

Book review

Protein energy malnutrition. J. C. Waterlow. London: Edward Arnold, 1992.

The term protein energy malnutrition (PEM), covers not only the clinical spectrum, ranging from kwashiorkor to severe marasmus, but also the milder (and clinically less spectacular) forms which manifest themselves in varying degrees of growth retardation and functional impairment in millions of poor children of the Third World. Although in recent years there has been some decline in the prevalence of severe (clinical) forms of PEM, in some parts of the world PEM is probably, still, the most widely prevalent state of undernutrition today. It is not only a major global public health problem in itself but also often serves to compound and aggravate other health problems that tend to exist alongside it in populations subject to poverty and deprivation. A book on PEM – authentic, well-researched and well-documented – is therefore bound to be of contemporary relevance and importance not just to scientists but also to public health personnel and policy makers

Research on PEM has dominated the global nutrition research agenda for nearly four decades. Outstanding physiologists, biochemists, cell biologists, pathologists, paediatricians and public health scientists have been attracted to research on different aspects of this problem. What has resulted is a vast wealth of literature and original publications, which has not only provided a sound scientific basis for practical policies and programmes for the prevention and control of PEM, but also served to enrich Nutrition Science. Writing a book on PEM which seeks to do justice to the vast multidisciplinary input that has gone into studies on this problem over the last 40 years is, indeed, a formidable undertaking. Such a book would demand of its author considerable breadth of understanding and (first-hand) knowledge of the multiple facets of the subject.

Dr Waterlow, in view of his scientific stature, his direct involvement with studies of this problem for over four decades, and his close interaction with fellow-scientists working in this area in many parts of the world, has been admirably able to meet this exacting requirement. The book on PEM which he has authored is much more than a synthesis and catalogue of the numerous publications on this subject. It is an eminently readable, critical and practical publication which offers stimulating insights.

The first half of this book of twenty chapters deals with physiological and biochemical issues; the latter half with epidemiological and public health aspects. The introductory chapter carries a brief note on history, with discussions on nomenclature, classification and etiology.

The discussions on the biochemical and physiological aspects in the first half of the book include consideration of studies on changes in body composition and body water, endocrine changes, metabolic changes, changes in electrolytes and minerals, and trace elements. Observations on the effects of PEM on the structure and

functions of various organs have been documented in a separate chapter. The possible role of changes in cell membrane – the sick-cell syndrome and leakiness of cell membrane – and resultant potential toxic effects of free radicals in the pathogenesis of the PEM syndrome is the subject of a thought-provoking chapter, which is followed by an equally stimulating chapter on the pathogenesis of oedema in kwashiorkor.

The theory of protein deficiency has been critically examined. The three links in the causal chain on which this theory has rested have been briefly explained and the arguments against it have been described.

The second half of the book contains a brief chapter on treatment of PEM, followed by illuminating chapters on growth failure, and on assessment of nutritional status based on anthropometric criteria. The succeeding chapters on the energy/protein requirements of children, and on breastfeeding, deal with areas to which the author has himself made significant direct contributions. These chapters which deal with the physiology of protein/energy nutrition could have more appropriately preceded the earlier chapters.

No book on PEM would be complete without a consideration of the nutrition-infection nexus and the nutrition-mental development relationship; these subjects appropriately find their places in two separate chapters.

Two chapters, one on malnutrition and mortality, and the other (the last) on prevention of PEM are the ones which deal with practical public health aspects that are of direct concern to health personnel in developing countries. Though the author has thus tried to maintain a balance between 'basic' and 'applied' aspects, the real strength and value of the book, as a whole, seems to rest more on the able manner in which research on the physiological and biochemical aspects of the problem have been highlighted and discussed, rather than on new insights and leads with respect to prevention and control. This however does not detract from the merit of this work, which stands out as an outstanding *scientific* contribution; it should in fact help to show that nutrition is no 'soft science' and that it offers exciting intellectual challenges to the scientist, in the laboratory, clinic and the field.

A notable omission has been the absence of discussion on one major factor currently responsible for PEM in most developing countries – namely the low caloric density of the predominantly cereal-based diets on which the children in poor communities of Asia and Africa are now being reared. A discussion of the practical approaches towards combating this factor using inexpensive indigenous methods would have greatly added to the value of this excellent publication. In particular, contributions of Desikachar and Tara Gopaldas from India and Dr Maletnlema from Africa towards promotion of indigenous technologies for reducing the bulk and viscosity of cereal-based diets using such devices as

malting and ARF (amylase-rich food) would have been useful to field health workers in Africa and Asia. Indeed a separate chapter on the nature and composition of the diets, and child-rearing practices that lead to PEM would have provided useful leads for prevention and control.

The book must rank as a landmark contribution to the

scientific literature on PEM. Several hundreds of scientific publications have been listed in the references, and many of them have been critically discussed. The book must be read by all those interested in the problem of PEM.

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