SURVEY OF PUPILS IN SCHOOLS FOR PHYSICALLY HANDICAPPED, IN LONDON

BY

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The proper placing of the handicapped school child, particularly the physically handicapped school child, in the school community has been a matter for discussion for many years. In deciding what is best for each child there are so many variables, apart from the physical handicap, to be taken into account—age, intelligence and personality, length of stay in hospital, family care, availability of day and boarding "special" schools, transport, size of classes, and types of buildings of nearby "ordinary" schools. In recent years there has been a demand for the admission to ordinary schools of children who would previously have been regarded as too severely handicapped for anything but a special school. At the same time there are now in the special schools many children who in previous years would have been regarded as too seriously crippled for life outside a hospital or the four walls of their home.

Surveys of the reasons for admission of children attending special schools for the physically handicapped in London have been carried out from time to time, the most recent being in 1949, 1951, and 1954. The results of these surveys were not published, although the London figures for 1951 were included among those for the whole of England and Wales in the survey made at that time by the Chief Medical Officer of the Ministry of Education (1954). So far as earlier surveys are concerned, the results of one carried out in London in 1928 were published in the Annual Report of the London County Council (1928). No records are available of any such surveys which may have been carried out between 1929 and 1948.

Method

Early in 1957 it was decided that another survey should be made, and the schools were asked to submit lists of the particular defects of their pupils. In practically every case the child was under observation by a consultant or specialist at a hospital, so that the school doctor had available enough evidence upon which to give a precise diagnosis. The returns from the schools were coded, and an aggregate for London was made of the coded items. In the interests of clarity, and with a view to comparison with any other current and future surveys, the coding was based on the classifications and nomenclature of the *International Statistical Classification of Diseases, Injuries, and Causes of Death* (W.H.O., 1957). It says much for the precise nature of the information available in the schools that in only a handful of cases was it necessary to ask the school for further information before a code number could be assigned.

Results

The full tabulation given in Table I shows 93 different conditions for the 1,325 children in 17 schools at the time of the survey. The largest group is cerebral palsy, 312, but this does not represent all the children of school age in London with cerebral palsy, as a survey in 1955 (MacGregor *et al.*, 1957) revealed 526 cases between the ages of 5 and 16 years. Children crippled by poliomyelitis (240) formed

TABLE I.—1957 Survey of Pupils in Schools for the Physically Handicapped in London

Code No.	Condition	No. of Cases
010	Tuberculosis of meninges and C.N.S.	9
011	" " peritoneum	1
013-0	" " spine	24
013-1	" " hip	33
013-2	" " knee	11
013-3	" " other bones and joints	5
081	Post-poliomyelitis	240
193	Malignant neoplasm of brain	2
199	" " leg	1
223	Benign neoplasm of brain	5
225	" " knee	1
228	Haemangioma	2
237	Tumour of brain	7
241	Asthma	4
253	Cretinism	1
272	Diseases of pituitary gland	4
277	Dwarfism	3
284	Post-rickets	1
286-0	Celiac disease	1
289-0	Gaucher's disease	1
289-2	Lipodystrophy	2
292-2	Coombs's anaemia	1
292-4	Aplastic anaemia	1
293	Anaemia	1
295	Haemophilia	21
298-0	Hepatosplenomegaly	2
344	Post-inflammatory disease of C.N.S.	11
351	Cerebral spastic infantile paralysis	312
352	Other cerebral paralysis	9
353	Epilepsy	23
355	Huntington's chorea	1
356-0	Progressive muscular atrophy	29
357	Friedreich's ataxia	2
364	Polynuritis	1
410	Rheumatic valvulitis—mitral	41
411	" " aortic	4
411	" " combined	25
414	Rheumatic endocarditis	1
416	" " carditis	1
445	Malignant hypertension	1
453-3	Vasomotor disturbance	1
468-2	Lymphadenitis	1
526	Bronchiectasis	3
560	Hernia	1
587-2	Fibrocystic disease of pancreas	2
593	Nephritis	8
601	Hydronephrosis	2
602	Renal calculus	1
722-0	Still's disease	15
724	Arthritis	4
730-1	Osteomyelitis	14
730-3	Periostitis	1
732	Perthes's disease	14
733	Dysplasia epiphysealis	1
735	Protrusion intervertebral disk	1
744-1	Progressive muscular dystrophy	24
745	Curvature of spine	14
748	Clubfoot	22
749	Coxa vara	2
751	Spina bifida	37
752	Hydrocephalus	22
753-1	Congenital malformation of nervous system	6
754-0	Tetralogy of Fallot	31
754-1	Patent ductus arteriosus	10
754-2	Interventricular septal defect	40
754-3	Interauricular septal defect	27
754-5	Other congenital malformations of heart	19
754-6	Coarctation of aorta	1
754-7	Other congenital circulatory malformations	18
756-1	Imperforate anus	3
757	Congenital malformation of genito-urinary system	4
758-0	Dislocation of hip	19
758-1	Chondrodystrophy	9
758-2	Congenital malformation of skull	2
758-3	Brittle bones	10
758-6	Other congenital malformations of bones and joints	33
759-1	Epicrystalline bullosa	3
780-3	Jacksonian epilepsy	1
780-4	Athetosis	21
780-5	Ataxia	7
N800/1	Fracture skull	3
N808	" pelvis	1
N813	" arm	1
N823	" leg	2
N836	Dislocation patella	1
N856	Traumatic cerebral paralysis	6
N888	Amputation arm	2
N891	Scarring leg	1
N897	Amputation foot	3
N898	" leg	3
N901	Injury both legs	1
N945	Burns both thighs	1
N948	Multiple burns	1

