

AN ANNOTATED BIBLIOGRAPHY OF NUTRITION RESEARCH IN MALAYSIA (1900-1979)

annotated & compiled by
TEE E SIONG



ASEAN PROTEIN PROJECT

National Sub-Committee Malaysia

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ASEAN Protein Project
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PREFACE

In 1952, P.C. Leong published an annotated bibliography of nutrition studies in Malaya, with 70 articles, covering the period 1911 to 1949. Since there has been no other such published collections, it was felt that a comprehensive up-to-date compilation would be useful. It was thus aimed to bring together and describe briefly, under one cover, all the published reports of nutrition studies in the country, from way back 1900 to mid 1979. After a somewhat exhaustive search, over 500 publications on the subject has been collected and annotated. This work will necessarily be a continuous piece of work. The bibliographic collection will grow with the growth of nutrition research in the country.

It is hoped that this compilation will help students, scientists and research workers in nutrition to identify and utilize research papers related to their own interests. If it helps to attract additional workers to the field and if they lead others to conduct research into topics about which information is lacking, then it would have performed an even greater service.

The author of this compilation would like to take this opportunity to express his appreciation to all who had contributed to the completion of this collection. The continuous encouragement given by colleague, L.C. Foo throughout the period of compilation must be given special mention. He wishes to thank the Head of the Division of Nutrition, Institute for Medical Research, Dr. Y.H. Chong, for permission to carry out this piece of work. Dr. Chong has been keenly interested in this collection, and has assisted in providing some of the publications. The author is grateful to the ASEAN Sub-Committee on Protein for the encouragement in publishing this Bibliography. Sincere thanks are conveyed to the following for having very kindly taken the time and trouble to write encouraging messages for this publication: Dato Mohd. Hashim Sam Abdul Latiff, Chairman of the National ASEAN Committee on Science and Technology (also Secretary-General of the Ministry of Science, Technology and Environment); Dr. G.F. DeWitt, Director of the Institute for Medical Research; and Dr. A. Zaharudin Idrus, Chairman of the National ASEAN Sub-Committee on Protein (also Director of the Agricultural Products Utilisation Division of MARDI).

Finally a few words will be given on the presentation of this compilation. The publications collected have been separated into various broad categories or subjects. Under each category or subject, the publications are arranged in chronological order. For papers published in the same year, they are arranged according to the alphabetical order of the author(s). The subject index and authors index at the end of the compilation give the abstract number(s) where the particular publication(s) could be located.

Tee E Siong
Nutrition Officer
Nutrition Division
Institute for Medical Research
Kuala Lumpur
Malaysia

October 1979

MESSAGE

from the CHAIRMAN, NATIONAL ASEAN COMMITTEE ON SCIENCE AND TECHNOLOGY (and SECRETARY-GENERAL of the MINISTRY OF SCIENCE, TECHNOLOGY AND ENVIRONMENT).

As Chairman of the National ASEAN Committee on Science and Technology, Malaysia, it is always a great honour and privilege for me to be associated with the progress and development of Science and Technology in this region and in the country in particular. With the growth of modern civilization, considerable changes have taken place affecting Man and his environment. Science has become an integral part of Man's cultural heritage, and technology has gained a unique place in his intellectual pursuits. Science not only widens his scope for understanding of nature around him, but also generates new information and values. With these, science and technology have been harnessed for the welfare of his community and society. As such, Man is more prepared to face the challenges of modern civilization. He needs tools in his endeavours to meet the requirements of his society and planet.

The publication of this bibliographic collection on nutrition studies compiled by Mr. Tee E Siong emphasizes in no uncertain terms the need for proper documentation of scientific publications both in Malaysia and in the ASEAN community. I would like to commend the initiative undertaken by Mr. Tee E Siong to attempt an exhaustive search for publications on nutrition studies in Malaysia and to compile them into such an easily accessible publication.

It is obvious that an annotated compilation of this nature would indeed prove to be useful and of interest to the nutritionists in Malaysia as well as those in the other ASEAN countries who undoubtedly are facing similar problems in their nutrition work. I would go on to say that this compilation can serve as a useful medium for exchange of scientific information between nutritionists in ASEAN countries, and could also be taken as a contribution towards scientific co-operation within ASEAN.

I wish Mr. Tee E Siong and his bibliographic collection on nutrition studies every success.

Dato³ Mohd. Hashim Bin Sam Abdul Latiff, D.P.M.P., J.M.N.

MESSAGE

from the DIRECTOR, INSTITUTE FOR MEDICAL RESEARCH

Ever since the IMR became established in 1900, research into nutritional disorders soon followed research into malaria and other tropical diseases. In fact the Institute became well known for its research work on beri-beri at the turn of the century at a time when thousands of people, not only in Malaysia but also in the region were dying from this deficiency disease. With the passage of time, diseases of other dietary deficiencies began to be investigated intensively; likewise the nutritional status of labourers working in the estates was also constantly assessed. In Malaysia, the Institute was not the only agency that was undertaking such studies. In fact research in nutrition, encompassing several disciplines, had attracted professionals from many fields, such as nutritionists, biochemists, clinicians, public health workers, social scientists, agriculturalists, food technologists and educationists.

After nearly 80 years of research in nutrition in Malaysia, the number of publications on the subject has increased tremendously and there is now the need to collect all these publications together to serve as easy reference for present and future researches in the field. The initiative undertaken here by Mr. Tee E Siong, Nutrition Officer in the Division of Nutrition of the IMR to present a comprehensive and annotated bibliography on nutritional research in Malaysia is very timely and very commendable. His contribution in this regard is certainly a step in the right direction to promote nutrition research in Malaysia.

Dr. G.F. de Witt. J.S.M. K.M.N.
Ph. D., F.R.I.C., F.M.I.C., F.M.S.A., A.M.

MESSAGE

from the CHAIRMAN, NATIONAL ASEAN SUB-COMMITTEE ON PROTEIN (and DIRECTOR of the AGRICULTURAL PRODUCTS UTILISATION DIVISION, MALAYSIAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE).

The ASEAN Protein Project has completed the first phase of its project under the ASEAN-Australia Economic Cooperation. Under this project various agencies are involved in undertaking Research and Development efforts towards alleviating malnutrition. The contribution of each agency in the project to meet the objective have taken various forms. It ranges from food product development to the evaluation of the products in terms of acceptability, studying the nutritional status and its implications as well as its commercial value vis-a-vis the economic status of the population. This publication of an annotated bibliography of nutrition studies covering the period of 1900–1979 is an extremely valuable contribution under the auspices of the ASEAN Protein Project. This bibliography will facilitate scientists, nutritionists, food technologists and others in the related fields in Malaysia and in ASEAN to continue their work towards improving the nutritional status of the people. This is definitely another significant contribution of the National ASEAN Protein Project that we are proud of.

Dr. Ahmad Zaharudin Idrus.

ABSTRACTS

NUTRITION IN MALAYSIA

1. JOHN LEWIS ROSEDALE

Has Malaya any food problems?

The Malayan Medical Journal, 3:86–88, 1928

The publication has, very briefly, summarised the important studies on food and nutrition in the tropics in general and Malaya in particular. Research on beri-beri and the diet, studies on the importance of other “necessary factors” in foods, quality and quantity of fats and proteins in local dietaries, and the importance of agricultural education in the improvement of human nutrition were some of the topics discussed.

2. A. VISWALINGAM

Food and disease in Malaya (with observations on pellagra and keratomalacia)

The Malayan Medical Journal, 4:65–69, 1929

Several aspects of food and disease in the country were generally discussed. The general dietary pattern of the Malays, Chinese and Indians were described and the likely nutrient deficiencies pointed out. These were related to the incidence of scurvy, beri-beri, pellagra and other deficiency diseases among these people. The article also touched on overnutrition and associated diseases, such as obesity, diabetes, etc.

3. M. BRODIE

The health of women and children in Malaya

J.R. Sanit. Inst. 58:305–324, 1937

Publication not available.

4. R.A. Pallister

Some observations on food deficiency diseases in Malaya

Journal of the Malaya Branch, British Medical Association, 4(2):191–197, 1940

This review focussed on vitamin A and “vitamin B2 complex” deficiencies, and a short discussion was given on anaemia and goitre. Signs and symptoms of vitamin A deficiency were first described in brief, followed by evidences of this deficiency in Malaya as reported by several investigators. The author next described his personal observations of avitaminosis B2 (details of which had been given in Landor and Pallister, 1935)*, mainly amongst prisoners. A shortage of iron in the food was thought to be the main cause of anaemia; the occurrence of goitre among the Malays was mentioned in passing.

*See abstract number 302

5. R. CRAWFORD

Aspects of estate health

The Medical Journal of Malaya, 2(1):10–19, 1947

This report is a re-consideration of a review on estate health made in 1941. The major part of the report was devoted to a discussion on the nutritional problems, with minor sections devoted to housing, environmental sanitation, etc. Various findings were put forward to show that the average diet of the Indian estate labourer was defective. The composition of such a diet was presented and was said to be ill-balanced and lacking in many essential nutrients. Symptoms known to be associated with dietetic deficiencies were said to be prevalent. Vital statistics of the estate population showed certain undesirable features which were in part related to defective nutrition. Finally, the generally poor physique and low resistance to disease shown by many labourers were thought to be reflective of inadequacies of the diet. Several ways in which the dietary of these Indians could be improved were proposed.

6. R.C. BURGESS and I.A. SIMPSON

Nutrition, other aspects

In: *The Institute for Medical Research 1900–1950. Institute for Medical Research Federation of Malaya, Jubilee Volume No. 25, Kuala Lumpur, 1951*; pp 119–126

Research in food and nutrition in the Institute for Medical Research from 1900 to 1950 was reviewed. Much of the attention in the early years was directed towards solving the beri-beri problem, although there were also some work on dietaries for hospitals and estates. The field began to widen in 1927. Studies on other deficiency diseases, namely nutritional anaemia, pellagra, xerophthalmia, burning-feet and avitaminosis B2 were carried out.

7. J.G. REED

Health on some Perak estates

The Medical Journal of Malaya, 5(4):329–366, 1951

The report presented a sketch of the population trends, vital statistics and health of the Indian labourers and their dependents for the first 5 years after the Japanese occupation of the country. A chapter of the report dealt with the nutritional aspects. Anaemia was given special mention, and was said to be more prevalent than before the occupation. Signs of lack of protein, vitamin and minerals were “all too frequently met with”. Many children were grossly under weight for their age. In the words of the author, “there was excessive nutritional ill-health”.

8. P.C. LEONG

Nutrition bibliography of Malaya

University of Hawaii Press, Honolulu, Hawaii, 1952; 23 p

About 70 articles were covered in this annotated bibliography of nutrition research in Malaya, with articles from 1911 to 1949. Papers were arranged according to alphabetical order of the author.

9. CICELY D. WILLIAMS

An experiment in health work in Trengganu, Malaya

Department of Public Relations, Kuala Lumpur, 1954

Publication not available.

10. C. ELAINE FIELD

Nutritional problems in the federation

The Medical Journal of Malaya, 9(3):179–194, 1955

A review of the nutritional disorders encountered in Malaya was given. The common clinical picture of an afflicted toddler was described; the signs associated with specific nutrient deficiencies were given (photographs were presented). The unsatisfactory dietary pattern of the child, leading to these deficiencies was next described. Suggestions were given to improve such a diet. The author then posed several questions pertaining to in-depth studies of the deficiencies of some nutrients. Two of these problems raised were discussed in some detail. The indefinite clinical picture of beriberi in infants and children was described and the need for further investigations on the subject stressed. The question of whether kwashiorkor, as described by C.D. Williams, existed in Malaya was tackled, reviewing the clinical picture and laboratory findings in a series of 8 cases of malnutrition with oedema encountered.

11. C.E. FIELD

Care of mother and baby

MacMillan, London, 1955

Publication not available.

12. FOOD AND AGRICULTURE ORGANISATION

Report on the state of nutrition in the Federation of Malaya during the period 1953

Paper tabled at the 4th Meeting of the Nutrition Committee (FAO/WHO) for South East Asia, Tokyo, 1956

Publication not available.

13. B.A. LAMPRELL

Estate health

In: *Manual of Rubber Planting (Malaya), Section 21, Compiled by A.T. Edgar, Published by the Incorporated Society of Planters, Kuala Lumpur, 1956; pp 631–638*

The article covered various aspects of estate health, which included sanitation, water supplies, housing, malaria and other diseases. A separate chapter (pp 631 to 638) was also devoted to a discussion on "Nutrition of Estate Labour Forces". A general discussion was given on the essentials of a balanced diet, and the different forms of rice and their nutrient differences. The various nutrient deficiency diseases were briefly

described. The state of nutrition of estate populations in Malaya was briefly reviewed. The importance of preventing subnutrition to ensure greater working potential was emphasized. Various methods for the improvement of nutritional status were suggested. Supplementary feeding was recommended as an interim measure and several menus were suggested for this purpose.

14. B.A. LAMPRELL

Nutrition on estate labour forces

Planter, 32:654–661, 1956

Publication not available.

15. INSTITUTE FOR MEDICAL RESEARCH

Nutrition in Malaya: 1946–1956

Institute for Medical Research, Federation of Malaya, Annual Report for 1956, Kuala Lumpur, 1957; pp 13–32.

The article reviewed several areas of nutrition studies and activities in the country. Each of these areas was separately discussed. In the area of clinical and dietary surveys, the studies of various investigators such as Bourne, Burgess, Thomson, Said Mohamed and McPherson were quoted and briefly discussed. In a description of the general state of nutrition in Malaya, figures for admissions to hospitals of patients suffering from anaemia and beri-beri and infant mortality rates, for 1946 to 1955 were presented and discussed. It was said that while frank deficiency diseases were not common, much ill-health due to malnutrition existed in many sections of the population. Studies on anaemia was next separately discussed. The studies of Bourne, Reed, Cowan, Eagland and Tasker were quoted. The various supplementary feeding schemes carried out by the government were described. It was emphasized that the successful implementation of any scheme of this kind depended ultimately on the enthusiasm and active participation of local community leaders. In the field of food technology, the studies of Simpson, Byron and others into the problem of rice milling and nutritional quality of rice were mentioned. The importance of nutrition education as a means of improving the nutritional status of the population was recognized. The various efforts undertaken by the government in this field were described.

16. D. BOWLER and ONG SAY KIM

Maternal and child care in Malaya

Mother Child, 30:60, 1959

Publication not available.

17. DATIN LADY THOMSON

Malnutrition in the Tropics

The Practitioner, 187:173–181, 1961

A general description of the major nutritional problems in the tropics was given. The various vitamin deficiency diseases, anaemia, and kwashiorkor were discussed. Aspects included in the discussion were aetiology, characteristic features and incidence of the dietary deficiency diseases, and recommended allowances for the nutrients involved. Wherever possible, data obtained by the author and other investigators in Malaya were included in the discussion.

18. DATIN LADY THOMSON

The Health of the Malayan child

Planters Association Annual Report, 1961. pp. 51–53

Statistical data were presented to show that better health facilities provided by the government had indeed lowered infant mortality and maternal mortality rates. However, the toddler mortality rates was still high compared with those in developed countries. Racial differences in these figures were pointed out. Possible explanations for the differences were given. Factors that brought about ill-health in childhood, such as poverty, poor child care and feeding practices, infections and worm infestations, were discussed. The poor diets of the people were described in some detail, with separate analysis for the different races. Nutrition education on diets and how best to use a limited income in the purchasing of foodstuffs was given emphasis.

19. DATIN F.A. THOMSON

Food, nutrition and Malayan Agricultural Diversification

Malayan Agriculturist (Magazine of the Agricultural Society, Universty Malaya), 3:22–25, 1962

A general picture of the existing nutritional status of the people was first given. Factors contributing to the malnutrition problems were discussed, the prevailing rural economy, population size and structure, shortage of cultivated land, and insufficient food supplies. Various methods to tackle the problems were pointed out, which included increased food production, improved transportation, marketing and distribution of foods.

20. DATIN LADY THOMSON

The child

Paper presented at the Women's International Club, Kuala Lumpur, 1962; 4 p.

The different stages of a child's development, from the foetus to adolescent, were briefly reviewed. The problems affecting the child at each stage were described. Various nutritional factors involved were discussed. It was felt important that parents should understand these problems so as to be able to give efficient help and understanding to their children.

21. DATIN LADY THOMSON

Nutritional problems in Malaya

Transactions of a Far East Symposium on Nutrition, Saigon, March 12 to 16, 1962; pp. 94–100

Malnutrition problems were said to be more serious in the rural areas in the country. Living conditions in the rural areas were briefly described. The major nutritional deficiencies were briefly reviewed. Clinical Signs encountered in 200 toddlers examined were presented. Figures for infant and toddler mortality (for 1949 to 1959) and the racial differences for these figures were reported. Preventive measures and programmes to overcome these problems were mentioned, which included supplementary feeding, improved health services and rural development.

22. DATIN LADY THOMSON

Hunger, Disease of millions

Speech given on World Health Day, Seremban, 1963; 4 p.

A number of surveys carried out had shown that nutritional problems existed in the country. Although there was no real starvation, there was however much faulty nutrition or "hidden hunger". The major nutritional deficiencies in the country were described. The main lines of attack of this "disease of millions" were outlined.

23. ABDULLAH BIN AHMAD

The twin problems of rural poverty and ill-health

Medical Journal of Malaya, 18:235–238, 1964

That poverty, ignorance, insufficient land, and ill-health were the causes of the family food being deficient in nutrients was emphasized. The malnourished soon became prey to the many diseases caused by an unfavourable environment. The article discussed generally the means and ways of breaking the vicious cycle of ill-health-low productivity-poverty-malnutrition-ill-health. The various actions undertaken by the government were examined, and felt to be inadequate. It was proposed that rural re-housing and rural re-construction was the fundamental solution to rural ill-health.

24. DATIN LADY THOMSON

Nutrition in a rural economy *

Journal of the Social Science Society, University of Singapore, No. 3, p. 15–18, 1964

The Malayan diet, like that of all the other developing countries of the world, was said to suffer from certain dietary deficiencies associated with the excessive intake of a carbohydrate staple, rice. The publication dealt with the difficulties involved in the

* A translation of the paper, entitled "*Dzat Makanan dan Kesihatan*" in Bahasa Malaysia, was read at the Seminar of the National Association of Women's Institute, Petaling Jaya, 20th August, 1964.

correction of such resulting malnutrition, occurring in an essentially rural country. It was said that wherever a country is mainly rural, economic and social advance is slower and more difficult. It was emphasized that nutritional problems were complex and social, economic, educational, medical and agricultural factors were interdependent. A concerted effort would be needed to overcome the problem.

25. UNGKU A. AZIZ

Poverty and Rural Development in Malaysia

Kajian Ekonomi Malaysia, 1(1):70–105, 1964

Some aspects of poverty and rural development in relation to food and nutrition were also briefly discussed. Poverty was said to be identifiable by the co-existence of certain socio-economic characteristics. Three of these were (a) nutrition, (b) mortality rates and (c) sarong index. Poverty is associated with low levels of nutrition. Diets of the poor are usually inadequate in terms of calorie, protein or vitamins. For any particular group of people, the level of poverty appears to be inversely correlated with the level of intake of animal protein. A characteristic of poverty is an inadequate level in terms of weight of proteins as well as an imbalanced pattern of amino acid intake. It was hypothesised that the ratio of actual protein intake to needs is directly correlated with level of income of the rural people. It was felt that this ratio is a better measure of the impact of poverty on nutrition than the measure of total food consumption or of total calorie intake. The relationship between life expectancy and infant mortality rates and poverty was also briefly discussed.

26. Y.H. CHONG

A brief review of the work of the Division of Nutrition, Institute for Medical Research

Nutrition Division, Institute for Medical Research, Kuala Lumpur, 1965; mimeographed, 5 p.

The current work of the Division was briefly reviewed. Four main areas of studies were described: 1. appraisal of nutrition status – dietary, anthropometric and biochemical studies were described; 2. food chemistry; 3. nutrition education and advice; and 4. research – protein quality of sun-dried ikan bilis, aflatoxins and fatty acid composition of cooking fats and oils.

27. UNGKU A. AZIZ

Poverty, proteins and disguised starvation

Kajian Ekonomi Malaysia, 2:7–48, 1965

In this 42-page article, the economist discussed the relationship between poverty, protein and disguised starvation. The relationship between proteins and poverty, which was said to be interacting and cumulative and moving along a spiral rather than a circle, was described and illustrated. The term “disguised starvation” or “disguised undernourishment” was explained. The quantitative and qualitative requirements for proteins were next discussed, followed by presentation of local data to show that protein deficiency occurred in the country, especially among the rural Malays. To solve

the protein deficiency problem (and the related problem of increasing rural incomes), it was felt important to first dispel the set of myths held about the Malays by the Colonial Government; the 6 myths were described. In the last part of the paper, the author discussed some economic aspects of the protein problem. It was recognized that the people preferred proteins from animal sources, but for reasons of costs, it was *not possible for the low income consumer to have them. It was felt that the main solution that appeared feasible was to increase rural incomes.*

28. MOHAMED BIN JAMIL

Tropical Agriculture and food production with special reference to Malaysia.

Proceedings of the 7th International Congress of Nutrition, Hamburg, 1966; pp. 226–243

The article first gave a discussion of the factors influencing agriculture and food production in the tropics in general. The factors discussed were climatic factors and social, economic and political factors. Population and food supplies in the tropics were also described. A case study of Malaysia was next presented. The situation of agricultural production and food supplies of the country was reported. The three Five-Year Development Plans of Malaya were briefly described to indicate the radical changes taking place in the field of agricultural planning and development. The non-availability of suitable foodstuffs within the reach of the consumer was recognized as a significant factor in the causation of malnutrition and nutritional deficiencies. The need for increased food crop and animal production was emphasized.

29. Y.H. CHONG

Current research in food and nutrition in Malaya

Transactions of the Third Far East Symposium on Nutrition, Manila, Philippines, February 14 to 21, 1967; pp. 60–65

The paper discussed three areas of research carried out by the Institute for Medical Research during 1965–1966. These were: 1. investigations into the quality of some inexpensive proteins. Determinations of available lysine in *ikan bilis* and cockles, two relatively inexpensive sea-foods, showed that their protein quality were comparable to that of most fresh meat and fish. It was suggested that the use of *ikan bilis* for feeding growing children should be encouraged. 2. examination of groundnuts and groundnut products and moulded soybeans used in the making of soy sauce for aflatoxins. 3. assessment of the nutritional status of Malay pregnant women by an abbreviated clinical examination, biochemical examination of blood and urine and dietary inquiry. The biochemical and hematological values obtained for 74 subjects were presented in a table.

30. F.A. THOMSON

Nutrition in rural Malaysia.

Bulletin of the Public Health Society, 1(1):15--18, 1967

In spite of government efforts in rural planning, problems in nutrition were still common in rural areas, where poverty and other social factors adversely affect the peoples' nutrition. A plea was made for a greater interest in and for a change of attitude to rural medical care. The country's population was said to be essentially rural, with a rapid growth rate and a large proportion of young people. Evidences from clinical, dietary and social surveys and child mortality rates were put forward to show that there was indeed a problem of poor nutrition in the country. The major deficiency problems were described. Several remedies to the problem were suggested, which included more surveys on the problem, nutrition and health education, increased food production and family planning.

31. MARJORIE CALDWELL

Malnutrition -- a challenge to the agriculturist

The Malayan Agriculturist, 7:14--20, 1968

Several aspects of malnutrition, with particular reference to the role of the agriculturist in the combat of the disorder, were discussed. The basic relationship between agriculture and nutrition was pointed out and the ways in which the agriculturist could assist in the increasing of available food supply were emphasized. It was felt important that the agriculturist should understand the nutritional problems in the country, and the detrimental effects of malnutrition. The article therefore gave a general description of the major nutritional deficiencies in man, the interaction between malnutrition and infection, and the effects of malnutrition on the health (particular reference was made to mental development) and productive capacity of the population. This was followed by a brief review of malnutrition in Malaysia. Besides planning for agricultural development, the agriculturists involved in education, extension and land development schemes can also aid in nutrition education to the people.

32. Y.H. CHONG

Food and nutrition in Malaysia *

Institute for Medical Research, Malaysia; Bulletin number 14, Kuala Lumpur, 1969, 16 p.

The bulletin gave a general discussion on the major nutrients in foods. Carbohydrates, proteins, fats, vitamins and minerals were discussed separately. For each group of nutrient, the following aspects were described: functions of the nutrient, major food sources, its content in some Malaysian foods, diseases associated with its deficiency, and some Malaysian data on the occurrence of the deficiency diseases. The vitamins discussed were A, B1, B2 and vitamin C. For the minerals, Calcium, Iron, Iodine and

* A Bahasa Malaysia version of the bulletin was also made available, entitled. *Makanan dan Pemakanan di-Malaysia*. Translation was done by the Jabatan Terjemah Persekutuan, Kuala Lumpur.

Fluorine were given emphasis. A short discussion was also given on the recommended daily allowances of nutrients and a table of such allowances for Malaysia was given.

33. N. CHANDRASEKHARAN

Nutrition in Malaya

N.Y. State J. of Medicine, 70:2010–2016, 1970

Publication not available.

34. N. CHANDRASEKHARAN

Malnutrition and mental development

Berita Malaysian Medical Association, 3(3):6–7, 1971

Evidences were put forth to show that undernutrition can cause stunting or dwarfing of growth and can influence the mature size of an individual. The greater part of the discussion was devoted to the possible effect of undernutrition on brain-size and hence mental development. Animal studies and evidences from human were described to indicate that malnutrition is a causal factor in the retardation of mental development. Therefore a child who has survived a period of severe malnutrition may be severely handicapped in terms of his physical and mental development. The need to correct infant malnutrition as a national priority was emphasized.

35. Y.H. CHONG

A brief history of nutrition research at the Institute for Medical Research 1900–1971

Nutrition Division, Institute for Medical Research, Kuala Lumpur, 1971; mimeographed, 13 p.

Nutrition studies at the Institute for Medical Research from 1900, when the Institute was founded, was briefly reviewed. A list of some milestones of achievements during 70 years of research was given. The current work profile and work load of the Nutrition Division at the Institute was described. A list of publications from the Division since 1951 was also included in the report.

36. S.C.E. ABRAHIM

Medical problems in the pre-school child

Bulletin of the Public Health Society, 7:22–28, 1973

The nutritional state of the child was first discussed. During the critical pre-school age, the nutritional problems were identified as undernourishment, protein deficiency and deficiencies of various vitamins and minerals. The effects of malnutrition on brain development, physical growth and infection, and the close association between nutritional anaemia and malnutrition were each discussed. Other medical problems of the child discussed included care of the newborn, the handicapped child, jaundice and milk feeding practices. Recommendations were put forward to help the pre-school child.

37. S.C.E. BARAHAM

Major problems in the pre-school child

Buletin Keluarga, no. 61, pp. 1, 2, 7; 1973

This article is similar to the one in abstract number 36, except that "other medical problems of the pre-school child" is not discussed in the present article.

38. CHONG YOON HIN

Food and nutritional problems in Peninsular Malaysia

Paper presented at the Seminar, "Role of Specialists in Promoting Family Health", 13–18 August 1973, Penang. 16 p.

Background data on demography, mortality statistics, health facilities, disease patterns, food balance sheet, etc. were first reviewed. It was thought that these preliminary evidences suggested that widespread and severe food and nutritional problems appeared unlikely. More direct evidences were then considered. Nutrition surveys of school children, carried out by the author and associates were quoted and indicated that moderate to severe malnutrition existed, particularly in the deep inland rural districts. Findings were presented to demonstrate the synergistic interaction of infection and malnutrition. The state of maternal nutrition was briefly discussed.

39. CHONG YOON HIN

Nutrition and athletic activities

In: Sports Medicine, An Introduction For Malaysians. Compiled and edited by Chan Onn Leng, University of Malaya Press, Kuala Lumpur, 1973; pp. 88–94

The nutritional requirements of athletes were discussed. Energy requirement and expenditure was discussed in relation to various degrees of athletic activities. The need for carbohydrate, fat, protein and vitamin intake was briefly described, and comments were made with regards to the excessive intake of these nutrients and athletic activities. Further discussion was devoted to the importance of keeping a watch on body weight. Other topics discussed were meal times and athletic performance and the types of foods taken just before a contest.

40. Y.H. CHONG

The problems of food and nutrition in Malaysia with special reference to rural areas

Paper presented at Seminar Kebangsaan Makanan dan Pemakanan Dalam Pembangunan Negara, 22–27th March, 1973, Malacca; 10 p.

Evidences of malnutrition in Malaysia were presented. Some vital statistics and results of some nutrition surveys in rural areas were discussed. Some aspects of food production and consumption in the country were presented. It was emphasized that the causes of malnutrition are multifactorial. Some recommendations to overcome food and nutritional problems were outlined.

41. FOO LI CHIEN and CHONG YOON HIN

Malaysia: (a) A review of current food and nutritional problems with special reference to calorie and protein; (b) government plans for improvement

Division of Nutrition, Institute for Medical Research, Kuala Lumpur, 1974; 20 p. (mimeographed)

Some relevant data on demography (vital statistics and mortality rates), per capita income and availability of medical health facilities in the country were presented. Information on food production and food availability with respect to calorie and protein were discussed. Results of some nutrition surveys of pre-school children conducted between 1969 and 1974 were summarized. From the available data, it was said that Malaysia should not have widespread food and nutrition problems. Nevertheless, due to various factors, malnutrition was not uncommon in the inland rural areas. The various plans undertaken by the government to upgrade the status of problem groups in the country were outlined.

42. ROBERT ORR WHYTE

Rural nutrition in Monsoon Asia

Oxford University Press, Kuala Lumpur, 1974

In this book, various aspects of nutrition were covered, ranging from naturalistic and supernatural beliefs on food and nutrition to nutrition policies and programmes. In all the chapters, the situation in each country in Monsoon Asia, including Malaysia, was presented. Data obtained by various investigators in this country were quoted.

43. Y.H. CHONG

Nutrition

In: Studies from the Institute for Medical Research, no. 32, Jubilee Volume – 75 Years of Medical Research in Malaysia 1901–1976, Kuala Lumpur, 1976; pp. 161–167

The occurrence of childhood malnutrition, particularly protein-calorie malnutrition, in the country was described. The diagnosis and recognition of protein-calorie malnutrition was discussed. Recent surveys of nutritional status in various rural areas showed that moderately severe forms of malnutrition was still common. The implementation of applied nutrition programmes to combat malnutrition was briefly described. The various studies carried out in nutritional biochemistry were next reviewed. Studies into the nutritive quality of foods, aflatoxin in foods, urinary and food fluorides, and nutritional biochemistry of blood and urine were each briefly described. The Nutrition Division of the Institute has also been actively involved in studies into serum lipids and lipoproteins in relation to hyperlipidaemia and coronary heart diseases.

44. Y.H. CHONG

Aspects of ecology of food and nutrition in Peninsular Malaysia

Environmental Child Health, Monograph No. 47, 1976; pp 237–256

The current food and nutritional problems in Peninsular Malaysia were reviewed in this 19 pages publication under 6 main chapters, namely the human environment, food production and availability, malnutrition in Malaysia, influence of infections and food habits on malnutrition, affluence and nutrition, and toxicants in foods. Demographic data, mortality rates, availability of health facilities and income distribution pattern were discussed in the chapter on human environment. The second chapter described the state of food production and availability as indicated by national food balance sheets. Studies carried out by various investigators were quoted to illustrate the problem of malnutrition in the country, and the influence of infections, parasitic infestations and cultural practices. Overnutrition and associated disorders among the affluence were discussed in a separate chapter. The hazards posed by toxicants in foods such as metals, pesticides, food additives, mycotoxins, etc. were briefly described.

45. HAJI SULAIMAN BIN HAJI KASSIM

Kawalan mutu makanan di Malaysia (Quality control of foods in Malaysia)*

Majallah Inspektor Kesihatan, pp. 63–65, 1976

To ensure that foods are safe for the consumption of people, quality control is essential. A unit for controlling the quality of foods was established in the Ministry of Health in early 1974. The duties and objectives of the Unit were outlined. Some of the activities of the Unit were briefly described, which included the taking of food samples for analysis, examination of factories/shops, health education to the people regarding quality of foods, and investigating complaints from the public. The role of the health inspectors in these and other health aspects were outlined.

* article in Bahasa Malaysia.

46. N. KANDIAH

Rural Health Research

In: *Studies from the Institute for Medical Research, No. 32, Jubilee Volume – 75 Years of Medical Research in Malaysia 1901–1976, Kuala Lumpur, 1976*; pp. 221–229

Several surveys carried out by the Division were described. Studies in Kampong Selisek (1970–1972), Ulu Jempol (1973–1975) and Ulu Rening (1975) were briefly reported. These studies mainly covered socio-economic aspects, anthropometric and clinical examinations, and dietary intake. Other duties of the Division were also briefly described.

47. Y.H. CHONG

The dimensions of nutritional problems in Malaysia *

Costed (Committee on Science and Technology for Developing Countries) Newsletter, July 1977; pp. 8–9

The major nutritional problems in the country were discussed. The three major deficiency diseases, namely protein-calorie malnutrition, vitamin A and iron deficiency anaemia were described. The causes and symptoms of these diseases were touched upon. The problem of over-nutrition was briefly discussed. The contamination of foods with various toxicants was also a major problem in the country. The principal intervention programmes that were undertaken by the government to overcome these problems were described.

* Also in: *Proceedings of the Symposium on Improving the Quality of Life in Malaysia: the Role of Chemistry*; 24–26 March 1977, Kuala Lumpur; pp. 159–162.

48. Y.H. CHONG

Poverty line income – the dietary component

In: *Estimation of Poverty Line Income, 1977, Peninsular Malaysia. Poverty Section, Economic Planning Unit, Prime Minister's Department, Malaysia*; 8 p.

The dietary component in the drawing up of a poverty line income was described. The primary objective was to estimate the cost necessary for the purchase of basic and inexpensive food items that will satisfy the nutritional needs of a household. The daily calorie requirements of a theoretical household of 5 persons was first computed. This energy requirement was proportioned into various food items and then translated into the corresponding quantities of food. The cost of these quantities of foods were then estimated at current food prices. A monthly estimate of minimum food cost for such a family was thus derived. It was felt that if to this food cost was added the cost of other basic necessities of life such as clothing, shelter, education, etc., it was possible to arrive at a total expenditure. Households with incomes below this total expenditure line (or poverty line) may therefore be regarded as in direct poverty.

49. Y.H. CHONG

Nutrition, food needs and prospects of supplies in relation to population growth of Peninsular Malaysia

Paper prepared for ESCAP (Economic and Social Commission for Asia and the Pacific), United Nations, 1977; 22 p.

The paper started off by giving a picture of the population size and growth rate of the country to illustrate the problems posed by rapid population growth. The current food and nutrition situation was next described in some detail. Recent trends in food production and supply, food availability as given by data from food balance sheets, and food consumption and distribution data were discussed. Results of recent surveys were quoted to show the existence of malnutrition – nutrient deficiencies as well as overnutrition – in the country. Projected food demands for 1990 were presented. To

meet these demands, the various resources for increased food production were outlined. The outlook for such proposed increased food production was examined.

50. PAUL C.Y. CHEN

Ecological factors influencing the growth of the child

Paper presented at the 2nd ASEAN Workshop on Food Habits, 7–11 July 1979, Kuala Lumpur; 28 p.

The two most important ecological factors that influences the course of physical growth of the child, namely the dietary intake and the influence of infections and diseases, were examined. Dietary intake of the child is in turn dependent on a wide range of ecological factors, the most important of which include factors that influence food production, the distribution and availability of foods, cultural preferences and taboos in relation to foods, and cultural habits regarding the preparation of foods. These factors were discussed separately, with illustrations drawn from studies conducted in Sabah, Sarawak and Peninsular Malaysia.

51. Y.H. CHONG

Malnutrition, Food Patterns and nutritional requirements in South East Asia *

Food Technology in Australia, April 1979; pp. 156–165

The paper placed emphasis on four countries in the South East Asia region, namely Indonesia, Malaysia, Philippines and Thailand. Some background information of some countries in the region were first presented, which included demographic data, vital statistics, life expectancy at birth and doctor to population ratio. The major nutritional problems in the 4 nations were next discussed. Protein-calorie malnutrition, iron deficiency anaemia, vitamin A deficiency, thiamine deficiency and endemic goitre were each briefly discussed. Data on patterns of food availability and consumption were presented. Energy and protein availability and the percentage contribution of these nutrients from various food groups were also given. Various food items were briefly discussed in relation to their importance in contributing to the nutrient intakes of the people in the region. The nutritional adequacy of the diets of these nations were assessed. The various agricultural and socio-economic measures undertaken by the various governments in the region to meet nutritional requirements were outlined.

* First presented to a Workshop on The Interfaces Between Nutrition and Food Science, co-sponsored by the UN University and The International Rice Research Institute, Los Banos, Philippines, March 1977.

52. INDRA PATHMANATHAN

Major health problems in urban areas*

Bulletin of the Public Health Society, 13:14–21, 1979

The socio-politico-economic changes in the last few years have brought about an increasing awareness of urban problems. The paper gave an overview of some of the

* First presented at the 14th Annual Conference of the Public Health Society, 22nd October, 1978, Melaka.

major health problems in urban areas. The topics touched upon included communicable diseases, environmental sanitation, industrialisation, and problems related to food and nutrition. The problem of malnutrition amongst squatter families was briefly discussed.

53. TEE E SIONG

Nutrition of school children and snack foods sold in canteens

Paper presented at the Seminar on Health, Food and Nutrition, 15–20th September, 1979, Pulau Pinang; 14 p.

Studies on the nutritional status of school children by various investigators in the country were briefly reviewed. The role of school feeding programmes in benefiting the child's nutritional status directly was discussed. Another possible source of supplementation to the diet of the school children is the school canteen. Snacking is a habit of children and can play a role in increasing their nutrient intake. It was thus felt important to consider the types of snacks being sold in these canteens. Brief visits to some school canteens had indicated that the most popular foods being sold are sweets (hard candies), bottled soft drinks, sweetened and coloured drinks, sweetened ices, dry cereals, fruit preserves and pickles. Such foods are of little or no nutritional value. They may also contain harmful ingredients and additives. The need for controlling the continuing consumption of such snacks and tit-bits among school children was emphasized.

NUTRITION SURVEYS:—

GENERAL

54. W.J. VICKERS and J.H. STRAHAN

A health survey of the state of Kedah (with special reference to rice field malaria, nutrition and water supply)

Kyle, Palmer & Co. Ltd., Kuala Lumpur, 1936; 96 p.

The report was divided into 6 parts. Part I gave some background information of the state of Kedah. Part II described some investigations into rice field malaria. The general situation of health and disease in the state was described in Part III. Results of a study of the haemoglobin level in 9406 subjects were reported. The high rate of anaemia found was said to have been caused mainly by helminthic infestation and dietary defects. The occurrence of symptoms of deficiency diseases was reported in a study of some 10,000 persons. It was said that there was a definite degree of sub-nutrition. The rural Malays seemed to be on the "verge of safety" and that any crisis or abnormal endeavour to his normal life tended to produce some forms of mild deficiency diseases. The incidence of goitre was also reported. Part IV of the report was devoted solely to nutrition, in which the results of a dietary survey of 16 families were reported. Foods taken by the families were weighed and nutrient content computed from food composition tables. Obtained results were compared with recommended allowances. The height, weight and sitting height of 563 persons were also reported in

this part. Part V and part VI dealt with the water supplies and some statistical data of the urban workman in the state respectively.

55. BRUCE CROSS

A short investigation of infantile mortality and child welfare on estates in Kedah

Journal of the Malaya Branch, British Medical Association, 4(2):141–163, 1940

The study was carried out in the Bedong Group of Estates in Central Kedah. This Group had a mixed population of about 12,000, consisting mainly of Indians. The infant and maternal mortality rates in this area were reported to be higher than that for other areas in Kedah, and even higher than that for the country as a whole. The low birth weight of infants in the study group was analysed and discussed. Nutritional status of the population was studied using anthropometric and clinical methods. Weights and heights of children compared unfavourably with those of a group of British children. An examination of 2033 children for signs of vitamin deficiencies showed that malnutrition was prevalent to a marked extent. Improved infant mortality rates and birthweights were reported when welfare nurses were assigned to make regular visits to the Group estates. A somewhat detailed discussion was given, emphasising on the fact that improper feeding and malnutrition of both mother and child was the fundamental factor involved in the prevailing high infantile mortality rates. Various recommendations were put forward for improving the situation. It was said that “in any future improvement in social services to the estate population, nutrition should have prior claim”.

56. J.G. REED

Notes on some estate vital statistics

The Medical Journal of Malaya, 2(1):20–26, 1947

A comparison and discussion of some vital statistics of some estate populations in Perak before and after the Japanese occupation was presented. Data (mostly between 1936 and 1947) were presented for sex ratios, birth, death and infant mortality rates. A brief discussion was given on the problems created by anaemia. The general state of nutrition in the estates was described in brief.

57. R.C. BURGESS

Some aspects of malnutrition in Malaya

The Medical Journal of Malaya, 2(4):239–246, 1948

A survey of Malay children in the Malacca coastal area was carried out to investigate into the living condition and state of nutrition of the children. Data collected included income and expenditure, food consumption and meal patterns, clinical picture, intestinal helminthiasis, haematological picture and heights and weights. The dietary survey showed that the diet of the study group had gross deficiencies in some of the major nutrients compared with the recommended dietary allowances. Clinical examinations revealed possible specific vitamin deficiencies, as observed from signs that deviated from normal in the hair, eyes, skin, mouth, etc. Intestinal helminthiasis was reported,

although gross anaemia was not indicated. Weight and height for age curves of these children studied were compared and shown to be lower than that of European children.

58. GEOFFREY H. BOURNE

Nutrition work in Malaya under the British Military Administration

International Review of Vitamin Research, 21(2/3):265–307, 1949

The report, covering a total of 43 pages, consisted of two parts. The first part described the manner in which nutrition work was organised in Malaya when British forces re-occupied the country following the Japanese withdrawal. Headquarters for nutrition work were set up at the Institute for Medical Research a large scale propaganda was launched to educate the people on food and nutrition. This included talks through the radio and using mobile vans, a recipe contest and nutrition exhibitions. The feasibility of promoting consumption of red palm oil was studied through questionnaires. Studies were also carried out to determine an acceptable substitute for rice so as to overcome the shortage of rice in the country. In a series of social surveys, about 400 families were studied. Finally, this part of the report described the distribution of milk and supplementary foods to children in welfare centres, hospitals and schools.

