIGHT EAR			LEFT EAR
	250 Hz	250 Hz	
50 - 52	[ ][ ][ ]	[ ][ ][ ]	65 - 67
	500 Hz	500 Hz	
53 - 55	[ ][ ][ ]	[ ][ ][ ]	68 - 70
	1000 Hz	1000 Hz	
56 - 58	[ ][ ][ ]	[ ][ ][ ]	71 - 73
	2000 Hz	2000 Hz	
59 - 61	[ ][ ][ ]	[ ][ ][ ]	74 - 76
	4000 Hz	4000 Hz	
62 - 64	[ ][ ][ ]	[ ][ ][ ]	77 - 79

Missing Data 999
(Inapplicable - 888)

Missing Data 999
(Inapplicable 888)

COLS

MISSING DATA - 9

COLS

9 CARD NUMBER 2

12 HEARING CAPACITY WITHOUT AID (Q.19)

1 No evidence hearing
2 Can hear loud shout at 3 metres
3 Can understand simple requests at 1 metre
4 Can understand normal conversation at 1 metre
5 Can understand normal conversation at 3 metres
9 Missing Data

13 HEARING CAPACITY WITH AID (Q.19)

1 No evidence hearing
2 Can hear loud shout at 3 metres
3 Can understand simple requests at 1 metre
4 Can understand normal conversation at 1 metre
5 Can understand normal conversation at 3 metres
8 Inapplicable (No aid)
9 Missing Data

14 - 16 AGE AT FIRST ISSUE OF AID (Q.20)

Year ☐ Months ☐☐

(Missing Data 999)

(No aid 888)

17 AID USE IN SCHOOL R EAR (Q.21)

1 Always
2 Often
3 Seldom
4 Never
8 Inapplicable (no aid)
9 Missing Data

(Q.21) AID USE IN SCHOOL L EAR 18

Always 1
Often 2
Seldom 3
Never 4
(Inapplicable (no aid) 5
Missing Data 9

(Q.21) AID USE OUT OF SCHOOL R EAR 19

Always 1
Often 2
Seldom 3
Never 4
Inapplicable (no aid) 8
Missing Data 9

(Q.21) AID USE OUT OF SCHOOL L EAR 20

Always 1
Often 2
Seldom 3
Never 4
Inapplicable (no aid) 8
Missing Data 9

(Q.22) AID ARRANGEMENT 21

Other 0
Position 1 1
Position 2 2
Position 3 3
Position 4 4
Position 5 5
Position 6 6
Position 7 7
Position 8 8
Missing Data 9

COLS

22 - 23 LANGUAGE USED AT HOME (Q.23)

☐☐ See attached list

(99 Missing Data)

---

24 - 25 LANGUAGE USED AT SCHOOL (Q.23)

☐☐ See attached list

(99 Missing Data)

---

26 SPEECH (Q.24)

1 Speech normal

2 Speech defective but intelligible to strangers

3 Speech defectuve but intelligible to parents/and teachers

4 Speech defective and single words

5 Speech unintelligible

9 Missing Data

---

27 MANUAL COMMUNICATION (Q.25)

1 Does not use manual communication

2 Uses sign language

3 Uses finger spelling

4 Uses both sign language and finger spelling

9 Missing Data

---

28 READING ABILITY (Q.26)

1 Reads like 8-year-old

2 Reads short sentences only

3 Reads short words only

4 Cannot read

9 Missing Data

---

29 INTELLIGENCE (Q.27)

1 Normal Intelligence

2 Subnormal Intelligence

9 Missing Data

COLS

(Q.27) I.Q. IF SUBNORMAL INTELLIGENCE 30

< 40	1
40 - 49	2
50 - 59	3
60 - 69	4
70 - 79	5
Inapplicable (I.Q. 80+ or normal intelligence)	8
Missing Data	9

(Q.28) OTHER HANDICAPS 31

None	1
Has other handicaps	2
Missing Data	3

(Q.28) OTHER HANDICAPS 32 - 33

See attached list ☐☐

(Inapplicable 88)

(Missing Data 99)

OCCUPATION OF FATHER (OR GUARDIAN) R-G SOCIAL CLASS (Q.6) U.K. ONLY 34

No father/guardian present	0
I	1
II	2
III	3
IV	4
V	5
Unclassified	6
Inapplicable	8
Missing Data	9

COLS

35 - 38 DATE MOST RECENT AUDIOGRAM (Q.18)
FREEFIELD AUDIOMETRY

Month ☐☐ Year ☐☐

(Inapplicable 88 88)

COLS

(Q.14) PERSONS SUSPECTING LOSS 62 - 63
OTHER THAN PARENTS

See attached list ☐☐

(Inapplicable 88)
(Missing Data 99)

---

39 - 53 HEARING LOSS IN dB - FREE FIELD AUDIOMETRY (Q.18)

39 - 41 250 Hz ☐☐☐
42 - 44 500 Hz ☐☐☐
45 - 47 1000 Hz ☐☐☐
48 - 50 2000 Hz ☐☐☐
51 - 53 4000 Hz ☐☐☐

(Inapplicable 888)

(Q.10) DISTANCE HOME--> SCHOOL (Km) 64 - 66

☐☐☐

(Missing Data 999)

---

54 - 55 COUNTRY OF ORIGIN IMMIGRANT FAMILY (Q.4 & Q.23)

☐☐ See attached list

(99 Missing Data)
(88 Inapplicable)

---

56 - 57 PERSON(S) COMPLETING FORM (Q.29)

☐☐ See attached list

(99 Missing Data)

---

53 - 61 DATE FORM COMPLETED

Month ☐☐ Year ☐☐

(99 99 Missing Data)

European Communities — Commission

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The report is the result of an epidemiological investigation, carried out under the sponsorship of the Commission of the European Communities and its Committee on Medical and Public Health Research (CRM) in the nine countries of the European Community, in order to determine the prevalence of childhood deafness. The design of the study specified that all children born during the year 1969 would be included if their hearing loss averaged 50 dB or worse in the better ear. The majority of children were enumerated in 1977 when they were eight years old. Questions included the nature and cause of the hearing loss, the degree of deafness, the range of associated handicaps, the age when the diagnosis was made and when treatment was initiated, etc.

The major features covered by the questionnaire were analysed. The basic format is to show the pooled national data, representing the European Community as a whole, and to show the results for each country in comparison. Brief comments are included on each group of histograms, or tables, to aid in the interpretation of the data. A number of cross-tabulations are included so that interrelated features can be studied, such as the degree of hearing loss, the age when diagnosed, and the quality of spoken language. A number of conclusions are reached based on objectives previously defined.

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