the second largest group, and congenital heart disease (127) was the only other group of more than a hundred cases. In essence Table I shows that, apart from these large categories, the children attending the special schools for the physically handicapped are suffering from a very wide range of conditions, some of which in this survey are represented by only one or two children.

From the point of view of morbidity statistics it is important to note that the figures given in Table I, which relate

only to children in special schools for the physically handicapped, cannot be used to measure the incidence of any particular condition amongst the child population, since there are many handicapped children satisfactorily placed in ordinary schools, and there are others who are not in school

at all. On the other hand, from the point of view of education statistics, the figures are of importance as a measure of the need for special educational provision.

In Table II an attempt has been made to compare the findings of the 1928, 1951, and 1957 surveys as representing the pre-war, settled post-war, and current positions. Only broad comparison by combination of some categories is possible because of the differing bases of classification used in the three surveys. A few marginal cases

FIG. 1.—Percentage distributions of pathological conditions of pupils in schools for the physically handicapped in London. 1928, 1951, and 1957.

may possibly have been put into the wrong category, but, because of the magnitude of the differences between the successive surveys, such minor errors will not radically affect the pattern of change over the years. In Table II the numbers recorded are also shown as percentage distributions and as rates per 1,000 of the total school rolls (see also Figs. 1 and 2).

Discussion

As Table II shows, the population of the schools for physically handicapped has fallen more steeply than has the total London school population; the incidence per 1,000 of the school population of attendance at schools for the physically handicapped in 1957 was less than half what it was in 1928. The most marked decrease has been, as would be expected, in juvenile rheumatism and in non-pulmonary tuberculosis. Juvenile rheumatism (including chorea) has fallen from 1.96 through 0.6 to 0.16; and non-pulmonary tuberculosis has fallen from 1.14 through

0.40 to 0.16 also. It is sometimes forgotten that 30 years ago poliomyelitis was so important; in 1928 poliomyelitis was second only to rheumatism as a reason for admission to schools for the physically handicapped, with an incidence of 1.21; in 1951 the incidence was 0.53 and in 1957 it was 0.54, again the second most common cause of admission, but now second to the cerebral palsies.

The incidence of cerebral palsy has gone up from 0.49 through 0.72 to 0.77; even the actual numbers have increased from 314 to 342. We know that many very severely handicapped children are now admitted to special schools, and this may well have affected this change. The incidence of arthritis, progressive muscular dystrophy, kidney disease, and brittle bones has increased, but the numbers involved

are not large. Congenital heart disease had caused 251 admissions (0.39) in 1928 and 241 in 1951, a much higher incidence (0.59), but by 1957 there were only 146 children left with congenital heart disease, a fall in the incidence to about what it was in 1928 (0.33). It would take a special inquiry to reveal the reasons for these variations. The incidence of disabilities due to injuries has fallen from 0.18 to 0.06, but this still means that 26 children are needlessly crippled. For those who do not know the special schools, it should be said that the stay of amputees, for example, is not long, and usually they soon return to ordinary schools.