Part two of the report presented the results of a nutrition survey carried out by the nutrition unit described above. A brief description of a survey of 6,200 school children, carried out by part of the unit in Singapore was given. A detail description of the survey of 14,696 people in Peninsular Malaya was next presented. A clinical examination was carried out, heights and weights measured, haemoglobin was determined and a simple exercise tolerance test was carried out. No highly refined investigational methods were used since "what was wanted was a quick, fairly rough survey of as big a slice of the population in as short a time as possible". Results of the survey were presented in terms of the various population groups, such as rubber estate labourers and dependents, clerical workers, industrial workers, school children, prisoners, etc. Although there was no gross starvation, it was reported that there was widespread moderate malnutrition. The nutrition state of the worst groups were identified. Suggestions were put forward to overcome the nutritional problems encountered.

59. R.C. BURGESS and LAIDIN BIN ALANG MUSA

A report on the state of health, the diet and the economic conditions of groups of people in the lower income levels in Malaya

Institute for Medical Research Report No. 13, Kuala Lumpur, 1950; 80 p.

Three occupational groups were covered in the report, namely, Malays employed in smallholder agriculture, Malay fishermen, and Indian labourers in a rubber estate. A brief description was given of the occupation, general living conditions, age and sex distribution of the groups, all living on the coastal plain of Malacca. An attempt was made to compare the three groups with respect to their health, food consumption, and economic conditions. Clinical examinations revealed some evidence of malnutrition in all the groups studied, as found in changes in the conditions of the hair, eyes, skin and

mouth. A table showing the percentage prevalence of these changes in the 6–8 years group was presented and results discussed in relation to possible specific vitamin deficiencies. Attention was given to anaemia, particularly in women of childbearing age; a table was presented to show the haemoglobin levels in the samples studied. Intestinal helminthic infestation was also studied in relation to haemoglobin levels. Heights and weights data for the adults and school children were presented and compared with a well-to-do group from North Malaya. Discussion on dietary survey covered aspects such as the major foodstuffs consumed, food habits, cooking practices, meal patterns, and adequacy of the major nutrients in the diets. A somewhat detailed discussion was also given to the economic aspects of all the groups, including their assets, income, indebtedness and expenditure. General conclusions were drawn from all the comparisons made in the study.

60. FLORENCE ADAM THOMSON

Nutritional ill health among Malay children in the Ipoh district of Perak, Malaya (a case described of severe malnutrition with enlarged liver)

Transactions of the Royal Society of Tropical Medicine and Hygiene, 44(3):339–346, 1950.

Clinical signs of malnutrition were presented for 1325 ante-natal patients. Prevalence rates for the various signs among the three races were compared. The dietary pattern and food habits of mothers and children in the area were briefly described. The presence of signs of nutritional ill health in 1703 Malay pre-school children was compared with a group of 2515 Fiji children. Some of the factors contributing to malnutrition were also compared for the two groups of children. A case of severe malnutrition with enlarged liver was described in some detail, with the help of photographs. Improvement in health was reported when the said malnourished child was given dietary treatment.

61. F. ADAM THOMSON

Malignant malnutrition in the Ipoh district of Perak, Malaya

Transactions of the Royal Society of Tropical Medicine and Hygiene, 44:760–761, 1951

In this short communication, a follow-up to the article in Thomson, 1950*, two aspects of the work were reported. Firstly, the dietary treatment of cases of malnutrition with enlarged liver was discussed. Secondly, fat analysis in stool for the detection of steatorrhoea in such severe malnutrition cases was reported.

*See abstract number 60

62. IVAN POLUNIN

The medical natural history of Malayan aborigines

The Medical Journal of Malaya, 8(1):55–174, 1953

In this 120-page report, four aborigine groups (each consisting of about 150 subjects) were covered: I. Semai-Senoi living at low altitudes; II. Semai-Senoi living at high altitudes; III. Negritos; and IV. Orang Seletar (Orang Laut). A host of data were collected, and a section was devoted to nutritional diseases (pp. 91–97 of report) and another to thyroid enlargement (pp. 98–99) of report). In the former section, results of weights and heights measurements were first presented and discussed. Few skin characteristics suggestive of dietary deficiency were seen, except for skin which wrinkled abnormally in the underweight subjects. There was practically no clinical evidence of vitamin A or thiamine deficiencies. Signs suggestive of riboflavin or vitamin D deficiencies were also looked for and recorded. The short section on thyroid enlargement gave the incidence of goitre encountered and discussed briefly the factors influencing this disorder (studies on goitre reported fully by the author in Polunin, 1951*).

* See abstract number 308

63. M.E. KENNEDY, RAJA AZMAN and JOHAN A. CHEGU

Report of a survey of malnutrition among Malay school children in a rural area

Health Departmental Report, 1954

Publication not available.

64. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

A survey to determine the state of nutrition and the socio-economic background of Malay toddler children

Institute for Medical Research Annual Report for 1957, Kuala Lumpur, 1958; pp. 32–37

It was aimed to conduct a detailed though limited survey in an area already known to contain a high proportion of ill-nourished children, as well as a more general survey over as much of the Federation as possible to establish that toddler malnutrition was indeed widespread. The general survey consisted of a rapid examination of over 800 toddlers. The places visited were Kota Baru (Pasir Mas), Kuala Trengganu (Batu Rakit), Kuantan (Raub District), some kampongs on the Perak River near Kuala Kangsar, some rural town areas in Selangor and Malacca (Nyalas). It was reported that malnutrition varied from place to place, but in no area was it absent. Classical kwashiorkor was not always found, but “pre-kwashiorkor” was said to be common. A detailed survey was conducted near Parit on the Perak river. The results of this detailed study was reported in detail in Thomson (1960)*.

* See abstract number 68

71. INTERDEPARTMENTAL COMMITTEE ON NUTRITION FOR NATIONAL DEFENCE

Federation of Malaya nutrition survey (September–October 1962).

Interdepartmental Committee on Nutrition for National Defence Report, United States Government Printing Office, 1964; 370 p.

This 370-page report presented the results of a survey of the nutritional status of military and civilian populations, covering 8 states in the Federation of Malaya. The survey was carried out jointly by the United States and the Malayan Governments. A total of 8,172 individuals were given an abbreviated clinical examination (which included height, weight and skinfold measurements) and 1,569 of these had a detailed examination. Biochemical examinations to determine the status of various nutrients were carried out on 729 individuals. Sub-samples of the families were also selected for dietary surveys. A total of 3480 individuals had a dental examination. Results obtained were compared and discussed for the different population strata, geographical locations and races studied, and with results of ICNND surveys in other countries. An evaluation of the food and agriculture facilities in Malaya was also given.

72. JOHN NELSON CHAPPEL and EDWARD R. JANOWITZ

Health survey on a rural Malay population F.L.D.A., Sungai Tekam, Pahang

The Medical Journal of Malaya, 19(3):191–200, 1965

The health of settlers in a F.L.D.A. community in Sungai Tekam, Pahang, was studied. A total of 440 persons, representing 96% of the population in the community were examined. A clinical examination was done, heights and weights measured, urine, stool and haemoglobin were examined, and a brief dietary survey was carried out. Mean weights and heights of the population surveyed were presented. Mean haemoglobin levels were presented and discussed in relation to intestinal helminthic infestation. The major clinical findings were reported. Results from the qualitative assessment of the diets of the families studied were given and the possible nutrients lacking discussed. Based on findings from the survey, several recommendations were made so as to improve the nutritional status and health of the settlers. It was proposed that follow-up surveys should be carried out after one and five years.

73. DATIN LADY THOMSON

Interdepartmental Committee on Nutrition for National Defence Report: Federation of Malaya nutrition survey, September–October 1962. A brief review

The Medical Journal of Malaya, 19(3):231–238, 1965

The author presented her comments on some aspects of the ICNND Survey Report (ICNND, 1964)*. In most respects, the Report was said to show the same results as previous surveys by other investigators in the country. Some differences in findings were brought out. The main disagreements pointed out were related to protein, calcium and iron adequacy, the availability and intake figures for some food items. The importance of some of the findings of the Report were emphasized.

* See abstract number 71

74. J.D. KINZIE, KAREN KINZIE and JANE TYAS

A comparative health survey among two groups of Malayan aborigines

The Medical Journal of Malaya, 21(2):135–139, 1966

A description was first given of the two groups of Malayan aborigines studied, which included their way of life and the main dietaries. The groups considered were (a) the Bukit Cheeding Proto-Malays, a semi-isolated group in Selangor (103 subjects), and (b) the Negrito of Jahai Tribe, a deep jungle group, living along the Upper Perak River (60 subjects). Results of a health survey of these two groups were reported. Results presented included average weight and height, physical examination, microhematocrits, malaria and microfilariae examination and stool examination for parasitic infestations. The findings were compared for the two groups studied, who differed in location, living conditions and racial stock.

75. Y.H. CHONG, S. LOURDENADIN, P.K. THEAN, R. LIM and C.G. LOPEZ

Nutritional status during pregnancy

Far East Medical Journal, 4(7):214–219, 1968

The nutritional status of 102 Malay pregnant mothers was assessed using clinical, biochemical, haematological and dietary methods. The abbreviated clinical examination did not appear to reveal much manifestations of nutritional deficiencies. Haematological data presented included haemoglobin, packed cell volume, red blood cell count, MCV, MCH, MCHC and PBF. Over 10 biochemical indices were measured in the subjects studied. Whenever possible, follow-up studies were carried out on these women for their hematology and biochemistry to study changes in these indices with advancing pregnancy. Correlative studies were made between the various biochemical and hematological parameters. Adequacy of nutrient intake was assessed in 8 of the subjects by home visits to inquire and observe food intake. The birth weights of the babies born to some of the subjects were recorded. The discussion brought out the percent prevalence of specific nutrient deficiencies encountered in the study. It was concluded that the survey had shown that the nutritional status of the urban pregnant women from the lower income group was far from satisfactory.

76. KIM DO JUNG and CHEE CHIN SEANG

Experiences with a school health project in rural schools in Province Wellesley

Report of the School Health Seminar, 4–6th April, 1968; Published by the Joint School Health Committee of the Ministries of Health and Education, Kuala Lumpur, 1968; pp. 65–70

All 22 rural primary schools in the central district of Province Wellesley were covered by the project. A total of 6191 pupils were studied. Height, weight and chest girth of the pupils were measured, haemoglobin was estimated and stool examined for helminth ova. Results of the study were not presented, but a summary of the findings was reported. The methodology of the study was described, difficulties encountered were discussed, and suggestions for future studies were made.

77. A. BREARLEY

Serum proteins, haematocrits, heights and weights of aborigine subjects in West Malaysia

The Medical Journal of Malaya, 24:183–186, 1970

A total of 109 apparently healthy aborigines, aged 4–45 years took part in the study. Total serum proteins, serum protein electrophoresis, haematocrits, heights and weights were measured. The results were grouped into three age groups and presented in tables. The findings were compared with those from other ethnic groups in Malaysia and elsewhere and briefly discussed.

78. JEAN JACKSON

Applied nutrition, Malaysia

Assignment Report (February 1969 to March 1970) Malaysia 0055, World Health Organization Regional Office for the Western Pacific, WPR/393/70, 1970; 82 p

Results of baseline surveys in the Applied Nutrition Project pilot area at Telok Datok were presented. The surveys covered various dietary and nutritional aspects and were to be used as comparisons for future surveys to indicate the extent to which the desired improvements were achieved. The dietary survey covered 89 households (10% sample) and data on food consumption, meal patterns, and dietary habits were collected. About 500 children (50% of all children aged 3 years and below in the area) were taken for a clinical and anthropometric examination, whilst 128 of these children had their blood examined for several biochemical parameters. A total of 113 fecal specimens were also examined for helminthic infestations. A brief report was also given on the agricultural and economic aspects of the community, and the extent of utilization of existing health services. Recommendations for the improvement of the state of nutrition in the area and the nation in general were put forward.

79. DAVID A. McKAY and TORLEN L. WADE

Nutrition, environment and health in the Iban longhouse

Southeast Asian Journal of Tropical Medicine and Public Health, 1(1):68–77, 1970

Five Iban longhouses in Sarawak were selected for the study. A brief description on the physical environment of the 5 communities was first given. The patterns of living in the longhouses were discussed in relation to exposure to communicable diseases. The availability of indigenous and government medical services in the survey areas were briefly discussed. Next, the economics and customs of the Ibans were discussed in relation to nutrition. A total of 88 pre-school Iban children were subjected to a brief physical examination for signs of nutritional deficiencies. Several types of body measurements were taken from subjects of all ages in an attempt to assess their nutritional status as well as to evaluate the relative usefulness and feasibility of these methods in the longhouse situation. Results of several anthropometric measurements from pre-school children and heights and weights of adults were presented. Findings from the study suggested that marginal malnutrition may not be uncommon in the communities and that it may become moderately severe when environmental conditions were unfavourable.

80. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Nutritional assessment of school children

Institute for Medical Research Annual Report for 1970, Kuala Lumpur, 1971; pp, 98 and 100

A total of 42 girls of an upper secondary school in Kuala Lumpur were studied. Height, weight, mid-arm circumference and triceps skinfold were measured. Various biochemical parameters were also determined from blood samples collected. These girls were said to be in excellent nutritional health. The study was carried out to collect some basal values for future comparative studies.

81. DAVID A. McKAY and RUTH LIM KWONG HENG

Epidemiological nutritional assessment in rural Malaysia

Proceedings of the 6th SEAMEO-TROPED Seminar; the 1st South-east Asian Regional Seminar on Nutrition, 27–31 October 1969, Jakarta; Central Coordinating Board, SEAMEO-TROPED Project, Bangkok, 1971; pp. 91–95

Marginal or mild to moderate protein-calorie malnutrition was said to exist as a significant public health problem, especially in rural areas. The use of toddler mortality rate as an epidemiologic index of protein-calorie malnutrition was briefly discussed. The toddler mortality rates for various areas in Peninsular Malaysia were presented. The most widely used indicator of mild to moderate protein-calorie malnutrition in small children was poor growth achievement. Experiences of the authors in using weights, heights, skinfold thickness, arm circumference and other anthropometric measurements in nutrition surveys were briefly described. The assessment of age-specific mortality rates and relative growth achievement of selected populations were said to be useful and relatively simple ways of evaluating malnutrition as a public health problem.

82. Y.H. CHONG, D. A. McKAY and RUTH K.H. LIM

Some results of recent nutrition surveys in West Malaysia (with emphasis on nutritional anthropometry and biochemistry) *

Bulletin of the Public Health Society, 6:55–61, 1972

The report summarized and analysed the results of anthropometrical and biochemical assessment of the nutritional status of 1500 Malay pre-school children in various parts of West Malaysia. In these surveys, carried out between 1968 and 1969, a number of anthropometric measurements were taken, including weight, height, triceps skin-fold thickness, mid-arm, chest and head circumference. Blood and urine samples were collected and a number of biochemical tests carried out. The relative merits of each of these indicators in the assessment of nutritional status were then evaluated. The nutritional status of children from the different survey areas were compared.

* Also in: *Bulitin Keluarga*, No. 52, pp. 1, 2, 7, 1972.

83. AMIR ABBAS

Health problems of mothers and children in a rural health survey in Ulu Selangor district

Report of the National Seminar on The Role of Specialists in Promoting Family Health; 12–18 August 1973, Pulau Pinang; pp. 40–44

Results of a nutrition survey conducted in Mukim Ulu Bernam, Selangor, were reported. A total of 425 pre-school children were examined for their height and weight, and the degree of malnutrition determined. Haemoglobin levels were determined and their blood examined for malaria parasites. The children were also examined clinically for signs of vitamin deficiencies. Anthropometric measurements were also taken from 386 primary school children. Seventeen pregnant women were examined regularly and their haemoglobin levels reported. It was concluded that malnutrition existed to a varying degree in the area although it was only about ten miles from the trunk road.

84. AJIMAH HASSAN

A follow up study of children age 5–60 months treated for malnutrition in hospital

Dissertation submitted in partial fulfillment of the requirement for the Diploma in Community Nutrition, Caribbean Food and Nutrition Institute, Jamaica, 1974; 55 p.

Twenty-four children, aged 5–60 months, were chosen from paediatric ward records of the General Hospital, Johor Baru, for follow-up studies when these children had been discharged and returned to their respective homes. An attempt was made to determine the effects of hospitalization on the malnourished children and to determine to what extent improvement was maintained after discharge, or if there was any re-occurrence of malnutrition. Enquiries were also made to determine the knowledge of nutrition information gained by mothers during the period of hospitalization of their children. The homes of these children were visited and their weights taken. Information was also collected on household composition, socio-economic status, housing characteristics and sanitation, and infant and child feeding practices. Differences in weights at time of admission, discharge and follow-up were pointed out. The need to recognize protein-calorie malnutrition by hospital personnel so as to carry out effective treatment was emphasized.

85. SIEW TIN CHEN

Pneumonia and diarrhoeas: killers of toddlers in developing countries

Tropical and Geographical Medicine, 27:103–108, 1975

A total of 147 toddlers admitted to the University Hospital for pneumonia or diarrhoea were analysed with regards to their weights, socio-economic background and other characteristics. Body weight deficit analysis of the children showed that they were suffering from varying degrees of protein-calorie malnutrition although malnutrition was not listed as an important cause of toddler mortality, nor as an important cause for hospital admission. They tended to come from poorer homes and to have a larger number of siblings born in rapid succession. Infant feeding practices were said to

be unsatisfactory. The interaction of infection and malnutrition and the social implications of these diseases were emphasized. Hospitals in developing countries were urged to promote health in addition to their traditional curative role.

86. A.J.U. ANDERSON

Nutrition of Land Dayak children. Final report of a basal nutrition survey, Sarawak pilot Applied Nutrition Project with state relationships and food policy

Sarawak Medical Services, Sarawak, 1976; 70 p.

To provide baseline data for the Sarawak Pilot Applied Nutrition Project at Tebakang, First Division, 696 Land Dayak children under 9 years old, from 12 outlying kampungs were studied. Investigations carried out included several anthropometric measurements, a clinical examination for signs of nutritional deficiencies, haemoglobin, stool examination for helminth infestation, and a study into the dietary pattern and practices of the community. Other information collected included data on clinic utilization, sanitation, contraception, and hospital admissions. Remedial measures recommended were discussed in some detail. The conditions were found to be more serious than had been expected, and nothing less than vigorous and integrated actions, including numerous state policies could reverse the serious situation.

87. A.J.U. ANDERSON

Nutrition of Melanau children of the Tillian River

Sarawak Medical Services, Sarawak, 1976; 21 p.

The kampungs covered in the study included Kuala Tillian, Tillian Ilir, Tillian Tengah and Tillian Ulu. Taking part in the survey were 485 children under 9 years of age, and all of them were examined anthropometrically. A clinical examination was carried out on the 352 children under 7 years to determine the occurrence of signs of nutritional deficiencies. The incidence of anaemia (determined by haemoglobin levels) and parasitic infestation were reported. A dietary survey was also carried out on 112 mothers. The incidence of breast-feeding and bottle-feeding, and food preferences and avoidance among the mothers were studied. A brief comparison was made between the children of those villages consuming mainly sago and those employing rice as the staple. Several recommendations, which included specific and general measures, were put forward to combat the extensive malnutrition occurring in these villages.

88. A.J.U. ANDERSON

Nutrition of Iban children of the middle Mukah River

Sarawak Medical Services, Sarawak, 1976; 25 p.

In a preliminary survey, 20 longhouses on the middle and upper reaches of the Oya, Mukah and Balingian Rivers and various tributaries were visited. A total of 242 children under 7 years were examined and 158 mothers of infants and toddlers were questioned on child feeding practices. The main survey was carried out on the Mukah River, in which 562 children under 9 years were included. All the children were examined anthropometrically and those under 7 years clinically. Principal clinical signs

associated with nutritional deficiencies were reported for these 460 children. Haemoglobin and intestinal parasites were also studied. One hundred and eighteen mothers responded to a dietary inquiry, which looked into breast-feeding and bottle-feeding practices, common items in the familys' diets and the food taboos and preferences practiced by the mothers. It was reported that serious under-nutrition was very extensive. Diets by contents and frequencies were found to be inadequate for both the children and families. Various recommendations, including several specific and general measures were made.

89. N. KANDIAH and LIM JU BOO

Report on the health status of a group of traditional Malay villages in Ulu Jempol

Institute for Medical Research Bulletin Number 17, Rural Health Research Study No. 1, Kuala Lumpur, 1976; 26 p.

Results of a multidisciplinary study, involving several divisions in the Institute for Medical Research and other institutions, carried out between 1973 and 1975, in a rural Malay community in Ulu Jempol, were reported. The study aimed at assessing the health problems in that village, and determining how these problems could be related to the environmental sanitation and socio-economic status of the people. Demographic, socio-economic and environmental sanitation data were obtained from questionnaires and actual observations for 85% of the total 1213 households. An abbreviated clinical examination was carried out for 767 subjects, which included infants, pre-school and school children, and mothers. Anthropometric measurements, including height, weight, mid-arm circumference, triceps skin-fold and chest circumference, were taken for 586 pre-school and school children. Haematological investigations were also done for these children. A total of 2358 samples of stool specimens were examined for intestinal parasites. Dietary intakes of the households were also recorded. Seventy-seven samples of sera from mothers were analysed for serum vitamin A and carotene, and haematology. The report also included several recommendations to improve the standard of living and health of the community studied.

90. A.J.U. ANDERSON

Nutrition of Iban children of the Lemanak River

Sarawak Medical Services, Sarawak, 1977; 20 p.

A preliminary survey of 667 Iban school children in the Lubok Antu District revealed that most of the children were moderately or severely underweight. A larger scale study was subsequently carried out, which consisted of a number of determinations. The principal clinical signs of nutritional deficiencies among 388 children under 7 years were reported. The incidence of goitre among 505 children under 9 years was studied. Hemoglobin levels were reported for 478 children aged 6 months to 8 years. A total of 114 children, aged 1 to 8 years, were studied for parasitic infestation. Weight and height measurements, taken from 505 children under 9 years were analysed and the incidence of protein-calorie malnutrition calculated. A total of 116 mothers of the survey children were interviewed with regards to maternal and family food consumption pattern, and infant and child feeding practices. Various recommendations were

put forward to combat the prevailing serious and chronic under-nutrition in the community.

91. A.J.U. ANDERSON

Nutrition of Malay children of the Sarawak River Delta

Sarawak Medical Services, Sarawak, 1977; 12 p.

Results of a preliminary study of the weights of 1313 Malay children under 7 years from 12 coastal kampungs in the First and Second Division, Sarawak, were first briefly reported. The main study consisted of 516 Malay children under 9 years from 5 fishing kampungs. A more detailed investigation was carried out, and included anthropometric measurements, clinical examination for signs of nutritional deficiencies and examination for intestinal parasites. A dietary inquiry was also made on 96 mothers. Recommendations were made to combat the extensive undernutrition found in this community.

92. N. KANDIAH

Report on the health status of settlers in an SLDA Scheme in Ulu Rening

Institute for Medical Research Bulletin Number 18, Rural Health Research Study No. 2, Kuala Lumpur, 1977; 26 p.

This is a report of an IMR interdivisional rural health programme. Various divisions in the Institute collaborated and carried out studies in this predominantly rubber tappers community in Ulu Rening. Information was collected on population distribution, socio-economic status, as well as environmental sanitation and hygiene. Nutritional status was assessed by a combination of clinical examination, anthropometry and nutritional biochemistry. A total of 65 pre-school children, 72 school children, 49 adult females and 39 adult males were subjected to a brief clinical examination. Nutritional biochemistry of the subjects included determination of protein, vitamin A and thiamine status. Anthropometric measurements were taken only for the pre-school and school children. Other determinations carried out were parasitism, bacterial infections, immunological status, and viral antibody levels. The major health problems encountered in the community were discussed.

93. N. KANDIAH and LIM JU BOO

Nutritional status in a rural estate community

The Medical Journal of Malaysia, 31(4):270–276, 1977

The nutritional status of 518 subjects (representing 46.6% of the total population) in an Indian rubber estate community in Selangor was studied. The subjects, including 65 pre-school children and infants, 251 school children, 86 adult males and 116 adult females, were studied by anthropometry, clinical examination; vitamin A and thiamine status, haemoglobin and stool parasites were also determined. Biochemical data were presented and discussed in relation to clinical findings for specific nutrient deficiencies. A brief discussion on the feeding habits of infants, housing conditions and family planning practices were also given.

94. KHOO THEAM ENG

Some aspects of the nutritional status of Temiars in Kemar

Dissertation submitted to the University of Malaya as partial fulfilment for the degree of Master of Public Health, 1977; 138 p.

The study was carried out on the Temiars, a tribal/linguistic sub-group of the Senois, the largest of the Orang Asli or aborigines of Peninsular Malaysia. The studied population was Temiar settled in Fort Kemar in the Ulu Perak district of Perak. Nutritional status of the subjects were determined by a clinical examination (on 73 children below 5 years) and anthropometry measurements (on 72 children below 5 years). A simple study of anaemia (using determination of haemoglobin and haematocrit) was also carried out on 442 subjects in the community. Household food consumption pattern and its socio-economic and socio-cultural determinants was studied on a sample of 39 households. The author and study team were air-lifted (the only accessible way) into the study area. Results obtained were presented in detail and discussed. Recommendations for improving the nutritional status of these aborigines were discussed. Problems encountered during the study were pointed out.

95. QUAH SEK LEONG

Nutritional adequacy of the present normal armed forces ration scale

Defence Research Centre Technocal Report No. 10, Ministry of Defence, Malaysia; Kuala Lumpur, 1977; 16 p.

The nutrient content of the current normal armed forces ration scale (NAFRS) (1967–1977 ration scale) was calculated from food composition tables and compared with the scale used for the 1961–1964 period. Calorific value of the former scale was said to be higher, but it was lower in some vitamins. Weight measurements of 5570 armed forces personnel, obtained by Khoo et al in 1973 (Khoo et al, 1976*) were presented and compared with similar data reported in the ICNND Survey of 1962*. It was obtained that present day armed forces personnel were heavier than those of yesteryears. Quatelet index calculations (W/H^2) also showed that in the present military population there was a definite tendency to be obese with growing age. A new NAFRS was proposed, with adjusted nutrient intakes. It was also suggested that a more comprehensive study be carried out to assess the nutritional status of the present servicemen.

* See abstracts number 71, 125 and 126

96. A.J.U. ANDERSON

Nutrition of Iban children of the Sut and Mujong Rivers

Sarawak Medical Services, Sarawak, 1978; 19 p.

Longhouses on the banks of the Sut and Mujong Rivers were visited. Twenty-two such houses, with 3144 residents, were covered in the course of the visits. A total of 502 children under 9 years were taken for an abbreviated clinical examination, determination of haemoglobin level, several anthropometric measurements and determination of intestinal parasites. Data on infant feeding practices, the common items in the diets of the children and families, and maternal food avoidances and preferences were also

collected. It was said that the populace studied showed the same pattern of chronic under-nutrition that affected the other Iban groups and Melanau, Land Dayak and Malay communities previously studied. Various remedial measures, ranging from increased production of food to family planning were discussed.

97. A.J.U. ANDERSON

Subsistence of the Penan in the Mulu area of Sarawak

Sarawak Medical Services, Sarawak, 1978; 24 p.

The study aimed at assessing the nutritional status and means of subsistence of both settled and nomadic Penans in the Gunong Mulu region of Sarawak. A total of 338 subjects of all ages were included in the study. Clinical and anthropometric examinations were performed, blood samples were taken for haemoglobin and malaria parasites and stools for intestinal parasites determinations. Child feeding histories and maternal food avoidances and preferences were recorded for 52 mothers. Food consumption was determined by weighing for 38 households and intake compared with requirements.

98. A.J.U. ANDERSON

Malnutrition among Sarawak children from four communities (a summary of findings from recent nutrition surveys)

Sarawak Medical Services, Sarawak, 1978; 6 p.

A summary of the results of surveys of four communities in Sarawak were presented. The groups concerned were Melanau of the Tillian River and Ibans of the Middle Mukah River, Land Dayaks of the Tebakang Pilot Applied Nutrition Project Area, and Malays of the Sarawak River Delta. Results of various anthropometric measurements for 2259 children, birth weights of 1153 infants, haemoglobin levels of 2186 children and stool examination for intestinal parasites for 485 children were reported. Clinical signs for vitamin A and B deficiency for 1725 children were presented. Feeding methods for 489 children under 3 years old were briefly described. It was concluded that every parameter (with the exception of birth weight) used had demonstrated serious levels of undernutrition among the communities. Remedial measures were suggested.

99. CHAN CHEE KHOON

Comparative studies of health and nutritional status of padi cultivators and rubber smallholders in Peninsular Malaysia

Thesis, submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science, Massachusetts Institute of Technology, 1978; 85 p.

The study aimed to investigate comparatively the food intake, health and nutritional status of a padi-farming or food producing community and a rubber smallholding or non-food producing agricultural community. Household interviews were conducted at the fringe of the Muda Irrigation Scheme area in Kedah. Information on the socio-economic background of 43 households (21 padi and 22 rubber households) were

collected. Dietary information, collected from 14 of the padi households and 18 of the rubber households, consisted of a 24-hour recall of household consumption of major food items and a recall of frequency of consumption of major food items. Various anthropometric measurements were also taken from the family members. Results obtained were said to show the socio-economic differences among the padi, rubber and mixed households quite clearly. Such differences were manifested in significant differences in various anthropometric indices. The results were discussed with reference to the transformation of a community with a subsistence/exchange economy into non-food cash-crop production, which is often accompanied by an increasing reliance on the market for commodity disposal and food supply, over which the cash-crop producer may have little control.

100. CHEN SIEW TIN

Physical health in relation to rural-urban migration

Bulletin of the Public Health Society, 12:22–28, 1978

An attempt was made to identify some of the physical health problems encountered by the urban poor children. Records of 811 children (aged 1–4 years) admitted to the University Hospital in 1971 were analysed. Many of these children were admitted for diarrhoeas and pneumonia, and were found to be suffering from varying degrees of protein-calorie malnutrition. The socio-economic background of these children were examined, including income of the household, family size, birth intervals, pattern of infant feeding, immunization status and presence of anaemia. Data from a study of school children in Petaling Jaya in 1972 were also analysed. Many of them were recent migrants to the city. Percentage prevalence of protein-calorie malnutrition in these children was reported. Source of drinking water supply, excreta disposal method and immunization status among these children were examined. It was concluded that the urban poor children with poor housing and environmental sanitation, large family size and poor diets suffered from malnutrition and infestations and frequent infections which further aggravated the malnutrition.

NUTRITION SURVEYS:—

ANTHROPOMETRY

101. C.H. WILLIAMS

The health of Indian estate school children. An investigation into the growth and nutrition of Indian estate school children in the Districts of Batang Padang and Lower Perak, State of Perak, Federated Malay States

The Malayan Medical Journal, 9:154–160, 1934

Height and weight data were collected from 1503 Indian school children, aged between 4 to 14 years, from some 45 different estates in Perak. The mean heights, weights and ages obtained were tabulated. Height and weight data were presented for each age group and compared with that given by English, Malay and Chinese children.

The Nutritional Quotient of the children studied was calculated to give an indication of their nutritional status.

102. C.H. WILLIAMS

A short note on the average weights and heights of Malay school children in the state of Negri Sembilan, F.M.S.

Journal of the Malaya Branch, British Medical Association, 1(4):350–354, 1938

Height, weight and age data for 5,217 Malay school children, between 7 to 14 years were analysed. The average height and weight were presented for different age groups. The growth rates (increase in heights and weights) between ages were also computed. The obtained results were compared with that reported by other investigators for other parts of the country.

103. A. NEAVE KINGSBURY and PAUL FASAL

A nutritional survey of the Federated Malay States. II. Heights and weights for young Tamils under plantation conditions

Institute for Medical Research, Federated Malay States, Bulletin No. 2, Kuala Lumpur, 1940; 7 p.

Over 3,600 Tamil children and young adults (aged 5 to 18 years), living on 37 rubber estates in Perak, Selangor and Negri Sembilan were measured for their heights and weights, sitting heights, circumference and expansion of chest, circumference of abdomen and circumference of arm before and after the contraction of the biceps muscle. It was felt that height and weight measurements were sufficient indices for the assessment of nutritional status. Height: weight tables were constructed by averaging the weights of individuals falling into the various height groups; measurements for the sexes were separately treated and presented. In the tables were also included columns showing for each height groups, weights that were 5% above, and 5, 10 and 15% below the average weight measured; the "above average weight by 5%" series was to be regarded as the goal to be achieved. The difficulty of obtaining accurate ages of the subjects was mentioned and as a basis for age grouping, the presence or absence of the molar teeth was noted. It was suggested that the preliminary tables presented could be of practical utility in the assessment of nutritional status.

104. BARCLAY BARROWMAN

Some heights and weights records of young Tamils under plantation conditions

Journal of the Malaya Branch, British Medical Association, 5(1):51–54, 1941

A total of 618 Tamil children, aged between 3 to 18 years, were examined. Weight and age data were tabulated for the various height groupings and compared with that given by Kingsbury and Fasal (1940)*. Weight and height data were also tabulated according to the different age groupings and compared with that reported for a group of American children. Besides the obvious importance of nutrition on the physique of plantation workers, it was felt that it was of even greater importance to ensure a

* See abstract number 103

settled life in congenial surroundings with well planned housing and the pushing of the control of disease, especially of malaria, to its maximum.

105. T. WILSON and CHANG HOEY CHAN

Report on medical examination of Malaysian school boys in Lower Perak (with special reference to heights and weights)

Journal of the Malaya Branch, British Medical Association, 4(4):330–351, 1941.

In a study of 2,388 boys, aged 6 to 16 years, who were attending 25 Malay vernacular schools, a physical examination was carried out and heights and weights recorded. Signs of deficiency diseases were particularly noted. A qualitative estimation was made of the dietary of these majority rural people. Height and weight data collected were presented and compared, by means of graphs, with that for American boys and those collected by Vickers and Strahan (1936)* for Kedah children. The differences obtained were discussed. The usefulness of presenting the correlations between age and height, age and weight, and weight and height was emphasized.

* See abstract number 54

106. G.R. WADSWORTH and T.S. LEE

The height, weight and skinfold thickness of Muar school children

Journal of Tropical Pediatrics, 6:48–54, 1960

Children from 6 schools in Muar were measured for their height, weight and skinfold thickness. The children, totalling 470, were from the lower income group, and of the Chinese and Malay race. Individual results were shown for height and weight in scatter diagrams, mean values were presented in tables; data for boys and girls were separately treated. Mean height and weight for age curves were also presented together with a similar curve of London children. Skinfold thickness was measured and presented for 6 sites on the child's body; true fat thickness was then calculated. Results obtained in the study were discussed in relation to the effect of the quantity and quality of diet on growth.

107. Z.N. KADRI

Heights and weights, arterial blood pressures and visual acuity of Malayan University students

The Medical Journal of Malaya, 16(2):115–124, 1961

A total of 1,898 students attending the University of Malaya from 1952–1959 were studied. Heights and weights were measured and the average values obtained for each race were presented. Differences obtained for the races were discussed. Tables showing the relation between heights and weights of the students were also given. The study also measured the blood pressure and visual acuity of these students.

108. FLORENCE A. THOMSON

The weight of pre-school children in the Federation of Malaya

The Medical Journal of Malaya, 15(3):160–165, 1961

A total of 14,604 weight measurements were taken from records of pre-school children attending a maternal and child health centre in Perak. The data included those from boys and girls (of approximately equal numbers) and consisted of all the three major ethnic groups (although predominantly Chinese). Weight for age curves were presented separately for the two sexes. A comparison for the three races was made. The data collected in this study was also compared with a series of English and Singapore children of similar age groups. It was proposed that the figures presented could provide a working standard for the weights of pre-school children in the Federation of Malaya.

109. FLORENCE A. THOMSON

The birth weight of babies in the Federation of Malaya. Effect of race and of economic change

The Journal of Tropical Pediatrics, 8:3–9, 1962

Birth records for the years 1953–1959 were studied at two hospitals in Kuala Lumpur and one at Ipoh. All the three major ethnic groups were included, and the total number in the study was 9044 full term live births. The figures were studied for differences in race, sex and hospital in three ways: 1. by an analysis of the overall means for the entire period under review, 2. by an examination of the annual mean figures, and 3. by consideration of the means for the final year (1959) of the period. Tables and graphs were presented and some aspects of the results highlighted. Explanations were offered for the similarities and differences between races, hospitals and year. From the results obtained, it was suggested that nutrition played an important part in increase of birth weight although other factors were also in operation.

110. A.E. DUGDALE

The weights of Malaysian infants up to one year

The Medical Journal of Malaya, 23(4):244–246, 1969

Data from a retrospective study of 923 infants who attended the infant welfare clinics in Kuala Lumpur, between 1962 and 1965 were presented and discussed. The weights of the infants, of all ethnic groups, were extracted from records in the clinics. Percentile growth chart for the infants was then plotted. The data presented were primarily to provide normal growth curves for infants in Malaysia up to one year of age. The discussion brought out the uses and short-comings of the study. It was felt that the growth curves presented could be taken to represent growth of infants who attended clinics in Kuala Lumpur and possibly elsewhere in Malaysia. The main set-back of the data was that it was not possible to ascertain if the infants used in the drawing up of this normal growth chart were “normal”, since full physical examination and history was not obtainable. The growth curves were also compared to that obtained for a group of American children.

111. DAVID A. McKAY

The arm circumference as a public health index of protein-calorie malnutrition of early childhood. (X) Experience with the mid-arm circumference as a nutritional indicator in field surveys in Malaysia

Journal of Tropical Paediatrics, 15:213–216, 1969

A mid-arm circumference versus age curve was presented for 5 groups of infants and toddlers from various areas in Malaysia: (1) 250 Malay children from Ulu Trengganu, (2) 69 Iban children in Sarawak, (3) Army children, 654 in number, (4) 141 Malay children in Ulu Selangor, and (5) 34 Malay children in Kuala Lumpur. Data from the Ulu Trengganu children were used for a study of the correlation between mid-arm circumference-for-age and other parameters: weight, length, mid-arm muscle circumference and triceps skinfold-for-age. It was obtained that the mid-arm circumference-for-age correlated well with weight-for-age. The author was of the opinion that the mid-arm circumference, simple to measure, relatively age-independent and correlated with other more complex measurements, may be a useful indicator of nutritional status in pre-school children.

112. POH-CHIEW TAN and CHEONG-LIM WONG

Heights and weights of a sample of Malaysian children

The Medical Journal of Malaya, 24(1):12–17, 1969

Weight for age and height for age curves were presented for 1126 primary school boys in Batu Gajah. Data for the 3 major ethnic groups were separately presented and compared. A height-weight-age curve was also presented. In this curve, figures for a series of American children and another from a study carried out in Muar were presented and compared with those obtained from this study. An appendix was included describing the method of preparation of such a height-weight-age relationship curve.

113. S.T. CHEN and A.E. DUGDALE

Weight and height curves for Malaysian schoolchildren

The Medical Journal of Malaya, 25(2):99–101, 1970

Weight and height measurements were obtained for 709 boys and 550 girls, of all ethnic groups, aged 6 to 12 years, from schools in Kuala Lumpur and Petaling Jaya. The study aimed at giving standards for weight and height of this privileged group of school children. Percentile charts of weight and height of the children studied were presented. When compared with those of a group of American children, it was obtained that the group of Malaysian children studied were smaller and lighter for age.

114. A.E. DUGDALE, S.T. CHEN and C. HEWITT

Patterns of growth and nutrition in childhood

The American Journal of Clinical Nutrition, 23(10):1280–1287, 1970

An attempt was made to demonstrate that associations between various anthropometric measurements exist and that such measurements may be used to estimate nutritional status. Data from 3 groups of children were used, namely a group of 677 army children, 103 school children and 65 children in Perth. It was found that bony growth and muscle growth were correlated, whereas subcutaneous fat varied independently. Explanations for the findings were given. It was felt that the state of nutrition estimated from these measurements had agreed well with the assessment of family nutrition derived from the history of food intake and examination of family resources.

115. RUTH LIM

A report on anthropometric measurements of pre-school children in Telok Datok, Kuala Langat

Division of Nutrition, Institute for Medical Research, Kuala Lumpur, 1970; 20 p. (mimeographed)

The study was carried out in the pilot Applied Nutrition Programme implementation area of Telok Datok. The anthropometric measurements were part of a large scale survey, consisting of a socio-economic survey, dietary study, and a clinical and biochemical investigation. A total of 511 pre-school children were taken for measurement of weight, height, head and chest circumference, mid-arm circumference and tricep skinfold. Results obtained were presented in graphs and the values compared with that for pre-school children from other areas in the country. Malnutrition scores for some of the parameters obtained were calculated.

116. DAVID A. MCKAY

Anthropometry in action. (V) Age assessment by indigenous calendar and recalled birth intervals in village anthropometric studies

Journal of Tropical Paediatrics, 16:24–27, 1970

The major difficulty in using anthropometric measurements for assessing nutritional status in developing areas is in obtaining an accurate estimate of a child's age. The author described the limitations of some methods for the assessment of age from experiences in Malaysian villages. A system was described that was said to enable ages of toddlers to be estimated to within 0.1 year. The method proposed was by using an indigenous reference calendar and a matrix of re-called intervals between births of children in the village. The use of the method in Malay villages in Trengganu and in Iban longhouses in Sarawak was described. Limitations of the method were also mentioned.

117. A.E. DUGDALE

An age-independent anthropometric index of nutritional status

The American Journal of Clinical Nutrition, 24:174–176, 1971

Anthropometric data from 700 Malaysian army children were used for the calculation of a nutritional index. For children between the ages of one and 5 years, the ratio $\text{weight/height}^{1.6}$ was found to be independent of age but correlated with the nutritional status. This ratio was proposed to be used as a nutritional index when the age of the child was not accurately known. A nomogram for the calculation of the nutritional index was presented. The levels of the nutritional index that could be used for the detection of malnutrition and obesity were proposed.

118. D.A. McKAY, R.K.H. LIM, K.H. NOTANEY and A.E. DUGDALE

Nutritional assessment by comparative growth achievement in Malay children below school age

Bulletin of the World Health Organization, 45:233–242, 1971

A battery of anthropometric measurements were taken from three groups of Malay pre-school children living under diverse environmental conditions. They were: (a) 600 children of Malaysian army personnel, (b) village children from Ulu Trengganu, numbering 230, and (c) 40 children from a group of urban elite in Kuala Lumpur. Data collected and reported included height, weight, mid-arm circumference, mid-arm muscle circumference, triceps skinfold, subscapular skinfold, head and chest circumference, crown-rump and parental heights. There was also a brief anaemia and parasite measurement. Results obtained for the three groups were compared. Growth achievement was discussed in relation to genetic and environmental factors. The usefulness of the indicators studied in the assessment of nutritional status were compared and discussed.

119. T.A. SINNATHURAY and W.P. WONG

The pattern of physiological changes in pregnancy in Malaysian women

The Medical Journal of Malaya, 25(3):182–186, 1971

The present study, said to be part of an extensive project, dealt with the pattern of weight changes in 300 normal pregnant women at the University Hospital, Kuala Lumpur. The ethnic pattern, maternal age pattern and parity pattern of the subjects were presented. The weight gain pattern during the 20th week to the 40th week of pregnancy was reported. The results obtained were compared with that obtained by investigators in various countries.

