



# Manual on Feeding Infants and Young Children

Margaret Cameron and  
Yngve Hofvander



Sponsored by the UN/ACC Sub-Committee on Nutrition

# Manual on feeding infants and young children

**Third edition**

**MARGARET CAMERON**

Principal Lecturer in Nutrition and Dietetics,  
Polytechnic of North London, England

and

**YNGVE HOFVANDER**

Professor of International Child Health,  
University of Uppsala,  
Sweden

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**Manual on feeding infants  
and young children**

## Foreword to the third edition

This is the third edition of the *Manual on Feeding Infants and Young Children*. The previous editions were published under the auspices of the former Protein Advisory Group (PAG).

The first edition, published in 1971, proved useful in field nutrition programmes and after it had been in use for four years a number of practical suggestions for changes were received. As a result a second edition was issued in 1976. This edition was translated into French and Spanish.

The new edition is the result of a thorough revision suggested by the authors to the Consultative Group on Maternal and Young Child Nutrition, an expert group of the UN/ACC Sub-Committee on Nutrition. The Sub-Committee sponsored this revision and the Swedish International Development Authority (SIDA) provided funds for its publication.

With the exception of a few countries, malnutrition continues rampant in the developing world. The authors and the Sub-Committee on Nutrition hope that this edition, like the previous ones, will provide support to the health, community, and nutrition workers who are in the front line of the fight against malnutrition.

Margaret Cameron has a degree in Home Science and post-graduate dietetic training. She is principal lecturer in nutrition and dietetics at the Polytechnic of North London. Previously she worked with the late Professor B.S. Platt in the Department of Human Nutrition at the London School of Hygiene and Tropical Medicine. Much material for the manual has been derived from her experience of teaching students from all over the world, conducting training courses, and WHO consultancies. Yngve Hofvander, MD, is a paediatrician and Professor of International Child Health at the University of Uppsala, Sweden. He was Resident at the Ethio-Swedish Pediatric Clinic in Addis Ababa and later Director of the Ethiopian Nutrition Institute. He frequently serves as a nutrition consultant for WHO and for several years has been engaged in research on young child nutrition.

The authors would like to pay tribute to the late Professor Bo Vahlquist for having initiated this Manual. His profound knowledge of child health, wisdom and international standing were invaluable in supporting their work.

*Professor P.E. Soysa, University of Colombo, Sri Lanka,  
Chairperson, Consultative Group on Maternal and Young Child  
Nutrition of the UN/ACC Sub-Committee on Nutrition*

*Dr H.J.L. Burgess, Secretary, UN/ACC Sub-Committee on Nutrition*

## Preface to the first edition

This manual is published under the auspices of the FAO/WHO/UNICEF Protein Advisory Group (PAG). When establishing its ad hoc Working Group on Feeding the Preschool Child, the PAG felt that the Group should examine the nutritional problems of the young child with special emphasis on home-made weaning foods.

In developing countries the mortality among preschool children is extremely high, often ten to twenty times higher than in industrialized countries. It is quite clear that malnutrition, often in combination with infection, plays a leading role in this connection. As long as successful breast-feeding continues the child is reasonably well protected, but once this unique food is no longer available in sufficient amounts the child enters a very precarious period of its life. The traditional society rarely has special weaning foods which are suitable for the purpose and adult food is usually quite inadequate for the needs of the young, fast-growing child.

In recent years great efforts have been made to stimulate production in developing countries of low-cost protein-rich foods to be used primarily as supplements during and after the weaning period. This is very laudable and attempts of this kind should be encouraged in every way. However, for a long time to come such products will in most countries reach only a small segment of the child population.

The only avenue open for the vast majority of the children is to find better uses for the locally available staples for preparation of nutritious weaning foods in the home. It is the main purpose of this book to give comprehensive information related to such home-made weaning foods. In addition, it provides information concerning the normal growth of the child, its nutritional needs, and the fundamental importance of breast feeding as a lifesaving measure during early life.

The topics just mentioned are by no means new; they have been dealt with by other authors and at various conferences and seminars, sometimes at considerable length. However, much of the material, especially information on home-made weaning foods, is in the form of mimeographed documents which are often hard to obtain. This may explain why comparatively little of this information has found its way into standard textbooks for nurses, doctors, and other professionals. Also, education on home-made weaning foods has been looked upon as a simple thing which could be left entirely in the hands of people without much training. This is a serious mistake since health personnel working in this field require much more training and knowledge, both

theoretical and practical, than do those who are engaged in giving shots of penicillin or vaccine.

The manual is intended primarily for professional groups who have some basic knowledge of nutrition, child health, home economics, etc., i.e. physicians, nurses, teachers and also nutritionists and home economists without specific experience in the field of young child nutrition. With the basic information provided it should be possible to prepare simple material for teaching in the local language. A special section of the manual is devoted to practical advice on how such a 'translation' could be executed.

Basic in all applied programmes, whether in nutrition or not, is the economy involved. It is of major importance that home-made weaning foods involve little or none of the cash economy as far as farmers and tenants, who are cultivating their own crops, are concerned. For the city dwellers, who have to buy part or all of the ingredients, the recipes provided in this manual aim at keeping ingredients and production costs low. It is essential that the home-made foods should be considerably cheaper than even the 'low-cost' commercial foods.

