Fat Babies and Fat Children

The Prognosis of Obesity in the Very Young

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Childhood obesity is common and often leads to adult obesity (Lloyd, Wolff, and Whelen, 1961), with all its well-known hazards. The treatment of obesity at any age is discouraging to patient and doctor alike. Prevention is therefore desirable.

Unfortunately the parents of fat children are all too often told, 'Don't worry, he'll grow out of it', and nothing is done until the child is grossly obese. Two important questions are these: how often does the overweight child 'grow out of' his obesity, and at what age should obesity be taken seriously by doctors and parents? The clinical histories of children under treatment for obesity, the Health Schedules of schoolchildren, and Infant Welfare Centre records help to answer these questions.

Clinical Histories of Obese Children

Between October 1962 and April 1965, 174 children aged 18 months to 14 years were referred to the Obesity Clinic at the Birmingham Children's Hospital. During the same period 95 obese children aged 5 to 14 years were seen at a School Clinic in Birmingham. All 269 children were at least 25% overweight for their age and height, and most were much fatter than this. All were examined and treated by the author. Every case was one of 'simple' obesity. Treatment was by means of a low calorie, low carbohydrate diet; appetite suppressants were prescribed for the hospital patients if required (these drugs were not available at the school clinic). Appointments were given monthly at first, later, every 3 to 6 months. Adequate weight loss followed by supervision for an indefinite period was the aim, because relapse is all too common in these cases.

History of onset of obesity. In 118 cases (44%) the child had been overweight since infancy. The others had become obese at a later date, usually after the age of 5.

Previous treatment. 176 children (61%) had had none, and most of the rest very little, beyond an isolated admonition to cut out sugar, for example.

Results of treatment. These were assessed in 160 cases, excluding those referred during the last 6 months, and children over 14 who were shortly leaving school. There were 42 children (26%) who achieved weights less than 25% above the average for their age and height; another 31 (19%) were still improving when last examined. Many children ceased to attend after one or two visits; others struggled on for months or years without losing worth-while amounts of weight.

When the child had been overweight since infancy the results of treatment were particularly bad, with only 14 out of 72 (19.5%) 'successes'.

Heights and Weights of Schoolchildren

Each child in Birmingham's maintained schools is weighed and measured when he is medically examined, usually at the ages 5, 10, and 15 years. The health schedules of 2000 school leavers whose height and weight records were complete were studied*. Children whose *weights for heights* were above the 97th centile† were considered obese. By this definition there were 28 children (15 boys and 13 girls) who had been obese at the age of 5. Over half these children—9 boys and 7 girls—were obese at all subsequent examinations.

There were 32 boys who were obese as school leavers; 11 had been obese throughout their school careers, and 23 were obese at the age of 10. Of the 69 obese 15-year-old girls, 13 had been obese at all previous examinations, 27 at 10. Most of these overweight school leavers had at least been plump at earlier ages, with weights above the 75th centile. It was uncommon for a skinny child to become obese.

Infant Welfare Records

The records of 2800 5-year-old children who had attended infant welfare centres in various parts of Birmingham were studied. (These records are

* Records were incomplete in over 50% of health schedules, so no estimate of the incidence of obesity could be made.

† All centiles based on the data of Tanner (1958).

TABLE

Birthweights and Subsequent Development of Fat Babies and Controls

	21 Fat Babies	24 Controls	Significance		
Birthweight (kg.)	3.6 ± 0.56	3.3 ± 0.56	1.842	∇ 0.1	∇ 0.05
Weight at 5 years (kg.)	22.6 ± 3.8	18.4 ± 2.7	4.4	∇ ∇ 0.001	
Height at 5 years (cm.)	112 ± 4.8	109 ± 6.3	1.97	∇ 0.1	∇ 0.05

usually destroyed when the child reaches the age of 5, so it was impossible to follow individual children from infancy to 15 years.) There were 38 babies who at some time during the second half year of life had weights above the 97th centile. Their heights and weights at 5, and those of an equal number of controls, were sought in school records. Controls were selected by extracting the clinic notes of the next child of the same sex as each fat baby.

Unfortunately 31 of these 76 children had left Birmingham or had not yet had a school medical examination. Finally, 21 fat babies (9 boys and 12 girls) and 24 controls were traced whose heights and weights had been recorded at a mean age of 5 years 5 months (Table).

The mean birthweight of the 'fat at 6 months' group was higher than that of the controls. The difference is just not statistically significant ($p > 0.05$). At 5½ years the *mean height* of the first group was above that of the controls; again the difference is not quite significant. Their *mean weight* was 4.2 kg. above that of the controls at 5½ years; the difference is highly significant ($p < 0.001$). The heights and weights of the boys and girls were analysed separately, with similar results.

When the weights of the 5-year-old children were plotted on a weight-for-height graph it was found that those of the children who had been overweight as infants *were all on or above the 50th centile*, and 4 (2 boys and 2 girls) were above the 97th centile, i.e. 1 child in 5 was obese. The 24 controls fell equally above and below the 50th centile of weight for height, and *none* was over the 97th centile.

The weight charts of children who attend welfare clinics regularly for 3 or 4 years also suggest that fat babies are liable to become fat children. Among the 2800 clinic records were those of 137 children who had attended regularly from infancy to 3 years or older. There were 32 babies who at 6 months had weights above the 90th centile; 14 (44%) had weights above this centile at 3 to 5 years compared with 7 of the 105 (6.6%) whose weights at 6 months were below the 90th centile. (The 90th centile rather than the 97th was chosen as the dividing line on this occasion, because there were only 3 babies among the 137 with weights above the 97th centile.)

Discussion

Overweight children cannot be counted on to 'grow out of' their obesity. Over half the obese school entrants in this series were obese throughout their school careers, and 5 out of 21 very overweight babies were obese at the age of 5. Dietetic treatment is more than usually disappointing among obese children who have been overweight since infancy. Since extreme overweight at any age *may* persist it should not be ignored at any age.

As Wolff (1965) writes: 'The modern paediatrician teaches that it is impossible to overfeed a healthy infant. Do we play our part in the causation of obesity? The warning that overfeeding may be dangerous is not out of place at any time after the first four to six months.'

Summary and Conclusions

Among 269 children undergoing treatment for obesity, 118 (44%) had been overweight since infancy, and in this group dietetic treatment was particularly unsuccessful.

School health schedules showed that 16 out of 28 obese school entrants were still obese at 10 and 15 years.

Twenty-one school entrants whose weight at 6 to 12 months had been above the 97th centile were significantly heavier than a control group, and 4 were obese.

Since obesity in childhood is resistant to treatment, prevention is important. Overfeeding in infancy should be avoided.

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REFERENCES

- Lloyd, J. K., Wolff, O. H., and Whelen, W. S. (1961). Childhood obesity: a long-term study of height and weight. *Brit. med. J.*, 2, 145.
- Tanner, J. M. (1958). The evaluation of physical growth and development. In *Modern Trends in Paediatrics (second series)*, ed. A. Holzel, and J. P. M. Tizard. p. 325. Hoeber, New York.
- Wolff, O. H. (1965). Obesity in childhood. In *Recent Advances in Paediatrics*, 3rd edn. ed. D. Gairdner, p. 216. Churchill, London.