120. A.E. DUGDALE

For best results, make and use your own growth charts

Clinical Pediatrics, 11(4):191–193, 1972

The author wrote on the construction of the best “normal” growth curves for routine use. Arguments were put forward for the construction of growth charts, specifically

weight charts, of the local population, including "the sick, the halt and the lame, as well as the healthy". Two assumptions were presented: (1) that the curative medical services in developing countries cannot cope with the load of diseases and there must be a method of determining the priority (or ranking) for treatment; (2) that growth achievement, particularly weight, is a reliable method of estimating the health and nutrition of a child, and hence one of the methods for such a ranking. It was felt that the usual growth charts, which were based on the growth achievement of privileged groups, were inappropriate for routine use. It was suggested that growth charts should be constructed for the local population, and include data from those who were obviously malnourished and ill.

121. A.E. DUGDALE, D.A. McKAY, R.K.H. LIM and K.H. NOTANEY

Growth charts based on measurements of Malay pre-schoolchildren

The Medical Journal of Malaysia, 27(2):85–88, 1972

A total of 660 Malay children below school age, from families in the Malaysian army, were measured for their weight, length, head circumference, triceps skinfold thickness and mid-arm circumference. The values for these parameters at the 90th, 50th and 10th percentiles were determined and the various growth charts presented. The usefulness of each of these parameters for routine nutritional assessment was discussed. It was suggested that a child's measurement could be plotted on these charts as a practical aid to assessing growth and health of that child.

122. PATRICIA ROBSON, J.M. BOLTON and A.E. DUGDALE

The Nutrition of Malaysian aboriginal children

The American Journal of Clinical Nutrition, 26:95–100, 1973

Simple anthropometric measurements, consisting of weight, height and triceps skinfold thickness, were taken from aborigine children, aged 5 to 10 years old. A total of 75 deep jungle *Orang Asli* children and 86 from the lowland were studied. The ratio percent of weight age to height age (WA/HA %) and data for triceps skin-fold thickness were presented. The data were compared to a group of urban children attending schools in Petaling Jaya. From data collected, it was concluded that malnutrition was not a greater problem among the *Orang Asli* children than among the town dwelling children. The discussion pointed out the potential dangers to the health and nutrition of the *Orang Asli*, should they move out of their original jungle habitat and settle in the more accessible rural areas.

123. Y.H. CHONG and RUTH K.H. LIM

The prevalence of malnutrition amongst Malay pre-school children – comparative assessment by anthropometric indicators *

Environmental Child Health, 21(1):19–22, 1975

The paper aimed at collating all the weight and height data for Malay pre-school children, collected by the authors and also those obtained in collaboration with other investigators. Weight for age, weight for height and height for age data from five

surveys, carried out between 1969 and 1972 were considered. Various standards or criteria were used to determine percentage prevalence of malnutrition in each of the survey areas. It was proposed that weight and height measurements in future nutritional surveys be treated as follows to obtain maximum amount of useful information:

1. 70% Harvard Standard for weight for age or the 10th percentile of the army children, as reported by Dugdale (1972)[†], be used as cut-off points for the prediction of prevalence of malnutrition;
2. children with less than 80% of the Harvard Standard for weight for height be considered as a measure of current acute malnutrition (wasting);
3. less than 85% of the Harvard Standard for height for age be used to indicate "stunting" due to a past history of chronic malnutrition.

* Presented by Chong, Y.H. at: "South-East Asia Addresses Its Health Problems; Current Research and Educational Activities", October 28th – November 1st, 1974, Bangkok.

† See abstract number 120

124. S.T. CHEN

Comparative growth of Malay, Chinese and Indian school children in Malaysia

Southeast Asian Journal of Tropical Medicine and Public Health, 7(3):443–451, 1976

A comparison of the growth achievement of the Malay, Chinese and Indian primary school children around Kuala Lumpur was reported. A total of 3,312 children, aged 6 to 11 years were measured for their weight, height, triceps skinfold thickness, arm circumference and head circumference (only first two parameters reported). Weight for age and height for age curves of the children were said to be lower than that for Boston children. It was obtained that the Chinese children on the whole were taller and heavier than the Malay and Indian children, the Indians being the least heavy. This was said to correlate well with the income levels of the three ethnic groups. It was also reported that growth achievement of the higher income group children was better than that of the poorer children, irrespective of their ethnic group. It was thought that the differences in growth achievement of the various ethnic groups were due to environmental differences rather than genetic differences.

125. KHOO EWE PHUNG, WILLIAM J. DITTO and ABDUL HAMID

Anthropometric survey of the Malaysian Armed Forces

Defence Research Centre, Ministry of Defence Malaysia, Technical Report 3, Volume 1, Kuala Lumpur, 1976; 100 p.

About 6000 men of the Malaysian Armed Forces were measured, comprising of 4700 in Peninsular Malaysia and 1300 in Sabah and Sarawak. A total of 56 measurements were taken, which ranged from simple weight and height measurements to such detailed measurements as interpupillary distances. Methods for obtaining these measurements were described with the aid of diagrams. Percentile values for all 56 measurements were presented in detail. It was felt that results obtained from this study of body measurements could be utilized to solve practical problems such as

clothing designs and sizes, shoe shapes and sizes, weapon or vehicle dimensions, load-carrying equipment sizes and weight, and so on.

126. KHOO EWE PHUNG, WILLIAM J. DITTO and ABDUL HAMID

Anthropometric survey of the Malaysian Armed Forces

Defence Research Centre, Ministry of Defence Malaysia, Technical Report 3, Volume 2, Kuala Lumpur, 1976; 94 p.

This publication contained all the raw data collected in the study of Khoo et al (1976)*, presented here as computer print outs. It was intended to assist investigators who wishes to obtain further analyses from the raw data.

* See abstract number 125

127. S.T. CHEN

Prevalence of protein-calorie malnutrition in a group of Malaysian school children

The Medical Journal of Malaysia, 31(4):266–269, 1977

Data obtained from a study of five primary schools in Petaling Jaya and Kuala Lumpur were analysed and discussed. Altogether 2,340 children, aged 6 to 9.9 years were considered. This represented part of the data reported in Chen(1976)*. Whereas only height and weight for age curves were presented in the previous report, the present publication also considered the weight for height achievements of the children. The incidence of deficits in weight for age (under-weight), height for age (stunting) and weight for height (wasting) was reported. It was obtained that most of the children were nutritional dwarfs, who had suffered from protein calorie malnutrition during the pre-school age period. Results were discussed for the different ethnic groups, and in relation to family income and sibling size.

* See abstract number 124

128. S.T. CHEN

Longitudinal study on physical growth of primary school children in Malaysia

The Medical Journal of Malaysia, 32:17–21, 1977

Data from a longitudinal growth study of school children in four schools in Petaling Jaya were presented. A total of 686 children, aged 6 to 12 years, of all ethnic groups were followed from 1969 to 1975. Their height, weight, triceps skinfold thickness, mid-arm circumference were measured yearly (only the first two parameters reported). The weight and height values at the 3rd, 10th, 25th, 50th, 75th and 90th percentiles of the various age groups were obtained and the curves presented. It was proposed that in Malaysia, children whose measurements (weight and height) were below the 10th percentile should be considered at risk of significant malnutrition or growth retardation. Values plotted between the 10th and 50th percentiles indicated "below average growth" and children consistently in intermediate range may be in a state of marginal malnutrition or have suffered from malnutrition in the past. It was suggested

that the charts presented may be useful for the identification of children at risk of significant malnutrition and for the institution of appropriate treatment.

129. LEKHRAJ RAMPAL

Nutritional status of primary school children: A comparative rural and urban study 1976

The Medical Journal of Malaysia, 32(1):6–16, 1977

A total of 5,360 primary school children, from the three major ethnic groups, drawn from both the rural and urban areas, were studied for their weights and heights. Weight for age and height for age curves for the different ethnic groups were compared. Children from the urban and rural areas were separately presented and compared for their weight for age and height for age achievements. The assessment of nutritional status of the children was based on three methods:

1. determining the percentage prevalence of protein-calorie malnutrition based on deficit weight for age, classed according to the suggestions of the Wellcome Trust Working Party;
2. determining the prevalence of children with "stunting", based on deficit height for age; and
3. determining the prevalence of children with "wasting", based on deficit weight for height.

The results obtained were tabulated and discussed.

130. ROZIA HANIS HUSSEIN

Birthweights-recent data and use in nutritional surveillance

Abstracts of Institute for Medical Research Scientific Meetings, 1978

Out of a total of 12,290 births recorded for 1973 in the Kuala Lumpur Maternity Hospital, a sample of 3,735 (30.4%) was taken for study. Racial composition and mean birthweights for the various races were analysed. The results were briefly reported.

131. R.K.H. LIM and L.C. FOO

Nutritional assessment of an underserved urban community

Proceedings of the Institute for Medical Research Scientific Meetings, 1978

A study of 421 children in an urban underserved community at 2½ mile Jalan Cheras, Kuala Lumpur, was reported. Height-for-age, weight-for-age and weight-for-height achievements of the children were determined and the extent of malnutrition encountered was given. Considering the poor nutritional status of the children, supplementary food (Kaset Infant Food) was distributed to them. A report of the distribution of this food is given in Lim, R.K.H. (1979)*.

* See abstract number 526

65. FLORENCE A. THOMSON

The nutritional state of the toddler in some Malay kampongs, with special reference to diet and way of life.

The Indian Journal of Child Health, 7:749–757, 1958

Demographic data, socio-economic status and the nutritional status of a remote rural district along the Perak River were presented. There was a preponderance of children under 15 years, particularly the toddlers. There had been an exodus of young adult men from the district, a typical rural problem. Data on household cash earnings were presented, and against this background of poverty, the diet of the people was said to be inadequate. Incidence of kwashiorkor and pre-kwashiorkor among the 200 toddlers examined, clinical signs encountered, and serum protein fractions, were reported.

66. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Nutrition surveys

Institute for Medical Research Annual Report for 1959, Kuala Lumpur, 1960; pp. 21–24

The report presented briefly the results of four separate surveys. Firstly, visits were made to government maternal and child health centres around Kuala Lumpur. A total of 300 children were examined clinically for signs of protein and vitamin A deficiency. Visits were also made to Welfare clinics of the Federation Armed Forces, where 50 children were given a brief clinical examination. The third visit described was that of Pulau Ketam (off the Selangor coast). Thirty-one Chinese children (between the ages of one and six years) were examined for signs of nutritional deficiency. The diets of these children were briefly reported. Lastly, results of a detailed study of the diet of a toddler in a poor home in Kampong Baru, Kuala Lumpur, was reported. Nutrient intake of the toddler, a 2½ year old girl, suffering from severe kwashiorkor, was presented and compared with recommended allowances.

67. H.A.P.C. OOMEN

An assessment of toddler malnutrition in Malay communities

Malaya 12, Report of the World Health Organization, Regional Office for the Western Pacific, Manila, 1960; 36 p.

A detail clinical survey, aimed at determining the extent and causes of protein malnutrition amongst Malay toddlers, was carried out in several villages in Kelantan, Perak, Trengganu, Malacca and Negri Sembilan. Weight and height measurements were also taken. A total of 2007 toddlers were examined in the study. Many of these children showed isolated symptoms of kwashiorkor, but none presented with oedema. Only two of them could be called marasmic. A discussion was also given to interference with nutrition by secondary agents such as malaria, infectious diseases, and vitamin A deficiency. Some activities to improve the nutrition of toddlers in the country were recommended.

68. FLORENCE A. THOMSON

Child nutrition. A survey in the Parit district of Perak, Federation of Malaya

Institute for Medical Research Bulletin Number 10, Kuala Lumpur, 1960; 73 p.

The results of a survey on the state of nutrition and the socio-economic background of Malay toddlers were presented in this 73-page report. A total of 200 households were studied and one toddler from each household was chosen for special examinations. The report began by giving an account of the geography, climate, population characteristics, housing, water supply, property ownership, occupations and earnings of the survey areas. Results of the dietary survey were presented and nutrient intake per capita was compared with recommended allowances. A part of the report was devoted to a discussion on the mothers and fathers of the children in the study areas. Weight measurements and clinical findings of toddlers were presented and discussed. From data obtained in the survey, it was concluded that the toddlers' health status was far from satisfactory; "in nearly every home, he is liable to suffer from protein starvation, be his family a well off or a poor one".

69. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Examination of school children

Institute for Medical Research Annual Report for 1960, Kuala Lumpur 1961; p. 27

Five schools in a rural district in Selangor were examined. A total of 405 children in these schools were studied, which included 193 Malays and 212 Indians. All children were weighed and measured, examined clinically and asked for a brief dietary history. Blood films for malaria parasites were collected, as well as blood for haemoglobin examination. Stool for helminths were collected. Results obtained were briefly reported.

70. N.M. IDAIKKADAR

A note on undernourishment in Malaya

The Journal of the Royal Statistical Society, Series A (General), 127(1):108–110, 1964

An estimate of the degree of undernourishment in the country was made, based on data collected in the Household Budget Survey of the Federation of Malaya in 1957–1958. Data on per caput calorie consumption from the survey were used to establish a level of undernourishment in the country, based on the procedure suggested by Sukhatme (1961)*. The percentage of the households that had a calorie intake below this level was taken to be the percentage of the population undernourished in Malaya.

* Sukhatme, P.V. (1961). The World's Hunger and Future Needs in Food Supplies. *Journal of the Royal Statistical Society, Series A (General)*, 124:463–525.

132. L.C. FOO and R. HANIS HUSSEIN

Nutritional anthropometry of urban kindergarten children

Division of Nutrition, Institute for Medical Research Annual Report for 1978, Kuala Lumpur, 1979; p 85

A total of 1,138 children from kindergartens in and around Kuala Lumpur and Petaling Jaya have been measured for their weight, height, mid-arm circumference and skinfold thickness (triceps and sub-scapular). Preliminary results (this is an on-going study) indicate that the mean weight-for-age achievements of these children originating from the middle income groups fall between 90–95% of the much used Boston and Iowa Standards, i.e. the 50th percentiles.

133. L.C. FOO and R. HANIS HUSSEIN

Nutritional status of children attending the children's library

Division of Nutrition, Institute for Medical Research Annual Report for 1978, Kuala Lumpur, 1979; p. 86

Two hundred and twenty-three children whose age ranged from 4 to 12 years from low income families were measured for their weight, height, mid-arm circumference and skinfold thickness. Weight and height achievements of these children were briefly reported. Some of the children were found to be moderately and severely mal-nourished and could benefit from some form of supplementary feeding.

NUTRITION SURVEYS:

BIOCHEMICAL

134. F.E. BYRON

The calcium and phosphorus content of the blood and the creatinine coefficient of the urine of some inhabitants of Malaya

Institute for Medical Research, Federated Malay States, Bulletin No. 4, Kuala Lumpur, 1930; 4 p.

A large number of cases of tropical ulcers had been treated in hospitals in the country. It was thought that these ulcers were due primarily to deficiencies in the diet. The calcium and phosphorus content of the blood of these patients and their urinary excretion of creatinine were determined. The importance of these determinations were briefly discussed.

135. DIVISION OF BIOCHEMISTRY, INSTITUTE FOR MEDICAL RESEARCH

Liver damage of nutritional origin

Institute for Medical Research Annual Report for 1952, Kuala Lumpur, 1953; pp. 22–26

Experiments were carried out to study the development of hepatic necrosis and fibrosis and subsequent generalised cirrhosis of the liver in rats fed a diet rich in carbo-

hydrates and low in proteins. It was felt that studies of this nature could aid in understanding the development of hepatic injury in infants and children whose general dietary pattern was one high in carbohydrate and low in protein. A study was carried out to determine the effect of feeding rats with a diet which approximated the diet of a poor Chinese. Parallel experiments were carried out where the diet was supplemented with legumes or fish. Unfortunately, on examining the livers of these rats after 6 months, it was not possible to demonstrate any difference in their livers (results of the experiments were reported in Institute for Medical Research Annual Report for 1953 and 1954).

136. G.R. WADSWORTH and T.S. LEE

Estimation of haemoglobin concentration in the tropics by means of oxyhaemoglobin solutions

Medical Journal of Malaya, 10(1):87–91, 1955

The study aimed at determining if the measurement of haemoglobin concentration from the light transmission of oxyhaemoglobin solutions could be satisfactorily carried out under tropical conditions of high environmental temperatures, strong light and high humidity. Results obtained by the method were comparable to those obtained from oxygen-combining capacity of blood. Reproducibility and precision of the method, and the effect of storing blood samples and the effect of storing oxyhaemoglobin solutions on haemoglobin values were also studied.

137. ELIZABETH B. CHEEK and SOH CHIN CHAI

Report on the effect of the consumption of enriched rice on the haemoglobin levels of South Indian labourers employed on rubber estates in Selangor

Institute for Medical Research, Report No. 51, Kuala Lumpur, 1956

Publication not available.

138. DIVISION OF BIOCHEMISTRY, INSTITUTE FOR MEDICAL RESEARCH

Protein malnutrition and hair cystine

Institute for Medical Research Annual Report for 1958, Kuala Lumpur, 1959; pp 48–49

It had been reported that the dyspigmentation of the hair in kwashiorkor, termed “dyschromatrichia” or “hypochromatrichia”, was accompanied by a low hair cystine content. It was thus felt that cystine content of hair could be used as a biochemical parameter for the diagnosis of kwashiorkor. Thirty-seven samples of hair from children were analysed for their cystine content to establish an “average” figure for Malayan toddlers. Details of the method used were given. In the Institute for Medical Research Annual Report for 1959, further results of the study were reported. Analyses were carried out for 15 samples from healthy children in Pulau Ketam. These were shown to be higher than that obtained for 14 children with kwashiorkor from Perak and Selangor.

139. N. CHANDRA and E.P.M. BHATTATHIRY

Composition of normal urine in students of the University of Malaya

Tropical and Geographical Medicine, 19:300–303, 1967

The study aimed at compiling a set of "normal" values for urinary constituents which may be used, for example, in the assessment of nutritional status of an individual and of the adequacy of the intake of various essential nutrients. Twenty-four hour urine samples were collected from 48 healthy students and values were reported for volume of urine, specific gravity, pH, titratable acidity, total solids, several inorganic constituents, and several organic constituents, such as total nitrogen, urea, creatinine, uric acid, ammonia and amino acids. It was observed that the composition of urine did not differ significantly between sex and was to a large extent determined by the dietary intake. Values obtained were compared with those described in standard texts; the significance of the differences was discussed.

140. N. CHANDRASEKHARAN

Serum protein changes during early pregnancy in Malayan women

The Medical Journal of Malaya, 23(1):47–50, 1968

Total serum protein, albumin, total serum globulin and the different globulin fractions were determined for 15 healthy non-pregnant women and 41 pregnant women belong to the lower socio-economic groups. Comparing the two sets of data, it was seen that there was a fall in the total serum protein, albumin, gamma globulin concentrations and the A:G ratio, with a rise in the gamma, beta and total globulins in early pregnancy. The significance of the findings was discussed. Data collected could be useful in future nutrition studies in pregnant women, bearing in mind that protein and vitamin deficiencies were common in these women of the lower socio-economic groups.

141. Y.H. CHONG, G.S. HO and G.F. DeWITT

An evaluation of a simple refractometric method for determining plasma total proteins

The Medical Journal of Malaya, 23(2):115–117, 1968

An assessment of a simple and rapid method of determining plasma total proteins using a direct reading refractometer was reported. Results obtained were compared with that obtained by the micro-kjeldahl method for 102 plasma samples. A good correlation between the two methods of protein analysis was said to have been obtained. The effects of evaporation of the blood samples on the plasma protein value was also studied. Improperly stored blood samples were said to have resulted in evaporation and gave higher values for protein determination.

142. Y.H. CHONG

A report on the biochemical assessment of nutritional status of pre-school children in the applied nutrition programme pilot area – Telok Datok, Kuala Langat

Division of Nutrition, Institute for Medical Research, Kuala Lumpur, 1970; 10 p. (mimeographed)

A total of 128 children (aged 4 months to 4 years) from 8 kampongs were included in the study. A number of laboratory investigations were carried out, which included packed-cell volume, haemoglobin, plasma total protein, protein electrophoresis, urinary urea nitrogen/creatinine ratio, and urinary hydroxyproline index. The percentage prevalence of children with unsatisfactory blood and urine indices was reported and correlated with an examination of clinical signs. Results obtained were compared for the different kampongs and with those obtained for other surveys in the country.

143. Y.H. CHONG and R. GILMAN

Trichuris infection – effect of treatment on nutritional biochemistry

Paper presented at a Meeting of the Malaysian Society for Parasitology and Tropical Medicine, Institute for Medical Research, 25th July, 1970; 3p.

The study covered 75 children (aged 2 to 9 years) who were admitted to the General Hospital, Kuala Lumpur, for investigation of diarrhoea during 1969. Those children who had trichuris worms in the rectum on anoscopy had their blood and urine collected for determination of various nutritional biochemistry parameters. The determinations were carried out on admission, after treatment and 50 days after discharge from hospital. These estimations were also carried out for a group of 70 children who were worm-free and living in the same locality. The results of this control group were compared with those for the group of patients. It was felt that trichuris infection affected adversely the protein status of children and that deworming alone was sufficient to improve the protein status and the anaemia encountered initially.

144. Y.H. CHONG and G.S. HO

Erythrocyte transketolase activity

The American Journal of Clinical Nutrition, 23(3):261–266, 1970

The authors described their experiences with determinations of erythrocyte transketolase activity and the stimulatory effect of adding thiamin-pyrophosphate (TPP) in vitro (TPP effect) as indicators for the assessment of thiamin status in the body. A total of 355 apparently healthy subjects, consisting of army and police personnel, laboratory personnel, athletes-in-training, pregnant mothers, and inmates of a local prison, and 5 beri-beri patients were studied. Values obtained were compared with those reported by other investigators. A cut off point of >25% TPP was suggested to be used as an index of thiamin deficiency. The effects of thiamin therapy and supplementation on TPP effect and that of storage of blood on transketolase activity were also studied.

145. N. CHANDRASEKHARAN

Metabolic changes in protein malnutrition

The Medical Journal of Malaya, 25(4):269–272, 1971

The study of metabolic changes in protein malnutrition is important as it enables the detection of the existence and also the measurement of the extent of protein deficiency. Some of these biochemical changes were discussed in the paper. Adaptive enzyme changes, reduction in metabolic expenditure of nitrogen, changes in serum albumin levels, muscle proteins and creatinine, plasma amino acid pattern, and hydroxyproline excretion were discussed. These changes usually precede the clinical manifestations and can contribute significantly to the assessment of nutritional status during the early stages of protein deficiency.

146. Y.H. CHONG and D.A. MCKAY

Urinary urea and hydroxyproline as indicators of marginal protein deficiency

Proceedings of the 6th SEAMEO-TROPED Seminar, 1st Southeast Asian Regional Seminar on Nutrition, Jakarta, October, 1969. Central Coordinating Board, SEAMEO Regional Tropical Medicine and Public Health Project, Bangkok, 1971; pp. 53–56.

Preliminary observations on the use of urinary urea N/creatinine ratios and hydroxyproline indices (hydroxyproline x body weight/creatinine) for the assessment of nutritional status in pre-school children were reported. Results obtained from 130 rural children in Ulu Trengganu, 100 urban army children and 50 urban children of government officers were presented and compared. Correlations between the two indices and that between hydroxyproline index and percentage of expected weight were determined. It was suggested that the ratio of urinary urea N/creatinine may be used to distinguish children of similar age groups with differing nutritional status and that the hydroxyproline index was a useful indicator of growth.

147. N. CHANDRASEKHARAN

An evaluation of some biochemical methods used in the assessment of protein nutritional status

Southeast Asian Journal of Tropical Medicine and Public Health, 3(2):262–266, 1972

Protein malnutrition was induced in growing rats by feeding them a low protein diet. At weekly intervals, the following biochemical determinations were carried out: total plasma protein and albumin, plasma amino acid ratio, urinary excretion of hydroxyproline and creatinine, and the hydroxyproline index calculated. Changes in these biochemical indices were presented in graphs. It was found that the plasma amino acid ratio and hydroxyproline index were significantly altered during the early stages of protein deprivation and so may serve as useful indicators of early protein malnutrition.

148. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Excretion of sulphate in random urine samples

Institute for Medical Research Annual Report for 1971, Kuala Lumpur, 1972; pp. 106, 109–110

Urinary sulphate was determined for 43 samples by using a gravimetric and a colorimetric method. No significant difference was observed for values obtained by the two methods. The correlation between the sulphate S/creatinine ration and the urea N/creatinine ratio, the latter of which had been previously established as a useful indicator of the level of current dietary protein intake in field surveys, was also determined. A highly significant correlation was reported. It was felt that urinary sulphate as determined by the colorimetric method described could be another useful biochemical indicator of current protein intake.

149. N. CHANDRASEKHARAN and J.K. CANDLISH

The urinary 'hydroxyproline index' in hospitalised and normal Malaysian children

Tropical and Geographical Medicine, 25:71–74, 1973

The hydroxyproline index, defined as:

mM hydroxyproline per litre

mM creatinine per litre per kg body weight

and suggested to be useful in the detection of growth retardation in protein calorie malnutrition, was studied in random samples of urine from 32 normal and 115 children hospitalized for various illnesses. A lowered index was obtained for the latter group; the results were discussed. It was felt that further work on the index could be rewarding.

150. Y.H. CHONG and G.S. HO

Erythrocyte transketolase activity and anaemia

The Medical Journal of Malaysia, 28(2):113–114, 1973

Extending from their study of erythrocyte transketolase activity in the assessment of thiamin nutrition (Chong and Ho, 1970)*, the authors studied the activity of this enzyme in 49 anaemic patients. Mean values of these patients was significantly higher than that of 37 healthy control subjects. There was also an inverse relationship between their transketolase activity and haematocrit and between the former and haemoglobin concentration. When transketolase activities were plotted against reticulocyte counts, a significant positive correlation was obtained. In the presence of a young red blood cell population, there seemed to be increased activity of several red blood cell enzymes, including transketolase.

* See abstract number 144

155. Y.H. CHONG

Biochemical assessment of the nutritional status of pre-school children in Kuala Trengganu

The Medical Journal of Malaysia, 28(4):213–220, 1974

This report highlighted the biochemical aspects of a nutrition survey carried out on 399 Malay pre-school children from 26 villages. Results were tabulated for haematocrit, haemoglobin, plasma albumin, amino acid ratio, vitamin A, urinary urea N/creatinine, urinary sulphate S/creatinine and urinary hydroxyproline index. The "cut-off" points for the various parameters to indicate deficiency were pointed out. The inter-correlation between the various biochemical parameters and the correlation between biochemical and anthropometric measurements were studied and discussed. It was concluded that between 20–25% of the children were suffering from some moderate to severe degree of malnutrition which were related to deficiencies in protein, calories and vitamin A and to nutritional anaemia.

152. T.K.W. NG and Y.H. CHONG

Serum tocopherol (vitamin E) status of Malaysians

The Medical Journal of Malaysia, 29(3):169–174, 1975

Serum tocopherol (vitamin E) was determined in four groups of subjects: (a) 63 blood donors in apparent good health, to obtain some baseline data; (b) 63 hyperlipoproteinaemic patients on a low-cholesterol, polyunsaturates-rich diet; (c) 56 hyperlipoproteinaemia subjects on a normal diet; and (d) 3 healthy laboratory personnel given a daily supplementation of alpha-tocopherol. Results obtained were presented in mg/100 ml serum and compared for the different groups studied. Serum tocopherol was also expressed as a ratio of total serum lipid and this was felt to be better indicator of vitamin E nutriture and has greater sensitivity in predicting vitamin E insufficiency.

153. N. CHANDRASEKHARAN and C.L. HO

Changes in body fluid distribution in experimental protein malnutrition

The Medical Journal of Malaysia, 30(4):266–272, 1976

The sequential changes in serum proteins and body fluids during the early stages in the development of protein malnutrition in rats simulating the condition of "pre-kwashiorkor" were described. Growing rats were fed a diet containing 0.5% protein to induce protein malnutrition. At weekly intervals the total body water, extracellular fluid volume, plasma and blood volumes, total plasma protein and albumin concentrations, and haematocrit values were determined. Changes in these indices during the progress of the experiment (which lasted 8 weeks) were presented and discussed.

154. Y.H. CHONG and C.W. PANG

Serum lipids, blood pressure and body mass index of orang asli – possible effects of evolving dietary and socio-economic changes

Proceedings of Symposium on Effects of Alterations of Dietary Patterns and Food Habits on Health, US-Japan Malnutrition Panels, Osaka, Japan, 5–6 December, 1978; pp. 84–95

The subjects of the study were 160 male Semais. These orang asli were selected from three separate locations, namely in the deep jungle, fringe jungle and the peri-urban areas. Blood pressure was recorded, heights and weights measured (from which body mass index – weight/height² in kg/m² – was calculated), and venous blood and urine samples collected for determination of serum lipids and other nutritional biochemistry parameters. Results obtained for the three groups of orang asli were compared. The findings of the study were discussed with reference to the changes in dietary pattern and socio-economic status of the orang asli and the development of hypertension, hyperlipidaemia and obesity amongst these people.

NUTRITION SURVEYS:

DIETARY

155. C.H. WILLIAMS

The life of a Malay child

Journal of the Malaya branch, British Medical Association, 2(2):73–84, 1938

Various information were collected, by means of questionnaires, from 900 rural children and 1123 urban children. All the children, aged between 6.5 to 15.5 years, were attending Malay vernacular schools in the Kinta District of Perak. A breakdown of the numbers and percentages of children in each age group was given. The occupations of the fathers or guardians of the children were analysed. The opinion of the teachers on the children's ability in class was obtained. Other general information collected included the time of getting up and going to bed, number of children in family and percentage of children doing household chores. Information on meal pattern and the types of foods consumed was analysed. Differences in findings from the rural and urban children were discussed. It was suggested that a more detailed study on the diet of children be carried out.

156. M.W. GRANT, TAN PHUI YONG and G.R. WADSWORTH

The dietary pattern of schoolchildren in the Muar District, Malaya

Tropical Medicine and Hygiene, 62:118–122, 1959

A dietary survey on 136 school children (aged between 9–15 years), carried out using the 24-hour recall method, was reported. These children, whose parents were rubber tappers and farmers, were asked to recall the types of foods taken throughout the previous day. No attempts were made at quantifying the foods taken. A dietary pattern of the children was obtained and some conclusions about the quality of the diet were made. The intake of some of the nutrients was discussed and possible

deficiencies pointed out. The results obtained were compared for the Chinese and Malay children, the two major ethnic groups involved in the study, and for the different schools.

157. A. SEDKY

The situation of food production and consumption in Malaya. (A preliminary study)
Report Series on Malayan Food Commodities, No. 1; Ministry of Agriculture and Cooperatives, Kuala Lumpur; August, 1962;

The need for planning for food production to meet the nutritional needs and hence increasing the people's efficiency and productivity was emphasized. A study of the local production and the availability and consumption of food commodities was felt useful as it would reveal some of the needs of the country and thereby be useful in the implementation of the second Five-Year Plan of Malaya (1961–1965). A description of the method of computing these data for the year 1960 was given. The calculated daily per capita consumption of various nutrients was compared with recommended national allowances. Possible ways to overcome the deficiencies shown by the obtained results were discussed. It was felt that there was a great need for training and research in food production in the country.

158. CLIFTON R. WHARTON, Jr.

Food consumption and nutritional levels in Malaya: some income, locational and racial aspects

Rural Social Science Monograph, Malayan Series No. 2B, Council on Economic and Cultural Affairs, Inc., New York, 1962; 13 p.

Estimates of the apparent levels of nutrition and the apparent extent of nutritional deficiencies in Malayan households were reported. Data on levels of food consumption were obtained from the Household Budget Survey 1957–1958, Department of Statistics, and used to calculate the per capita nutrient intakes. Tables were presented for the various income groups, race and location (urban or rural). Results obtained were compared with and expressed as a percentage of recommended allowances. It was felt that the Household Budget Survey had underestimated the consumption levels of foodstuffs and it had not taken into consideration meals taken away from home. Taking these two points into consideration, the nutrient intakes were recalculated and a new set of figures for the intakes presented. Tables were also presented showing the nutrient intakes as obtained in this study, and these intake levels as a percentage of recommended allowances, compared with those reported by Sedky (1962)*, Thomson (1960)* and Burgess and Laidin (1950)*. The report contained a total of 19 tables and brief notes were given for the methods of calculations involved.

* See abstract numbers 157, 68 and 59

159. CHONG WEE CHEE

Detailed comments on levels of nutrition in Malayan households

Rural Social Science Monographs, Malayan Series No. 2A, Council on Economic and Cultural Affairs, Inc. (N. Y.), 1962; 40 p.

This report is supplementary to that of Wharton (1962)*. It contained details for the various methods of computation of nutrient intakes from food intakes, recommended monthly household allowances and comparison of nutrient intake between races and within each race. Some of the raw data of food intakes were also presented.

* See abstract number 158

160. MALCOLM J. PURVIS and THOMAS T. POLEMAN

Research Report on the food economy of Malaysia and Brunei

Department of Agricultural Economics, New York State College of Agriculture, Cornell University, United States of America, 1965; 417 p.

The report was essentially a study of available figures on food production and food consumption and gave a critical evaluation of the relative value of the various sources of information. The report was divided into 4 sections:

1. a major section dealt with the current production and consumption of foodstuffs in Malaysia and Brunei. For the former aspect, the main source of information was the Food Balance Sheet. Estimates of consumption were compiled from budget surveys, nutritional surveys and other sources. Results obtained for the 5 main areas under study – (a) Malaya, (b) Singapore, (c) Sarawak (d) Sabah, and (e) Brunei were first separately reported and then synthesised and reported for Malaysia and Brunei.
2. a small section on the current production and consumption of tobacco and cotton in the two countries.
3. the relationship between income and consumption levels in the two countries under study, in which the expenditure elasticities of selected commodities were presented.
4. projections of domestic production of selected commodities for Malaysia and Brunei in 1965, 1970 and 1975.

161. N. CHANDRASEKHARAN, E.P.M. BHATTATHIRY and E. PATRICK

Nutrient intake of students (men) in University of Malaya Residential Colleges

Far East Medical Journal, 3(8):251–256, 1967

The study aimed at assessing the extent to which diets of university students as provided and consumed in the residential colleges meet the recommended nutrient allowances for young adults and at evaluating the nutritional adequacy of the diet. Diets served and consumed in 3 residential colleges for men students in the university were collected every day for a week. Analyses for proximate composition, a few vitamins and minerals were carried out in the laboratory. A description of the dietary pattern and food items in the diets was given. Tables showing the nutrient composition of the diets studied were presented and compared with similar data reported by other investigators for other population groups in the country, and also with the recommended national allowances. The content of each nutrient in the diets was

discussed. Nutrient intake was found to be adequate and said to be confirmed by the good standard of health amongst university students.

162. N. CHANDRASEKHARAN and E.P.M. HHATTATHIRY

Dietary intake of women students in the University of Malaya

The American Journal of Clinical Nutrition, 21(2):183–184, 1968

The study covered over 500 women students coming from different parts of Malaya and belonging to different ethnic groups, residing in 2 residential colleges of the university. Random samples of the diets served and consumed by the students were collected and chemically analysed for their proximate composition, some vitamins and minerals. Average daily nutrient intake obtained was reported and discussed in relation to recommended national allowances and national intake figures. Results obtained showed that the diets were nutritionally satisfactory.

163. CHAN ONN LENG, MARGARET T. DUNCEN, J.W. SUNDSTEN, T. THINAKARAN, MOHD. NOR BIN CHE'NOH and V. KLISSOURAS

The cardiorespiratory fitness and energy expenditure of the Temiars

The Medical Journal of Malaysia, 28(4):267–272, 1974

A primitive settlement of Temiars was selected for a study of their physical work capacity in their natural environment. Twenty boys and 10 men were subjected to exhaustive exercise and their physiological and metabolic responses studied. The general health and nutrition of the subjects was also studied. Nutritional assessment was carried out by a brief 24-hour recall dietary survey. Calorie intakes were computed and when compared with recommended dietary allowances was said to be sufficient.

164. CHRISTINE S. WILSON

Child following: A technic for learning food and nutrient intakes

Environmental Child Health, 20(1):9–14, 1974

It was felt that interviewing the mother as to the child's daily intake may give reasonably accurate information about the foods he eats at home, but does not account for any foods taken outside the home and at times other than meals. A method for determining the total food intake, including between-meal snacking, which is common in most traditional societies, was thus tried. The method was to "follow behind" the small child for an entire day, noting all foods and drinks offered to him. A study of 3 toddlers using this method was reported. The family background and total food intake for a day was described; the nutrient intake computed was compared with Malaysian recommended daily dietary allowances and discussed. The author drew attention to certain drawbacks of the reported technique of child following. Nevertheless, it was felt that the technique gave accurate results under defined circumstances and is specially useful and applicable to the toddler. It was particularly recommended for use in studies of traditional societies.

165. BRUCE M. NICOL

Report to the Federal Government of Malaysia on food and nutrition in Malaysia's Development Planning

Food and Agriculture Regular Programme No. RAFA 20, Food and Agriculture Organization of the United Nations, Bangkok, 1975; 42 p.

The report, made by the FAO consultant, was prepared in response to the government's request for assistance in the developing of a national food and nutrition policy for incorporation in the Third Malaysia Plan (1976–1980). The aims of the report were defined as:

1. to assess the nutritional situation in the country in the light of food supply, food demand and food utilization;
2. to assess the health situation as it is affected by food supplies and distribution, food habits and other factors;
3. to set up objectives and targets to be used in the planning for adequate food production and consumption in relation to nutritional welfare;
4. to examine the present organization which co-ordinates the activities of the various ministries, departments and governmental bodies working in the field of food, health and nutrition and make proposals for any modifications in its structure or functions;
5. to identify any programmes or projects which should be implemented within the framework of the government's food, health and nutrition policies and plans.

The report discussed the various aspects mentioned above in brief and various recommendations were made.

166. CHUI KAH PENG

The infant and toddler feeding patterns of a rural Malay community in relation to the family dietary patterns

Thesis Submitted in Partial Fulfillment of the Degree of Master of Science, Faculty of Medicine, London School Hygiene and Tropical Medicine, University of London, 1976; 83 p.

A total of 23 households in Kampung Jalan Bahru, Balik Pulau Penang, were chosen for the study. The participant-observer method was used, supplemented by interviews and discussions. The socio-economic standing of the households were first studied as this has bearing on the food patterns. The general food patterns of the households were reported. The food items consumed during the main meals and snacks were discussed. Detailed nutrient intake of one household was computed and reported. A study of the infant and toddler feeding practices dealt with breast-feeding, bottle-feeding and food supplementation in some detail. Heights and weights were also measured for 26 children aged 6 months to 5 years, and compared with the Harvard Standard.

167. CHOW KIM SING

Chinese and Malay farmers' subsistence: an input-output analysis

Thesis Submitted in Partial Fulfillment of the Degree of Bachelor of Arts (Honours), Department of Anthropology and Sociology, University of Malaya, Kuala Lumpur, 1977; 131 p.

The nutritional status and occupational activities of the Chinese and Malay farmers at Sekinchan in Kuala Selangor, Selangor, were studied. The subsistence activities, labour patterns and leisure activities of the two racial groups were described. The detailed work schedule for 10 households (5 Malays and 5 Chinese) was reported. The food consumption in these selected households were also determined by weighing the foods taken. Calorie and protein intake of these households were then computed. Adequacy of the diets for the two racial groups was compared. An attempt was made to relate the adequacy of these nutrients in relation to the daily activities of the communities.

168. KOH BEE HONG

The flow of energy in an Orang Asli community (a case study of a Temuan community at Sungei Lui, Ulu Langat, Selangor)

Thesis submitted in partial fulfillment of the degree of Bachelor of Arts (Honours), Department of Anthropology and Sociology, University of Malaya, Kuala Lumpur, 1977; 160 p.

The findings of a field study of the "flow of energy" in an Orang Asli community at Sungei Lui, Ulu Langat, Selangor, were reported. The general composition of the diet of the Temuan community was described. The calorie intake of three sample households was determined for 7 days by weighing the food consumed. The sources of food energy for these households were described. Daily activities of the household members were studied and energy expenditure calculated. A comparison of energy intake and energy output was made. The pattern of energy flow in the community studied was described. The role of energy consumption in social evolution was considered and the question of whether maintaining a low energy society was a possible answer to the energy crisis was discussed.

169. KOH BEE LIEN

A preliminary study of the nutrition and energy use of the Semais of kampung Batu 25

Department of Anthropology and Sociology, University of Malaya, Kuala Lumpur, 1977; 17 p. (mimeographed)

The dietary pattern of a Semai population in Kampung Batu 25, Ringlet, Perak, was reported. The major items in the diet, methods of preparation and cooking food, and food taboos were described. A brief account of the food consumption pattern of 3 households was given. Energy sources (human muscles, fire, electricity, etc.) and their uses were also described. It was noted that there was a gradual shift of this Semai group from their traditional way of life to more interaction with the other racial communities in the country.

170. MOHANARANI RASIAH

The Semai of Kampung Sungei Odak: nutrition and energy use

Department of Anthropology and Sociology, University of Malaya, Kuala Lumpur, 1977; 11 p. (mimeographed)

Dietary pattern of a Semai village, Kampung Sungei Odak, was studied. Because the village was only 7 miles from Tapah town, many aspects of the way of life of this group of Orang Asli, including their nutritional habits, had been influenced. The common items in the diets of the people, the ways foods were prepared, their meal patterns and taboos were described. Infant and child feeding practices were briefly reported. The sources of energy for the community, including food and non-food energy (kerosene, firewood, etc.) were described. Energy consumption in 3 families was studied in some detail. Items used included the traditional and the modern.

171. A.J.U. ANDERSON

Food consumption of the Lemanak River Iban

Sarawak Medical Services, Sarawak, 1978; 13 p.

A total of 49 families, all of which were Iban, were studied. Food intake of the 1–2 year old children in the families were determined by weighing and that consumed by others in the family were separately determined. Nutrient intakes were computed and compared with WHO requirements for adequacy of the diets. The major sources of the nutrients were discussed. Food habits of the people and the method of feeding the 1–2 year old children were described. The report also gave a summary of weight and height measurements of indigenous Sarawak communities, collected from eight separate studies over the last 4 years. This included data for 4106 children under 9 years. Based on the poor nutritional state revealed in the study, various recommendations for improvement were put forward.

172. A.J.U. ANDERSON

Food consumption of Land Dayaks in the Tebakang Area

Sarawak Medical Services, Sarawak, 1978; 15 p.