*Bo Vahlquist*  
*Chairman of the PAG ad hoc Working Group*  
*'Feeding the Preschool Child'*

*1 September 1971*

# Acknowledgements

We would like to acknowledge with thanks the generosity of the Swedish International Development Authority (SIDA) which has provided funds to make the manual available in developing countries. We are also grateful to the UN/ACC Sub-Committee on Nutrition (SCN) who sponsored the revision and the SCN's Consultative Group on Maternal and Young Child Nutrition for their technical advice.

Because of changing nutrition policies, the availability of a great deal of new information and the results of an evaluation of the manual, preparation of the third edition has involved extensive re-writing as well as some re-organization of the contents. We have welcomed advice and comments from colleagues and friends around the world and also from those who completed the questionnaire about the second edition.

It is not possible to name everyone who has assisted us but we would like to mention especially: Pat Harman and David Morley for generously allowing us to use the specialized library collection in their Tropical Child Health Unit, and for their advice on some illustrations; Constance Reed who so conscientiously typed our manuscript; and Ann Burgess who undertook the technical editing. She did this with great interest and considerable attention to detail.

We acknowledge the permission granted to include a number of figures and tables, some published and some still awaiting publication.

We thank:

FAO for Figs. 14, 22, 23, 25, 26, 32, 33, 34, 35, and 39 and for help in selecting food composition values.

WHO for Figs. 3, 10, 13, and 15 and for Tables 28 to 37 in Appendix 1. These tables give, for the first time, the recommended reference figures for heights and weights of infants and young children in terms of selected percentage levels.

Maurice King and Oxford University Press for Fig. 17.

The Tropical Child Health Unit, London for Fig. 9 and for Figs. 8, 19, and 30 which were especially adapted for this manual.



# Introduction

This manual is designed for those who are involved in any way in the fields of health and nutrition. Its aim is to explain why improvement in the health and diets of many infants and young children is necessary, and to give useful and practical information on how this may be achieved.

It is hoped that the manual will be used by doctors, medical assistants, nurses and midwives, nutritionists and dietitians, home economists, senior personnel in community development and agriculture, students in these disciplines, and especially those with responsibility for training and supervising primary health care workers. The information given here should be adapted to the educational level of these workers and to the local conditions in which they are working.

The advantages of breast-feeding and good complementary feeding, and how this may be encouraged, are discussed. Simple methods for monitoring growth and screening for malnutrition are given. The nutrient contributions to meals and diets of various foods are described as well as the effects on them of storage and processing. How any combination of readily available foods can be used to make suitable meals for young children is explained.

All diets, especially for infants and young children, must meet their known needs for energy and all nutrients, including protein. This can be achieved by using a wide variety of foods. However, some foods are very bulky and small children may find it difficult to eat enough of them to cover their needs. Because of this, the concentration of energy and nutrients in suitable volumes of multi-mixes and meals has been taken into account when making recommendations. Young children are part of a family and guidelines are given both for making multi-mixes using a variety of raw ingredients and for selecting foods from the family cooking-pot for their meals.

Many questions still remain to be answered in regard to an individual's needs for energy, and for protein in terms of quality and quantity. Proteins are important but intake must be considered in relation to total dietary energy and other essential nutrients. This edition of the manual does not give undue emphasis to protein but it does recognize that foods contributing protein to the diet do provide, at the same time, important nutrients, such as vitamins, minerals, and trace elements.

Because of its public health importance, the dietary sources of vitamin A receive special attention. For the same reason, sources of iron and vitamin C (which is associated with the absorption of iron from foods) are given in several of the tables showing calculated values of foods or diets.

In most tropical countries, the population is predominantly rural, and many

families live on a subsistence economy. However, the number of people migrating to the towns is increasing; those in urban areas who have recently changed to a market economy often have low incomes and consequently only a small amount of money available for food. Therefore the meals recommended for infants and young children take into account the foods or money available in such areas. Advice on economical food buying must be based on local knowledge of food prices, availability, habits, and general level of literacy.

All health service personnel must encourage breast-feeding from at least the mother's first antenatal visit. Advice on infant feeding and support to the family should continue after delivery and throughout infancy whether or not the mother decides to breast-feed. The mother may need to know how to complement her milk with multi-mixes she can make at home when her child is 4–6 months old. If the mother is unable to breast-feed, it is not usually feasible, for economic and health reasons, for poor families to feed infants adequately or safely with commercial milk formulas. For this reason simple home-made substitutes for breast milk, which are less expensive, are described and advice is given on how they may be safely prepared.

Because of the wide variations in available foods and dietary customs in different areas of the developing world, the suggestions given in this manual are intended to encourage the preparation of national or local editions. A simplified edition modified for the food customs and patterns of living in specific localities can be particularly helpful for primary health care workers.

Reference data to aid interpretation of anthropometric measurements and calculation of nutrient values of foods are given in the appendices.

A list of useful publications and references is provided for those who want more detailed information on the topics covered.

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