The school for the physically handicapped is usually a single-storied building, too often some 30–40 years old, and not too well suited to its present function. There are usually about 100 children in the school and there are not more than 20 in a class. All children are conveyed to and from school in special coaches which call at their homes or points convenient to them. In 1928 no treatment was given in the schools, and children who required it had to attend

FIG. 2.—Rates (per 1,000 of total school roll) of pathological conditions of pupils in schools for the physically handicapped in London. 1928, 1951, and 1957.

TABLE II.—Comparison of 1928, 1951, and 1957 Surveys of Pupils in Schools for the Physically Handicapped in London

Condition	Numbers Recorded			Percentage Distributions			Rates per 1,000 of Total School Rolls		
	1928	1951	1957	1928	1951	1957	1928	1951	1957
Tuberculosis of bones and joints	726	161	73	17.9	9.7	5.5	1.14	0.40	0.16
Post-poliomyelitis	771	214	240	19.0	12.9	18.1	1.21	0.53	0.54
Post-rickets	78	1	1	1.9	0.1	0.1	0.12	0.00	0.00
Cerebral paralyses (including athetosis) .. .	314	294	342	7.7	17.8	25.8	0.49	0.72	0.77
Rheumatism and chorea	166	1	—	4.1	0.1	—	0.26	0.00	—
Rheumatic heart disease	1,088	244	72	26.9	14.8	5.4	1.70	0.60	0.16
Bronchiectasis, etc.	33	5	3	0.8	0.3	0.2	0.05	0.01	0.01
Diseases of kidney	6	9	11	0.1	0.5	0.8	0.01	0.02	0.02
Arthritis	61	26	19	1.5	1.6	1.4	0.10	0.06	0.04
Osteomyelitis	79	33	14	1.9	2.0	1.1	0.12	0.08	0.03
Progressive muscular dystrophy	22	37	22	0.5	2.2	1.7	0.03	0.09	0.05
Congenital heart (including circulatory) disease ..	251	241	146	6.2	14.5	11.0	0.39	0.59	0.33
Brittle bones	7	10	10	0.2	0.6	0.8	0.01	0.02	0.02
Other congenital defects	223	193	180	5.5	11.6	13.6	0.35	0.48	0.41
Accidents	115	30	26	2.8	1.8	2.0	0.18	0.07	0.06
Other conditions	121	158	166	3.0	9.5	12.5	0.19	0.39	0.37
Total	4,061	1,657	1,325	100.0	100.0	100.0	6.36	4.08	3.00
Total school rolls	639,000	406,000	443,000						

hospitals, losing valuable educational time in travelling and waiting. In 1951 a start had been made in providing physiotherapy in the schools, and by 1957 it was available in all the schools, together with speech therapy, and where a group of deaf cerebral-palsied children are gathered together a teacher of the deaf can visit them. In the old schools there is inadequate provision for these services, but in the new schools, built and building, the planning is excellent.

There are some children, too severely handicapped for the special schools of the London County Council, who may be at hospital schools or schools run by independent organizations and supported by the local education authorities, while others, about 60, receive teaching at home.

There has been a double change over the years, some handicapped children being received into the normal school community and others being drawn out of the home and the hospital into the special schools. Accordingly, it should not be assumed that all the decrease over the last 30 years is due to an improvement in the health of the child population. Much of the change is, however, due to just this. It is not that there are children with chorea or rickets in ordinary schools—there is no chorea, there is no rickets.

Summary

A survey was made in 1957 of the reasons given for admission of the 1,325 children in London's schools for the physically handicapped. The diagnoses were coded under the International Statistical Classification (W.H.O., 1957). 93 different conditions were recorded. The most common reason for admission was cerebral palsy (312), followed by poliomyelitis (240) and congenital heart disease (127).

This survey is compared with previous surveys made in 1928, when there were 4,061 children in these schools, and in 1951, when there were 1,657. The incidence of the main groups of diseases in these three surveys is examined.