This is a follow-up of the report of Anderson (1976)*. Land Dayak families in the Pilot Applied Nutrition Project area at Tebakang, Sarawak, were again considered. This second study emphasized on the dietary aspects of the populace. A total of 45 families, all of which had at least one child between one and two years old, were chosen for the study. Food intakes were determined by weighing, nutrient contents calculated and adequacy of the diets determined. Sources of the main nutrients were discussed. Cooking and child feeding methods were observed. Height and weight data for 338 children under 9 years were briefly reported and compared to that reported earlier in 1976. Results of the study were said to have shown that the state of nutrition in the community not only had failed to progress, but a significant deterioration had taken place. Reasons for this were examined.

* See abstract number 86

173. WALTER T. VORSTER

Food consumption and availability among low-income Malays in a peri-urban kampong in Melaka

Paper presented at the 1st ASEAN Workshop on Food Habits, Manila, 6–11 November 1978; 12 p.

Ujong Pasir, one of several suburban residential districts outside Melaka town was chosen for the study. Dietary intake was recorded on a recall basis. Information was also gathered from less formal observations and participation in the community life on a part-time basis. The food items taken with rice were listed, together with the amount consumed per capita. The probable deficiencies in the diets were pointed out. The habit of snacking was given some brief discussion. The village provision shops and the non-commercial channels as the sources of foods consumed were described. It was felt that an adequate diet may not be potentially within the reach of these low-income people.

174. CHEAM SOON TEE and RADZUAN ABD. RAHMAN

Household consumption patterns of protein rich food in Malaysia

Paper presented at the Malaysian Institute of Food Technology Symposium on Protein Rich Food in ASEAN, Kuala Lumpur, 12–13 July, 1979.

Using the narrow definition of protein rich food as referring to animal source food items, this paper examined the consumption patterns of these food items among Malaysian households using cross-sectional household budget data. In particular the paper attempted to determine significant changes, if any, in the consumption patterns between the periods 1957/58 and 1973, the two years for which household budget data was available. Attention was also focussed on the effects of certain socio-economic variables on household consumption patterns of these food items. The inter-relationships and effects of such socio-economic variables as income, ethnicity, and urbanization were incorporated in the consumption curve analysis. It was felt that the changing patterns of consumption must be continuously monitored and assessed to provide up-to-date and accurate information for policy formulation on commercial as well as nutritional aspects of production, distribution and consumption of food commodities in general, and protein rich food in particular.

175. DIVISION OF RURAL HEALTH RESEARCH AND BEHAVIOURAL SCIENCES, INSTITUTE FOR MEDICAL RESEARCH

Food and nutrition practices in Jengka 11

Institute for Medical Research Annual Report for 1978, Kuala Lumpur, 1979; p. 108.

A study of dietary patterns in Jengka 11 was briefly reported. Besides data on food consumption and taboos, information on family size, income and other socio-economic factors were also collected.

176. DIVISION OF RURAL HEALTH RESEARCH AND BEHAVIOURAL SCIENCES, INSTITUTE FOR MEDICAL RESEARCH

Study of nutritional status and dietary patterns in Jengka 12

Institute for Medical Research Annual Report for 1978, Kuala Lumpur, 1979; pp. 108–109

The prevalence of protein-energy malnutrition, vitamin deficiency and anaemia encountered in the study population was briefly reported. The dietary study was geared towards qualitative aspects, so that information collected included food preferences and avoidances, child feeding practices, household member responsible for choosing and/or buying food for the family, and the types of foods normally bought. Results of the study were still being processed at time of reporting.

NUTRITION SURVEYS:

CLINICAL

177. A. NEAVE KINGSBURY and PAUL FASAL

A nutritional survey of the Federated Malay States. I. Illustrated descriptions of common clinical manifestations of subnutrition among rural Malays and Tamils

Institute for Medical Research, Federated Malay States, Bulletin No. 1, Kuala Lumpur, 1940; 14 p.

The bulletin discussed some of the clinical signs of malnutrition as seen in nutrition studies in the Federated Malay States. Some 1,600 Malay children and 3,600 young Tamils were said to have been studied. Four main signs were described in some detail (with photographs), namely, xerosis of conjunctiva and bitot's spots, xerosis of the skin, phrynoderma: follicular hyperkeratosis, angular stomatitis and rickets.

178. LUCIUS NICHOLLS

The signs of malnutrition and the significance of them in public health practice

The Medical Journal of Malaya 2(4):247–250, 1948

The clinical signs of malnutrition were divided and considered in four categories, those of the eyes, the mouth, the skin and the bones. Each of the signs in the categories was briefly described.

179. SIEW TIN CHEN and A.E. DUGDALE

Morbidity pattern amongst some primary school entrants in Malaysia

Tropical and Geographical Medicine, 24:269–274, 1972

Some of the clinical observations made during a study of 361 primary school entrants were presented. The socio-economic background of the study children was first briefly presented. Status of immunization before school entry was studied. The prevalence of clinical signs of nutritional deficiencies was presented and compared with that

obtained by other investigators in the country and elsewhere. The prevalence rates of the common signs were also compared for the three major ethnic groups. The findings were discussed and attempts at improving the nutritional status of these children were suggested.

BERI-BERI

180. MAX. F. SIMON

Short paper accompanying preparations of nerve from beri-beri patients

Journal of the Straits Medical Association, No. 2, pp. 23–28, 1893

Slides of normal and beri-beri patient nerves were presented and discussed. Some of the symptoms encountered in the disease were briefly described. It was felt that the essence of the disease was a peripheral neuritis, and it could affect any peripheral nerve, including the vaso-motor. The symptoms of the disease, and often the mode of death, were determined by the particular nerves affected.

181. MAX. F. SIMON

The causes of death in beri-beri

Journal of the Straits Medical Association, No. 4, pp. 44–50, 1894

A general discussion was given of beri-beri, emphasising on the pathology and the causes of death of the disease. Et iology of the disease was touched upon and attempts at treatment were briefly described. Experiences encountered in the Straits Settlement and Malay Peninsular were described.

182. W.L. BRADDON

The etiology of beri-beri

Federated Malaya States Medical Archives, 1901

Publication not available.

183. W.L. BRADDON

Rice theory of beri-beri, where it fails

London, 1902

Publication not available.

184. H. WRIGHT

An inquiry into the etiology and pathology of beri-beri

Institute for Medical Research, Studies No. 2, Kuala Lumpur, 1902; 93 p.

Publication not available.

185. H. WRIGHT

On the classification and pathology of beri-beri

Institute for Medical Research, Studies No. 3, Kuala Lumpur, 1903; 74 p.

Publication not available.

186. HERBERT E. DURHAM

Notes on beri-beri in the Malay Peninsular and on Christmas Island (Indian Ocean)

Journal of Hygiene, 4:112–155, 1904

Publication not available.

187. P.N. GERARD

Beri-beri: its symptoms and symptomatic treatment

A & J Churchill, London, 1904

Publication not available.

188. S. LUCY

Beri-beri and diet

Journal of the Malaya Branch, British Medical Association, No. 2, pp. 41–46, 1905

The rice theory of beri-beri was discussed. Personal observations of the author were put forward to show that beri-beri was caused by the consumption of a poison or toxin conveyed in stale “uncured rice”. The disease was said to be most prevalent among Chinese coolies who consumed “Rangoon” or “Siam rice” or “beras China”, these types of rice being termed “uncured rice”, and particularly so when it became stale. In contrast, the Kampong Malays or estate Tamil coolies, who ate “cured” or “parboiled rice”, were said to be immune to beri-beri.

189. C.W. DANIELS

Observations in the Federated Malay States on beri-beri

Institute for Medical Research, Federated Malay States, Studies No. 8, volume 4 part 1, Kuala Lumpur, 1906; 105 p.

This 105-page publication reported observations on the disease, made in certain public institutions and other bodies, for the past 10 years. The occurrence of the disease in various prisons in Malaya were first presented, which included prisons at Taiping, Batu Gajah, Pahang, Singapore, Penang and Kuala Lumpur. Data on the incidence of beri-beri in other places, such as mines and hospitals were also presented. The findings were discussed in relation to the main hypotheses on the etiology of beri-beri. Rice as a possible causative agent in the production of the disease was given some detailed discussion. The views put forward by several investigators in the problem were pointed out and discussed. It was concluded that beri-beri was an infectious disease and that food, either with regards to its quantity or quality, was not the causative agent.

190. JOHN D. GIMLETTE

Beri-beri, mouldy rice: the occurrence of beri-beri in the Sokor District

Journal of Tropical Medicine, 1906

Publication not available.

191. W. LEONARD BRADDON

The Cause and Prevention of Beri-Beri

Rebman Ltd., London, 1907; 544 p.

The author, a state surgeon in Negri Sembilan, wrote of his experiences and studies in beri-beri. Prevalence of the disease in the country, then known as the Malay Peninsular, was reported. Clinical characteristics of the disease were described. Various theories of the etiology of the disease were examined. The major part of the book dealt with the theory of rice grain intoxication as the cause of beri-beri. Evidences were put forward to support the theory. The nature of the toxic agent in rice which was believed to produce beri-beri was discussed in some detail.

192. WILLIAM FLETCHER

Rice and beri-beri (preliminary report on an experiment conducted at the Kuala Lumpur lunatic asylum)

The Lancet, i:1776–1779, 1907

In 1905, there was an epidemic of beri-beri in the Kuala Lumpur lunatic asylum. It was found that the inmates were given uncured (polished) rice. In the following year, the author undertook a study, where half of the inmates (120 persons) were placed on uncured rice and another half (123 persons) on cured (parboiled) rice. Explanatory notes on cured and uncured rice, method of preparation of cured rice, the method of cooking rice and the normal rations of these inmates were given in this report. Details of the experiment were also given, including method of separating the inmates into the two groups, the distribution of the two types of rice and results of examination for knee-jerks and oedema among the patients. The study was designed to test the various theories on the aetiology of beri-beri. It was concluded that uncured (polished) rice was the cause of the disease. However, it remained to be proven whether the cause of the disease amongst the eaters of uncured rice was a "poison" contained in the rice or whether there was something essential to the human which was absent in the uncured rice.

193. S. LUCY

Beri-beri and "stale" rice

Journal of the Malaya Branch, British Medical Association, No. 3, pp. 5–17, 1907

Mortality data for beri-beri were presented for several hospitals and prisons where parboiled rice was given for one year. The data were scrutinised and it was said that there was a definite improvement in the death rate when parboiled rice replaced "Rangoon rice". It was felt that parboiled rice should be given further careful and

extended trial in the treatment of beri-beri. Cases of Malays, Javanese, etc. who normally consumed parboiled rice, and who did not get beri-beri, were shown to have contracted the disease when change of occupation, environment or necessity compelled them to include "Rangoon rice" or "stale rice" in their dietary.

194. WILLIAM FLETCHER

Rice and beri-beri

The Journal of Tropical Medicine and Hygiene, 12(9):127–135, 1909

Observations made by the author on this disease in Kuala Lumpur, especially at the Lunatic Asylum, were reported. A short description of the salient features of the disease and the various tests employed in its examination and diagnosis were first given in this article (photographs were also presented). Results of the study made at the Asylum in 1906 were next reported (as given in Fletcher, 1907)*. As the study dealt with the effects of different kinds of rice, the author gave a description of these (with photographs). The study was continued in 1907, along the same lines as that in the previous year. The findings obtained for the total two-year period were reported. The observations made were discussed in relation to the various theories on the causation of beri-beri. The conclusions arrived at were the same as those in the previous report. While it was established that white polished rice was the cause of beri-beri, it was not known if it was caused by some poison the polished rice contained or due to some defect in the nutritive value of such rice.

* See abstract number 192

195. HENRY FRASER and A.T. STANTON

An inquiry concerning the etiology of beri-beri. A preliminary communication

The Lancet, i:451–455, 1909

A group of 300 road construction labourers, working in Negeri Sembilan, were included in the study. They were divided into two groups of approximately equal numbers. One group was given white rice for their daily meals and the other group, parboiled rice. Twenty cases of beri-beri occurred among 210 people placed on white rice, whereas no case was found among the second group of labourers. Probable origins of the disease were investigated, which included an infectious origin, nematode worms particularly ankylostomes, organisms in the blood. All results of the study considered, it was concluded that "beri-beri has, if not its origin in, at least an intimate relationship with the consumption of white rice".

196. HENRY FRASER and A.T. STANTON

An inquiry concerning the etiology of beri-beri

Institute for Medical Research, Federated Malay States, Studies No. 10; Kuala Lumpur, 1909; 24 p.

The views put forward by various investigators, including that by Braddon, regarding the etiology of beri-beri, were briefly presented. The different types of rice, namely,

homepounded, parboiled, and polished white rice, were briefly described. A study was undertaken to determine the part played by rice in the causation of the disease. About 300 labourers involved in road construction in Negri Sembilan were divided into two parties. One group was given parboiled rice while the other, polished rice. The men were under constant medical supervision and proper records were kept of their duration of rice consumption and the occurrence of beri-beri. Systematic examinations were made on the blood and urine of patients suffering from beri-beri, and in no instance were any organisms found that were likely to have a causal relationship with the disease. It was concluded that the disease had an intimate relation with white rice and further research along these lines was felt justified.

197. HENRY FRASER and A.T. STANTON

The etiology of beri-beri *

Institute for Medical Research, Federated Malay States, Studies No. 11; Kuala Lumpur, 1909; 9 p.

While it was generally accepted that there was a causal relationship between the consumption of white rice and beri-beri, the mechanism by which this white rice produced the disease remained obscure. The authors carried out investigations along the lines of the hypothesis of a defect of nutrition in this rice. Experiments were briefly described, which showed the effects of padi, white rice, white rice with added polishings, and home-pounded rice on the development of beri-beri in fowls (details given in Fraser and Stanton, 1911)†. It was thought that a substance or substances residing in the outer layers which were milled away in white rice were able to prevent the disease. Investigations were carried out to determine, by chemical methods, the precise differences between the various types of rice. It was obtained that the phosphorus content of the rice was related to the degree of milling of the rice and that the less phosphorus the rice contained, the more liable it was to produce polyneuritis. It was thought that the essential cause of beri-beri was in a nutritive defect in the rice.

* Also in: *Philippines Journal of Science (Section B)*, 5(1): 55–63, 1910.

and in: *Transactions of the Society of Tropical Medicine and Hygiene*, 3(5):257–267, 1910.

† See abstract number 204

198. HENRY FRASER and A.T. STANTON

Beri-beri

Institute for Medical Research, Federated Malay States, Annual Report for the year 1910

The report discussed briefly the nature of the substances present in the subpericarpal layers of the rice grain which were believed to be important in maintaining normal nutrition. It was thought that entirely new principles in the causation and prevention of disease may be discovered in these researches.

199. HENRY FRASER and A.T. STANTON

The etiology of beri-beri

The Lancet, ii:1755–1757, 1910

The study attempted to determine the nature of the substances present in the sub-pericarpal layers of the rice grain which were removed in the milling process and which could prevent the occurrence of beri-beri. Various fractions were obtained from rice polishings and tested on fowls to determine if they could prevent polyneuritis. Fat and phytin so extracted proved to be of no importance. When the rice polishings were extracted with 0.3% hydrochloric acid, and the resulting solution fed to fowls, polyneuritis did not occur. Hence by the process of exclusion, the search for substances present in rice polishings that were able to prevent beri-beri was directed to the fractions soluble in dilute acid.

200. W.L. BRADDON

The discovery of the cause of beri-beri

London, 1911

Publication not available.

201. G.E. BROOKE

Periodicity in beri-beri

The Malaya Medical Journal, 9(4):36–38, 1911

Beri-beri admissions to various public institutions (hospitals, prisons, asylums) of the Straits Settlements as reported for about 30 years (1881 to 1909) were presented. It was reported that admissions to the Pauper Hospitals in Singapore and Penang, two towns 400 miles apart, followed the same relative trend. "Closed" institutions, such as the prison and asylum showed a special type of curve of their own. A third feature of the charts was that there seemed to be a certain periodicity of the disease. The findings were discussed in relation to the existing theories on the aetiology of beri-beri. It was felt that beri-beri was not a nutritional disturbance, but other explanations such as the "acid microbial-rice" theory was thought worthy of serious investigations.

202. H. FRASER

The relation of the organic phosphorus content of various diets to diseases of nutrition, particularly beri-beri

The Lancet, ii:1159–1160, 1911

In this letter to the editor, the author made some clarifications on the views held by some investigators that the pericarp of the rice grain contained the bulk of the phosphates and other salts, and that it was the removal of this pericarp during milling that rendered the grain harmful. It was felt that this view was incorrect, and it was the subpericarpal layers of the rice grain that were the important ones. The retention of these inner layers was essential for the prevention of beri-beri. It was suggested that

the subpericarpal layers contained a substance of high physiological importance, and could prevent the disease.

203. H. FRASER and A.T. STANTON

Beri-beri

Institute for Medical Research, Federated Malay States, Annual Report for the year 1911

Continuing research into the determination of the substance of high physiological importance contained in rice polishings, was reported. Attempts at isolating the active principle were briefly described.

204. HENRY FRASER and A.T. STANTON

The etiology of beri-beri*

Institute for Medical Research, Federated Malay States, Studies No. 12; Kuala Lumpur, 1911; 89 p. + 61 tables

Observations made by various investigators, including Braddon, Fletcher, Durham, Fraser and Stanton, who studied the disease in Malay Peninsular, long regarded as an "endemic focus of beri-beri", were quoted to show that the consumption of white rice was the cause of the disease. The various types of rice consumed in the country were briefly described. The histological and chemical examination of these types of rice to determine the differences between them were reported. Numerous feeding experiments (a total of 68) on fowls were reported to demonstrate biologically that: (a) fowls fed on various types of white polished rice developed polyneuritis, whilst those fed on parboiled rice and unpolished rice remained healthy; (b) the harmful effects of the white rice was not due to the existence of a poison developed after milling; (c) if the polishings removed from such white rice during milling were added to the diet of white polished rice, the fowls remained healthy, indicating that the polished rice was deficient in some substance of high physiological importance, and removed during milling; (d) the nature of these protective substances in the polishings had been partially studied, such as stability to heat, solubility in various solvents. It was recommended that the consumption of unpolished or undermilled rice should be encouraged as measures for the prevention of beri-beri in the country.

* Also in: *The Journal of Tropical Medicine and Hygiene*, 14(23):333–341, 349–358, 365–374, 1911.

205. THE MALAYA MEDICAL JOURNAL

Editorial

The Malaya Medical Journal, 9(4):5–7, 1911

The article aimed at urging a wider outlook for research, and a more honest investigation of conflicting evidence, in the study of the aetiology of beri-beri. While the consumption of over-milled rice seemed to be bound up with the development of beri-beri, it was felt that conflicting evidences could not be ignored. Examples of such

evidences were quoted, which were said to have been “too often passed over in silence or airily dismissed” by the adherents of the rice theory.

206. REGISTRAR'S REPORTS

Beri-beri references from some Straits Settlements Medical Reports

The Malaya Medical Journal, 9(4):48–51, 1911

The number of beri-beri cases, and deaths due to this disease occurring in the Straits Settlements were reported for 1906–1908. The type of rice consumed by the patients was reported.

207. HENRY FRASER and A.T. STANTON

The prevention and cure of beri-beri

The Lancet, ii:1005–1007, 1912

The first part of the paper, dealing with prevention of beri-beri, was concerned mainly with the finding and use of a standard or an indicator of the extent to which rice grains had been polished. The choice for such an indicator was discussed, and it was proposed that the content of phosphorus pentoxide be used. Possible ways for encouraging unpolished rice consumption for the prevention of the disease were pointed out and discussed. The paper next described experiments to test the curative properties of extracts from rice polishings in studies using fowls. Methods were described for obtaining such extracts. The curative and prophylactic ability of the extracts were said to be demonstrated in feeding trails with the fowls.

208. DAVID GILL

Beri-beri

The Malaya Medical Journal, 10(3):22–24, 1912

Investigations on beri-beri was briefly reviewed. The studies of Eijkman on pigeons were quoted. Investigations into the active substance in the “silver skin” of rice that was removed in polished rice and the coining of the term “vitamine” by Funck were mentioned. Citing from Braddon, it was said that there were 45,000 cases of beri-beri in the Federated Malay States during the 30 years before the report.

209. JOHN D. GIMLETTE

Beri-beri in Kelantan

The Malaya Medical Journal, 10(4):2–10, 1912

The history of beri-beri in this East Coast state on the Malay Peninsular was traced from 1904–1910. The disease was said to be imported and it spread among the labouring classes who were fed upon imported polished rice. A table was presented showing the number of cases of beri-beri and deaths due to the disease for every month, through the 7-year span.

210. HENRY FRASER and A.T. STANTON

Beri-beri, the rice theory and recent criticisms

Paper presented at the 82nd Annual Meeting of the British Medical Association, held at Aberdeen, 1914; 10 p.

The paper was solely devoted to answering criticisms from investigators who did not support the “rice theory” or “deficiency theory” of beri-beri. Some investigators believed that the disease was of a protozoal or other origin transmitted by an intermediate host such as bugs, lice or fleas, etc., whilst others felt that the disease was caused by a micro-organism and directly communicable from person to person. Yet other hypothesis included the suggestion that beri-beri was a “place” disease, suggesting that certain areas had been contaminated by a hypothetical virus of beri-beri so that dwellers therein became affected by the disease and when removed, they recover. Evidences from experiments and observations of the authors were put forward to disprove these hypotheses and to show that beri-beri, as it occurred among the rice-eating peoples of the Federated Malay States, was caused by the continuous consumption of polished rice as the staple of the diet.

211. HENRY FRASER and A.T. STANTON

Unpolished rice and the prevention of beri-beri

The Lancet, i:96–98, 1914

To provide further evidence to their earlier findings that when rice-eaters substitute unpolished rice for polished rice, beri-beri did not occur, the authors described an expedition into the interior of New Guinea to explore the snow mountains. Included in the expedition were 204 natives of the Malayan Archipelago, who were rice-eaters. They were supplied unpolished rice, and despite the laborious nature of the 7-month expedition, no single case of beri-beri was reported. It was suggested that the pericarp of the rice grains used in the expedition could have been removed to improve the appearance of the grain. Evidences were presented to show that this pericarp layer was valueless and that the grain would still have more than 0.4% of phosphorus pentoxide, and may safely be regarded as harmless, and able to prevent beri-beri.

212. HENRY FRASER and A.T. STANTON

The chemistry of rice polishings

The Lancet, i:1021–1022, 1915

The effects of sodium hydrate on the curative properties of extracts from rice polishings were reported. It was found that when extracts were treated with this alkali, they lost the ability to prevent the development of polyneuritis in fowls. It was thought that the active substance/substances in the rice polishing extracts were decomposed by the alkali. It was felt that progress in the search for the active principle in rice polishings could only be made when improvements were made to the existing crude and imperfect methods employed by chemists in this work.

213. H. FRASER and A.T. STANTON

The treatment of beri-beri

Institute for Medical Research, Federated Malay States, Annual Report for the Year 1918

A method for the preparation of an extract of rice polishings was described. The use of the obtained extract in the prevention and cure of polyneuritis in fowls and in the treatment of human beri-beri was briefly described. Favourable results were said to have been obtained.

214. J.W.D. MEGAW

The beri-beri problem

Transactions of the 5th Biennial Congress of the Far East Association of Tropical Medicine, Singapore, 1923; pp. 218–233

The author presented his views on the etiology of beri-beri. The findings of advocates of the dietary deficiency theory of beri-beri, including Fraser and Stanton, were critically reviewed. It was felt that some of these investigators had failed to demonstrate that the disease was always associated with a lack of vitamin B. Further, it was believed that polyneuritis observed in fowls and human beri-beri were distinct from each other. The rice intoxication view of the causation of beri-beri was discussed. It was suggested that there were really two diseases, rice intoxication and avitaminosis B. These might have occurred separately or in combination and hence may explain the variations in the symptomatology of the syndroms which had been classified as beri-beri.

215. A.T. STANTON

The control of beri-beri in the Far East

Paper presented at the 5th Congress of the Far Eastern Association of Tropical Medicine, Singapore, September 1923; 10 p.

In this address to the Congress, the author first gave a brief review on the different theories regarding the causation of beri-beri. Evidences were said to support the vitamin deficiency theory, whilst rejecting the infection and the food poisoning theories. In attempts to control beri-beri, the objective was to ensure that undermilled rice should form the staple of the diet of the community which is prone to suffer from the disease. To meet this objective, several proposals were put forward and discussed in the second part of the paper, which included education of the people in the dangers of consuming over-milled rice.

216. C.E. COBB

Beri-beri and rice control in Malaya

Institute for Medical Research, Federated Malay States, Bulletin No. 4; Kuala Lumpur, 1924; 3 p.

The temporary disappearance of beri-beri in the District hospital of Kuala Pilah during the shortage of rice in 1919 was reported to demonstrate the possibility of eliminating the disease by controlling consumption of white rice. It was thought that during this rice shortage period, the people consumed more flour and vegetables and lightly milled rice, and hence had increased vitamin intake. In the beginning of 1921, when rice was plentiful again, the people especially the Chinese, preferred and consumed only white polished rice, and beri-beri was again endemic. It was felt that beri-beri could be eliminated if the people could be educated to take in more vegetables and flour and if the importation of highly polished rice could be restricted.

217. H. FRASER and A.T. STANTON

Collected papers on beri-beri.

Institute for Medical Research, Federated Malay States, Studies No. 17, 1924; 103 p.

This collection consisted of papers on beri-beri contributed by the authors from 1909 to 1918. All the 10 papers are given in this Annotated Bibliography collection (abstract numbers 195, 196, 197, 199, 204, 207, 210, 211, 212 and 217).

218. S. LUTHER

Rational treatment of beri-beri

The Malayan Medical Journal, 2:61–62, 1927

The use of "rice washings bath treatment" for beri-beri was described. In this procedure, said to be applicable only to dry beri-beri, the patient's legs and feet were bathed in warm rice washings. Some vitamins were said to be absorbed through the skin during the process. Encouraging results were reported.

219. J.L. ROSEDALE and C.J. OLIVEIRO

Studies on the anti-neuritic vitamin. IV. Polyneuritis versus beri-beri

The Malayan Medical Journal, 5:62, 1930

Contradicting views on the generally accepted assumption that the B1 vitamin was the anti-beri-beri substance since it could cure typical head retraction polyneuritis in pigeons were put forward in this short communication. It was felt that while the vitamin B1 bore some relationship to beri-beri, it was not by itself the true anti-beri-beri substance.

220. I.A. SIMPSON

Studies in vitamin B1 (the antineuritic vitamin). Part II. The "oryzatoxin" theory

Institute for Medical Research, Federated Malay States, Bulletin No. 1, Kuala Lumpur, 1934; 24 p.

The report was aimed primarily at investigating the claim by some investigators that an emulsion obtained from white rice, termed the "oryzatoxin emulsion", when injected into fowls produced symptoms resembling avian polyneuritis and that this could be alleviated by vitamin B1. This "oryzatoxin" was thought to be rice toxin causing beri-beri and was thought to support the toxin theory of the etiology of the disease. Details for the preparation of the emulsion, and its administration (by injection and orally) to pigeons were reported. It was found that the emulsion had no deleterious action when given orally to the pigeons. When it was injected intramuscularly, the emulsion was shown to be fatal to the birds, but no evidence of polyneuritis or beri-beri was obtained. It was thought that this particular deleterious effect of the emulsion had no resemblance whatsoever to beri-beri, and did not appear to have any dietetic significance. The author concluded that it was not able to confirm the claim that the "oryzatoxin emulsion" had a beri-beri producing effect.

221. R.A. PALLISTER

Beri-beri: a review of recent literature

Journal of the Malaya Branch, British Medical Association, 2(1):39-46, 1938

The discussion was split into various sections. The causation of heart failure in beri-beri was discussed under pathology of the disease. The biochemistry of vitamin B1 mentioned the role of this vitamin in the oxidation of pyruvic acid. The main features of the dry and wet forms of beri-beri were discussed. The use of crystalline vitamin B1 in the treatment of the disease was described.

222. F.E. BYRON

Beri-beri and vitamin B1

In: *The Institute for Medical Research 1900-1950. Institute for Medical Research, Federation of Malaya, Jubilee Volume No. 25, Kuala Lumpur, 1951; pp. 98-118*

The birth of the word "vitamin" was briefly described. The history of research on beri-beri in the Far East was traced. This review then concentrated on beri-beri studies in Malaya, specifically in the Institute for Medical Research, from 1900 to 1950. The studies of Hamilton Wright, C.W. Daniels, W.L. Braddon, Fraser and Stanton and W. Fletcher were described. Most of the findings pointed to a dietary deficiency in polished rice as the cause of beri-beri. Attempts to isolate the active principle from rice polishings were described. The studies of Simpson into the oryzatoxin theory were discussed. The value of parboiled rice was investigated by Byron and other investigators.

223. R.A. PALLISTER

Beri-beri and other nutritional disorders of the heart

The Medical Journal of Malaya, 6(4):207–218, 1952

The greater portion of the article was devoted to a discussion on cardiac beri-beri. The signs and symptoms, method of treatment and the diagnosis of cardiac beri-beri were discussed in some detail. Several other heart diseases that had been attributed to nutritional deficiency other than beri-beri, were also described.

224. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Thiamine deficiency in Malaya

Institute for Medical Research Medical Circular No. 57, Kuala Lumpur, 1961; 1 p.

The circular drew the attention of all health personnel to the problem of vitamin B1 deficiency occurring especially among the rural dwellers. The signs to look for in beri-beri were briefly described.

NUTRITIONAL ANAEMIAS

225. M.J. BATTRAY

The haemoglobin index and other factors in newly recruited coolies to the Federated Malay States

The Indian Medical Gazette, 53:168–170, 1918

Haemoglobin level determination and stool examination for helminths were carried out for 331 Indian and Chinese coolies who had just arrived from their native coasts on a rubber estate in Johore. The pigmentation of the papillae of the tongue, said to be associated with anaemia, was also observed. It was thought beneficial if all newly recruited coolies were subjected to a helminthic examination in order to check the increase of existing infestation at the threshold of the estate.

226. WINIFRED H. CORKE and LILIAN M. BUSH

An investigation of some cases of anaemia in Tamil women

The Malayan Medical Journal, 5:129–135, 1930

Thirty-one cases of anaemia, admitted into the Hospital at Kuala Pilah, were described. All the cases were Indian women, and included 26 pregnant cases. Detail clinical picture and blood picture were described for some of the cases. Twenty-two cases were diagnosed to be of pernicious type of anaemia, three cases the aplastic type and six cases of the secondary type of anaemia. It was thought that pernicious anaemia was common in Indian women, originating in a combination of a blood-destroying infection such as malaria or syphilis, and an insufficiency of vitamins in the diet.

227. R.A. PALLISTER

Some observations on tropical anaemias

The Malayan Medical Journal, 9:43–50, 1934

A series of 36 cases of anaemia, admitted to the Batu Gajah District Hospital, were described. Twenty-one of them were diagnosed as macrocytic anaemia and 12 of these were pernicious anaemia of pregnancy. The blood pictures and complicating diseases of this group of macrocytic anaemia cases were presented. The remaining 15 cases, diagnosed as microcytic anaemia were also briefly described. The efficacy of various methods of treatment was evaluated.

228. G.S. VENKATESAN

Some observations on anaemias: their aetiology, complications, diagnosis and treatment

The Malayan Medical Journal, 10:100–110, 1935

A classification of anaemias was given, the groupings being aplastic, deficiency, haemolytic and mechanical anaemias. Deficiency anaemia was further sub-divided into macrocytic and microcytic anaemias. The major portion of the article dealt with macrocytic anaemia, specifically pernicious anaemia. The cardinal signs of this particular type of anaemia were described in some detail. Treatment for the various types of anaemias was next listed, with more detail discussion on some of the methods. Seven cases of anaemia were described to illustrate the value of fractional test meals in the diagnosis of the disorder.

229. J.G. REED

Maternal mortality among South Indian estate women

Journal of the Malaya Branch, British Medical Association, 4(1):13–32, 1940

Mortality statistics of Indian women in estates in South Perak for the years 1935 to 1939 were collected. These data were compared with those for 1929 to 1933 from estates in the coastal district of Selangor. Anaemias was said to be one of the major causes of death on the Perak estates. Furthermore, it was found that malnutrition was the underlying cause of anaemia. The need for prevention was emphasized, and this could only be achieved by improved nutrition. In the Selangor data, anaemia was not seen to be a primary cause of death, although it was prevalent.

230. GEORGE A.B. COWAN

Folic acid in severe nutritional anaemia: a report of five cases

Transactions of the Royal Society of Tropical Medicine and Hygiene, 41(4):525–535, 1948

A detail description of the response to treatment of five cases of severe nutritional anaemia was presented. Two of the cases were of nutritional macrocytic anaemia and the remaining three were of dimorphic anaemia. Each case was discussed separately and the response to folic acid treatment was monitored by various biochemical

parameters. Response was said to be satisfactory in all cases, and in two cases, both of dimorphic anaemia, was described as dramatic.

231. P.W.G. TASKER

Anaemia in the Indian labour force of some rubber estates in Malaya

The Medical Journal of Malaya, 6(1):10–14, 1951

The study aimed at determining the type of anaemia before and after treatment. Cases with an initial haemoglobin level below 6 gm per cent were selected and admitted to the hospital. Twenty-one cases were given iron alone, and 21 further cases were given additional therapy of either crude liver extract, folic acid, or vitamin B. Blood was collected and haemoglobin, hematocrit, and red blood cell count determined; mean corpuscular volume (MCV) and mean corpuscular haemoglobin concentration (MCHC) were calculated. The criteria for identifying a "normal" blood, one with iron deficiency, pernicious anaemia or dimorphic anaemia using the MCV and MCHC values obtained were described. It was found that before treatment, most of the patients were microcytic-hypochromic and normocytic-hypochromic, i.e. iron deficient, and responded rapidly with iron treatment. After treatment, patients under both types of treatment moved towards a macrocytic-normocytic-orthochromic picture. It was felt that the macrocytosis was temporary; explanations were given for this phenomenon.

232. R.D. EAGLAND

A report on anaemia in estate labourers, Malaya

The Medical Journal of Malaya, 7(1):36–38, 1952

An account was given of some experiences, covering the period from May, 1950 to June 1952, in the diagnosis and treatment of anaemia occurring in rubber estates labourers. Nutritional anaemia with chronic blood loss was prevalent; it was felt that the condition was due to a combination of ankylostomia infestation and under-nutrition. Patients were first deinfested followed by standard treatment for hypochromic anaemia, augmented by a corrected diet and a dietary supplement. Details for the treatment of 91 patients were given, including dietary correction.

233. B.A. LAMPRELL and ELIZABETH CHEEK

Anaemia in Southern Indians employed on Malayan plantations. (A review of causes, and methods of treatment in an exceptionally anaemic population)

The Medical Journal of Malaya, 7(2):107–114, 1952

Experiences on a rubber estate in Selangor, of population totalling 1375 Tamil labourers and their dependents, were described. Haemoglobin values were reported for 268 persons studied and were said to be below the average for Southern Indian labourers in Malaya. This was attributed mainly to the exceptionally poor standard of feeding by this population. This view was supported by the very great improvement shown in 14 cases of severe anaemia after receiving an improved diet. Various aspects of the population were discussed, including dietary practices, socio-economic aspects,

environmental hygiene and helminthic infestation, and various attempts at bringing about improvements.

234. P.W.G. TASKER, J.F.P. WHELAN and ELIZABETH CHEEK

Further investigations on anaemias of southern Indian rubber estate labourers

The Medical Journal of Malaya, 7(1):25–35, 1952

This is a follow-up of the previous study of Tasker (1951)*. A total of 41 patients, all with haemoglobin level below 6 gm percent were studied. A full blood examination, including red cell count, haemoglobin level, packed cell volume, blood film and a sternal marrow smear were carried out. The subjects were divided into three groups: 1. three cases with megaloblastic erythropoiesis, which were successfully treated with folic acid and oral iron; 2. three cases with normoblastic erythropoiesis, but with clinical complications; 3. the remaining 35 cases showed an uncomplicated normoblastic erythropoiesis, and were successfully treated with oral iron, oral iron with calcium caseinate, oral iron with ascorbic acid or intravenous iron. As obtained in the previous study, a number of them developed macrocytosis by the end of the first month of treatment. A statistical analysis of the results of the various methods of treatment was appended; the results obtained were compared and discussed.

* See abstract number 231

235. P.W.G. TASKER

Treatment of megaloblastic anaemias

The Lancet, i:785, 1954

In this letter to the Editor, a comment was made on the statement by some investigators that “whereas all megaloblastic anaemias responded to folic acid, not all respond to vitamin B12”. Exceptions to this widely held opinion were given. It was felt that such exceptions were of importance in understanding the relation between these two vitamins in haemopoiesis.

236. P.W.G. TASKER

Studies in the nutritional anaemias of Malaya: diagnosis

The Medical Journal of Malaya, 9(2):152–160, 1954

The paper described various haematological and biochemical methods for the differentiation between the two main types of nutritional anaemia, namely the normoblastic microcytic hypochromic iron deficiency type, and the megaloblastic macrocytic normochromic anaemia. Bone marrow examination was said to be the most informative and practical; peripheral blood film alone was found to be insufficient to make a clear assessment. Success was even more infrequent with the absolute indices (MCV and MCHC), total and differential white counts were also of little help. The advantages and disadvantages of the above mentioned haematological methods were discussed. Gastric analysis and serum bilirubin as biochemical examinations were briefly mentioned.

237. P.W.G. TASKER

Correlation of serum vitamin B12 levels and urinary folic acid in nutritional megaloblastic anaemia

The Lancet, ii:61–63, 1955

The relationship between serum vitamin B12 level and the urinary excretion of folic acid after a loading dose of the latter was studied in 29 patients, proven by marrow biopsy to have gross nutritional megaloblastic anaemia. Folic acid was given subcutaneously initially, followed by further daily loading parenterally for the next 5 days. Serum vitamin B12 and urinary excretion of folic acid were assayed using microbiological methods. A close positive correlation was obtained. The significance of the findings, with regards to the interrelationship between folic acid and vitamin B12 in the aetiology of nutritional megaloblastic anaemia were discussed.

238. P.W.G. TASKER

Studies of the nutritional anaemias of Malaya: the prevalence of iron deficiency

Transactions of the Royal Society of Tropical Medicine and Hygiene, 49(5):478–482, 1955

Serum iron concentrations, haemoglobin and packed cell volume were studied in 314 patients showing signs and symptoms of malnutrition and anaemia, at the General Hospital, Kuala Lumpur. Graphs showing the relationship between serum iron and haemoglobin, MCHC and serum iron, PCV and MCHC with haemoglobin values. Essential features of the graphs were pointed out and discussed. Results obtained seemed to confirm previous reports that iron deficiency played an important role in the development of nutritional anaemia. Upon the iron deficiency may be superimposed other forms of anaemia, such as that leading to the development of megaloblastic marrow.

239. P.W.G. TASKER

Studies of the nutritional anaemias of Malaya: the significance of the giant stab cells (as seen in the bone marrow of patients suffering from severe nutritional anaemia)

Transaction of the Royal Society of Tropical Medicine and Hygiene, 50(5):460–464, 1956

The diagnostic value and significance of the giant metamyelocyte or giant stab cell in nutritional anaemias was studied in 342 patients suffering from nutritional anaemias, admitted to the General Hospital, Kuala Lumpur. Marrow smear examinations confirmed that all the megaloblastic and intermediate megaloblastic marrows contained giant stab cells. The stab cell was also frequently seen in patients with normoblastic marrows and suffering from severe iron deficiency anaemia. Evidence was presented to show that the presence of the giant stab cells in the bone marrow was related to the development of megaloblastic changes.

240. P.W.G. TASKER

The direct action of folic acid, folinic acid and vitamin B12 on megaloblasts in vivo

British Journal of Haematology, 2:205–209, 1956

The patients used in the study were suffering from severe nutritional megaloblastic anaemia. The percentage of megaloblasts, intermediate megaloblasts and normoblasts was determined in the marrow smears obtained before and after direct instillation of vitamin B12, folic acid and folinic acid into the bone marrow. Details of the experiment and interpretation of the results were described. It was found that vitamin B12 had a direct local action in correcting megaloblasts to normoblasts in some of the patients who showed a deficiency for this vitamin as judged by their subsequent response to treatment. Folinic acid also had a direct action on megaloblasts. Folic acid, on the other hand, appeared to require metabolic alteration elsewhere before being capable of converting megaloblasts to normoblasts.

241. PETER TASKER, ALISON M. RICHARDSON and DEREK LLEWELLYN-JONES

Anaemia in pregnancy as encountered in Malaya

Journal of Obstetrics and Gynaecology, 63:409–414, 1956

Out of a total of 5550 pregnant women who attended the General Hospital, Kuala Lumpur in 1954, 200 women attending the ante-natal clinics were admitted for the treatment of anaemia and a further 96 were treated in the puerperium. These women were studied for their haemoglobin, red and white cell counts, packed cell volume, and, for the majority, a bone marrow smear. Based mainly on the marrow picture, the patients were classified into the various types of anaemias. It was again shown that iron deficiency was almost invariably present and superimposed on this basic deficiency were other additional types of anaemia, of which that associated with a megaloblastic marrow was the most important and common. Particular reference was made to the high incidence of megaloblastic anaemia and sensitivity to vitamin B12 treatment. The incidence of severe anaemia among the various races was also presented and possible explanations for the differences discussed. A description was given for the treatment and response of these patients studied.

242. P.W.G. TASKER

The diagnosis of nutritional megaloblastic anaemia: the use of bone marrow biopsy

The Medical Journal of Malaya, 12(2):395–405, 1957

It had been recognized that examination of peripheral blood could be very misleading in indicating the presence of a nutritional megaloblastic anaemia. Based on studies on over a thousand patients, over a period of 4 years, using the bone marrow biopsy technique, it was felt that the biopsy examination was of great value in the accurate diagnosis of megaloblastic anaemia. The method was described in detail, including the technique for performing an iliac crest bone marrow biopsy, the fixing and staining of marrow smears, a description and photographs of the main cells to be considered, and interpreting the results.

243. P.W.G. TASKER

Hookworm and anaemia

The Lancet, i:1226–1227, 1958

This short communication touched on the estimation of blood loss, using ^{51}Cr , in patients with *Necator americanus* infection, and the diminution of blood-volume in severe anaemia with hookworm infection.

244. P.W.G. TASKER

Anaemia in pregnancy: a five-year appraisal

The Medical Journal of Malaya, 13(1):3–10, 1958

The report summarised the knowledge on the frequency of anaemia in pregnancy, its management and its effects upon pregnancy, accumulated over a five year period. The types of anaemia encountered were tabulated for 1226 patients admitted for the treatment of anaemia. Data on racial incidence of iron deficiency and megaloblastic anaemia was presented. Clinical symptoms encountered were reported. The various haematological indicators used and the most suitable ones found were discussed. The various methods of treatment used were mentioned. The incidence of prematurity and foetal loss and maternal deaths in mothers who were anaemic were compared with those mothers who were not. The findings were discussed.

