



PRIVY COUNCIL

MEDICAL RESEARCH COUNCIL

SPECIAL REPORT SERIES No. 257

A STUDY OF INDIVIDUAL CHILDREN'S DIETS

by

E. M. WIDDOWSON

LONDON : HIS MAJESTY'S STATIONERY OFFICE

1947

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PREFACE

In the majority of the dietetic surveys carried out from time to time the family has been the unit of investigation and, consequently, measurements have been made of the food eaten by parents and children together. The method is useful for some purposes and, by making certain assumptions, it is possible to get some idea of the food eaten by the children. The method does not, however, give any picture of what an individual child eats and does not show the variations between one child and another. Hence it does not provide the information by which it is possible to correlate intake of food with the physical state of the children in relation to age, sex and other factors. Information on these points is obviously desirable, and when, in 1936, Dr. Widdowson proposed to investigate the diets of individual children, the Council welcomed her suggestion. The intention was to obtain an exact knowledge of what food, in kind and quantity, was actually consumed by each child in selected groups. The method employed was to weigh the food eaten over a period of one week by each child studied. At the same time the heights and weights of the children were measured, and frequently also the blood and teeth were examined. To collect these data from over 1,000 children was a formidable task, but it was completed in 1939, a few weeks before the war broke out. The translation of the individual diets into terms of proteins, fats, minerals and vitamins, and the subsequent analysis of the records, would inevitably have taken a very long time, but the exigencies of war have further and very greatly delayed the preparation and publication of the results which are here presented.

The children whose diets were studied by Dr. Widdowson were healthy, and most of them were living at home. At least 20 boys and 20 girls were investigated at every year of age from 1 to 18. The records, therefore, cover the whole range of childhood, and many curves have been constructed showing the effects of age on food habits and dietary intakes. The children came from "middle class" homes, and it is satisfactory to find that their heights and weights were fully up to American standards. Nevertheless, when the children were graded according to the economic circumstances of their parents, there was an unmistakable tendency for the less fortunate financially to be slightly smaller and lighter than the others.

In most dietary surveys the data are presented only in chemical phraseology or in terms of "proximate principles", but in this report the actual foods eaten by the children are recorded in some detail, and many people, particularly those actively concerned with the feeding of children, are likely to find this section of special value. It includes some surprising findings. Who, for instance, would have predicted that the consumption of white bread rose steadily with age, while that of brown bread was the same at all ages studied? And who would have been prepared for the discovery that clear differences existed between the food consumption of the two sexes as early as the ages of 6, 7, or 8?

Among the most striking points revealed by this investigation were the wide individual variations in calorie intake which were compatible with good health and average physical development. In each age group studied there was always one child who ate twice as much as another, and similar differences were found when children of the same height, weight or surface area were compared. Variations of the same relative size have been encountered by Dr. Widdowson in adults, and it is evident that they constitute a warning against legislating for

individuals from a knowledge only of the average. These differences, no doubt, will help to explain why one person keeps fit and puts on weight while another loses weight when issued with the same rations.

It is recognized in the report that the information obtained is not that relating to "requirement" but essentially that of dietary habit. Even after surveying the literature with great care the author has to conclude again and again that no firm figure can be given even for the average person's "requirement" of iron or calcium, or even protein, much less for an individual's requirement, and the variations revealed in the report further emphasize this point. Nevertheless, we are very much better informed about dietary matters than we were at the close of the war of 1914-1918, and our knowledge of the value of particular items of diet has lately been turned to good account by such measures as the provision of cheap milk for children and all the recent extensions of that scheme.

A few children living in "homes" or at residential public schools, some children with parents out of work, and a few diabetics and vegetarians were included within the scope of Dr. Widdowson's studies, and the relevant data, plotted against the general background of the main investigation, are of interest for comparison.

In conclusion, it is pertinent to point out that much of the work reported here was made possible only by the series of analytical investigations into the chemical composition of foods which had been carried out by Dr. McCance and Dr. Widdowson, with support from the Council, since 1925 (see Report No. 235 in this Series, second edition, 1946). Dr. Widdowson had herself taken a prominent part in the latter phase of this work, and it is satisfactory that she should have been able to apply its results in studying the present problem.

MEDICAL RESEARCH COUNCIL,
38 Old Queen Street,
Westminster, S.W.1.

12th February, 1947.

A STUDY OF INDIVIDUAL CHILDREN'S DIETS

BY

E. M. WIDDOWSON, B.Sc., Ph.D.

(from the Department of Experimental Medicine, University of Cambridge)

"And they shall eat bread by weight, and with care; and they shall drink water by measure and with astonishment,"

—Ezekiel 4, 16.

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