The changes observed—the falling incidence of juvenile rheumatism and non-pulmonary tuberculosis, the rise of cerebral palsy—are discussed and the reasons for the general decline in the numbers in schools for the physically handicapped are examined.

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The Exhibition of Medical Records at the Royal College of Physicians of London (November 26 to December 12) covers nearly 400 years, from the end of the fifteenth to the middle of the nineteenth centuries. Among the many exhibits on view are the first ordinance book of the Fellowship of Surgeons (c. 1492-7) which contains the text of the Bye-laws of the unincorporated Fellowship of Surgeons of the City of London; and the Letters Patent incorporating the College of Physicians in London, granted in 1518. The earliest subscription book of the Archdeaconry of Chichester shows the subscription of Elizabeth Strudwicke, of Kirdford, who was licensed to practise as a surgeon in 1673; this is "probably one of the earliest examples of a female surgeon." Among the other 59 exhibits are the articles of agreement between David Irish, "practicinor in physick," and Joseph Chitty, of Witleys, Surrey, to cure the latter's wife of "hypocondriak melancholy madness" for £5 down and a further £5 on completion of the cure. The catalogue of the exhibition (price 2s. 6d.), with an introduction by Mr. L. M. PAYNE, assistant librarian, Royal College of Physicians, gives further details.

REMITTENT INSULIN-INSENSITIVE DIABETES

BY

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Following total pancreatectomy the adult human requires about 60 units of insulin a day (Young, 1951), but this figure is probably less than the actual daily insulin secretion because the operation also presumably diminishes the production of glucagon—a hyperglycaemic hormone secreted by the alpha cells of the islets of Langerhans. Many diabetics actually require much more than 60 units of insulin daily to keep them in good health, and Bornstein and Lawrence (1951) and Bornstein (1953) have shown that some diabetics have normal serum insulin levels. In such cases diabetes is probably due to insulin insensitivity rather than to actual insulin deficiency *per se*, but the mechanism of this insensitivity is not yet clear. A number of hormones are known to counteract the hypoglycaemic effects of insulin, and it is possible that the endocrine secretions of the anterior pituitary, thyroid, and adrenal glands, and of the alpha cells of the pancreas, may each be involved to varying degrees in different cases. Several physiological and pathological processes are known to be associated with decreased insulin sensitivity, including puberty, pregnancy, thyrotoxicosis, infection, and metabolism in a high carbohydrate diet. In some cases, however, there seems to be no obvious cause for the observed fluctuations in insulin requirements.

A number of diabetics are seen in Singapore who exhibit this fluctuation to an extreme degree. Some of these patients require over 200 units of insulin daily for a period, though later their insulin requirements may fall to zero. The following eight cases are striking examples of this syndrome, and others have been observed.

Case 1. 720 Units of Insulin Daily. Over 3 Years' Complete Remission

A 52-year-old Malayalam taxi-driver was admitted to hospital on April 18, 1954, with a history of a cough for five months, and fever, polyuria, weakness, loss of weight, and excessive thirst for six weeks. He was found to be a diabetic with gross cavitating tuberculosis of the right upper lobe. His sputum contained acid-fast bacilli and his urine showed sugar and acetone. A glucose-tolerance test revealed a fasting blood sugar of 215 mg./100 ml., rising to 270, 332, 384, and 316 mg. at half-hourly intervals. Treatment was begun with streptomycin and isoniazid, and he was controlled on soluble insulin. The progress of his glycosuria and insulin administration is summarized in Fig. 1. It will be seen that ultimately 720 units of insulin were required daily to control his glycosuria. Later the insulin requirements fell away to zero, and on February 14, 1955, a glucose-tolerance test showed a fasting blood sugar of 83 mg./100 ml., rising to 120, 148, 170, and 154 mg. at half-hourly intervals. Meanwhile his pulmonary tuberculosis had also improved, and an arrangement that had been made in May, 1954, to fly him to London for a right upper lobectomy was cancelled. Anti-tuberculosis therapy was finally stopped on November 2, 1954, at which time his sputum was negative, his E.S.R. was 2 mm., and his chest x-ray film showed only mild residual fibrosis.

This patient has remained fit and well, and has never had a recurrence of his diabetes or tuberculosis. He has weathered a number of other infections, including influenza and gastro-enteritis, without any complication.