245. P.W.G. TASKER

Refractory nutritional megaloblastic anaemia

Transactions of the Royal Society of Tropical Medicine and Hygiene, 52(6):574–579, 1958

The primary purpose of the study was to determine the effects of varying degrees of malnutrition on the speed of response of iron deficiency and megaloblastic anaemias to the appropriate treatments. Forty-two malnourished patients with iron deficiency anaemia and 35 with gross megaloblastic anaemia were considered. Serum albumin and globulin concentrations, serum protein electrophoresis, and liver biopsy were taken to indicate the severity of malnutrition. The haematological status of each patient was determined by study of the peripheral blood picture and bone marrow biopsy. It was found that the response to treatment of megaloblastic patients was severely affected by increasing malnutrition. In contrast, there was relatively slight interference with the response to treatment of those with iron deficiency anaemia. Possible reasons for this marked difference observed was discussed.

246. P.W.G. TASKER

Studies of the nutritional anaemias of Malaya. The influence of hookworm infection

The Medical Journal of Malaya, 13(2):159–164, 1958

Over 1,400 patients attending the General Hospital, Kuala Lumpur, were included in the study. Haemoglobin level, stool examination for ova and blood were carried out for each patient. A graph showing the relationship between haemoglobin levels and the

results of the stool examination for hookworm ova, roundworm ova and blood in stool was presented. The degree of anaemia and the hookworm infection rates were closely correlated and it was concluded that hookworm was partially responsible for the anaemia. Further, albumin-globulin ratios, determined in 160 of the patients, led to the conclusion that malnutrition appeared not to increase the likelihood of a hookworm infection.

247. P.W.G. TASKER, D.L. MOLLIN and HELEN BERRIMAN

Vitamin B12 deficiency in the megaloblastic anaemias of Malaya

British Journal of Haematology, 4:167–176, 1958

A combined study of serum vitamin B12 level and the patient's response to treatment with vitamin B12 and/or folic acid was carried out to obtain more precise information on the cause of the megaloblastic anaemia. A total of 123 patients with megaloblastic anaemia, including pregnant women, were studied. Serum vitamin B12 concentration, measured using a microbiological method, was determined before treatment; blood counts were carried out before and after treatment. It was confirmed that severe tropical megaloblastic anaemia was more common in pregnant women than in non-pregnant women and men. Serum vitamin B12 level was found to vary in these patients, with the lowest levels found in a far greater proportion of the men than of the non-pregnant or pregnant patients. The response to treatment by patients with normal or low serum B12 concentrations was presented. The results obtained were used for diagnosing whether the patients were deficient in B12, folic acid, or both.

248. P.W.G. TASKER

Blood-volume in chronic nutritional anaemia

The Lancet, i:807–809, 1959

A total of 74 patients, who were either haematologically normal or had chronic nutritional anaemia, were used in the study. Haemoglobin and packed cell volume were determined; plasma volume was estimated using Evans-blue. It was found that blood-volume decreased progressively with intensification of the anaemia, while the plasma-volume remained essentially constant. The drop in blood-volume was largely accounted for by the reduction in red-cell volume. The significance of the findings was discussed.

249. P.W.G. TASKER

Blood-volume in chronic nutritional anaemia

The Lancet, i:1051, 1959

In this short communication, which was a follow-up to the report in Tasker (1959)*, another approach to the study of plasma and blood volume in anaemia was presented. Serial studies on individual patients as they responded to appropriate treatment and regenerate haemoglobin were carried out on 14 patients. There was no demonstrable

* See abstract number 248

difference in the plasma volume before and after treatment but the blood volume had risen markedly.

250. P.W.G. TASKER

Concealed megaloblastic anaemia

Transactions of the Royal Society of Tropical Medicine and Hygiene, 53(3):291–295, 1959

In the course of studying some 1,300 patients, who were suffering from nutritional anaemia, 25 presented with signs of a pure iron deficiency anaemia, including a normoblastic bone marrow picture. On treatment with parenteral iron, re-examination of the peripheral blood picture showed little alteration except a slight rise in all values; but the bone marrow was found to be grossly megaloblastic. All these patients subsequently responded well to folic acid. Possible explanations for this sequence of events were given. It was suggested that severe iron deficiency may interfere with the development of megaloblastic changes in the bone marrow, changes which would normally be expected in patients with a folic acid deficiency.

251. P.W.G. TASKER

Ferrokinesis and iron utilization in malnutrition (a study using radioactive tracer methods)

Transactions of the Royal Society of Tropical Medicine and Hygiene, 53(6):467–474, 1959.

Comparative studies were undertaken on two groups of patients to determine whether severe malnutrition could interfere with bone marrow erythropoietic function or significantly alter iron metabolism: 1. thirty-six patients who were either normal or suffered from apparently uncomplicated iron deficiency anaemia of varying severity; 2. eleven patients suffering from severe malnutrition in addition to iron deficiency. It was shown that turn-over rates of radioactive tracer ^{59}Fe , measuring the erythropoietic activity, were depressed in severe malnutrition compared with the value from group 1 patients. The subsequent utilization of the radioactive tracer, measuring the use of iron in the synthesis of haemoglobin, tended to be slow but the final uptake was normal.

252. G.R. WADSWORTH and T.S. LEE

Haemoglobin levels of schoolchildren in a rural health district of Malaya, and of pregnant women in Malaya and Singapore

The Journal of Tropical Pediatrics, 5:67–72, 1959

Haemoglobin levels (reported both in percent Haldane Scale and gram percent) of 261 boys and 174 girls, children of parents of the lower income group, attending 6 different schools in Muar were presented. A total of 98 women, attending the ante-natal clinic at Muar were also determined for their haemoglobin concentration and the results analysed according to the duration of pregnancy and to parity. Haemoglobin levels and MCHC were presented for 86 women who were wives of Malay soldiers in

Singapore. A further group of 24 patients, in the ante-natal ward of the General Hospital, Johor Baru, were also analysed for their haemoglobin levels. It was obtained that a considerable amount of moderate anaemia existed among children in Muar and in pregnant women in Malaya; the anaemias were mainly hypochromic. The deleterious effects of anaemia were pointed out.

253. P.W.G. TASKER

Treatment of nutritional megaloblastic anaemia

Transactions of the Royal Society of Tropical Medicine and Hygiene, 54(2):171–177, 1960

The relative values of folic acid and vitamin B12 in the treatment of nutritional and pregnancy megaloblastic anaemia were studied. Folic acid was given parenterally or orally to 54 patients, whilst 48 patients received vitamin B12 intramuscularly. Response to treatments was measured by the red cell count in 15 days. It was obtained that results from the use of folic acid were better and more consistent than those found with the use of vitamin B12. When the long term results of treatment were compared, there was no apparent superiority from the use of a combination of folic acid and vitamin B12 over the use of folic acid alone.

254. P.W.G. TASKER

Folic acid and vitamin B12 (effects of graded doses in the treatment of tropical nutritional megaloblastic anaemia)

Transactions of the Royal Society of Tropical Medicine and Hygiene, 54(6):578–581, 1960

This was a follow-up to the report of Tasker (1960)*, where the relative value of folic acid and vitamin B12 in the treatment of severe nutritional and pregnancy megaloblastic anaemia was determined. In the present study a separate approach was taken, whereby small graded doses of the two vitamins, ranging from an ineffective to a presumed fully effective level, were given. The study was also particularly designed to detect any interaction (potentiation) between the two vitamins. A total of 54 patients were included in the study. The responses were judged by the changes in the red cell count over the 15 days of treatment. Results obtained showed that there was a highly significant difference in effects between the dose levels of folic acid, but none was detected between the dose levels of vitamin B12. Neither was there any evidence of an interaction between the two vitamins; explanations for this were given.

* See abstract number 253

255. P.W.G. TASKER

Blood loss from hookworm infection

Transactions of the Royal Society of Tropical Medicine and Hygiene, 55(1):36–39, 1961

Twenty anaemic patients were studied. Blood was withdrawn, the red cells incubated with ⁵¹Cr-labelled sodium chromate and then re-injected into the patients. Stools and

blood were collected and their radioactivity counted. By comparing the activity in the stools with that found in the blood, the daily blood loss was estimated. The daily blood loss was found to vary from 2 ml to 90 ml, and was proportionate to the worm, *Necator americanus*, load; it did not appear to be related to the haemoglobin level.

256. P.W.G. TASKER

Absorption of vitamin B12 in nutritional megaloblastic anaemia

Transactions of the Royal Society of Tropical Medicine and Hygiene, 55(3):272–276, 1961

The study aimed at determining whether there was a relationship between a deficiency and a malabsorption of vitamin B12 and, where malabsorption was found, to determine the cause. Labelled vitamin B12 was given to 66 patients suffering from megaloblastic anaemia, and the recovery of the tracer in the stools was used as an index of absorption. The absorption of vitamin B12 was studied in relation to such factors as race, sex, age, the serum vitamin B12 level, gastric acidity, the absorption of folic acid and of xylose, and the histological appearance of intestinal biopsies. Where absorption was impaired the effects of intrinsic factor, aureomycin, penicillin and prednisolone were investigated. It was obtained that a malabsorption of vitamin B12 was rarely severe, thus improvement of absorption was unlikely to have been a major cause of the deficiency. Malabsorption, where it did occur, might have been related to changes in the intestinal bacterial flora and/or inflammatory changes in the intestinal mucosa, for the malabsorption was readily corrected by aureomycin and sometimes by prednisolone.

257. S. LOURDENADIN

Pattern of anaemia and its effects on pregnant women in Malaya

The Medical Journal of Malaya, 19(2):87–93, 1964

Results of a survey of haemoglobin level in about 1000 pregnant women who attended the antenatal clinic were presented. The average haemoglobin level in the various races was given. The incidence of severe anaemia in expecting mothers who attended the clinic for the years 1957 to 1961 was also reported. A breakdown on the types of anaemia encountered in the first three years of this period was presented. The distribution centred mainly on microcytic and macrocytic anaemia. The factors that may produce these conditions were discussed. The various possible effects of anaemia in pregnancy, labour and puerperium and the fetus were enumerated. It was felt urgent to detect and treat anaemia in pregnancy to bring these women to an optimum state of physical fitness so as to bear the stress of parturition.

258. LIE-INJO LUAN ENG and G. DeWITT

Serum iron and iron binding capacity in Malaysians

The Medical Journal of Malaya, 18(4):269–275, 1964

Serum iron and iron binding capacity, determined using colorimetric methods, were carried out for four groups of subjects: a. 136 normal healthy persons, of all ethnic

groups, to establish "normal" values; b. 97 anaemic children, aged 3 months to 7 years, to evaluate the incidence of iron deficiency; c. 32 newborns (from cord blood) and 36 mothers, to determine how, in general, babies start their life as regards the amount of iron in their blood; d. 23 patients suffering from miscellaneous diseases. Results obtained were presented and discussed separately for each group studied.

259. DEREK LLEWELLYN-JONES

Severe anaemia in pregnancy (as seen in Kuala Lumpur, Malaysia)

The Australian and New Zealand Journal of Obstetrics and Gynaecology, 5:191–197, 1965

The prevalence of severe anaemia, as seen in the Maternity Hospital, between 1953 and 1962, were presented. Data on maternal mortality rates, low birth-weight babies, perinatal loss and still-birth rates, were presented to illustrate the deleterious effects of severe anaemia on the mother and foetus. The aetiology of iron deficiency anaemia and megaloblastic anaemia, the two major forms of the disorder, was discussed. Diagnosis and treatment of the anaemias were also given prominent attention in the article.

260. LIE-INJO LUAN ENG and H.K. VIRIK

Anaemias in children in Malaya

Transactions of the Royal Society of Tropical Medicine and Hygiene, 60(1):53–63, 1966

The study aimed at obtaining an overall picture of the causes of severe anaemia in children of different races. Almost all known causes of anaemia were explored in this study of 2205 children admitted to the General Hospital, Kuala Lumpur. A host of determinations were carried out, including haemoglobin levels, serum iron and iron binding capacity, iron store in bone marrow, haemoglobin electrophoresis, auto-immune antibodies, glucose-6-phosphate activity and stool examination for worm eggs and protozoa. Haemoglobin levels were analysed by race and by age groups. The various causes for severe anaemias found were iron deficiency anaemia, megaloblastic anaemia, congenital hemolytic anaemias, malaria, acute leukaemia, anaemia with chronic infection and other conditions, including auto-immune haemolytic anaemia and glucose-6-phosphate deficiency with haemolysis. Some discussions were devoted to these various types of anaemias encountered.

261. Y.H. CHONG and C.G. LOPEZ

A rapid method for the detection of vitamin B12 deficiency

The Medical Journal of Malaya, 22(3):250, 1968

In this short communication, the successful use of a thin-layer chromatographic procedure for the detection of methylmalonic acid in urine to diagnose vitamin B12 deficiency anaemia was reported.

262. S. LOURDENADIN

Hazards of anaemia in pregnancy in Malaysia

International Journal of Gynaecology and Obstetrics, 7:234–242, 1969

Data on the incidence of anaemia among urban and rural pregnant mothers were presented. Factors influencing the occurrence of anaemia, such as malaria and parasitic infection, and malnutrition were enumerated. To illustrate the hazards of anaemia in pregnancy, labour and puerperium, data on foetal loss, foetal weight, maternal mortality, etc. were presented. Some actions taken by the government to overcome the problem were outlined.

263. CORNELIA DAVIS

The relationship of heavy infections of *Ascaris lumbricoides* to malnutrition

University of California International Center for Medical Research and Training Annual Progress Report, 1970; pp. 97–106

Results of an examination for stool helminths in 402 children admitted to the Pediatric Department of the General Hospital, Kuala Lumpur, were reported. The infestation rates among the different ethnic groups and the prevalence rates for *Ascaris*, *Trichuris* or Hookworm infestation were presented. The children were also examined for clinical signs of nutritional deficiencies. An attempt was made to correlate heavy worm infestations with poor nutrition states.

264. BISSERU

Aspects of soil-transmitted helminths in rural public health

Pacemaker, 6:44–45, 1971

Several aspects of the problem of helminthic infestation were discussed, which included the mode of transmission, infestation rates among children, the racial differences in these rates, and the pathogenesis of these worms. A brief discussion was also given to the relationship between parasitic infestation and nutritional status. The correlation between poor weight achievement, anaemia and worm burden was mentioned.

265. K.A. DUTT and T. VELATHAUN

Megaloblastic anaemia in Malaysia: a review of 26 cases

The Medical Journal of Malaya, 26(1):65–67, 1971

The authors reported their encounter of 26 cases of severe megaloblastic anaemia. Clinically, hemorrhagic retinopathy was the constant striking feature. The peripheral blood picture (photographs given) was atypical, characterised by normochromic with mild macrocytosis or ovalocytosis and occasional nucleated red cells. Bone marrow was shown to be markedly hypercellular with variable degree of megaloblastic erythropoiesis combined with scattered giant metamyelocytes. The importance of marrow biopsy to exclude or confirm the diagnosis of megaloblastic anaemia was emphasized.

266. T.T. LOH and T.A. SINNATHURAY

Haematological data and milk iron in Malaysian women

Australian and New Zealand Journal of Obstetrics and Gynaecology, 11:254–258, 1971

Haematological data (haematocrit, haemoglobin, reticulocyte count, plasma total iron binding capacity and plasma iron) were collected from 45 normal primiparus and multiparous parturient women. Haemoglobin levels obtained were said to be relatively high, whereas the plasma total iron binding capacity levels were low. Whole milk iron, milk whey iron and total iron binding capacity of breast milk were determined. Correlation analyses of these parameters in milk and similar parameters in plasma showed that: 1. plasma iron and total iron binding capacity had no direct influence on or correlation with the milk iron concentrations; 2. there was no correlation between the iron binding capacity of whey proteins, presumed to be mostly lactoferrin, and the concentration of whole milk iron.

267. R. BALASUNDARAM

Retinopathy in megaloblastic anaemia

Southeast Asian Journal of Tropical Medicine and Public Health, 3(4):613–616. 1972

Results of a study of 21 cases of megaloblastic anaemia and the importance of retinopathy in this condition were reported. It was found that retinopathy (retinal haemorrhages and exudates) was an important feature of this anaemia condition, and could be a useful sign in the diagnosis of megaloblastic anaemia in this region.

268. H.C. ONG

Haematological values in pregnancy in Orang Asli (aboriginal) women

The Medical Journal of Malaysia, 27(4):240–242, 1973

Haematological data (haemoglobin, packed cell volume and MCHC) were collected from 278 pregnant Orang Asli women, and the influence of gravidity and location of settlements upon these values were studied. Results were analysed in relation to gestational period and with increasing parity. The general trend of falling haematological data with advancing pregnancy was not clearly established, but increasing parity was no doubt a factor in the development of iron deficiency anaemia in pregnancy. The poorer haematological values found for the pregnant women in the "outside" jungle population compared with those in deep jungle was thought to be related to problems of migration.

269. J. GANESAN

Nutritional anaemias

In: *Studies from the Institute for Medical Research, No. 32, Jubilee Volume – 75 Years of Medical Research in Malaysia 1901–1976, Kuala Lumpur 1976*; pp. 173–178

Studies on nutritional anaemia, carried out over the years by workers from the Institute, mainly Tasker, Lie-injo and Virik, were reviewed. Several of these studies helped to elucidate some basic aspects of this group of anaemias. In other studies, the prevalence and importance of these disorders in the country were reported.

VITAMIN A DEFICIENCY

270. A. VISWALINGAM

Keratomalacia

The Malayan Medical Journal, 3:84–86, 1928

The author described his experiences with this deficiency disease in the course of his ophthalmic practice. Keratomalacia was defined as the manifestation of a nutritional disorder due to deficiency of certain elements in the diet, mainly fat and fat soluble vitamins (it is noted that no mention of vitamin A was made throughout the report). The disorder was said to be mainly confined to the Indian labourers. Factors, mainly dietary, that contributed to the development of the disorder were discussed. Signs and symptoms affecting the eyes were described, and photographs of three affected children were presented. Improved diets, including a liberal supply of “vitaminous foods” were among the treatment methods suggested. The importance of taking prophylactic measures to prevent this eye-sight impairing disorder was emphasized.

271. P.H. MARTIN

Observation on cases of keratomalacia

The Malayan Medical Journal, 4:103–104, 1929

The author wrote briefly on his encounter with a few cases of keratomalacia in a series of patients with anaemia secondary to malaria and hookworm infections. Treatment with liver extract and milk was described, and serum calcium and reticulocyte count monitored. There was no mention of vitamin A involvement in this short communication.

272. J.W. FIELD

Some observations on vitamin a starvation among immigrant Indians in Malaya

The Malayan Medical Journal, 6:46–53, 1931

A general description was given of the degenerative eye changes and a lowered resistance to bacterial infection, major phenomena associated with deficiency of vitamin A. Data from surveys carried out in North Perak and Negri Sembilan on 1585 Indian and

1259 Malay children were presented to show the occurrence of xerophthalmia in the various races. The Indians were found to be most affected. Incidence of night-blindness among the adults was mentioned, and was also said to be widespread among Indians. Factors contributing to the widespread distribution of vitamin A deficiency among Tamil labour forces in the country and their consequent lowered resistance to infection were discussed.

273. A. VISWALINGAM

A day in the life of an ophthalmologist

The Malayan Medical Journal, 10:113–115, 1935

In describing his duties as an ophthalmologist and the types of cases met with during the course of the day, the author referred extensively to the occurrence of ocular affections of nutritional origin. It was said that as a consequence of the low standard of living and the unbalanced diet of the mass of the people in the country, these affections, affecting mainly the children, were a daily occurrence in his practice. The symptoms seen in phlyctenular conjunctivitis and xerophthalmia were described. Besides employing local remedies in their treatment, cod liver oil was always used, and a general improvement in the diet of the patients was essential.

274. A.D. WILLIAMSON

Keratomalacia

The Medical Journal of Malaya, 3:68–69, 1948

A general discussion was given on the symptoms of keratomalacia in children and the development of this disorder due to a poor diet. The use of sweetened condensed milk in lieu of breast feeding was particularly condemned. Difficulties in the recognition of the Bitot's spots and night-blindness were mentioned.

275. A.D. WILLIAMSON

Keratomalacia

Proceedings of the Alumni Association of the King Edward VII College of Medicine, Singapore, 5(4):321-323, 1952

A general discussion of the disease, recognized as caused by a deficiency of vitamin A, and affecting mainly infants and young children, was given. The signs and symptoms encountered in the disease, particularly those affecting the eye, were described in some detail. In the treatment of the patients, the provision of a balanced diet was said to be important besides giving a large dose of vitamin A concentrate. The causal factors of keratomalacia were discussed briefly. Emphasis was placed on the use and abuse of sweetened condensed milk as the most important single factor.

276. F. ADAM THOMSON

Eye signs of vitamin A deficiency in the Ipoh District of Perak, Malaya

Transactions of the Royal Society of Tropical Medicine and Hygiene, 47(2):159, 1953

In this short communication, the development of eye signs and symptoms of vitamin A deficiency in 25 Malay children was reported. The methods of treating these children were described. Dietary advice and supplies of skim milk, vitamin oil and red palm oil were given to the parents of the afflicted children.

277. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Eye signs of vitamin A deficiency in children

Institute for Medical Research Annual Report for 1962, Kuala Lumpur, 1963; pp. 75–79

Two series of children were studied. The first consisted of 28 police children, considered by their parents to be in good health. The second series consisted of 9 children under treatment at the eye clinic of the General Hospital, Kuala Lumpur. Serum of these children were determined for total protein, protein fractions by electrophoresis, vitamin A and carotene. It was found that 6 of the police children showed conjunctival xerosis or crinckling. There appeared to be close correlation between mild eye signs of vitamin A deficiency and a low serum level of the vitamin. Serum vitamin A in the second series was extremely low, but was not always associated with a low total serum protein. Each of the 9 cases studied was briefly described. The nutrient intake of one of these children was computed and compared with recommended allowances.

278. H.A.P.C. OOMEN, D.S. McLAREN and H. ESCAPINI

Epidemiology and public health aspects of hypovitaminosis A. A global survey of xerophthalmia

Tropical and Geographical Medicine, 4:271–315, 1964

This 44-page report was based on results obtained in a world-wide survey of xerophthalmia, organised by the World Health Organization, in which the authors participated as short-term consultants. Various methods were employed in the survey, including questionnaires to medical officers, government statistics, hospital records and personal observations by the consultants. Data for Malaysia were included in the report. From the notes of an ophthalmologist, incidence of affections to the conjunctiva and cornea observed at Kuching and outstations of Sarawak during 1958 and 1959 were reported. Data were also extracted from the Sarawak register of the blind (1956–1960) and the census of Sarawak (1960). Studies made by Oomen (1960)*, McArthur (1962)*, Said (1955)* and McPherson (1955)* were quoted to illustrate the occurrence of xerophthalmia in Peninsular Malaysia.

* See abstract numbers 67, 440, 289 and 280

279. DATIN LADY THOMSON, ELVA RUIZ and MANGISI BAKAR

Vitamin A and protein deficiency in Malayan children

Transactions of the Royal Society of Tropical Medicine and Hygiene, 58(5):425–431, 1964

Vitamin A and serum total proteins were reported for 22 “normal” police children and 23 children showing ocular signs of vitamin A deficiency. Results of vitamin A determinations in the serum of 517 women at delivery in the labour ward and the cord blood of the infant were also reported. The study was extended to the determination of vitamin A level in the breast milk obtained from 317 women. All the results obtained in the whole study were presented in a master-table.

280. H.J. MCPHERSON

Investigation of ophthalmological conditions in Kelantan

The Medical Journal of Malaya, 20(2):126–131, 1965

The study, covering the period from December 1955 to January 1956, was carried out by following a programme of visits to certain dispensaries, infant welfare centres, Kuala Krai District Hospital, several Malay schools and the General Hospital at Kota Baru. A total of 968 patients were examined. Analysis of the blind cases studied showed that keratomalacia was by far the commonest single cause of blindness. A discussion on keratomalacia was given, covering aspects such as the commonest age of onset of blindness, contribution of poor diet to the condition, and clinical aspects. The other causes of blindness encountered were also touched upon. Recommendations were put forward for the elimination of keratomalacia.

281. A. VISWALINGAM

An introduction to the major theme of trachoma and nutritional ocular conditions

Transactions of the Asia-Pacific Academy of Ophthalmology, The Third Congress, Singapore, 1968; pp. 59–63

The author described some of his experiences in the subject of trachoma and keratomalacia during his 25 years as head of the Ophthalmic Department in Malaya. After a general discussion on trachoma, the paper dealt with one of the most common ocular nutritional disorder, keratomalacia. This disorder was said to have contributed to a fair proportion of the blind in the country, in the early part of the century. The clinical picture of the child afflicted with keratomalacia was described. Measures to overcome the problem were suggested. The discussion centred on vitamin A deficiency and keratomalacia as they occurred among the Indian labourers in plantations.

282. N. CHANDRASEKHARAN

Nutritional and biochemical investigations on vitamin A deficiency in Ulu Trengganu

Proceedings of the 8th Singapore-Malaysia Congress of Medicine, 8:482–485, 1973

Ten primary schools located in different parts of Ulu Trengganu were selected for the study. All children were examined clinically and those with signs of vitamin A de-

iciency were selected for nutritional and biochemical investigations. Serum vitamin A and β -carotene, serum total proteins and albumin were determined. A detailed enquiry into the family's food habits and food consumption was carried out using the 24-hour recall method. The intake of the major nutrients and vitamin A was found to be low when compared with the recommended national allowances and the national figures of intake. Most of the vitamin A consumed was in the form of carotenoids. Total serum protein and albumin levels were considered normal, but the serum vitamin A and β -carotene levels were low. It was suggested that the low total vitamin A intake could partly be attributed to poor utilization of the pro-vitamins, because of inadequate intakes of fat and protein.

283. TEOH SOON TEONG

Some aspects of vitamin A consumption in a rural area in West Malaysia

The Medical Journal of Malaysia, 27(4):243–247, 1973

Four Malay villages, with a total of 205 households, in the district of Rembau, Negeri Sembilan, were selected for a study of vitamin A intake. A 24-hour recall of food consumed by each household was obtained. The total amount of vitamin A (sum of both retinol and non-retinol intake) when compared with suggested daily intakes showed that there was a low level of consumption. The households were also classified arbitrarily as having "low" and "satisfactory" intakes. Analysis of the percentage of retinol and non-retinol intake showed that most of the vitamin A intake was from the less efficient precursors of vitamin A, and mainly from fruits and vegetables. There did not seem to be an increase in the contribution of vitamin A on a festival day (Hari Raya Haji) although there was a significant increase in the retinol component of the intake.

284. N. CHANDRASEKHARAN

Ecological assessment of vitamin A status of primary school children in Ulu Trengganu

The Medical Journal of Malaysia, 29(3):187–194, 1975

This is a more detailed report on the study, reported earlier in Chandrasekharan (1973)*. A map was given of the study area, all the results were presented with more detailed statistical analysis, and a more detailed discussion on the results was given, including suggestions for both short and long term preventive and therapeutic measures to overcome the problem of vitamin A deficiency.

* See abstract number 282

285. TONY K.W. NG and Y.H. CHONG

Serum vitamin A levels of two rural communities in Malaysia *

Journal of Tropical Paediatrics and Environmental Child Health, 23:91–93, 1977

Serum vitamin A levels were determined in 439 subjects (comprising of 92 pre-schoolers, 149 school children and 198 adults) from two villages, Ulu Rening and Sungai Choh, and the Kindergarten children of Jenderam Hilir and Kampong Bahagia. Mean serum vitamin A level of the three age groups were presented in a table and the frequency distribution of the serum levels were presented in histograms. Results obtained for the different areas and for the different age groups were discussed and compared.

* Also in: *Proceedings of the 18th SEAMEO-TROPMED Seminar, Kuala Lumpur, 2–5th August 1977*. Published by SEAMEO Regional Tropical Medicine and Public Health Project, Bangkok, Thailand, 1978.

PROTEIN – CALORIE MALNUTRITION

286. B. MELBA WILL

Some cases of marasmus among children in Kinta

The Medical Journal of Malaya, 3(4):259–263, 1949

Five cases were described, illustrated with photographs. Age, weight and history of the children were reported and a brief description of the progress to treatment was given. Methods of treatment and advice to the mothers were discussed. Several suggestions were put forward for the combating of this disorder.

287. CICELY D. WILLIAMS

Kwashiorkor

The Lancet, i:711–712, 1949

In this short communication, Cicely Williams was attempting to point out the differences in changes in skin conditions seen in kwashiorkor and pellagra. To illustrate a point, it was mentioned briefly that in her 12-years stay in Malaya, she had seen only two typical cases of kwashiorkor, although cases of malnutrition were on the whole common.

288. FLORENCE ADAM THOMSON

Notes on kwashiorkor in Malaya

Transactions of the Royal Society of Tropical Medicine and Hygiene, 48(2):150–152, 1954

A general description was given for 100 cases of children, with age ranging from 3 months to 5 years, and coming from Ipoh, Batu Gajah and Parit district of Perak. The clinical signs commonly encountered, including alterations in the conditions of the

skin and hair, were described. Emphasis was given to protein supplementation in the discussion on treatment of these children.

289. MOHAMED SAID

Kwashiorkor in Negri Sembilan

The Medical Journal of Malaya, 10(1):20–47, 1955

A detailed description of 9 cases of kwashiorkor seen at the General Hospital, Seremban, was given. Birth history, health of mother during pregnancy, dietetic history, family history, previous illnesses, results of brief clinical examination, stool examination, haemoglobin level and plasma proteins levels were reported for each of the child studied. Clinical photographs were presented. General comments on the clinical features encountered, serum protein levels and the incidence of anaemia were given. The etiology of kwashiorkor in these children was discussed. It was suggested that the problem of kwashiorkor should not be viewed in isolation from that of the wider problem of malnutrition in infants and children. Suggestions were made for the eradication of this problem.

290. F. ADAM THOMSON

Kwashiorkor in Malaya

Transactions of the Royal Society of Tropical Medicine and Hygiene, 52(1):91, 1958

This short communication presented preliminary results of a study of 200 households in four areas in Perak. One toddler was taken at random from each household for examination. The incidence of eye signs, skin and hair changes, enlargement of the liver and spleen and edema was reported. The number of children diagnosed as kwashiorkor and pre-kwashiorkor was given.

291. R.F.A. DEAN

Kwashiorkor in Malaya

Bulletin of the World Health Organisation, 20:727–729, 1959

The report summarised briefly findings from a survey, carried out in 1956, in the states of Pahang, Trengganu, Kelantan, Kedah, Perak, Selangor and Negeri Sembilan. The survey was undertaken by the World Health Organisation and the government of Malaya. A full report of the survey is given in Dean (1961)*.

* See abstract number 292

292. R.F.A. DEAN

Kwashiorkor in Malaya: the clinical evidence

The Journal of Tropical Pediatrics, 7:3–48, 1961

From several previous scattered studies, carried out in various parts of the country by various investigators, it was evident that there were probably many cases of kwashior-

kor not yet being recognized. A large scale survey was thus carried out, undertaken by the World Health Organisation and the Federal Government of Malaya. A complete list was given for the places visited in the states of Pahang, Trengganu, Kelantan, Penang, Kedah, Selangor, Negri Sembilan and Perak, covering over 7000 children up to 7 years old. The first part of this 23-page report was devoted to describing the planning and conduct of the survey, which included a description of the technique of the clinical examination. A total of 192 children, all Malays, were found to be showing signs of kwashiorkor; a table showing where they were found was given. A separate table gave the percentage incidence of kwashiorkor in the various states; the highest recorded being in Perak.

Part II of the report was devoted to a discussion of the findings obtained. The significance of the percentage incidence reported was first pointed out and the reader was cautioned on the interpretation of results. In a discussion on the validity of the results obtained, reasons for the large variations in the between-states incidence were given. Since the highest incidence was recorded in Perak, some discussion was devoted to these results. The effects of change of circumstances and of season on the incidence of kwashiorkor were mentioned. Finally, the reasons for the failure to find signs of kwashiorkor in Chinese and Indian children were given.

293. S.T. CHEN

Protein calorie malnutrition: a major health problem of multiple causation in Malaysia

Southeast Asian Journal of Tropical Medicine and Public Health, 5(1):85-89, 1974

The report was a case-illustration of the multiple causation of malnutrition and the interrelation of these causes. The case described was that of an 18-month old Indian girl who was admitted into the hospital with severe malnutrition and a lung abscess. The main anthropometric and laboratory findings of the child were reported. The background of the child was used to illustrate that malnutrition resulted basically from a deficient diet and superimposed infection, both of which were due to several underlying factors. All the factors were interrelated and act synergistically to undermine the nutritional status of susceptible groups such as the toddler. Ways and means for the prevention of the problem were discussed.

294. S. BALAKRISHNAN

Protein-calorie malnutrition in admissions to paediatric wards, General Hospital Kota Bharu, Kelantan

Proceedings of the 18th SEAMEO-TROPED Seminar, Kuala Lumpur 2-5th August 1977. Published by SEAMEO Regional Tropical Medicine and Public Health Project, Bangkok, Thailand, 1978. pp. 125-128

Results of a study of 89 cases of protein-calorie malnutrition, admitted to the paediatric wards in 1975 and 1976 were reported. The children were grouped into various degrees of malnutrition according to the Wellcome Trust Party Classification. Serum protein, haemoglobin and vitamin A levels of these cases were reported. Problems encountered in the management of these cases, that is, death in the first 48 hours, infections and diarrhoea, were discussed.

295. FOO LI CHIEN, REBECCA GEORGE and CHONG YOON HIN

A comparison of weight gains in children with severe protein-calorie malnutrition receiving normal or lactose-prehydrolysed milk

Paper presented at the International Conference on Infant Nutrition and Diarrhoeal Disease and Workshop on Post-Graduate Pediatric Education, 9–13th November, 1979, Kuala Lumpur

The study was carried out on 24 malnourished children admitted to the pediatric ward of the General Hospital, Kuala Lumpur. Twelve of them were given normal full cream milk, and the remaining half was placed on lactose-prehydrolysed milk. Weight and height changes of these children were recorded for 3 weeks. It was found that those children on normal milk had poorer weight gains when compared to those receiving pre-hydrolysed milk. Hence the suggestion by investigators to use such hydrolysed milk in international aid programmes should be supported. However, in cases where such milk is not available in sufficient quantities, it was felt that normal milk should continue to be used since it has been found in the study that malnourished children also showed appreciable weight gain, albeit sub-optimal, when fed normal milk.

OTHER NUTRITIONAL DEFICIENCY DISEASES

296. A. VISWALINGAM

Notes on a case of pellagra

The Journal of Tropical Medicine and Hygiene, 20(8):85–86, 1917

The clinical findings of a Chinese male patient, aged 32 years, were described; photographs were presented of the patient. The diagnosis of the disorder was described. This patient, who was a mining coolie, was believed to be the first case of pellagra in the Federated Malay States to be recorded.

297. A. VISWALINGAM

Pellagra

The Journal of Tropical Medicine and Hygiene, 21(15):153–158, 1918

The different theories on the etiology of pellagra were first discussed: the “vitamine” deficiency theory, the parasitic infection theory, and the maize theory (which was really part of the deficiency theory). At the time, pellagra was defined as a disease of unknown origin. Considering the circumstances of the pellagra patients in Malaya, who lived in unsanitary conditions and had a poor diet, the author felt that both the parasitic theory and the deficiency theory may hold good in the etiology of the disease in this country. The symptoms of the disease were described in some detail, touching on the gastro-intestinal symptoms, cutaneous manifestations, and degenerative changes in the nervous system. The diagnosis and prognosis of pellagra patients were also discussed. It was felt that better sanitary conditions and a better diet “would do a great way to preventing, if not to alleviating or curing the disease”. Finally, five cases of the disease were described, with inclusion of some photographs.

298. A.B. JESSER COOPE

“Burning feet”

The Malayan Medical Journal, 3:129, 1928

In this letter to the editor, some comments were made on the report of Dugdale (1928)*, regarding the condition known as “burning feet”. It had been observed by the writer that the symptom was confined to Tamil coolies and were especially noticeable during famines and conditions of economic stress. It was noticed that the condition was usually associated with night blindness and scurvy. It was concluded that the symptom was solely due to scurvy. Full antiscorbutic treatment was reported to give complete success.

* See abstract number 299

299. J.N. DUGDALE

“Burning feet” and other problems in estate medical practice

The Malayan Medical Journal, 3:74–76, 1928

The symptoms of the complaint called “burning feet” were described. It was said to occur mostly among poorly nourished coolies. The specific cause of the condition was unclear. However, various probable causes were suggested, and was said to be often associated with food deficiency, specifically vitamin deficiency. Since the etiology of the condition was obscure, various lines of treatment were followed. Another problem encountered during medical practice in the estates was the occurrence of an unidentified fever, which showed no resemblance to malaria and did not react to quinine. Finally some comments were made on the use of plasmoquine in malaria treatment.

300. W. BONNER MORGAN

Burning feet

The Malayan Medical Journal, 4:69–70, 1929

Burning feet was a familiar disease to those engaged in estate medical practice. It appeared to be found only among Tamil emigrants. The symptoms associated with the disease were described. A study of 19 cases was described. The history of these patients was said to be similar and included a poor diet. Treatment, using a combination of drugs and an improved diet was described. The etiology of the disease was discussed. It was felt that this was a deficiency disease of the vitamin B group.

301. A. VISWALINGAM

Observations on pellagra and keratomalacia

The Malayan Medical Journal, 4:97–103, 1929

A general discussion was given for the two diseases. The symptoms and etiology of pellagra were discussed. The different existing theories on the etiology of the disease were presented and discussed. On the other hand, the gastro-intestinal disturbances, peculiar skin eruptions and degenerative changes in the nervous system were rather

accepted symptoms of the disease. Keratomalacia was thought to be due to the absence of fat-soluble vitamins in the diet. Signs and symptoms were not dealt with in this report (see Viswalingam, 1928)*. Photographs of pellagra and keratomalacia patients were presented.

* See abstract number 270

302. J.V. LANDOR and R.A. PALLISTER

Avitaminosis B2

Transactions of the Royal Society of Tropical Medicine and Hygiene, 29(2):121–134, 1935

The authors described a disease, which was said to resemble pellagra, and termed "avitaminosis B2". Data were collected mainly from observations in the Singapore Prison and the Johore Prison. The main lesions in the early stages were reported to be eczema of the scrotum, and the angles of the mouth and superficial glossitis (photographs were presented). In the later stage, the symptoms were those of combined degeneration of the spinal cord and poor vision. The disease was found to be curable in the early stages by the use of yeast or marmite, either fresh or autoclaved; foods containing only vitamins A, C or D did not help the disease. It was therefore thought that the disease was due to a deficiency in the diet of "the vitamin variously called B2, G or PP factor".

303. WILLIAM HUGHES

Infantile scurvy

The Malayan Medical Journal, 11:55–57, 1936

The "fascinating history" of scurvy was briefly traced. Pathology and symptoms of the disease were described. A case of infantile scurvy, a Chinese girl of 3 years, admitted into the General Hospital Penang, was reported. Results of the clinical examination were presented. Dietary requirements for vitamin C was touched upon. The case reported showed that gross deficiency did exist, due entirely to ignorance, in a country where the sources of vitamin C were so cheap and plentiful.

304. J.V. LANDOR

Deficiency of vitamin B2

The Lancet, i:1368–1370, 1939

In this follow-up work to the earlier report of Landor and Pallister (1935)*, nicotinic acid was given to 10 prisoners, diagnosed as suffering from avitaminosis B2. It was found that this vitamin was not able to cure the disease, whereas marmite brought about immediate improvements. In contrast, a patient with classical signs of pellagra was successfully treated with nicotinic acid. The author maintained that the cases of eczema of the scrotum and stomatitis described by him were caused by "a deficiency

* See abstract number 302

of a portion of the vitamin B2 complex, which is not nicotinic acid". It was hoped that the precise missing factor in the production of the syndrom described would be identified after testing the various factors of the "vitamin B2 complex".

305. R.A. PALLISTER

Ataxic paraplegia occurring amongst Chinese in Malaya

Transactions of the Royal Society of Tropical Medicine and Hygiene, 34(2):203–211, 1940

A disease, termed ataxic paraplegia, occurring amongst Chinese in the country, and characterised by weakness and numbness of the legs, was described. The main signs encountered were absence of tendon reflexes, sensory loss and ataxia. A study of 15 cases was described, which included their diets, symptoms encountered, some biochemical findings, and response to treatment. Possible causes of the disease was discussed. The symptoms in ataxic paraplegia was compared with those occurring in "prison disease" (avitaminosis B2)* and "burning feet". It was thought that the disease could be a form of pellagra modified by other factors in the diet or circumstances of those affected.

* See abstract number 302

306. R.A. PALLISTER

A case of infantile pellagra in Malaya

Journal of the Malaya Branch, British Medical Association, 4(1):110–113, 1940

The case described was that of a Chinese girl, aged 15 months, admitted to the Penang General Hospital. The poor dietary history of the child was described. Clinical findings of the child were presented, describing the presence of oedema of the feet and hands, scanty hair, changes in the skin, etc. The child, also said to be anaemic and worm infested, died 12 days after admission.

Note: refer to articles on the disagreement in the diagnosis of pellagra and kwashiorkor, such as that by C.D. Williams (1940), in *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 34(1):85–90, 1940.

307. R.C. BURGESS

Deficiency diseases: prisoners-of-war at Changi, Singapore *

The Lancet, ii:411–418, 1946

The author, a nutrition officer at the prisoners-of-war camp in Changi, and also attached to the Malayan Medical Services, reported the outbreak of various deficiency diseases in the camp. The diets of these soldiers were described in some detail. Nutrient content of these diets were calculated. The number of fresh beri-beri cases per month, from 1942 to 1945 were charted alongside calorie and vitamin B1 content

* Also in: Experiences in the Military Camp at Singapore, *Proceedings of the Nutrition Society*, 5:116–121, 1947.

of the diets in the same time period. Similarly, the outbreaks of retrobulbar neuritis, keratitis and pellagroid skin rash were plotted alongside nicotinic acid and riboflavin contents of the diets. An association between these deficiency diseases and the consumption of the vitamins was demonstrated. Attempts were made to estimate from these data the minimal levels of intake of these B vitamins in order to prevent the diseases. The means undertaken to combat these diseases in the camp were briefly described.

308. IVAN POLUNIN

Endemic goitre in Malaya

The Medical Journal of Malaya, 5(4):302–319, 1951

Results of a study of 618 Malays and 710 aborigines were reported. The classification on the grades of thyroid enlargement used in the study was described. The incidence of goitre found was presented in tables and maps. Some of the factors influencing the incidence of goitre were discussed. The iodine content of water and some land and sea foods were presented.

309. J.D. MacLEAN and K.R. KAMATH

Infantile scurvy in Malaysia

The Medical Journal of Malaya, 24:200–207, 1970

Four cases of curvy, admitted to the Gombak Aborigine Hospital and the University Hospital, Kuala Lumpur, were reported. All 4 children were from poor families, and had a poor diet consisting mainly of sweetened condensed milk. The clinical and laboratory findings, and response to treatment was described for each case (with photographs). A brief review of some of the clinical picture, radiological signs and diagnostic laboratory tests in scurvy was given. That 4 cases of scurvy, considered to be a rare disease, were found in two hospitals over a five-month period, was considered surprising. Several reasons for this large number of cases were postulated.

NUTRITION AND DENTAL HEALTH

310. C.F. MUMMERY

Dental caries and the Malayan schoolchild

The Malayan Medical Journal, 4:136–137, 1929

The high percentage of dental caries found in the Malayan children was said to “almost amounting to an epidemic of dental disease”. It was felt that this alarming state of affairs was the result of the introduction of western civilizations, specifically in the dietary habits. The introduction of a diet lacking in nutrients and consisting of highly refined processed and seasoned foods, and the ignorance of even elementary knowledge of oral hygiene, were said to be the main factors. How this dietary pattern may fit into the accepted theories of dental caries was described. Teaching and propaganda were discussed as the solution to the problem.

311. C.F. MUMMERY

Dental caries – some contributing causes for the high rate in Malaya

The Malayan Medical Journal, 5:70–71, 1930

Data obtained from a dental examination of schools in Selangor and Negri Sembilan were presented and analysed. The incidence of dental caries was plotted for the various schools studied, from the rural and urban areas, and for the three major ethnic groups. The higher incidence among the Chinese compared with the Malays and Indians was explained in terms of the dietary habits of the children. Similarly, the availability of highly refined and processed foods available in the urban areas was explained to be the cause of higher incidence of dental caries in these schools compared with the rural areas. One of the main factors in the high rate of dental decay amongst school children was the large amounts of “injurious” foods sold to the children in the tuck-shops and food-stalls.

312. E.K. TRATMAN

Mottled enamel as evidence of endemic fluorosis in the Sabak Area of the Sg. Bernam, Kuala Selangor, Selangor

Journal of the Malaya Branch, British Medical Association, 4(2):181–183, 1940.

The toxic effects of excess fluorine on the teeth were briefly described. The author reported observing a mild but undoubted degree of the condition of mottled enamel. The extent of the area involved and the percentage of persons affected were however not known. The most probable source of the excess fluorine was thought to be the drinking water supplies. It was felt that if the area were to be opened up for padi cultivation and population growth, it would be necessary to instal safer sources of water supplies.

313. E.K. TRATMAN

Dental conditions in Malaya

Journal of the Malaya Branch, British Medical Association, 4(2):184–190, 1940.

Generalizations were made about the relative incidences of dental caries, paradontal disease (pyorrhoea) and gum diseases among the three major ethnic groups in Malaya. Each of these oral diseases was then discussed. The relationship between “communication” or “modernization” and the incidence of caries was pointed out. Current theories on the causes of dental caries were debated. It was however agreed that diets play an important role in this disease. The causes of paradontal diseases was discussed in general, and in particular with reference to the ethnic groups in the country.

314. K.S. YIM

Incidence of dental caries among Chinese school children in Simanggang

Malayan Dental Journal, 1:22–24, 1961

Results of a dental survey of prevalence of dental caries among Chinese school children living in Simanggang, Sarawak, were reported. The survey was said to be part of an

intended pre-fluoridation survey of the town. A total of 239 children were examined, and only one child was found to have a caries-free mouth. The high prevalence of caries and rate of caries attack was attributed to the easy availability of toffees, sweets, etc. to the children, and the lack of any dental hygiene.

315. DATIN LADY THOMSON

Dental health, nutrition and the Malayan child

Journal of the Dental Auxiliaries, 2(1):20–25, 1964

The state of nutrition in Malaya was first briefly described. Evidences were put forward to show that dietary deficiencies of several vitamins and minerals were common. How these deficiencies could affect the state of health of the gums, teeth and mouth was then discussed. The possible involvement of certain nutrients in the development of tooth structure was pointed out. The preference for a "sophisticated diet", pappy and sweet foods were identified as major factors contributing to the greater incidence of dental caries in the urban children and among the Chinese. Measures that had been taken to improve the nutritional health of the nation as a whole and in particular to better dental health were mentioned.

316. JOSEPH J. ENGHOLM

Prevention of oral disease through nutrition

Malaysian Dental Journal, 5(1):42–46, 1965

The dangers of the excessive consumption of processed foods and especially the refined fermentable carbohydrates were emphasized. The dry prepared cereals, white bread and refined sugar were said to have little or no nutritional value. On the contrary, they were said to be highly cariogenic. Tooth decay was only one of the many oral diseases. For total oral health, it was felt essential to resort to proper selection of food. In the meantime, total health of the individual could be ensured. The importance of maintenance of oral health rather than treatment of oral diseases was stressed.

317. DATIN LADY THOMSON

Diet and the teeth

Malaysian Dental Journal, 5(2):47–53, 1965

Certain deficiencies and faults occurred in the Malayan diet, and it was felt that some of these affected both the formation as well as the preservation of the teeth. The diets usually contained an excess of carbohydrate in the form of pappy, soft and sweet food and sweet drinks, which had been known to have deleterious effects on dental health. The part played by these foods in caries formation was described. The lack of lysine in the dietary protein was said to be a possible contributory factor to poor dental health in the country. Vitamin A deficiency had been known to affect all epithelial tissues, and it was felt that it might have considerable effect on tooth development. The possible roles played by other nutrients, such as vitamin D, calcium phosphorus, Vitamin B group, ascorbic acid and fluoride, were briefly discussed. It was emphasized

that in order to reduce substantially the incidence of dental diseases, it was necessary to introduce large changes in the diets and habits of the people.

318. GEORGE W. BURNETT and B.J. MORIERA

Rampant dental caries or odontoclasia in Malaysia children

The Dental Journal of Malaysia and Singapore, 9(2):45–50, 1969

The literature on the occurrence, etiology and pathology of “odontoclasia” – rampant disintegration of the teeth and believed to be different from ordinary dental caries – were briefly reviewed. It had been suggested that the condition was essentially caused by the substitution in the diet of predominantly carbohydrate containing food for fruits and vegetables, resulting in a decreased intake of vitamin and minerals and a relative increase in the acid constituents of the ash of the diet. The occurrence of odontoclasia in Malayan children, as seen during the ICNND Survey in 1962* was reported. Photographs showing the various stages of the rampant destructive process were presented and described.

* See abstract number 71

319. Y.H. CHONG

Medical and health aspects of fluoridation (with special reference to West Malaysia)

Report of the Committee Appointed to Inquire into and Report Upon the Fluoridation of Public Water Supplies in West Malaysia, Dental Division, Ministry of Health, Kuala Lumpur, 1971; pp. 36–40

The literature on fluoridation, especially with regards to its safety and fluoride toxicology was briefly reviewed. The beneficial effects of fluoridation as reported by various investigators were pointed out. The possible toxicity effects of fluoride were discussed. The situation of fluoridation of water supplies in West Malaysia was summarised. In view of the presence of only traces or insignificant amounts of fluoride in our drinking water and the widespread prevalence of dental caries, it was felt that a nationwide fluoridation programme should be given serious considerations.

320. L.C. FOO and Y.H. CHONG

Fluoride studies in Malaysia

The Southeast Asian Journal of Tropical Medicine and Public Health, 6(2):264–268, 1975

The 24-hour urinary fluoride excretion of normal healthy adults (a total of 201 samples) and the fluoride content of extracted deciduous teeth of children (total of 142 samples) from a fluoridated (Johore Bharu) and a non-fluoridated area (Kuala Lumpur) were reported. Results obtained for the two areas were compared and discussed with reference to fluoride intake, its excretion and retention, and the incidence of dental caries and enamel mottling. The fluoride content of 9 types of local fish, 2 vegetables and 2 types of tea were also reported to illustrate the other important dietary sources of fluoride besides drinking water.

321. L.C. FOO

Fluoridation: public health surveillance based on urinary excretion of fluoride

Abstracts of Institute for Medical Research Scientific Meetings 1977, pp. 49–50

The paper describes briefly a surveillance project to monitor trends and to provide a warning system to prevent excessive fluoride ingestion by the general public, in conjunction with the nationwide water fluoridation programme. Special attention was paid to workers directly involved in the fluoridation of water supplies. Urinary excretion of fluoride was used as an indicator of fluoride intake. Preliminary results obtained for some workers in fluoridation plants were compared with those obtained for the general public. The importance of surveillance to avert fluoride intoxication was emphasized.

OVERNUTRITION AND ASSOCIATED DISORDERS

322. Y.H. CHONG

Serum lipids and lipoproteins in healthy Malaysians

The Medical Journal of Malaya, 16(2): 136–143, 1961

Serum cholesterol, lipid phosphorus and beta/alpha lipoprotein ratios were reported for 84 apparently healthy male adult blood donors. No significant difference in the levels of these parameters was found among the three major ethnic groups. Results were discussed in relation to types and amounts of fat intake. A highly significant upward trend of serum lipids with age was obtained. There was also a good correlation among the various serum lipid values.

323. K.S. LAU, C.G. LOPEZ and O.M. GAN

Serum cholesterol levels in Malays, Indians and Chinese in Malaya

The Medical Journal of Malaya, 16(3):184–192, 1962

A total of 512 Malayan males, considered “clinically normal and healthy”, were studied for their serum cholesterol values. It was found that there was no significant difference in the mean serum cholesterol levels between the three major ethnic groups in the country. The level showed a definite upward age trend. The results obtained in the study were compared with those of other population groups which had been reported by other investigators, and the differences discussed. The discussions centred around the relationship between types and amounts of fat in the diet and serum cholesterol levels.

324. Y.H. CHONG and G.L. MILLS

A comparison of plasma lipoprotein levels in asians, Africans and Europeans *

The Medical Journal of Malaya, 20(4):284–287, 1966

Detailed analyses of plasma lipoproteins were carried out on 32 apparently healthy men and 5 who were suffering from myocardial infarction. The healthy men consisted of Malaysians, Ugandans, Italians and Englishmen; the diseased subjects were all Londoners. Low and high density fractions of the plasma lipoproteins were prepared and their cholesteryl esters, unesterified cholesterol, triglycerides and phospholipid contents determined. The atherogenic index was calculated using the levels of low density lipoproteins, determined using analytical ultra-centrifugation. The results were presented and discussed in relation to the differences in the diet and environment of the various population groups studied.

* Presented in detail by CHONG, Y.H. in: *The Chemical Composition of Human Plasma Lipoproteins*, a Thesis Submitted to the University of London for the Degree of Doctor of Philosophy, 1964; 208 p.

325. Y.H. CHONG and S.M.A. LAHADY

Hyperlipoproteinaemia in a Malaysian family

Far East Medical Journal, 5:156–159, 1969

A description was given of the clinical history of a Malaysian Chinese woman with severe abdominal pain and associated lipaemia. Total lipids, triglycerides, cholesterol and phospholipid levels in the serum of the patient were presented for a one-year period, inclusive of pre-treatment and post-treatment values. Serum lipoprotein electrophoresis and ultracentrifugation of the low-density lipoproteins fractions were also carried out. Serum lipid levels were determined for members of the patient's family. It was shown that most of them were also moderately hypercholesterolaemic, hypertriglyceridaemic and had raised beta/alpha lipoprotein ratios, hence illustrating a case of familial hyperlipoproteinaemia. This was believed to be the first of such case to be reported in Malaysia. The patient was classed as Type V of the Fredrickson et al (1967)* classification; a brief description of the classification was given.

* Fredrickson, D.S., Levy, R.I. and Lees, R.S., *New England Journal of Medicine*, 276:34, 94, 148, 215, 273, 1967.

326. Y.H. CHONG, C.C. SOH, G.S. HO, R. RAJARATNAM and P. NONIS

Serum low density lipoproteins, triglycerides and cholesterol levels in Malaysia

Clinica Chimica Acta, 34:85–92, 1971

Serum low density lipoproteins, triglycerides, cholesterol and total lipids values were presented for over 300 clinically healthy Malaysian subjects and 172 hospital patients with ischaemic heart disease. The healthy subjects consisted of aborigines and blood donors of the three major ethnic groups. A rise in the serum lipids with age was observed up to about 50 years of age. Although no ethnic difference was observed in the lipid levels among donors, their values were significantly higher than that of the

aborigines. There was a good correlation between serum levels of cholesterol, triglycerides, and low-density lipoproteins. It was suggested that values above 600 mg% low-density lipoprotein, 250 mg% cholesterol and 280 mg% triglycerides (non-fasting) were to be regarded as indicative of hyperlipoproteinaemia. Elevated serum lipid values as important risk factors for the development of coronary arteriosclerosis were discussed.

327. C.J. BURNS-COX, Y.H. CHONG and R. GILLMAN

Risk factors and the absence of coronary heart disease in aborigines in West Malaysia
British Heart Journal, 34:953–958, 1972

A total of 73 adult aborigine men were included in the study. Besides a clinical examination and measurement of blood pressure, serum cholesterol, triglycerides, β -lipoproteins and total lipids were determined. Mean height and weight were measured and obesity index calculated. Mean packed cell volume, serum albumin and erythrocyte transketolase activity were also determined to show that the subjects were adequately nourished. Results obtained were separately presented for the fringe jungle and the deep jungle groups of the aborigines. Various risk factors affecting the development of coronary heart disease were identified, but the discussion centred on raised serum lipids and raised systemic blood pressure, believed to be the two most important factors.

328. K.L. KHOO, Y.H. CHONG and R.P. PILLAY

Familial type II hyperlipoproteinaemia in a Chinese family
Medical Journal of Australia, 1:1048–1050, 1973

A Chinese family, with familial Type II hyperlipoproteinaemia was described. Serum levels of cholesterol, triglycerides, β -lipoproteins and lipoprotein electrophoresis pattern were determined for all the 16 members in the family. It was obtained that 7 out of the 14 siblings were affected. The family pedigree confirmed that the mode of inheritance was an autosomal dominant trait. The propositus was observed in a follow-up study for about 9 months, during which a diet restricted in cholesterol-rich foods and raised polyunsaturated fats were given. The lowered serum cholesterol and β -lipoprotein levels were said to illustrate the effectiveness of dietary control of the disorder.

329. K.L. KHOO and Y.H. CHONG

Diet and drugs for hyperlipidaemia. (Editorials)

Medical Progress, May, 1974; pp. 13–14

In this editorial, the authors wrote of the emergence of coronary heart disease as a major killer amongst city dwellers of Kuala Lumpur, besides other Asian cities. Fasting serum lipids levels of urban Malaysians were said to be comparable with those in the Americans (data presented). It was suggested that the serum lipid chemistry of all patients be thoroughly assessed and a phenotype assigned prior to the commencement

of treatment. Several drugs in use in this treatment were mentioned. However, primary dietary prevention was thought to be feasible and preferable.

330. Y.H. CHONG

Diet as a risk factor in coronary heart disease

Journal of the Medical and Health Laboratory Technology Malaysia, 2(1):3–6, 1975

Coronary heart disease was recognized as a major killer amongst the urban communities in Asia, including Malaysia. Among the risk factors listed, several were said to have significant associations with the diet. The involvement of dietary factors, for example quantity and quality of dietary fats, dietary cholesterol, sugar, trace metals and dietary fibre in the development of the disorder was discussed. The change in the diets of nations in relation to their incomes was described. Serum lipid levels of Malaysians were presented to show that they were approaching or even appear to exceed those found in Americans. Fearing that the incidence of coronary heart disease in the country may increase from year to year, it was proposed that primary dietary prevention be encouraged.

331. Y.H. CHONG and K.L. KHOO

Serum lipid levels and the prevalence of hyperlipidaemia in Malaysia

Clinica Chimica Acta, 65:143–148, 1975

A total of 1025 apparently healthy urban subjects, of both sexes and all races, and with ages ranging from 3 to 81 years, were studied for their serum cholesterol, triglycerides and β -lipoprotein values. Mean and standard deviations for these values were presented by age groups. The age-related means and 2SD of each of the lipid parameters were then calculated and suggested to be used as the “upper limits of normality” or “local cut-off values”. Using these established cut-off values, the prevalence of hyperlipidaemia in the healthy subjects studied was compared to that in 705 coronary heart disease subjects.

332. J.J. JONES

A comparative study of the prevalence of adult obesity in the three racial groups of Kuala Lumpur

The Medical Journal of Malaysia, 30(4):256–260, 1976

The prevalence of obesity in an urban population was studied. Heights and weights of 300 adult women and 300 adult men, aged 20 to 70 years, and from all races, were measured. From these, the Quetelet Index ($\text{weight} \cdot \text{height}^{-2}$) was calculated and compared for the three races and with that of a group of Americans. In a sub-sample of the population studied, skin fold thickness and a simple dietary intake were determined. An attempt was made to relate the prevalence of obesity with serum cholesterol level, blood pressure and plasma uric acid level, indicators of coronary heart disease and diabetes.

333. TONY K.W. NG and Y.H. CHONG

Interlaboratory cholesterol standardization programme in Peninsular Malaysia

Journal of the Medical and Health Laboratory Technology Malaysia, 5(1):1–4, 1978

A programme to evaluate the methodologies and techniques used for serum cholesterol determination in hospital laboratories was described. Eleven laboratories, from various general hospitals in major towns in Peninsular Malaysia participated, with the Nutrition Division of the Institute of Medical Research as the reference laboratory. The method used by the participating laboratories, and the possible sources of errors were discussed. These included source of cholesterol standard (serum or chemical standard), method of determining cholesterol concentration, source of reagents, and stability of Lieberman-Burchard Reagent. Certain precautions and techniques were suggested to be followed to ensure precision and accuracy, so as to enable cholesterol determinations performed in the country to be comparable.

NUTRIENTS IN FOODS

334. TERTIUS CLARKE

The examination of milk

Journal of the Malaya Branch, British Medical Association, No. 3, 49–52, 1907

The importance of the examination of milk to detect adulteration and contamination, with a view to protecting consumer interest, was emphasized. Existing standards for the composition of milk were found to be inadequate and new standards proposed. Estimation of the acidity of milk was suggested to be a simple method to detect the presence of acid producing organisms in milk.

335. GILBERT E. BROOKE

Glycine soja

Malaya Medical Journal, 4(2):20–23, 1911

A general description was given of soya bean. The various products made from the bean were briefly described, including bean curd, bean milk, bean cheese, bean flour, bean oil, etc. The content of the major nutrients in the soya bean was presented and compared with several cereals, vegetables and animal foods. Soya bean was described as “an article of the diet which contains all the essential and properly proportioned constituents of a perfect diet”.

336. C.D.V. GEORGI

Some Malayan vegetable oils and fats of minor importance

Malayan Agriculture Journal, 10:222–227, 1922

The publication reported the determination of fat (oil) content of seeds from various plants and fruits, namely Brazil nut, Calophyllum, Croton, Pulasan and Rambutan.

Various physical and chemical characteristics of the separated oils were also studied, including density, refractive index, saponification value, iodine value and acidity.

337. M. BARROWCLIFF

The vitamins

Transactions of the 5th Congress of the Far Eastern Association of Tropical Medicine, Singapore, 1923; Reprinted by the St. John's Press, Kuala Lumpur; 7 p.

Progress in the research of vitamins and the current state of knowledge of these recently recognized essential food factors were briefly reviewed. The then known vitamins, vitamin B, C and A were discussed. The discovery of these vitamins, their properties, stability during cooking, the role that they play in metabolism, diseases attributed to deficiency of these vitamins and food sources were some of the aspects covered. Referring to the development of the knowledge of vitamins, it was said that "more had been learnt about dietetics in the last 10 years than in the previous 1,000".

338. A.T. STANTON

Vitamins and diet

Medical Bulletin No. 1, Federated Malay States, Kuala Lumpur, 1923; 3 p.

A general discussion on vitamins, diet and deficiency diseases was presented. A brief review on the history of vitamin research and discovery was given. A table was given on the occurrence of vitamins A, B and C in some foodstuffs. Presence or absence of the vitamins were indicated; quantities of the vitamins were not reported.

339. The Malayan Medical Journal

Vitamin B

The Malayan Medical Journal, 2:64–65, 1927

Vitamin B1 and beri-beri were briefly discussed in this editorial. The recognition of beri-beri as a deficiency disease due to consumption of polished rice, the curative and prophylactic properties of rice polishing extracts, and the food sources of the vitamin were the main points of discussion.

340. C.D.V. GEORGI and GUNN LAY TEIK

Pulasan and rambutan fats

Malayan Agriculture Journal, 17:364–366, 1929

The seeds of pulasan and rambutan fruits were analysed for their fat contents. Various analytical constants of the fats extracted, such as specific gravity, refractive index, saponification value, iodine value and acid value were reported. Results obtained were said to be in agreement with those previously reported (Georgi, 1922)*. The possible economic importance of fat from these seeds were discussed.

* See abstract number 336.

341. JOHN LEWIS ROSEDALE

Sunlight and vitamins

The Malayan Medical Journal, 4:96, 1929

In this short communication, the ability of sunlight and ultra-violet light to produce anti-rachitic properties in irradiated oils was discussed. On the other hand, the practice of exposing rice and other similar foods for long periods to direct sunlight was discouraged since vitamins B1 and B2 could be destroyed.

342. R. BRUNEL HAWES

The soy bean

The Malayan Medical Journal, 5:72, 1930

The method for preparing a soy bean pie, suggested for hospital patients, was described. The protein and calorie value, and the cost of the pie, were compared with the usual pork ration. Soy bean in the recipe could be replaced by peanut with no alteration in the method of preparation or increase in expense.

343. THE MALAYAN MEDICAL JOURNAL

Vitamin A

The Malayan Medical Journal, 6:64, 1931

In this editorial, the possible functions of vitamin A were briefly discussed. The role that vitamin A plays in human nutrition, known at that time, was pointed out.

344. C.J. OLIVEIRO

Calcium in nutrition – a review

The Malayan Medical Journal, 6:101–104, 1931

Several aspects of calcium were discussed. Human requirements of the mineral and the best sources of supply of calcium were first touched upon. The views of investigators on the excretion of calcium and its level in blood were quoted. The possible influence that vitamin D has on calcium metabolism, including toxic doses of the vitamin, was discussed.

345. I.A. SIMPSON

Studies in vitamin B1 (the antineuritic vitamin). Part I. The concentration of vitamin B1 from rice polishings

Institute for medical Research, Federated Malay States, Bulletin No. 2, Kuala Lumpur, 1931; 10 p.

Details were given for the extracting of vitamin B1 from rice polishings. The method of concentration consisted of an initial stage of extracting the vitamin by means of a very dilute solution of sulphuric acid. This was followed by absorption onto "acid clay". After a series of chemical treatment, a pale yellow semi-crystalline residue was

obtained. The isolates were then used for various biological tests in pigeons. Both prophylactic and curative methods were employed. In the former, the appearance of typical symptoms of so-called "polyneuritis" were taken as the criterion. For the curative tests, only those birds showing typical opisthotonos were used. The isolates prepared were concluded to be extremely potent.

346. LEONG PENG CHONG

A review of the B vitamin complex

The Malayan Medical Journal, 7:19–22, 1932

Evidences were put forward to show that the water soluble B vitamin consisted of 2 substances, namely, an antineuritic vitamin termed B1, and a pellagra-preventive factor, termed B2. The chemical and physical properties of vitamin B1, its natural occurrence in foods, and methods for the preparation of this antineuritic vitamin were briefly reviewed. A short discussion on vitamin B2 followed. Reports from various investigators were quoted to show the possible presence of several other factors in the vitamin B complex.

347. CHRISTOPHER JOSEPH OLIVEIRO

Some aspects of vitamin C: a review

The Malayan Medical Journal, 7:15–18, 1932

Selected aspects of the vitamin were discussed. The pathological changes in the teeth in vitamin C deficiency were described. Metabolism in scurvy touched on the possible role of the vitamin in calcium and phosphorus metabolism. The vitamin C content of apples, papayas, eggs, grapes and meat was discussed. The ability of some animals to synthesize the vitamin was briefly mentioned.

348. CHRISTOPHER JOSEPH OLIVEIRO

A preliminary note on the antiscorbutic value of tropical foods

The Malayan Medical Journal, 7:38–45, 1932

Several experiments with animals were described to determine the antiscorbutic value of foods. The prophylactic type of experiments were used, in which a basal diet devoid of the vitamin C was given together with various doses of the foodstuff under investigation. The minimum protective dose that prevented the onset of symptoms and signs of scurvy in the guinea pig was determined. Studies with the local small Chinese orange was described. Subsequently, a variation to the method was made, namely histological changes in the teeth of the guinea pigs was observed, such changes being manifested before visible signs of scurvy were detectable. Experiments were carried out with mangosteen and spinach. A rough idea of the antiscorbutic properties of the three different foodstuffs was thus available.

349. D.C. RICHARDS

Chemical analysis of Malacca milk supply

The Malayan Medical Journal, 7:52–53, 1932

Forty-two samples of unadulterated milk, obtained from cows belonging to four different dairies were examined for their “fats” and “solids not fat” contents. The values obtained were compared with the legal standards fixed for these substances in the country.

350. JOSEPH PADUA MORRIS and CHRISTOPHER JOSEPH OLIVEIRO

Calcium in tropical foods

The Malayan Medical Journal, 8:236–238, 1933

Data on the principal local food sources of calcium were presented. Details of the method used in the analyses were given. A total of about 60 types of foods were examined. The discussion was mainly devoted to the human requirements of calcium.

351. LEONG PENG CHONG

A rough evaluation of vitamin A in oils

The Malayan Medical Journal, 9:205, 1934

A colorimetric method for the determination of vitamin A was described. The method was based on the measurement of the blue colour developed when vitamin A reacts with antimony trichloride in chloroform. Results were expressed in blue units.

352. CHRISTOPHER JOSEPH OLIVEIRO

The antiscorbutic value of tropical foods

The Malayan Medical Journal, 9:50–54, 1934

This is a follow-up report of the one made by the author in 1932*. Young guinea pigs were fed on a basal diet devoid of vitamin C. To this was added various doses of the foodstuff to be tested. The minimum protective dose, taken as the least amount necessary to maintain a normal histological picture of a cross-section of the root of the incisor tooth, was determined for each foodstuff. About 80 kinds of local foodstuffs were studied and the minimum protective dose for each foodstuff was expressed as gram or cubic centimeter. Table presented permit comparison of the antiscorbutic value of foods analysed. The discussion centred on several fruits and vegetables, and their possible contribution as good sources of the antiscorbutic vitamin.

* See abstract number 348

353. JOHN LEWIS ROSEDALE and CHRISTOPHER JOSEPH OLIVEIRO

The nutritional properties of red palm oil

The Malayan Medical Journal, 9:140–145, 1934

The publication reported the results of an investigation on the fat soluble vitamins (vitamin A and D) of red palm oil and other oils commonly used for cooking purposes. Vitamin A potency of red palm oil, heated palm oil, coconut, gingelly and earthnut oils were determined using experimental rats in prophylactic as well as curative experiments. Xerophthalmia was the main criterion used. In separate experiments, these oils were tested for vitamin D potency. The ability of the oils in healing rachitic beading of the costo-chondral junctions was determined in rats.

354. JOSEPH PADUA MORRIS and JOHN LEWIS ROSEDALE

The mineral content of some tropical foods

The Malayan Medical Journal, 10:1–6, 1935

In an attempt to supply data for all the mineral elements which appeared to be important dietary essentials and which are found in local foods, about 70 kinds of foodstuffs were examined. Gravimetric or colorimetric methods, details of which were given, were employed. The minerals reported were chloride, phosphates, calcium, magnesium, sodium, potassium, sulphates, iron, copper, manganese and iodine. Investigations were also made into the differing results obtained for different samples of the same kind of foodstuff. It was concluded that the nature of the soil, methods of cultivation and manuring influenced considerably the mineral content of foods. Experimental evidences to support this were put forward for coconut, pineapples and padi grown under different conditions.

355. J.L. ROSEDALE

Chemical analyses of Malayan foods

Government Printing Office, Singapore, 1935; 29 p.

The proximate composition of 5 main classes of foods were presented in Table I. A total of about 170 foodstuffs were included. Calories were calculated and presented in 100g, per pound and per kati of the foodstuffs. Table II presented the content of some amino acids in 18 animal products and 4 plant foods. A histogram showing a comparison of various protein sources in their ability to promote growth and support lactation in feeding experiments was also given. Vitamin A and carotene content of about 100 types of foods of both plant and animal origin were given in Table III. With the activity of vitamin B of dried yeast fixed arbitrarily at 100 as a reference, the activity of this vitamin in about 50 other types of foodstuffs were presented in Table IV. The individual members of the vitamin B group were not reported. It was said that "our knowledge of vitamin B is imperfect". The antiscorbutic value of some 80 types of fruits and vegetables were reported in Table V, presented as minimum protective dose for guinea pigs. Table VI gave the content of 12 minerals in about 70 kinds of foodstuffs. The proximate composition of about 50 types of cooked foods was also reported, in Table VII. In all the tables presented, brief notes on the method of determination and the functions of the nutrients were given.

356. T.A. BUCKLEY

The dietetic value of palm oil

Malayan Agriculture Journal, 24:485–488, 1936

The publication aimed primarily at promoting red palm oil for culinary or medicinal use on the grounds that it contains carotene, the precursor of vitamin A, the activity of which was said to be more or less equivalent to that of cod liver oil. The solid component of the oil was suggested to be removed which improved palatability and the resulting liquid was said to be richer in carotene than the original whole oil. The discussion also brought out the results presented by Simpson (1936)* that mature fruits with low acidity were the most potent for vitamin A.

* See abstract number 358.

357. I.A. SIMPSON

Recent work on vitamins and hormones

The Malayan Medical Journal, 11:1–5, 1936

The vitamins discussed in the article were vitamins A and D. The food sources, functions, and chemical structure of the vitamins were discussed. The major portion of the paper dealt with the chemistry of several hormones.

358. I.A. SIMPSON

The carotene content of Malayan palm oil

Institute for Medical Research, Federated Malay States, Bulletin No. 1, Kuala Lumpur, 1936; 14 p.

The carotene content of palm oil, obtained from fruits at different stages of maturity, was studied. Two methods of determination were used, namely biological assay and tintometric estimation. In the biological assay, white rats were fed the test samples of palm oil and the increase in weight obtained compared with that given by a standard carotene. The potency of each sample of palm oil was thus calculated. Tintometric assay was carried out by (1) measuring the intensity of the yellow colour of the chloroform extracts, and (2) measuring the blue colour developed on addition of a chloroform solution of antimony trichloride. Results obtained by this colorimetric method were generally lower than that given by the biological assay method. It was found that palm oil obtained from fully ripened fruit and rendered with such precautions as to keep the free acids to a minimum would possess the maximum carotene content. A study was also made of the various methods available for extracting carotene from palm oil. The most suitable method was proposed and described.

359. I.A. SIMPSON

The use of the freezing point of milk for the detection of added water

The Malayan Medical Journal, 11:28–35, 1936

The freezing point of milk as obtained by various investigators were presented to demonstrate the constancy of the value. The method, proposed for the detection of added water in milk, was applied to 171 samples of genuine cow and buffalo milk. A standard value for freezing point depression was suggested. The method was also found to give satisfactory results with samples of milk which had been preserved with the prescribed amounts of formalin solution. For these preserved milk, a separate standard for freezing point depression was recommended.

360. I.A. SIMPSON

Increasing the vitamin B content of Chinese cabbage

The Malayan Medical Journal, 8:207–208, 1938

In this short communication, the author drew attention to the article of Miller and Abel (1933)* which reported the increased vitamin B1 content of Chinese cabbage when it was pickled with salt and rice bran. Simpson recommended the carrying out of larger scale trials of the method in this country and to extend it to other commonly consumed vegetables.

* Miller, C.D. and Abel, M.G. (1933). Adsorption of vitamin B1 by plant tissues. Part I. Adsorption of vitamin B1 by *Brassica chinensis* when pickled with salt and rice bran. *Journal of Biological Chemistry*, 100:731.

361. P.C. LEONG

Vitamin A content of Malayan foods

Journal of the Malaya Branch, British Medical Association, 2(4):219–228, 1939

Over 80 types of local fruits and vegetables (including cereals, pulses, nuts and oil seeds) were examined for their carotene content and about 40 types of foodstuffs were analysed for their vitamin A and carotenoids. Separate methods were described for foodstuffs that contain only carotene, those containing only vitamin A, and those foodstuffs that contain both vitamin A and carotene. Carotene colour was measured directly in a tintometer, whilst vitamin A was reacted with antimony trichloride and the resultant colour read in a tintometer. Results were expressed as International Units of vitamin A. The results obtained were discussed in relation to human requirement for this vitamin.

362. P.C. LEONG

Vitamin A content of Malayan bananas

Journal of the Malaya Branch, British Medical Association, 3(2):156–161, 1939

About 17 types of the Malayan bananas were studied. A detail description of the procedure used to determine carotene content was given. The yellow coloured ether

extract containing carotene was measured in a tintometer and compared with known concentrations of a pure specimen of β -carotene. The determination was repeated on two varieties of bananas, using the biological test method on rats. Different dosage of the bananas were given to rats fed on a vitamin A depleted diet and the growth response obtained compared with that given by standards of β -carotene. It was found that the colorimetric method over-estimated the carotene content by a factor of about 2.5 times. This was thought to be due to the ether extract containing a mixture of carotenoids. The obtained values were therefore corrected by reducing them by a factor of 2.5. Results were reported as International Units vitamin A per 100 g bananas.

363. P.C. LEONG

The antiscorbutic activity of dehydroascorbic acid

Journal of the Malaya Branch, British Medical Association, 3(3):228–237, 1939

The study aimed at comparing the biological activities of different "forms" of ascorbic acid: 1. reduced ascorbic acid, 2. dehydroascorbic acid oxidised with ascorbic acid oxidase, 3. dehydroascorbic acid oxidized with iodine, and 4. irreversibly oxidised ascorbic acid, obtained by boiling a solution of (2). Each of the "forms" were fed to guinea pigs to study their effect on the survival period, maintenance of weight, degree of protection from scurvy and extent of ascorbic acid storage in the tissues. It was shown that all the first three "forms" of ascorbic acid possessed antiscorbutic activities and were of a similar magnitude. Thus the reversibly oxidised forms of ascorbic acid (i.e. 2 and 3) were of the same antiscorbutic potency as the reduced form. All animals given the irreversibly oxidised ascorbic acid (form 4) died.

364. P.C. LEONG

Vitamin C content of Malayan foods

Journal of the Malaya Branch, British Medical Association, 3(3):238–257, 1939

In the first part of this investigation, ascorbic acid was determined for over 60 types of fruits and over 70 types of vegetables by titrating with 2, 6-dichlorophenol indophenol. Each of the foodstuffs was also examined for the presence of ascorbic acid oxidase and reversibly oxidised ascorbic acid. In addition, the role that trichloroacetic acid played in stabilising the vitamin C during titration and its interference in the reduction of dehydroascorbic acid by hydrogen sulphide was studied. Vitamin C content was expressed in both mg and International Units. Guava, *Ramnia* and papaya contained the most vitamin C for the fruits. Among the vegetables, *Kelor*, *Kai Lan Choy*, chilli and *Sesawi* were the richest in this vitamin. Results obtained showed that only a few of the foodstuffs do not contain ascorbic acid oxidase and that not all foodstuffs contained reversible oxidised ascorbic acid.

Part II of the report dealt with the effect of boiling and frying on a number of vegetables. For the ten vegetables studied, it was shown that the amount of loss in vitamin C depended on the period and method of cooking and the nature of the vegetables.

Results obtained were discussed in relation to human requirements of vitamin C and meeting this requirement by using locally available rich sources that are also cheap. The effects of cooking was also taken into consideration in this context.

365. JOHN LEWIS ROSEDALE

The nutritive value of rice *

Journal of the Malaya Branch, British Medical Association, 3(3):213–227, 1939

A series of experiments were conducted to further investigate the differences between polished and unpolished rice by observing growth in young rats. The basal diet of the animals consisted of polished rice, casein, red palm oil, calcium carbonate and marmite. A series of experiments were designed in which the polished rice was substituted by unpolished rice and where one or more of the above constituents of the basal diet were left out. In addition, 20 other food items were added, one in each experiment, to the basal diet to determine if these supplements improved the diet. Results obtained showed that unpolished rice gave better growth in rats than polished rice in all the experiments. Further, the experiments showed that none of the foods chosen as supplement was able to bridge the difference between polished and unpolished rice.

* Also in: *Transactions of the Congress of the Far East Association of Tropical Medicine, Hanoi, 1938*, volume 1, pp. 489–501.

366. I.A. SIMPSON

The antineuritic value of parboiled rice (a comparison with undermilled raw rice)

Institute For Medical Resarch, Federated Malay States, Bulletin No. 4, Kuala Lumpur, 1939; 15 p.

Experiments were conducted to compare the antineuritic values of parboiled and raw rice. White rats fed on a basal diet deficient in vitamin B1 were compared with those on the basal diet supplemented with parboiled or raw rice. Growth of the animals and the appearance of polyneuritis were observed. It was obtained that overmilled raw rice (devoid of pericarp) contained insufficient vitamin B1 to protect the rats from loss of weight and eventual paralysis. Parboiled rice, whether under or overmilled, were found to possess antineuritic properties comparable to that of undermilled raw rice (about 70% of pericarp remaining). The process of parboiling of rice was discussed. It was thought that the antineuritic value of parboiled rice could be attributed to the parboiling process, during which some of the vitamin B1 was dissolved out of the pericarp and absorbed by the endosperm thus retaining the vitamin inside the grain. The vitamin B1 content of parboiled rice would then be less dependent on the amount of pericarp retained, i.e. the degree of milling.

367. P.C. LEONG

Vitamin B1 (thiamine) content of foods

Journal of the Malaya Branch, British Medical Association, 4(1):66–107, 1940

Young rats deficient in vitamin B1 produced a slow rate of heart beat. This condition of bradycardia was known to be "cured" by the administration of substances contain-

ing this vitamin. On this principle, it was suggested that the vitamin B1 content of a substance can be determined by comparison with a standard of known potency. This "bradycardia method" was used for the assay of thiamine in over 400 types of foods, which included cereals, pulses, fruits, vegetables, milk and milk products, eggs, meat and fish. Some foodstuffs were analysed for their B1 content in the raw state and again after cooking to determine the amount of thiamine loss due to the various processes of cooking. Results obtained were expressed in International Units per 100g foodstuff. The discussion touched on human requirements of thiamine, the concept of "minimum" and "optimum" intakes, and values of intakes proposed by various investigators cited.

368. P.C. LEONG

Nicotinic acid content of foods

Journal of the Malaya Branch, British Medical Association, 4(3):261–278, 1940

The cyanogen bromide-aniline method, based on the Koenig reaction was used in the determination. It involved the production of a yellow colour when cyanogen bromide and aniline were added to the pyridine nucleus of the nicotinic acid. The colour so produced was read in a tintometer and compared with nicotinic acid standard. The procedure was described in detail, and included discussions on methods of extraction for different foodstuffs and the method of treatment when extracts were coloured. About 100 types of foods, including cereals and pulses, fruits and vegetables, meat and meat products, dairy products, poultry, fish and other marine products. The richest sources of nicotinic acid were highlighted. Results were also discussed in relation to human requirement and adequacy of dietary intake of the vitamin. A brief reference was made to the occurrence of pellagra in Malaya.

369. J.P. MORRIS

Zinc content of some tropical foods

Journal of the Malaya Branch, British Medical Association, 4(1):114–117, 1940

The zinc content of about 100 types of local foodstuffs were reported. Animal products, vegetables, fruits and cereals were included in the study. The possible role of zinc in metabolism was discussed.

370. J.P. MORRIS

Cobalt content of some tropical foods

Journal of the Malaya Branch, British Medical Association, 4(3):279–283, 1940

The publication reported the cobalt content of over 150 kinds of foodstuffs, including animal products, cereals and pulses, fruits and vegetables. A colorimetric procedure using the nitroso-R-salt was used (no description of method given). It was shown that the principal sources of cobalt were pulses, nuts and egg-yolk. Other foodstuffs, for example, *blachan*, edible bird's nest, fish roes, oysters and prawns were also found to be rich in this mineral. Rice, fruits and vegetables were considered poor sources of

cobalt. Various studies were cited to show the importance of cobalt in the nutrition of animals and man.

371. JOHN LEWIS ROSEDALE and J.N. MILSUM

Malay leaf and other vegetables and their analyses

Department of Agriculture, Straits Settlements and Federated Malay States, General Series No. 31, 1940, 19 p.

A total of 62 types of vegetables were analysed and 13 nutrient values were presented, including proximate composition, several minerals, vitamin C and carotene. The vegetables, both wild and cultivated were mostly obtained from the Larut District of Perak, and had been used by the Malays as food items. A brief description was given for each of these plants, and the method of preparation for consumption.

372. R.A. ALTSON

A note on the distribution of vitamin B1 (thiamine) in the rice grain

Malayan Agriculture Journal, 29:127–128, 1941

It had been known that a negative correlation existed between the amount of milling to which rice was subjected and its content of thiamine. The extent to which a rice grain had been milled could be determined by immersing it in an aqueous solution of iodine and observing the colour formation. Some investigators had suggested the use of this staining technique as a rough measure of the thiamine content of the grain. For this to be valid, it was necessary to assume that the thiamine is uniformly distributed throughout the aleurone layer and the embryo. The author felt that this was not so, and 50% of the thiamine of a grain may be concentrated in the embryo.

373. PAUL FASAL

A nutritional survey of the Federated Malay States. IV – Food values of common articles of diet for Malays and Tamils, etc., in Malaya

Institute for Medical Research, Federated Malay States, Bulletin No. 3, Kuala Lumpur, 1941; 22 p.

This bulletin is a compilation of nutrient composition of foods from different publications. This food composition table covered only the foodstuffs most commonly used in Malaya and was said to be reasonably comprehensive for Malay and Tamil dietary. The author drew attention to the variations in nutrient composition due to season, soil, strain, etc., and nutrient losses and changes during cooking. A total of about 300 foodstuffs were included in the tables and grouped into various classes. The bulletin also included some discussion on dietary standards. Nutrient requirements as given by several dietary standards were reported.

374. F.E. BYRON

Modern methods of rice milling

The Medical Journal of Malaya, 1(3):177–179, 1947

The four principal methods that had been used to reduce the loss of nutrients due to milling were discussed. Preservation and restoration of nutrients were achieved by undermilling, parboiling, “conversion” and fortification. The advantages and disadvantages of each method were pointed out.

375. F.E. BYRON

Food preservation and nutrient losses

The Medical Journal of Malaya, 2(1):62–65, 1947

The effects of the various methods of food preservation on the nutritive value of the treated foods were generally discussed. The possible loss of the major nutrients and some vitamins were discussed for heat sterilization and canning, dehydration or drying, and refrigeration. It was concluded that all the three main methods discussed had little deleterious effects on the nutritive value of foods.

376. P.C. LEONG

Riboflavin content of foods *

The Medical Journal of Malaya, 2(2):148–156, 1947

A biological method, based on the growth response of rats, was used. Young male rats were fed a basal diet free of riboflavin. When the rats were depleted of riboflavin, i.e. when each rat showed a stationary growth curve, the test foodstuffs were fed to these animals. Growth response was then recorded. Concentration of riboflavin in the foodstuff was calculated by comparing with the growth response given by a standard preparation of riboflavin. About 50 foodstuffs, represented by cereals and pulses, fish and other marine products, vegetables and fruits, and dairy products were studied. Results obtained show that riboflavin was widely and more or less evenly distributed among the common foods. The amount contributed by the various foodstuffs in the usual human dietary was discussed separately under the different groups of foodstuffs. A few foodstuffs were also examined in the cooked state to ascertain the amount of loss due to cooking. The effects of cooking and frying were looked into.

* Reprinted from: *Journal of the Malaya Branch, British Medical Association*, 5(2):104–108, 1941.

377. P.C. LEONG and J.P. MORRIS

Calcium and oxalic acid of vegetables

The Medical Journal of Malaya, 1(4):289–297, 1947

Oxalic acid in foodstuffs is important as they are known to adversely influence the utilization of calcium in the diet. Calcium and oxalic acid content of some 70 vegetables commonly eaten in Malaya were determined. Oxalate in the foodstuffs was

precipitated with saturated calcium chloride. The calcium oxalate so obtained was then titrated with potassium permanganate. Results obtained were separated into four tables according to their calcium or oxalic acid content. Five cheap vegetables were identified as excellent sources of calcium. Oxalic acid content varied, and in some it was practically nil. The fate of ingested oxalate was briefly discussed.

378. STANLEY G. WILLIMOTT

Malayan food composition table

Department of Agriculture, Federation of Malaya, Scientific Series No. 23, Kuala Lumpur, 1949; 34 p.

A total of 195 food items were included in the Table. Foodstuffs were grouped into 12 broad classifications on the basis of similarity of character or of practical uses, and their percentage composition expressed in terms of 11 nutrients. Only the principal staple foodstuffs of the country were selected for the Table. The Table was compiled after a wide scrutiny of an extensive literature and also included some of the author's unpublished observations. The publication contained 52 references.

379. S.G. WILLIMOTT

The composition and nutritive value of the Egyptian kidney bean (*Dolichos Lablab* Linn.)

The Medical Journal of Malaya, 3(4):245–248, 1949

The occurrence, nomenclature, species and botanical characteristics of the Egyptian Kidney Bean (*Dolichos Lablab*) was briefly reviewed. Seeds of different colours, a characteristic of this legume, appeared to vary little in the percentage composition of their principal nutrients. Its composition and nutritive value were said to correspond to those of the grams. Data were presented to show that the bean contained appreciable amounts of calcium, vitamin A and ascorbic acid; thiamine had been shown to be present. Emphasis was placed on the possible presence of hydrocyanic acid in the beans. On investigating the green pods, mature beans, and the germinated seeds, negative results were obtained in every case. It was concluded that the bitter principle in these beans could not be a cyanogenetic glucoside.

380. DIVISION OF BIOCHEMISTRY, INSTITUTE FOR MEDICAL RESEARCH

Loss of nutrients during the washing and cooking of rice

Institute for Medical Research Annual Report for 1949, Kuala Lumpur, 1950; pp. 21–22

Experiments were first carried out to determine if there was any difference in the iron content of milled rice when it was cooked by the Tamil method of using surplus water and in an aluminium pot or when cooked by the Malay method of using only the amount of water needed and cooking the rice in the iron pot. No difference was found. In both cases, the greatest portion of the iron was lost in the wash water, comparatively little being lost in the discarded water from the Tamil cooked rice.

Similar findings were obtained when thiamine was determined. However, in the case of undermilled rice, it was found that the Malay method was preferable.

381. I.A. SIMPSON

The distribution of thiamine and riboflavin in rice grains: with a study of the changes that occur in the distribution of thiamine during the process of parboiling rice *

Institute for Medical Research, Federation of Malaya, Bulletin New Series No. 6, Kuala Lumpur, 1951; 19 p.

A photographic method for the location of thiamine and riboflavin in rice grains was described in detail. Cut rice grains were treated with an alkaline solution of potassium ferricyanide, thus converting the thiamine to thiochrome which showed a characteristic fluorescence when illuminated with UV light. Riboflavin which fluoresced directly was also similarly illuminated. With the use of appropriate filters, the location of these vitamins were recorded photographically. It was confirmed that both thiamine and riboflavin existed in the germ or embryo; but whereas thiamine was largely concentrated in the scutellum, riboflavin was more uniformly distributed throughout the tissues of the embryo. The same method was used for the study of the distribution of thiamine when rice grains were subjected to different methods of parboiling. It was shown that under certain conditions, considerable diffusion of thiamine into the endosperm did occur.

* Also In: *Cereal Chemistry*, 28:259–270. 1951.

382. I.A. SIMPSON, A.Y. CHOW and C.C. SOH

A study of the nutritional value of some varieties of Malayan rice

Institute for Medical Research, Federation of Malaya, Bulletin New Series No. 5, Kuala Lumpur, 1951; 28 p.

The content of several nutrients of the principal rice varieties grown in Malaya was reported. Details of the methods used in the analyses of moisture, ash, protein, iron, calcium, phosphorus, phytic acid phosphorus and aneurin for the study of 30 different varieties of padi, milled rice and hulled rice were described. The cultural characteristics of the various varieties of rice were briefly described. Since only one sample of each padi variety was examined, it was not possible to obtain any correlation between the type of soil and the level of any particular nutrient in the padi. However, certain suggestive similarities were said to be found between the level of some nutrients of different rice variety that had been grown in the same area. It was felt that further studies should be made on the influence of variety and of the soil and other cultural conditions on certain nutrient characteristics of rice.

383. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

"Premix" rice experiment in Malacca

Institute for Medical Research Annual Report for 1951, Kuala Lumpur, 1952; pp. 35–36

Results of a field study of the effects of adding "premix" to the diet of Malay school children in Malacca, started in 1949, were briefly reported. About 800 children were selected and divided into 3 groups. Group 1 children received a simple additional meal in school, the second a similar meal fortified with "premix" containing thiamine and niacin, and the third a meal fortified also with riboflavin. The children were measured for their height and weight and examined for clinical signs of vitamin deficiencies. The determinations were repeated at monthly intervals and terminated after 14 months (mid 1951). Results obtained before and after the study were presented in this report.

384. P.C. LEONG

The nutritive value of coconut toddy

British Journal of Nutrition, 7:253–259, 1953

The study aimed to determine the distribution of thiamine, riboflavin, nicotinic acid, calcium and iron between the yeast fells and the fluid portion of toddy. Whole toddy was also analysed for its major food components and for acidity and alcohol contents. The methods used for each analysis were described in detail. The composition of coconut toddy in terms of its major nutrients were found to be similar to that of malt liquors in general. Protein and fat contents were negligible from the dietetic standpoint. It was thought that the consumption of coconut toddy in moderate quantities would not make any significant contribution to the human requirements for thiamine, riboflavin and calcium. However, the amounts of nicotinic acid and ionizable iron in a pint of toddy would furnish about 10% of the recommended daily allowance.

385. I.A. SIMPSON, A.Y. CHOW and C.C. SOH

The distribution of thiamine and riboflavin in the mung bean; and the changes that occur during germination

Cereal Chemistry, 30:222–229, 1953

Mung beans were examined in the dormant state and in the early stages of germination. Thiamine and riboflavin content were determined (details of methods given) and their distribution studied photographically (method as given in Simpson, 1951)*. It was shown that in the initial stages of germination, the content of both the vitamins decreased. After about 20 hours, both vitamins increased, and a more pronounced increase after 48 hours. Photographic records showed that in the dormant seed, thiamine was concentrated in the cells of the germ and in the cells of the cotyledons adjacent to the germ. In the case of riboflavin, a more general dispersion of the vitamin appeared to occur in the cotyledons of the dormant seed, and some concentration in the cells of the radicle. During germination, general diffusion of both vitamins was observed, with a marked concentration in the cells of the wall of the young growing shoots.

* See abstract number 381

386. M.C.K. SVASTI

The chemical composition of *ikan bilis*, a marine fish of Malaya*

Thesis submitted to the Department of Chemistry, University of Malaya, in partial fulfillment of the requirements for the degree of Master of Science; 1953

Publication not available

* Also in: *Philippines Journal of Science*, 83:365–379, 1954

387. DIVISION OF BIOCHEMISTRY, INSTITUTE FOR MEDICAL RESEARCH

Loss of nutrients during the washing and cooking of parboiled rice

Institute for Medical Research Annual Report for 1953, Kuala Lumpur, 1954; pp. 33–37

The loss of iron, calcium, phosphorus and phytic acid phosphorus during the washing and cooking of parboiled rice was studied. Two common methods of cooking were studied, the Malay method whereby all the cooking water was absorbed into the cooked rice, and the Tamil method in which excess cooking water was used, and the excess water being drained away after the rice was cooked. Results obtained were presented and compared. The differences obtained were commented. The loss of iron and thiamine during the washing and cooking of highly milled rice and enriched rice was also studied.

388. DIVISION OF BIOCHEMISTRY, INSTITUTE FOR MEDICAL RESEARCH

Nutritional improvement of rice: enriched rice

Institute for Medical Research Annual Report for 1954, Kuala Lumpur, 1955; pp. 33–36

A committee, with representatives from the Planting Industry, the Estate Medical Practitioners, the Supplies Department of the Federation and the Institute for Medical Research, met in 1953 to consider the possibility of commencing field trials to assess the effect of enriched rice on a sample of estate labourers. A field experiment was carried out on 21 rubber estates in Selangor, with 10 estates receiving rice enriched with iron (and thiamine), and the remaining 11 acting as controls. A total of 300 men and 300 women were included in the study. The estimation of haemoglobin levels was the only laboratory examination carried out. Results obtained before the introduction of enriched rice were reported. Repeated determinations of haemoglobin were to be carried out at three month intervals. Results of the study were given in Institute for Medical Research Annual Reports for 1955 and 1956.

389. DIVISION OF BIOCHEMISTRY, INSTITUTE FOR MEDICAL RESEARCH

Nutritive value of rice milled by small rice mills

Institute for Medical Research Annual Report for 1954, Kuala Lumpur, 1955; pp. 38–39

Twenty-four samples of rice, milled by small power-driven mills, were examined. These samples were either milled by (a) mills fitted with a rotating metal cylinder and cone, which de-husk and polish in one operation, and fine adjustment was not possible; or (b) a disc-huller type of mill with a separate adjustable polisher. It was shown that the undermilled rice from the (b) type of mill was of reasonable quality from a nutritional point of view. The majority of the samples from the (a) type of mill were far less satisfactory, both from the amount of breakage of the grains that had occurred and from their thiamine content. Results of the analyses of further 30 sample of rice milled by the (a) type of mill were reported in the Institute for Medical Research Annual Report for 1955 and 1956. Although the small power-driven rice mills had become popular and filled an essential role in rice-growing rural areas, the type of mill used usually produced a badly broken, overmilled rice, which was nutritionally most unsatisfactory and probably economically wasteful. The need to improve the design of small power-driven rice mills was emphasized.

390. DIVISIONS OF BIOCHEMISTRY AND NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Methods for improving the nutritive value of rice in the Federation of Malaya

Institute for Medical Research, Federation of Malaya, Report No. 43, Kuala Lumpur, 1955; 16 p.

The need for overcoming the nutritional defects of highly milled rice was emphasized. Attempts had been made, without much success, to popularise the use of undermilled, parboiled and vitamin enriched rice in the country. Some reasons for this failure were discussed. Improvements to the method of parboiling rice were suggested so as to remove the odour and flavour which had made such rice generally unpopular. Results of a small scale palatability trial of the improved parboiled rice were reported. Methods to encourage more general use of this improved parboiled rice were suggested. If attempts to popularise this rice were unsuccessful, it was suggested that serious considerations should be given to encourage the more general use of enriched rice.

391. C.J. OLIVEIRO

The nutritive value of foods

Proceedings of the Alumni Association, Malaya, 8(2):105–129, 1955

It was felt that the Malayan food composition tables available at the time, with figures expressed on a percentage basis, did not lend themselves to easy computation of the nutrients. A table was therefore compiled, with all the nutrients expressed as per ounce of the food, which was thought to be more convenient to use. The data in this table were collected from various published and unpublished investigations on foods and changing over the figures to that available in per ounce of the edible material. Many new foodstuffs were analysed and where the validity of certain previous analyti-

cal figures were doubtful, the analyses were repeated. The Table presented contained 307 items of foodstuffs. Each of the nutrients was briefly discussed, especially with reference to their recommended daily allowance.

392. DIVISION OF BIOCHEMISTRY, INSTITUTE FOR MEDICAL RESEARCH

Use of fish meal as a source of protein for young children

Institute for Medical Research Annual Report for 1955, Kuala Lumpur, 1956; pp. 47–48

The use of fish meal or flour as a source of good quality protein for young children was considered. Samples of meal produced locally by the Department of Fisheries were subjected to a storage test. Five batches of fish meal, produced from 4 types of local fish were analysed for their nutrient content and compared. The development of such fish products for human consumption would necessarily take some time. Stringent trials were necessary to ensure that the product was free from pathogenic organisms, extensive feeding trials on animals had to be undertaken first before acceptability trials among adults and older children could be carried out. Such fish meal could then be tried as a supplementary food for young children under close supervision.

393. I.A. SIMPSON and A.Y. CHOW

The thiamine content of human milk in Malaya. Part I. The “normal” level of thiamine in milk from Malay, Chinese and Indian women

The Journal of Tropical Pediatrics, 2:3–17, 1956

Samples of full lactation milk were collected from women who attended the “infant welfare centres”, and early lactation milk from the hospital. The thiochrome method, described in detail, was used for the analysis of thiamine, after a preliminary incubation of the milk with takadiastase and pepsin, followed by separation of the vitamin by absorption and subsequent elution from “decalso”. Wide variations in the milk thiamine content was found in samples from individual women; possible reasons for this was discussed. The low mean thiamine level of 91 samples of full lactation milk from apparently “normal” women was attributed to the inadequate dietary intake of vitamin B1. Results from the examination of 48 samples of milk collected during the first month after parturition was said to be in agreement with previous reports that the thiamine content of such milk, initially low, gradually increased towards the end of the first month of lactation.

394. I.A. SIMPSON and A.Y. CHOW

The thiamine content of human milk in Malaya. Part II. The effect of the administration of supplementary thiamine on the thiamine level of human milk

The Journal of Tropical Pediatrics, 2:69–76, 1956

The effect of an oral supplementation of thiamine was first studied in 16 women whose initial milk thiamine content was low. Marked variations were observed in the response given by the subjects. There was also no apparent correlation between the thiamine intake and the concentration in the milk after supplementation. It was

concluded that there was no hard and fast rule as to the amount of supplementary thiamine that should be given to ensure a satisfactory response in its content in the milk. Ten women, some of whom initially showing mild, clinical symptoms of beri-beri, were also studied for the effect of parenteral administration of thiamine. There was again wide variations in the response. It was suggested that in cases where the thiamine content of the milk was low, initial parenteral administration of thiamine must be supplemented by a continued oral intake of additional thiamine if a satisfactory level of the vitamin in the milk was to be maintained.

395. I.A. SIMPSON and SOH CHIN CHAI

The nutritional value of quail's eggs

Proceedings of the Nutrition Society, 15:xi, 1956

A total of 54 quail eggs were studied for their proximate composition, vitamin A, carotenoids, thiamine and riboflavin. In general, the results obtained were said to differ little from those reported for hen eggs, with the exception that higher values for lipids, riboflavin and carotenoids were found for quail eggs.

396. DIVISION OF BIOCHEMISTRY, INSTITUTE FOR MEDICAL RESEARCH

Use of fish meal as a source of protein for young children – toxicity trials

Institute for Medical Research Annual Report for 1956, Kuala Lumpur, 1957; pp. 50–55

Samples of fish flour, prepared from *ikan tamban*, were tested for toxicity, or the development of toxicity on storage, by feeding trials on rats. Fresh fish flour was tested for possible acute toxicity and chronic toxicity. Fish flour which had been stored for one month was also similarly tested. The rats were said to have thrived on the diets, even on that containing 50% by weight of fish flour. No indication of toxicity was found, even in the case of the stored fish flour. Results obtained were said to be promising. Further results of the trials were given in the Institute for Medical Research Annual Report for 1957. In the use of these fish meal for young children, it was felt that one needed to be cautious as the use of flour from whole fish posed a danger that, however finely ground the meal may be, the bones remained as very sharp needle-like fragments.

397. DATIN LADY THOMSON

Notes on milk products

Institute for Medical Research, Federation of Malaya, Report No. 58, Kuala Lumpur, 1958; 4 p.

Short descriptive notes were given for various types of milk. The liquid milks described were fresh cow's milk, sweetened and unsweetened condensed milk, toned milk and filled milk. The following types of dried milk (milk powder) were described: full cream, modified, skim and filled. The protein, fat and carbohydrate contents of various types of fresh milk, milk powder and sweetened condensed milk were also reported.

398. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Analysis of Malayan sea-fish

Institute for Medical Research Annual Report for 1960, Kuala Lumpur, 1961; pp. 29–31

In 1957, a programme which was expected to extend over many years, was started whereby samples of the more common varieties of fish on the local market were analysed in each month of the year. It was thought that there could be a considerable variation in the nutrient contents of the flesh of these various fish throughout the year, and such variation could have an effect on the method of canning or preserving these fish as well as their palatability. Furthermore, if a table of nutritive values of foods were to be prepared, it was necessary to know the extent of these variations. By the end of 1960, analyses were completed for 10 different Malayan sea fish, caught in all months of the year, and of different sections of the coast. Results of proximate composition, some minerals and a few vitamins were presented. Variations in the nutrient contents were commented upon.

399. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Analysis of fresh water fish

Institute for Medical Research Annual Report for 1961, Kuala Lumpur 1962; pp. 42–44

The study was started in late 1960. The analyses were continued in 1961, with the examination of 24 varieties. Proximate composition, a few minerals and some B vitamins were reported for these fresh water fishes. The time of the year when these fishes were caught were recorded. Further results of the study were reported in the Institute for Medical Research Annual Report for 1962 and 1963.

400. RUTH LIM

For good health eat Malayan foodstuffs

Kereta Api (Malayan Railway Administration Magazine), 2(11):6–9, 1962

This is an article for nutrition education, discussing in general the types of Malayan foods recommended for good nutrition. The discussion was along the lines of the three main food groups, namely body building, protective and energy giving foods. Emphasis was placed on the fact that foods produced locally were nutritionally as good and very often better than those that were imported and more expensive. The main message was: "we do not have to be wealthy to eat 'well'".

401. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Analysis of rice

Institute for Medical Research Annual Report for 1962, Kuala Lumpur 1963; pp. 82–83

Fifty samples of rice were examined for moisture, broken grains, pericarp, protein and vitamin B1 content. These were samples from various firms tendering for supply to

various government institutions. They showed considerable range in quality. Results were compared with those reported by Simpson et al (1951)*. The study was extended to 1963, and the Institute for Medical Research Annual Report for 1963 presented results for the analysis of a further 47 samples of rice. Further analysis of another 44 samples of rice was reported in the Institute for Medical Research Annual Report for 1964.

* See abstract number 382

402. Y.H. CHONG and G.L. MILLS

The fatty acid composition of cooking oils and fats used in Malaya

The Medical Journal of Malaya, 21(2):125–127, 1966

Nine types of cooking oils and fats used locally were studied for their fatty acid composition. Fatty acids extracted were converted into their methyl esters and analysed by gas-liquid chromatography. Eight fatty acids were studied, from lauric to linolenic acid. Corn oil and soy bean/groundnut oil mixture gave the highest percentage of polyunsaturated fatty acids. On the other hand, coconut oil, ghee and lard contained the least amounts of polyunsaturated fatty acids. Oils sold commercially as “cooking” or “edible” oils were also found to be poor in their content of these unsaturated fatty acids. The results obtained were discussed in relation to the role that dietary fats and cholesterol play in atherosclerotic heart disease.

403. Y.H. CHONG and C.C. SOH

The protein nutritive quality of *ikan bilis* (*Stolephorus spp.*)

The Medical Journal of Malaya, 20(3):230–233, 1966

The protein quality of *ikan bilis*, obtained by measuring the available lysine content, was investigated, especially to determine if this quality was damaged during commercial processing, including sun-drying. Thirty-four samples of *ikan bilis*, made up of 3 main species, were studied. There was no significant difference in available lysine content between species. This value did not drop significantly when the fresh *ikan bilis* was sun-dried for 70 hours, indicating no damage to the protein quality. The protein quality so measured was said to be similar to or even higher than that for several animal foods. When cost per tahl (37g) of protein was calculated for these foods, *ikan bilis* was found to be the cheapest. It was felt that the cheap, good quality protein of *bilis* could be used as useful supplements to increase the protein intake of the country's rural population.

404. N. CHANDRASEKHARAN

The Malaysian sea turtle eggs as a source of vitamin A

The Medical Journal of Malaya, 23:214–215, 1969

Sea turtle eggs, used as food items for a long time, were collected from the beaches of Trengganu. Vitamin A and β -carotene content of these eggs were determined using a colorimetric procedure. Carotene contents were then converted to International Units

of vitamin A and added onto that obtained for preformed vitamin A. Results obtained were compared with that given by hen's and duck's eggs. It was found that the sea turtle eggs were richer in vitamin A. It was suggested that these eggs could be a good source of the vitamin as they are available in the plenty and are relatively cheap in the east coast states. Besides, they were also said to be good sources of proteins and calories.

405. Y.H. CHONG and C.C. SOH

The carotene content of some Malaysian vegetables and fruits

The Medical Journal of Malaya, 23(4):282–287, 1969

Over 30 types of leafy vegetables and yellow pigmented fruits were analysed for their carotene content. An adsorption chromatographic procedure was used, whereby the chlorophylls and other unwanted carotenoid pigments were removed. The separated β -carotene was then measured photometrically. The highest carotene content was obtained in "Daun turi" and "Chekor manis", and for fruits, in papaya and water melon. Results obtained for a number of selected items were compared with that obtained by the solvent partition procedure used by Leong (1939)*. The latter method gave a higher value which deviated for 4 to 340% from the adsorption chromatography method, particularly for red-pigmented foodstuffs. Thin-layer chromatography of extracts obtained by the solvent partition method showed that they contained one or more pigments in addition to the major β -carotene component. It was thought that the over-estimation in the older procedure was due to the presence of these unwanted pigments.

* See abstract number 361

406. F. ABDULLAH and M.H.H. RAGAB

Vitamin C content, pH-value and titratable acidity of 26 types of Malayan fresh fruits grown in Selangor

Malayan Agriculture Journal, 47:416–428, 1970

The vitamin C content of 26 types of local fruits, representing 12 plant families were examined. Since pH value and titratable acidity were thought to play a role in the stability of vitamin C in fruits, these values were also determined. pH values were obtained using a pH meter; titratable acidity was determined by direct titration against standard sodium hydroxide solution. Reduced ascorbic acid content was determined by titration with 2, 6-dichlorophenol indophenol solution. Total ascorbic acid was obtained by titrating with the same dye after repeating treatment of the sample with hydrogen sulphide. Results obtained showed that the highest vitamin C content was found in Guava, Pomelo, Papaya and Neck Orange. If the amounts consumed and the availability of the fruits were taken into consideration, Banana and Papaya would be the most important source of the vitamin, followed by Rambutan and Durian. The role of acidity, oxygen and heavy metals and ascorbic acid oxidase in the oxidation of ascorbic acid to dehydro-ascorbic acid were briefly discussed. This destruction of vitamin C was also discussed in relation to the colour changes observed during the peeling, cutting or pulping of the fruits.

407. SOH CHIN CHAI

The nutrient composition of human milk (the levels of thiamine, vitamin A, carotene and protein in the breast milk of Malaysian mothers)

Bulletin of the Public Health Society, 4:32–34, 1970

The publication reported some available data on the nutrient composition of the milk of Malaysian mothers. Results reported by Simpson & Chow (1956)*, Thomson et al (1964)*, and unpublished results obtained by the author were presented. The milk samples had been collected from mothers from the lower income group visiting the maternity hospital and the maternal and child health centres in Kuala Lumpur. The methods used in the determination of the nutrients were briefly described. Results obtained were tabulated and compared for the different ethnic groups and with that reported by "western" countries. Vitamin A level in the breast milk of the women studied appeared to be above the value quoted by WHO for a well nourished population. Thiamine, on the other hand, was said to be low.

* See abstracts number 393 and 279

408. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Nutritional properties of new hybrid varieties of rice

Institute for Medical Research Annual Report for 1970, Kuala Lumpur, 1971; pp. 97 and 99

Five new hybrid varieties of rice, namely *Malinja*, *Mahsuri*, *Bahagia*, *Ria*, and crossings of *Ria* with *Mahsuri*, were studied. Proximate composition, some minerals and vitamins were determined. Results obtained were compared with those reported by earlier investigators for other varieties of Malayan rice. It was found that the new varieties appeared to have a higher protein content than other Malaysian varieties. There was little discernible intervarietal differences in the other nutrients.

409. M. J. CALDWELL

Ascorbic acid content of Malaysian leaf vegetables

Ecology of Food and Nutrition, 1:313–317, 1972

A study was undertaken to determine the vitamin C content of green leaves, both cultivated and wild, which were used as vegetables in Malaysia. Ascorbic acid (reduced form) was determined by titration of the leaf extracts, prepared in oxalic acid, with 2, 6-dichlorophenol indophenol. Some 50 species of the green leaves were studied. In most cases, a wide range of values was obtained, thought to be variations due to variety, exposure to sunlight, time of harvest, stage of ripeness at harvest, site and length and temperature of storage. Some of the vegetables analysed were found to be rich in ascorbic acid, especially leaves of *Pina-pina*, *Ubi kayu* (dark leaves), *Keman*, *Chekor manis* and *Geti*. It was felt important to educate the rural people to include more of these vegetables, available relatively cheaply, in their diet.

410. M.J. CALDWELL and I.C. ENOCH

Riboflavin content of Malaysian leaf vegetables

Ecology of Food and Nutrition, 1:309--312, 1972

Riboflavin was determined by direct fluorometry after extracting the blended samples with hydrochloric acid and precipitating the protein from the extracts. Values from the 40 species of green leaves studied were expressed as mg riboflavin per 100 g edible portion. Results obtained were said to compare favourably with the figures given by FAO Food Composition Table of 0.19 mg riboflavin per 100 g dark green leaves and 0.8 mg for light green leaves. The highest concentrations were found in the leaves of *Pucok Janggus*, *Geti*, *Keremak*, *Ubi Kayu*, *Bayam Duri*, *Chemperai*, *Keman*, *Pina-pina* and *Chekor manis*. The authors were of the opinion that many Malaysian green vegetables have a high riboflavin content, and as potentials for increasing dietary riboflavin, they compare favourably with some animal foodstuffs such as milk and fish.

411. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Comparative nutritive value of breast milk, cow's milk, reconstituted cow's milk and soybean milk

Institute for Medical Research Annual Report for 1971, Kuala Lumpur, 1972; pp. 106--108

A total of 29 samples of mature human breast milk were obtained from health centres in and around Telok Datok, Selangor. Proximate composition, calcium and iron, and some vitamins were analysed. Fresh cow's milk, reconstituted milk from milk powder, diluted condensed milk and soybean milk were also analysed for comparison. Results obtained for the human milk were compared with that reported by other investigators. The quality and quantity of the breast milk collected was discussed briefly in relation to the nutritional status of the mothers. Comments were made on the good nutritive value of soybean milk and the poor quality of over-diluted condensed milk.

412. L.S. LIEW and P. CHANG

Monoamines in Malayan bananas

Asian Journal of Medicine, 8:281--283, 1972

The monoamine content in 5 varieties of Malayan bananas was investigated. A paper chromatographic technique was used to detect the presence of 5-hydroxytryptamine, dopamine, noradrenaline and adrenaline. The effect of ripening on the first two mentioned monoamines was also studied. The findings were discussed in relation to the interfering effects that ingestion of bananas may have on the diagnosis of carcinoid tumours and pheochromocytoma.

413. A. SEDKY, GUN-KIHLIN OHLSSON and LIM AH LANG

More nourishment from Malaysian fruits and vegetables

Food Technology Research and Development Centre of Malaysia. Published by Food and Agriculture Organization of the United Nations and the Ministry of Agriculture and Fisheries of Malaysia, 1972; 25 p. + 61 histograms

The publication is divided into two parts. The first part is a general discussion on food and health. The general functions of food, and functions of the individual nutrients, malnutrition and some of the common deficiency diseases were discussed. In part two of the report, the content of the important vitamins and minerals in some of the local fruits and vegetables were presented in histograms. Histograms showing the content of these nutrients in a dollar's worth of fruits and ten cents worth of vegetables were also presented. It was emphasized that some of the Malaysian fruits and vegetables were richer in these nutrients than some of the imported ones, and the former were available at lower prices. A brief discussion was also given on the methods of preparation of foods and nutrient losses.

414. TEE E SIONG

Determination of net protein utilization of two low-cost, high protein foods

Proceedings of the Institute for Medical Research Scientific Sessions, 1976

The net protein utilization of two low-cost, high protein biscuits, formulated for supplementary feeding, was determined. Thirty-day old albino rats were used for the determination of both net protein utilization operative and standard. Digestibility and biological value were determined simultaneously. Net dietary protein calorie percent was then calculated. Some practical aspects of the method were considered. Differences in results obtained for the two foods were discussed and compared with that given by skim milk. Some important aspects of the use of these parameters in the evaluation of protein quality were discussed.

415. LEE KHENG HOON

Cobalt and nickel in Malaysian finfish and shellfish

Proceedings of the Symposium on Improving the Quality of Life in Malaysia: the Role of Chemistry; 24–26 March 1977, Kuala Lumpur; pp. 103–108

Cobalt and nickel content of 13 species of Malaysian finfish and 8 species of shellfish were studied by atomic absorption spectrophotometry. The main sources of these metals were pointed out. The importance of these and other trace metals to human nutrition was discussed.

416. YEOH GUAN HUAH

The role of chemistry in improving quality of palm oil

Proceedings of the Symposium on Improving the Quality of Life in Malaysia: the Role of Chemistry; 24–26 March 1977, Kuala Lumpur; pp. 217–228

Some examples on the use of chemistry in the study of palm oil composition and quality were described. The study of fatty acid composition and free fatty acid content of the oil by gas-liquid chromatography were discussed. Minor constituents in the oil that could be determined were carotenoids, tocopherols, sterols, phosphatides, triterpenic and aliphatic alcohols. The various tests performed to reflect the state of oxidation in palm oil were listed. The importance of studying trace metal contamination in palm oil was discussed.

417. H.H. YEOH and M.Y. CHEW

Cassava leaf proteins

Proceedings of the Symposium on Improving the Quality of Life in Malaysia: the role of Chemistry; 24–26 March 1977, Kuala Lumpur; pp. 163–175

The protein content and total amino acids of 6 varieties of cassava leaves were reported. Comparisons were made with cassava seed and tuber proteins. The major components of the cassava leaf protein, namely albumin, globulin, prolamin and glutenin were fractionated. The effects of ammonium sulphate, heat and temperature on the various protein fractions were also studied. The amino acid profiles of these protein fractions were determined by ion exchange chromatography. Both nutritional and some physio-chemical properties of these proteins were discussed.

418. TONY K.W. NG and Y.H. CHONG

Fatty acids and polyunsaturates in some common Malaysian cooking oils

Medical Journal of Malaysia, 33(4):331–333, 1979

The fatty acid composition of 14 types of commercially available cooking oils, analysed by a gas-liquid chromatographic procedure, was presented. The percentages of unsaturated and polyunsaturated fatty acids in these oils were calculated. Comments were made on the degree of unsaturation of these oils. The contribution of separated fats to energy intake in the diets of the Malaysian were briefly discussed.

419. SYED JALALUDIN and P. VOHRA

Processing of legumes to improve their nutritive value

Paper presented at the Malaysian Institute of Food Technology Symposium on Protein Rich Food in ASEAN, Kuala Lumpur, 12–13 July, 1979

Humans and their animals depend upon legumes, especially soya beans and groundnuts to supply the bulk of their protein need. However, these legumes are also rich in

antinutritive components or toxicants. Various processing methods to remove these components and various ways to improve the nutritional value of these legumes were discussed. The antienzyme components and lectins are protein in nature, and could be overcome by treatment such as cooling, pressure cooking and roasting. The usual practice of soaking overnight and discarding the water reduces complex polysaccharides. Germination further improves the products. However, toxicants such as estrogens, goitrogens and flatulence causing components are only reduced in protein-rich isolates such as *tahu* and textured proteins. Aflatoxin contamination may be rendered harmless by ammoniation with or without heat treatment. The amino acid deficiencies could be overcome by supplementation or chemical combination with limiting amino acids especially methionine.

420. TEE E SIONG and ASRI RASAD

Pangamic acid (vitamin B15): I. The actual state of research *

Berita Farmasi (Journal of the Malaysian Pharmaceutical Society), 6(1):22–27, 1979

The article reviewed the state of research on this “new” water-soluble accessory food factor, claimed by some to be the “physician’s new weapon”. The natural occurrence of the so-called vitamin B15 was reviewed and said to be insufficiently proven. The physio-pharmacological properties reported to be attributable to pangamic acid were described. The confusions surrounding the structure of the “vitamin” and the availability of various non-authentic synthetic preparations of “vitamin B15 – pangamic acid” were discussed. It was felt that research on the controversial vitamin had been surrounded by gaps, confusions and contradictions.

- * Presented in detail by TEE, E.S. in: Contributions to the Study of Synthetic Preparations and the Natural Occurrence of Pangamic Acid (Vitamin B15), a Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science (Applied Nutrition), Regional Graduate Applied Nutrition Course, Faculty of Medicine, University of Indonesia, Jakarta, 1978; 228 p., 137 references.

Also in Bahasa Indonesia, entitled: *Vitamin B15: Senjata Ampuh?* in: *Media Aesculapius (Surat Kabar Kedokteran dan Kesehatan Nasional, Indonesia)* 9(4):5, 1978.

421. TEE E SIONG and ASRI RASAD

Pangamic acid (vitamin B15): II. Structural studies of synthetic preparations *

Berita Farmasi (Journal of the Malaysian Pharmaceutical Society), 6(384):33–43, 1979

Six synthetic preparations called “pangamic acid – vitamin B15”, or supposed to have the therapeutic properties of this “vitamin” were studied. Results of the examinations carried out, which consisted of thin-layer chromatography, colour reactions, melting

- * Presented in detail by TEE, E.S. in: Contributions to the Study of Synthetic Preparations and the Natural Occurrence of Pangamic Acid (Vitamin B15), a Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science (Applied Nutrition), Regional Graduate Applied Nutrition Course, Faculty of Medicine, University of Indonesia, Jakarta, 1978; 228 p., 137 references.

Also in Bahasa Indonesia, entitled: *Apakah Asam Pangamat (Vitamin B15) Itu?* in: *Media Aesculapius (Surat Kabar Kedokteran dan Kesehatan Nasional, Indonesia)* 9(7):1 and 10, 1979.

point and nitrogen content determinations, and ultra-violet, infra-red, mass and nuclear magnetic resonance spectroscopic studies, were reported. Results obtained led to the conclusion that none of the preparations could be considered to contain pangamic acid. They were really mixtures of two or more of the following: diisopropylammonium dichloroacetate, gluconate, glucose and dimethylglycine. The implications of the availability of such non-authentic preparations of "pangamic acid-vitamin B15" were pointed out.

422. E.S. TEE, T.K.W. NG and Y.H. CHONG

Cholesterol content and fatty acid composition of some Malaysian foods

Medical Journal of Malaysia, 33(4):334–341, 1979

The gas-liquid chromatographic determination of cholesterol content and fatty acid composition of 21 types of raw foodstuffs and 23 cooked, ready-to-eat meals were reported. The procedure used was described in brief. Foods rich in cholesterol and high in polyunsaturated to saturated fatty acid ratios were highlighted. Results obtained were discussed in relation to the contribution of cholesterol and fatty acid to the Malaysian diet and the development of coronary heart disease.

TOXICANTS IN FOODS

423. JOHN D. GIMLETTE

Datura poisoning in the Federated Malay States

British Medical Journal, 1:1137–1139, 1903

The habitual and botanical features of two species of the poisonous datura, *fastuosa* and *alba*, were described. The seeds, in which the poisonous property chiefly existed, was said to bear some resemblance to those of the common chillies, and at times had been mistaken for them. Four cases of poisoning in the Peninsular were described. In all the cases, the datura seeds were administered intentionally, with criminal intent. The poisonous effects, toxic principles involved, and methods of treatment were described.

424. I.A. SIMPSON

A poisonous variety of star anise

The Malayan Medical Journal, 10:140–141, 1935

The fruit of Chinese star anise, *Illicium verum*, had been widely used as a flavouring in curries in Malaya. The article described a case of poisoning due to ingestion of a poisonous variety of star anise, the fruit of which very closely resembled the fruit of *Illicium verum*. The symptoms of the case, a Tamil adult male, were described. The vegetable material consumed was thought to be the fruit of the poisonous Japanese star anise, *Illicium religiosum*. The diagnostic differentiation of the two varieties of star anise were given.

425. I.A. SIMPSON and E.C. LIM

Margosa fruit suspected to be cause of a case of fatal poisoning

The Malayan Medical Journal, 10:138–139, 1935

Various parts of the margosa or neem tree had been regarded by some as a source of a variety of remedies for numerous complaints. A case of poisoning in an adult female Eurasian, thought to be associated with ingestion of margosa oil was described. An oil isolated from the viscera was studied for its physical constants and compared with genuine margosa oil. It was concluded that the oil isolated was indeed margosa oil and the presence of fruit and seed tissues in the stomach seemed to suggest that margosa fruit, which contained the seeds, had been consumed.

426. E.S. MONTEIRO

A case of lathyrism

Journal of the Malaya Branch, British Medical Association, 1(2):164–166, 1937

A case of spastic paraplegia, the history and investigation of which suggested the diagnosis of lathyrism, was described. The case, an adult Indian male in Kota Tinggi, could only afford the cheaper quality dhal and rice. Results of a clinical examination and laboratory investigation were reported. When put on a diet rich in vitamin A and B1, his condition did not improve.

427. Y.H. CHONG and C.G. BENG

Aflatoxins in unrefined groundnut oil

The Medical Journal of Malaya, 20(1):49–50, 1965

The report, said to be the first on the presence of aflatoxins in the human dietary in Malaysia, studied 16 samples of groundnut oil, 9 refined and 7 unrefined. The method for aflatoxin estimation, using a thin-layer chromatography procedure, was described. Five samples of the oil (all unrefined) were found to contain aflatoxin B1 and G1. The possible human hazards of consuming such contaminated oils were discussed.

428. Y.H. CHONG

Aflatoxins in groundnuts and groundnut products

Far East Medical Journal, 2:228–230, 1966

The method for use in the detection and determination of aflatoxin was described. Samples were first defatted, the toxins extracted into chloroform, and the extract chromatographed on a thin-layer of kieselgel G. Of the 38 samples of shelled groundnuts examined, 10 were found to contain aflatoxin B1. No aflatoxin could be detected in the 10 samples of whole groundnuts (in the shell) examined. A total of 39 samples of cooking oil, consisting of 28 samples of unrefined groundnut oil, 5 samples of refined groundnut oil and 6 samples of a mixture of groundnut and soybean oil were investigated. In addition, 16 samples of peanut butter were analysed. The results were presented in a table, giving the level of aflatoxins detected and the source of the oils

and nuts. It was pointed out that groundnuts and groundnut products were common items in the diets in the country.

429. Y.H. CHONG, C.G. BENG, J.T. PONNAMPALAM and RUTH K.H. LIM

Moulded soy beans as a potential source of aflatoxin contamination

Far East Medical Journal, 2(9):298–300, 1966

The study on aflatoxins in Malaysian food items was extended to studying moulded soy beans used in the preparation of soy sauce, and soy sauce itself. Cultures prepared from the moulded soy beans showed that *Aspergillus flavus* was present. However, thin-layer chromatography of 18 samples of moulded soy beans and 9 samples of soy sauce showed that none contained aflatoxins. The apparent inability of toxigenic strains of *A. flavus* to establish themselves in soy sauce factories seemed somewhat unexpected since the moulding of soy beans in these factories appeared entirely haphazard and uncontrolled. Possible explanations for this were given. The authors drew attention to the presence of several unidentified substances bearing strongly greenish fluorescence in the samples studied.

430. LIM HAN and YEAP GIM SAI

The occurrence of aflatoxin in Malayan imported oil cakes and groundnut kernels

The Malaysian Agricultural Journal, 45(3):232–244, 1966

An outbreak of aflatoxin poisoning in animals in the country was briefly reviewed. Some chemical and biological characteristics of aflatoxin were described. A study of the occurrence of aflatoxin in some 69 samples of groundnut, coconut, sesame, soya bean and maize products was carried out. The method used in the determination was described in detail. Results obtained for each of the sample studied were reported. An attempt was made to give a semi-quantitative estimation of the content of these toxins. The health hazards of consuming aflatoxin contaminated foodstuffs were briefly discussed.

431. Y.H. CHONG and J.T. PONNAMPALAM

The effect on duckling of a diet containing moulded-soybeans

The Medical Journal of Malaya, 22(2):104–109, 1967

The biological response of day-old ducklings to a diet containing moulded soybeans was studied; 32 birds were used. No significant difference was observed in the general appearance, growth rate, mortality and liver histology between ducklings fed the experimental diet (containing moulded soybeans used in the preparation of soy sauce) and those fed the negative control diet (containing mould-free soybeans). These two diets were shown by thin-layer chromatography to be free from aflatoxins. In contrast, all the animals fed the aflatoxin containing diet died by the 5th day of experiment, and changes in the liver cells were observed (photographs of liver sections were presented). Results obtained not only confirmed previous findings of the authors (Chong

et al, 1966)* of the absence of aflatoxins, but also appeared to rule out the possibility of other hepatotoxic principles of fungal origin in moulded soybeans.

* See abstract number 429

432. G.F.J. MOIR

Aflatoxins and poultry disease

Kajian Veterinaire, 1(2):84–99, 1967

Several aspects of aflatoxins were covered in this review article. The discovery of aflatoxins in turkeys and subsequently in other animals was described. The chemistry of these toxins were dealt with in some detail. Symptomatology and pathology of aflatoxicosis, toxicology and carcinogenicity of aflatoxins were described. Preventive measures that could be undertaken were enumerated. Studies on aflatoxins in Malaysia were briefly reviewed. The article especially dealt with aflatoxicosis in animals although its occurrence in humans was also discussed.

433. G.F.J. MOIR

Aflatoxins

Scientific Malaysian, No. 1, pp. 24–25, 1968

A brief general description of several aspects of these toxins produced by *Aspergillus flavus* was given, which included their discovery, toxicity, and properties. A brief review of research on aflatoxins in Malaysian foods followed. The importance of legislations to control the import or sale of foodstuffs contaminated with aflatoxins was pointed out. Further research into more types of peanut and other foodstuffs was felt necessary.

434. P.Y. BERRY

Puffer fish poisoning

Malayan Scientist, 5:42–46, 1970

Isolated cases of tetraodon poisoning, caused by consuming puffer fish, were said to have been reported in Malaysia. In this country, although puffers were widely distributed and commonly included in the fishermen's catch, only a few people will eat the fish. It has been said that by removing those parts of the fish that contained the toxin, the fish may still be eaten. The nature of the toxin and symptoms of poisoning were described.

435. MAMORN SAITO and R. BAHAGWAN SINGH

Survey of mycotoxin contamination in food and its relation to hepatoma in Malaysia – a pilot study (a Malaysia-Japan cooperative study of mycotoxins in foods in relation to liver diseases in Malaysia)

A Joint Report by the University of Tokyo, Japan and the Institute for Medical Research, Kuala Lumpur, 1975; 54 p.

Studies on mycotoxins, including aflatoxins, was briefly reviewed. Studies carried out in Malaysia were brought out. Statistics in the country on mortality rates due to malignant neoplasms and cancer of the liver (for year 1970) were analysed. It was thought that the incidence of liver cancer in Malaysia was probably higher than that of Japan. A semi-quantitative study on frequency of food intake carried out on 50 households in Sekinchan, Selangor, was reported. Some samples of food were collected for chemical and mycological assays. Results of a mycological survey of Malaysian foods were next presented. A total of 275 food samples were studied. The mycoflora encountered in the foodstuffs were reported. The foods were then studied for the presence of mycotoxins, which included aflatoxins, sterigmatocystin, ochratoxin A, luteoskyrin, rugulosin, patulin and penicillic acid. Suggestions were made for follow-up studies on the subject. (A summary of the paper in Japanese is given).

436. Y.H. CHONG

Aflatoxin in Malaysia

A Background Paper Prepared for Members of the Food and Drugs Committee, 1977; 7 p.

Research on aflatoxins in Malaysia, especially those carried out by the Nutrition Division of the Institute for Medical Research, was briefly reviewed. A large number of foodstuffs had been studied for the detection of aflatoxin, which included groundnut and groundnut products, soybean and soy sauce, maize, cassava, preserved fruits, prawn paste, satay sauce, etc. It was felt that there should be legislations banning the sale of foods containing aflatoxin or any other mycotoxin in the country. There was an urgent need to set up a laboratory for routine aflatoxin analysis.

**SOCIO-CULTURAL ASPECTS
OF FOOD AND NUTRITION**

437. JEAN MILLIS

Modifications in food selection observed by Malay women during pregnancy and after confinement

The Medical Journal of Malaya, 13(2):139–144, 1958

Information on food customs observed by Malay women during pregnancy and confinement was obtained to determine the significance of these practices to their nutritional status. The women, 358 in number, were mostly wives of police constables and corporals recruited from Malaya and stationed in Singapore. They were considered to belong to the lower income sections of the community. Most of these women

returned to their kampongs for confinement and rejoined their husbands when the baby was 4–6 weeks old. Home interviews were carried out to record food selection during these vulnerable periods and also when they were non-pregnant and non-lactating. Few women modified their diet and no special allowances were made for the increased physiological demands of pregnancy. During confinement, traditional restrictions in food selection were observed by most women and resulted in a highly unsatisfactory diet. Whilst during lactation, the majority of the women consumed a diet considered adequate. A few of these lactating women also observed some food restrictions. The detrimental effects of these practices to the health of mothers and infants were discussed.

438. JEAN MILLIS

Infant feeding among Malays

The Medical Journal of Malaya, 13(2):145–152, 1958

The Malay mothers described in the earlier report (Millis, 1958)* were used in the present study. Data on breast feeding practice and weaning diets were collected during home interviews. Causes for weaning and the number of mothers who weaned before the third month and one year were presented. It was found that 65% of the women were breast feeding at one year and over 50% continued to breast feed during the second year. The incidence of breast feeding among these Malay women studied was compared with a similar study by the author of Indian and Chinese women in Singapore. Data on complementary and artificial feeding were presented. It was felt that the weaning diet was unsatisfactory and would fail to meet the physiological requirements of rapid growth. Several recommendations were put forward to improve the infant feeding pattern.

* See abstract number 437

439. E.M.B. WYLDE

Background, history, growth and advance of social paediatrics in Kuala Lumpur

The Medical Journal of Malaya, 16(1):14–31, 1961

The superstitious background of the population in Kuala Lumpur was briefly described to give an understanding of the beliefs associated with childbirth and child management. Food restriction during pregnancy and after delivery, infant and children feeding practices were discussed. It was emphasized that these superstitions existed now only to a limited degree. The growth of social paediatrics in Kuala Lumpur was then traced from the pre-war to the post-war periods.

440. A.M. McARTHUR

Assignment report: nutrition, Malaya-12

World Health Organization, Regional Office for the Western Pacific, Manila; WPR/449/62, October 1962; 137 p.

The 137-page report dealt with observations and findings in an investigation into the cultural and social customs of the Malays, related to the nutrition of these people. The author stayed for about 11 months in two kampongs, one in Malacca and the other in Perak, to collect the information. Customs and beliefs, including the dietary aspects, relating to pregnancy and child-birth and the mother-child relationship were reported. Social and cultural customs with regards to child weaning and the feeding of children were discussed in some detail. A discussion was devoted to the factors contributing to malnutrition among these rural Malays. The condition of environmental sanitation and personal hygiene was separately discussed. The practice of scientific and native medicine was given a rather large chapter in the report. Several recommendations for health education and community development programmes were put forward.

441. FLORENCE A. THOMSON

The reasons mothers take their children to a health centre (appraisal of work done at a health centre in the Federation of Malaya)

Journal of Tropical Paediatrics, 7:107–112, 1962

The report described the children's records for the period 1954–1956 of a semi-urban Rural Health Centre. Aspects of the records extracted included the number of children visiting the centre, the reasons for their visits, vaccination records, method of delivery of child, records of milestones of development of these children, and information on breast feeding practices. Data for the three major ethnic groups were separately reported and discussed. Incidence of breast feeding, reasons for not doing so, types of alternate or substitute milk and supplementary foods given were reported.

442. S. HASMAH BINTE M. ALI

Effect on a basic attitude – health

Intisari, 1(4):27–36, 1963

The influence of cultural beliefs and customs of the Malays on maternity cases and the child was discussed. The various customs followed by the kampong Malay women during pregnancy, delivery and puerperium were described. It was said that the food fads during pregnancy and the puerperium had caused much conflict between the old-fashioned mothers and the modern ones. The diet of the women then consisted of only rice, salted fish and pepper, other foods being avoided. Various traditional practices surrounding the birth of the child were described. These included infant feeding practices customarily followed by these rural Malays.

443. R.J. WOLFF

Meanings of food

Tropical and Geographical Medicine, 1:45--51, 1965

The author reported data on cultural factors which affect the diet of lower-income Malays, collected from the States in Peninsular Malaysia. Emphasis was placed on the vulnerable groups. In the chapter on Culture and Diet, the style of living of the Malays and how this resulted in the poor diet of toddlers was described. The culture of the Malays seemed to attribute independence and responsibilities in choosing a nutritionally sound diet to very young children, who unfortunately often were not capable of assuming such independence and responsibility. The chapter on Diet and Meals described the meal patterns of these families and how they could adversely affect the food intake of the toddlers. The categorization of foods based on the cultural meanings by these people was thought to be of overriding importance. In the chapter on Meanings of Food, the four or five categories of food were described. It was felt that nutrition education should take into consideration the meanings of foods to the people prior to teaching the specifics of a balanced diet.

444. ROSEMARY FIRTH

Housekeeping among Malay peasants

London School of Economics Monographs on Social Anthropology No. 7, 2nd Edition, 1966. 242 p.

The author wrote of her observations and findings during her 11 months stay in Malaya (1939--1940), most of which time was spent in Kelantan. Most of the chapters in the book has bearing on the nutritional health of the family. In the first chapter, discussing the condition of housekeeping, the household size, family structure, household resources and way of life were described. The position of women in the house and community, and occupations of the women were discussed in another chapter. A separate chapter was devoted to a discussion of the importance of rice to the families, in which the amount of rice consumed, examples of meal patterns, and importance of unpolished rice and the prevention of beri-beri and the method of cooking were discussed. There was also an appendix in the book, giving the common ways of cooking certain food items and several recipes. In a detailed study of 10 households, how money was spent daily for foods and non-foods were recorded. A brief description of the infant and child feeding practices was given in the chapter on The Child's Place in the Household. In a final chapter, the author wrote of the changes she observed during a return visit to Kelantan in 1963. She was able to re-study some of the households she first visited 23 years ago. Amongst the changes described were those pertaining to spending patterns and changes in income and earning patterns.

445. ROSEMARY FIRTH

Food and social change

Kajian Ekonomi Malaysia, 5(2):10--22, 1968

Food was said to be associated with almost every aspect of change in the social orientation of individuals. Firstly it accompanies and highlights particular physical and

emotional stages of child development – suckling, weaning and so on. Food is also linked in special ways with most social changes in group relationships, the crisis of life such as marriage, burial and so on. It is to man far more than a biological need. Thus, food has a high symbolic value both privately and publicly in all human societies. A general discussion was given, and examples from the Malaysian scene were given whenever possible.

446. ANTHONY CLARKE COLSON

The prevention of illnesses in a Malay village: an analysis of concepts and behaviour

A Dissertation Submitted to the Department of Anthropology and the Committee on the Graduate Division of Stanford University, in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy, 1969; 201 p.

The study was carried out in Kelola village, Jerantut district, Pahang. The various theories of the etiology of diseases, concepts of health and illnesses among these rural people, the identification of pathogens and the customary or traditional methods of prevention and treatment of illnesses were discussed. Some of these beliefs and practices were related to food. The avoidances or restrictions of certain foods and the reasons for doing so were briefly described.

447. PAUL C.Y. CHEN

Indigenous concepts of causation and methods of prevention of childhood diseases in a rural Malay community

The Journal of Tropical Pediatrics, 16:33–42, 1970

The study was carried out in 5 kampongs in North Kedah. Information was collected through interviews with housewives, headmen and members of the village committee, bomoh and bidan kampong. Childhood diseases were thought to result from three classes of factors – predisposing conditions, supernatural causes and physical causes. Most of the physical causes discussed were related to food. Some examples given were foods which cause certain diseases, “hot” and “cold” foods, and foods that “carry wind”. Some indigenous methods of disease prevention were discussed. It was felt that a full knowledge and understanding of relevant indigenous attitudes and beliefs was important for effective health education.

448. PAUL C.Y. CHEN

Ascariasis: beliefs and practices of a rural Malay community

The Medical Journal of Malaya, 24(3):176–182, 1970

Data were collected from the rural Malay community in the northern part of Kedah through interviews with local leaders and the traditional medicine man, housewives and also from direct observations. A table was presented listing the beliefs about causation of ascariasis. The most common belief was that ascariasis was caused by children eating a side dish (*lauk*) containing fish, the milk of mature coconuts, peanuts and eggs. Based upon these beliefs about causation, the primary preventive measures practised was dietary taboos against the foods listed. A discussion was also devoted to the types of drugs used in the treatment of ascariasis infestation.

449. A.E. DUGDALE

Breast feeding in a South East Asian City

Far East Medical Journal, 6:230–234, 1970

Records of 2009 children, born in 1960, 1962 and 1965 were extracted from the infant welfare clinics in Kuala Lumpur. Information obtained included family income, family size, incidence of breast feeding, and the age the child was weaned. The results for the three major ethnic groups were separately presented and compared. The findings were discussed in relation to year of birth, family income and size. The major factor affecting the frequency and duration of breast feeding appeared to be the income of the family. Possible explanations for this were offered. Changes in the trends of breast feeding over the years were noted and possible causes discussed.

450. CHRISTINE S. WILSON

Food beliefs and practices of Malay fishermen. An ethnographic study of diet on the East Coast of Malaya *

Doctoral Dissertation in Nutrition, University of California, Berkeley, California, 1970; 497 p.

The study was carried out in RuMuda, a fishing village in Trengganu, where the author stayed for about 9 months. Data collected included a census on occupation, income, property, markets, gardens and other food resources, amounts spent on foods; beliefs about foods and their relation to health were collected by a questionnaire; and information on feeding practices of pregnant and lying-in women and for young children. Mealtimes were observed for a period of 5 to 7 days for each of 5 families. Three toddlers were each followed for one day to record everything each child ate that day. Food preparations for ordinary meals, sweetmeats and for celebrations were recorded. The housing and sanitation conditions were also observed. The dissertation also included some suggestions for future research.

* also in: *Food Beliefs Affect Nutritional Status of Malay Fisherfolk. journal of Nutrition Education*, 2:96–98, 1971.

451. C.S. WILSON, J.C. WHITE, L.K. SENG, Y.H. CHONG and D.A. McKAY

Relations of food attitudes to nutrient status in a Malay fishing village

Federation Proceedings, 29:821, 1970

A brief report was made of an anthropologic study of nutrition in a Malay coastal village. Food intake of 5 families were determined and 3 toddlers were similarly studied for one day each. Cultural factors influencing dietary intake of the toddlers and the postpartum women were mentioned.

452. A.E. DUGDALE

The effect of the type of feeding on weight gain and illnesses in infants

British Journal of Nutrition, 26:423–432, 1971

The effects of various social and nutritional factors on the weight gains and the number of reported illnesses were analysed. The factors considered were the ethnic group, the sex of the infant, the size and income of the family and the type of milk fed, i.e. whether breast fed or artificially fed. A total of 250 infants attending the Maternal and Child Health Clinics in Kuala Lumpur were included in the study. In this group studied, breast feeding appeared to offer no advantages over bottle feeding.

453. DAVID A. McKAY

Food, illness, and folk medicine: insights from Ulu Trengganu, West Malaysia

Ecology of Food and Nutrition, 1:67–72, 1971

A picture on the interaction of food and illnesses in the local folk medical practices was presented. The discussion began with describing the role of the bomoh in these Malay villages in Trengganu. Folk beliefs of how foods affect health and illnesses was discussed. A table was presented giving a list of foods and the illnesses believed to be exacerbated by these foods. An understanding of these cultural beliefs was felt important in efforts in nutrition education.

454. CHRISTINE S. WILSON

Cultural effects on the diet of East Coast Malay fisherman (with special reference to nutritional status)

Bulletin of the Public Health Society, 5:26–28, 1971

The author gave a general description of the interactions between cultural factors and nutrition as observed in a Malay fishing kampong on the East Coast in Trengganu. Food sharing was seen to be a fundamental of kampong life. Meal times were observed to be rather casual, and snacking seemed an integral part of the eating pattern. The most important single association of food with the culture was said to be the puasa or fasting month. The diet during this month before Hari Raya was described. Food beliefs and taboos were still practised to some extent. The preference or avoidance of “cooling” and “hot” foods was discussed. Some examples on the use of foods in spirit offerings were given. The place of durian in the Malay dietary was given some mention.

455. J.M. BOLTON

Food taboos among the Orang Asli in West Malaysia: a potential nutritional hazard

The American Journal of Clinical Nutrition, 25:789–799, 1972

The publication describes the food taboos practised by some major groups of Orang Asli in Malaysia. These food taboos affect chiefly the sources of animal protein. A discussion was devoted to the reasons why the animal sources of food may be rejected: (a) kindred spirit or special relationship of the animal, (b) consideration of the food as unclean, (c) consideration of the food as inedible or poisonous, and (d) fear of harmful

effects following the consumption of the food. Details of the food taboos of the deep jungle Semai, the other Senoi ethnic groups, the Negrito ethnic groups and the Melayu Asli ethnic groups were described. The effects of food taboos on the nutrition of these indigenous people were briefly discussed.

456. P.C.Y. CHEN

Sociocultural influences on vitamin A deficiency in a rural Malay community

Journal of Tropical Medicine and Hygiene, 75(12):231–236, 1972

The area studied was a Malay community of 125 households, a few miles away from Kuala Berang in Trengganu. A total of 31 primary school children and 27 pre-school children were clinically examined for signs of nutritional deficiency. It was found that vitamin A deficiency was a major nutritional problem in the community studied. A detailed dietary investigation on 20 of the households randomly selected revealed that generally the diet did not adequately meet the nutrient requirements of the people, the intake of vitamin A being particularly low. A study into the indigenous beliefs and practices that might have contributed to the development of this deficiency in vitamin A revealed that these rural Malays believed that “cooling” fruits and vegetables may precipitate the development of night-blindness. However, it was also noted that tradition advocated feeding the afflicted child with a piece of fish or chicken liver to treat night-blindness.

457. K.B. KUAH

Malay customs in relation to childbirth

The Medical Journal of Malaysia, 27(2):81–84, 1972

The customs discussed were mostly non-dietary in nature and not directly related to nutrition. However, in the discussion on beliefs affecting the puerperium, it was mentioned that there was a restriction in the diet of the new mother. The avoidance of “cooling” foods, fresh milk and fruits and the restriction of water was reported. The way of breast feeding the newborn and the weaning diet were mentioned under the discussion on beliefs with regards the newborn.

458. P.C.Y. CHEN

An analysis of customs related to childbirth in rural Malay culture

Tropical and Geographical Medicine, 25:197–204, 1973

The study was conducted between 1968 and 1971 in four rural Malay communities in the states of Kedah, Selangor, Johore and Trengganu. Interviews were carried out on housewives, village headmen, indigenous Malay Medicine-men and indigenous Malay village midwives. No dietary taboos were recorded for customs at childbirth. During the 44-days confinement period after childbirth, dietary restrictions were practised. “Cooling” and “poisonous” foods and those that were supposed to “carry wind” were taboo while “heating” foods were advocated. The observed customs relating to childbirth were classified into four categories, namely, beneficial, harmless, harmful and uncertain.

459. PAUL C.Y. CHEN

Socio-cultural factors affecting family health of rural Malays

Report of the National Seminar on The Role of Specialists in Promoting Family Health, 12–18 August 1973, Pulau Pinang, pp. 91–95

Some of the factors discussed involved food and nutritional health of the people. Some of the examples presented included: foods in the traditional concept of diseases causation, dietary taboos during the post-natal period, and dietary restrictions to the children.

Also in: Cultural Background of Family Health in Malay Society, *Bulletin Keluarga, No. 73, August 1974*; pp. 1, 2, 7 and 8.

460. SITI HASMAH BINTI HAJI MOHD. ALI

Some aspects of traditional health attitudes and practices in rural areas

Report of the National Seminar on The Role of Specialists in Promoting Family Health, 12–18 August 1973, Pulau Pinang; pp. 85–90

Attitudes, customs, habits, aspirations and behavioural patterns of rural people towards health and disease were discussed. Customs and beliefs relating to maternal care, child delivery and post-natal practices were given particular attention. Food taboos for the post-natal mothers were briefly described. It was however reported that food pantangs were no longer in existence in most rural areas.

461. CHRISTINE S. WILSON

Food taboos of childbirth: the Malay example

Ecology of Food and Nutrition, 2:267–274, 1973

The study was carried out in a fishing village called RuMuda in Trengganu. Interviews carried out revealed that pregnancy was not a time of ritual or dietary stress to the Malay women in this remote kampong. However, tradition and custom required the observance of certain dietary restrictions for 40 days after the birth of the child. The avoidance of "cool" or "cooling" foods and the preference of "hot" or "neutral" foods during puerperium was described. The report also described a more detailed and systematic study of 50 of the randomly selected women. Dietary intake of a sub-sample of 6 women was determined using the one-day recall method. The diet and meal pattern of these women during and after pregnancy was described. The nutrient intake of a Malay woman during her pregnancy, confinement and lactation period was presented and compared with the Malaysian recommended dietary allowances. It was thought that the severe restrictions of the post partum diet, causing a lowering of nutritional status following birth of the child, may contribute to the high fetal and neonatal deaths recorded.

462. ZAINAL AZNAM YUSOF and KHAIRUDDIN YUSOF

Some socio-economic and medical aspects of Malay mortality in urban and rural areas

Malaysian Centre for Development Studies, Occasional Paper No. 1, 1974; 52 p.

Some aspects of the social, economic and medical aspects of mortality in West Malaysia, specifically among the Malay community were analysed. The differences between the urban and rural sectors of the population, in terms of various health indicators, were examined. The various causes of stillbirth and neo-natal death were discussed, which included socio-economic factors, nutrition, cultural habits, education and availability of medical services. Data for these modes of death were presented for 1966 and 1969. Maternal mortality was next considered. Causes of infant mortality and toddler mortality rates were discussed, and data presented. It was found that Malay mortality rates in urban areas had not improved to any great extent and in a number of areas were higher than the mortality rates in rural areas. It was suggested that this was due to unfavourable socio-economic and medical factors which affect Malays in the urban areas. Amongst the factors discussed were low income; unemployment and employment in lower categories of the occupational structure; probable lower standard of nutrition; lack of sufficient, healthy, housing environment; and urbanisation or the high rate of growth of the Malay urban population due large to rural-urban migration.

463. TEOH SOONG KEE

Breast feeding in a rural area in Malaysia

Medical Journal of Malaysia, 29(3):175–179, 1975

The study was carried out in a rural community in Perlis. A total of 714 pregnant women, attending the antenatal clinics, who delivered their babies between January 1970 and June 1972 were interviewed by the nursing staff. They were asked whether they breast fed, the duration, and the reasons for their choice of the method of feeding. The findings were presented in tables. The incidence of breast feeding was calculated and discussed in relation to race, age, parity, income, occupation of mother and education of mother. The reasons for the choice between breast feeding and artificial feeding were analysed. It was felt that in order to prevent the trend to artificial feeding, the health staff at the maternal and child health clinics should motivate the women even at the antenatal period.

464. S. BALAKRISHNAN and HASBULLAH BIN HAJI HUSSEIN

Breast feeding in Kelantan

Medical Journal of Malaysia, 32(1): 22–24, 1977

A total of 461 mothers with infants attending the maternal and child health clinics were interviewed. The incidence of breast feeding was studied in relation to duration of breast feeding without added compliments, the age when solids were introduced and awareness of the mothers of some of the advantages of breast feeding. 95% of the mothers were found to breast feed their children at least once or twice a day, but only 18% were breast feeding fully up to 3 months and 9% were breast feeding without added solids up to 6 months. It was found that 78% of the mothers had the undesirable practice of introducing solids to their infants before the end of the third month.

465. PAUL C.Y. CHEN

Food habits and malnutrition

Medical Journal of Malaysia, 31(3):170–175, 1977

The contribution of food habits as causative factors of malnutrition were discussed. A classification of foods in terms of cultural beliefs was first presented. Examples, taken from the various ethnic groups in Malaysia, were given for the different groupings of foods: non-foods, cultural super-foods, “heating” and “cooling” foods, medicinal, ceremonial, prestige, taboo, communication and sympathetic magic foods. The food habits of the most vulnerable groups in the rural people were discussed in relation to malnutrition. Dietary restrictions in the pregnant women and after delivery, the practice of breast-feeding of infants, food taboos and other feeding problems of the toddlers and patients during illnesses were high-lighted. It was felt essential for the health worker to bear in mind the symbolic meaning to many of the foods so as to manage successfully the diet of his patients or that of the community he serves. He is to be fully aware of these local traditions and food habits if he is to be successful in achieving the necessary changes that he hopes to make.

466. DIONG KO ING

Folk medical beliefs and practices in Sitiawan

Medical Journal of Malaysia, 31(4):338–346, 1977

A study of the beliefs and practices with respect to illnesses, their causations and cures among the Chinese community in Sitiawan was carried out. A background of the traditional Chinese medical concept was first presented, which included the Yin and Yang principle, acupuncture and moxibustion. Findings on the folk concept of the aetiology of illnesses and the symptomatology and signs of illnesses were then reported. In the discussion on folk beliefs and practices in the treatment of illnesses was included the role that foods play in this aspect. In the practice of folk medicine, for the prevention and avoidance of the causal agents of illnesses, the greatest attention and emphasis was said to have been paid to foods. Foods in their beliefs, may be “cooling”, “heaty”, “poisonous” and “neutral”. Examples were given of these foods.

467. ADELINA ABDULLAH and MOHD. HASHIM HASSAN

Dietary patterns of a coastal Malay community in Trengganu

Paper presented at the 1st ASEAN Workshop on Food Habits, Manila, 6–11 November 1978; 19 p.

A study of the food behaviour of a coastal Malay community in Calok, Trengganu, and the nutritional problems of the community as an effect of such food behaviour was carried out. Personal interviews and observations were conducted on 50 households. Information on household size, age distribution of the population studied, educational status, occupations of household heads, expenditure on foods and food items available in the village stores, were collected. The general dietary pattern of the community was described. Infant and toddler feeding practices and food avoidances observed were discussed. Food was collected from a sub-sample and analysed for its nutrient composition in the laboratory. Weight and height measurements were also taken for 180

school children aged 7–12 years (data not reported in this preliminary report). Results obtained were discussed and compared with that reported by other investigators.

468. C.K. CHAN

Infant and toddler feeding practices among various communities in Peninsular Malaysia

Paper presented at the 1st ASEAN Workshop on Food Habits, Manila, 6–11 November 1978. 13 p.

The article summarise the findings of various investigators on the subject of infant and toddler feeding practices. The different ethnic groups and various occupational groups were covered. Topics discussed included breastfeeding and weaning practices, food supplementation to the infant and dietary pattern of the toddlers including food taboos.

469. S.T. CHEN

Infant feeding practices in Malaysia

The Medical Journal of Malaysia, 33(2):120–124, 1978

One hundred mothers, whose children (aged 6 months to 2½ years) had been admitted to the Pediatric Unit of the University Hospital, were interviewed regarding the feeding practices of their children. Data on the incidence and duration of breast feeding were presented. The types of artificial milk feeding used were reported. The practice of giving non-milk foods to the children were described. The results obtained for the different ethnic groups were compared. It was felt that mothers should be encouraged to breast feed wholly and babies should be put to the breast as soon as possible after birth. It was emphasized that no bottle feeding should be given in the post-natal wards unless it was absolutely necessary. The practice of using pre-cooked cereals by the lower income children should be discouraged as it is expensive. The importance of a transitional diet from milk to adult diet should be stressed to parents.

470. Y.H. CHONG

Socio-cultural aspects of food habits and malnutrition

A country report for presentation at the 1st ASEAN Workshop of Food Habits, Manila, 6–11 November, 1978. 10 p.

A general description on the socio-cultural aspects of food was given. A classification of foods according to their meanings, symbolism, religious or otherwise, and their ability to prevent or exacerbate illnesses was given. Examples from the different ethnic groups were given for the over-valued foods, medicinal or therapeutic foods, food as a symbol, taboo foods and “hot” and “cold” foods. Dietary restrictions or “pantang” practised by the new mother during confinement and their effects on maternal and childhood nutrition were discussed. Some effects of urbanization on food patterns and malnutrition were described.

471. SITI HASMAH HJ. MOHD. ALI

Adat, kesihatan dan wanita – Jilid 1

Maternal and Child Health Division, Institute of Public Health, Kuala Lumpur, 1978;
96 p.

The publication is a compilation of working papers and talks prepared by the author in her 16 years of service in the State of Kedah. Information given in the 10 papers (from 1967–1974) were drawn from personal experiences in health work in the community. Most of the papers dealt with the effects of cultural beliefs of the rural women/mother on health care. Topics on nutrition were also included in some papers, such as child feeding practices, food taboos for the expecting mother and after delivery.

472. LIM JU BOO

A study of dietary pattern in a resettled land scheme

Abstracts of Institute for Medical Research Scientific Meetings, 1978

A study of dietary patterns in Jengka, in the State of Pahang showed that more than half of the population in that land resettlement scheme harbour no form of food taboo or belief. This probably could be due to changing trends in food patterns – a sequel to their exposure to external urban influences and sociological changes over a single generation. Most of the migrants have lived most of their lives under modern urban environments over the last twenty-five years. The paper attempts to answer some of these impacts of resettlement on traditions and customary practices pertaining to food beliefs. Concepts towards food and nutrition among the older generation may have an overpowering repercussion on the food pattern in a fast emerging generation, shown by the fact that the father makes most of the adult decision for the family. Nevertheless, despite carbon-copy behavioural patterns being passed on from the older to the younger generations, the paper discusses evidence of decreasing food taboos among the younger contemporaries. Such trend is encouraging, and could well indicate the consequences of education, knowledge and social mobility from traditional ideas into novel practices. The paper also discusses the various facets of food practices, and the frequencies in which certain foods are consumed or avoided in broad terms of their nutrient contents, and with reference to the age and sex of the respondents.

473. LENORE MANDERSON

Hot-cold food classification and physical well-being in Peninsular Malaysia: preliminary observations

Paper presented at the 1st ASEAN Workshop on Food Habits, Manila 6–11 November 1978; 26 p.

Studies of humoral pathologies and particularly the derived hot-cold classification system in various countries in the world were briefly reviewed. Studies in this belief by investigators in Malaysia were briefly discussed. In the present study, information on beliefs in the hot-cold classification of foods were said to have been collected from open-ended unstructured interviews. An attempt was made to identify why certain foods might be regarded as either hot or cold, to explore the inter-relationships of diet and health and to point out some of the implications of these food beliefs. It was felt

that there was room for further research on the extent to which food beliefs, especially the classification of foods as hot and cold, may affect physical health negatively yet have positive psychological importance and social significance.

474. I. PATHMANATHAN

Breast feeding — a study of 8750 Malaysian infants

The Medical Journal of Malaysia, 33(2):113–119, 1978

Mothers of 8755 infants were interviewed with regards to breast feeding experiences during the period 1970–1974. These women were residents in 13,704 randomly selected households in the urban areas of Kuala Lumpur, Ipoh, and Petaling Jaya and 6 rural areas from 5 different Malaysian states. Data on duration of breast feeding were collected. The incidence of breast feeding was presented in relation to various factors, such as the age, education and occupation of mother, family income and place of birth of the infant. Results obtained for the different ethnic groups and for the rural and urban areas were compared. Although 64% of the infants were initially breast fed, between one-half to two-thirds of these had been taken off the breast by the end of the second month. Efforts to improve the practice of breast feeding were briefly discussed.

475. SITI HASMAH HJ. MOHD. ALI

*Adat, kesihatan dan wanita -- Jilid 2**

Maternal and Child Health Division, Institute of Public Health, Kuala Lumpur, 1979; 81 p.

In this second volume of compilation of working papers for seminars, workshops, forums and lectures, papers from the period 1975–1978 were presented. Topics related to nutrition covered in the 7 papers presented included the traditional practices (and food habits) associated with pregnancy, childbirth and puerperium among the three major ethnic groups in the country, and a somewhat detailed discussion on breast feeding.

* See abstract number 471 for jilid 1

476. TEE E SIONG

Advances in food technology and changes in food consumption patterns: examples from the Malaysian scene

Paper presented at the 2nd ASEAN Workshop on Food Habits, 7–11 July 1979, Kuala Lumpur; 15 p.

Advances in food technology and modernization had brought about much changes in the food habits of communities. Such changes and the resulting ill-effects on the nutritional status of the people had been recognized early by investigators in the country. Some observations by Malaysian investigators on the general inadequacy of modern diets were cited. Specific examples of some such 'new' food items, introduced as a result of advances in technology, were next discussed. Observations made by

various investigators in the country on the general acceptance of such foods and the resulting detrimental effects were quoted. The ill-effects were particularly felt by the poor, who were also ignorant. It was felt that there was a need to re-emphasize the dangers of such foods. It was hoped that the 'invasion' of such sophisticated, luxurious and non-essential foods into our communities could be effectively checked.

DIETS AND DIETARY REQUIREMENTS

477. KING EDWARD VII COLLEGE OF MEDICINE, SINGAPORE

Food Facts I

The Malayan Medical Journal, 4:148–150, 1929

This is the first of two articles, discussing in general on food and nutrition. The importance of obtaining sufficient energy, the main food sources of energy, the relationship between energy and heat, vitamins in fats, and calorie requirements were first discussed. The next nutrient considered was protein, touching on food sources of protein and daily requirements. The importance of "food regulators" – the minerals and vitamins – were discussed. Fibre and water were also recognized as important items in the diet. Food tables, showing the major nutrient content of some 50 types of foods were presented.

478. KING EDWARD VII COLLEGE OF MEDICINE, SINGAPORE

Food Facts II. How to build your diet.

The Malayan Medical Journal, 5:43–44, 1930

This is the second article in the series of two articles discussing in general on food and nutrition. The principles of formulating an adequate and "varied" diet, and the interchangeability of foodstuffs were discussed. The importance of including food items with "food regulators" to give a sound diet was emphasized.

479. JOHN LEWIS ROSEDALE

The improvement of local dietaries

The Malayan Medical Journal, 11:151–153, 1936

Dietary requirements for "protective foods" and calories as set out by an expert commission of the League of Nations in 1935 were presented. The standards set out were discussed to consider how local dietaries could meet these requirements. The difficulty of obtaining sufficient milk and milk-products, in such amounts as recommended by the model, was identified. It was suggested to replace these with additional amounts of undermilled rice. The nutrients still lacking, identified as protein, calcium, vitamin A and fat, were calculated. Ways to make up these deficiencies using local food items were suggested. An amended dietary standard was thus obtained.

480. DIVISIONS OF NUTRITION AND BIOCHEMISTRY,
INSTITUTE FOR MEDICAL RESEARCH

Catering in residential institutions in the Federation of Malaya

Institute for Medical Research, Circular Medical H. Qrs. No. 1 (New Series), Kuala Lumpur, 1955; 12 p.

The publication presented two schedules as a guide in food catering to principals of residential schools, technical colleges, hostels, welfare homes and similar institutions. Schedule A consisted of suggested menus for the various meals in a week, while Schedule B gave the quantities of various foodstuffs recommended for use in institutional catering. Some notes were given on the importance of an adequate and well-balanced diet, on the use of the schedules presented and some aspects of the costs of foodstuffs.

481. I.A. SIMPSON

The influence of climate on diets

The Medical Journal of Malaya, 11(3):171–176, 1957

The article discussed the influence of a hot, moist climate on the foodstuffs and dietaries available and the effects of such diets on the health and well-being of those living in such climates. The diets in such regions were said to be obstacles to adequate nutrition. The resulting malnutrition was said to lead to a vicious circle of apathy, inertia and malnutrition. An example of a feeding programme in an estate in Malaya and the resulting better nutritional health and efficiency was described. Suggestions were put forward for the improvement of diets and nutrition in these tropical countries.

482. DATIN LADY THOMSON

The evolution of the diet of modern man

Kereta Api (Malayan Railway Administration Magazine), 2(10):11–12, 1962

A brief account was given of the changes in the diet of man, as man changed from being a hunter to a farmer. Some faults of the modern diets of western Europe and North America were pointed out. The overuse of refined foods and excessive intake of carbohydrate and fats, and the resulting complications were discussed. The major dietary deficiencies in Malaya were described. The wider use of local foodstuffs, which were inexpensive and available to all, was suggested for the correction of such deficiencies.

483. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Recommended dietary allowances

Institute for Medical Research Report No. 64, 1964; 4 p.

The Recommended Dietary Allowances (RDA) proposed by the Food and Nutrition Board of the National Research Council (NRC) of the United States was used as a

reference and an RDA, suitable for use in Malaya, was constructed. Explanatory notes on the changes made to the NRC recommendations were given.

484. MINISTRY OF HEALTH, MALAYSIA

Hospital diet scales and descriptive notes

Government Printers, Kuala Lumpur, 1964; 37 p.

The diets listed had been introduced throughout the government hospitals in the country. They were said to have been designed to cover most dietary needs which would normally arise in hospitals. Full diets for the three ethnic groups in third class wards, and various special diets, such as vegetarian, light, soft, diabetic, high protein and children's diet were given. For each diet, the estimated nutritive value and cost were presented. The publication also gave the Recommended Daily Dietary Allowances for Malaya.

485. L.K.C. CHAN, K.L. LEE and S.E. TAN

A recommended diet for West Malaysian pregnant women

The Medical Journal of Malaya, 22(2):94–98, 1967

Based on the various dietary standards available, a table for Recommended Daily Dietary Allowances during pregnancy and lactation was formulated. With the help of various food composition tables, and the above Allowances, suggested menus for a pregnancy woman for one week was prepared. Detailed calculations of the nutritive value of one day's menu as well as the whole week's menu were presented. Adequacy of the suggested menu was compared with the Recommended Allowances formulated. The suggested menu were also discussed in relation to cost, availability and acceptability of the food items suggested.

486. ABDUL HALIM ISMAIL

Some available estimates of nutritional requirements and levels in relation to economic activity for West Malaysia

Nusantara, 1:25–43, 1972

Nutritional requirements (recommended dietary allowances) as proposed by FAO and WHO, and the estimates proposed by the Division of Nutrition, Institute for Medical Research (1964)*, for West Malaysia were discussed. An attempt was made to give an estimate of the average daily per capita calorie requirement for the country. Nutrient deficiency and the resulting ill-effects were discussed, especially in relation to working efficiency and mental attitude towards work. Available evidences on the levels of nutrition in West Malaysia were next presented. Estimates of average daily per capital intake of various nutrients, as presented by Wharton (1962)*, Sedky (1962)*, Thomson (1960)*, Burgess and Alang Musa (1950)*, were discussed in relation to dietary requirements. Intakes for the rural and urban population, and for the different ethnic groups were compared.

* See abstract numbers 158, 157, 68, 59

487. C. DEVENDRA

Animal production and its relationship to human nutritional requirements in Peninsular Malaysia

Kajian Veterinaire, 5(2):52–65, 1973

Taking into consideration the population size and structure of Peninsular Malaysia in 1970, livestock population, imports and exports of livestock, and the protein content of the various meats and dairy products, the net animal protein consumption per caput per day was calculated. The total per caput protein consumption was next calculated by adding the figures for fish, prawns and vegetable proteins. The obtained figures were then compared with recommended dietary requirement for Malaysia, and with similar figures for several other countries. The possibility of increasing production from the individual animal components was discussed in some detail.

488. TEOH SOON TEONG

Recommended daily dietary intakes for Peninsular Malaysia

The Medical Journal of Malaysia, 30(1):38–42, 1975

A review of previously available dietary standards in Malaysia was presented. Explanatory notes on the method of construction of the recommended table were given. Brief notes on the use of dietary standards were also included.

489. E.S.L. LEONG, C. DEVENDRA and Y.H. CHONG

Animal proteins: their availability and future demands for human consumption in Peninsular Malaysia

Ministry of Agriculture and Rural Development, Bulletin No. 142; Kuala Lumpur, 1976; 33 pp.

The availability of protein in the country as reported by various investigators (from 1957 to 1971) were presented and discussed. The protein production and per caput protein consumption of various food commodities for 1973 was then presented. Details of the method used in the calculation were given. The calculated figures for protein availability were compared with dietary protein requirements. The demand for the various food items, projected from the years 1975 to 1990, compiled from various reports and bulletins, were presented. Areas that could be exploited to increase protein production to meet the projected targets were discussed.

490. Y.H. CHONG

Dietary protein-energy requirements – a re-appraisal

Keynote Address Presented at the Malaysian Institute of Food Technology Symposium on Protein Rich Food in ASEAN, Kuala Lumpur, 12–13 July, 1979

Evidences were presented to indicate that the daily protein allowance recommended jointly by FAO and WHO in 1973 was too low and needed revision. Furthermore, in developing countries, additional dietary proteins may be required owing to the presence of chronic infections, diarrhoeal diseases and marginal availability of calories.

In the light of these evidences, a proposal was made to increase the current daily protein allowance in Malaysia. While this should not be regarded as final, it was felt that the interim proposal made should provide a guideline for those involved in supplementary feeding of children with particular reference to the nutritional adequacy of supplementary foods.

NUTRITION INTERVENTION PROGRAMMES

491. J.G. REED

Some health problems on estates

Journal of the Malaya Branch, British Medical Association, 1(3):253–264, 1937

The whole article dealt with three main topics, namely: 1. fly breeding in bored-hole latrines; 2. the present outbreak of measles and its prevention by the injection of parental blood; 3. the use of red palm oil as a dietary supplement for children on estates, which will be considered here.

It was thought that the main deficiencies in the diets of the estate Indian labourers were fat and vitamin A. Realising the nutritive value of red palm oil, the oil was used as a supplement in an experiment in an estate. A total of 88 children were given a daily oral dose of red palm oil for 5 months. Weight increase, and the number of diseases occurring in the period were observed and compared with another group of 86 untreated children. The weaknesses of the experiment, carried out under ordinary estate conditions, were pointed out. It was felt that a more accurate scientific experiment needed to be carried out to produce better results.

492. PAUL FASAL

A nutritional survey of the Federated Malay States. III. Supplementary food on estates

Institute for Medical Research, Federated Malay States, Bulletin No. 1, 1941, Kuala Lumpur; 16 p.

Realising the need for immediate help to the malnourished children, the provision of supplementary foods was advocated. Two recipes were first used, called "estate pudding" and "mixtures". Details of the method of preparation, the nutrient content and cost of these supplementary meals were given. The soya bean was thought to be an ideal food to be promoted. Its nutritive value was discussed. The use of soya bean to prepare a "cake" for similar purposes was described and its ingredients and nutrient composition presented. Other recipes used were those where the soya bean was substituted by coconut and groundnut. A comparison of all the supplementary meals in use was made.

493. ELIZABETH B. CHEEK

A Malayan guide to good health through balanced diet

Department of Public Relations, Malaya, 1947

Publication not available

494. DIVISION OF NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Supplementary feeding of school children

Institute for Medical Research Annual Report for 1952, Kuala Lumpur, 1953; pp. 51–52

In many rural areas, children were sent considerable distances to school without any breakfast. Thus, the children sometimes found it difficult to concentrate on their work in school and became listless and inattentive. Supplementary feeding schemes in schools were thus initiated by the Medical and Social Welfare Departments in cooperation with the Department of Education. The various types of snacks provided and their relative usefulness were briefly discussed. It was proposed that the most suitable food for the purpose was the hot, cooked “snack”. An appropriate composition of such a snack was suggested. The management of the preparation and cooking of the food was briefly discussed.

495. DIVISIONS OF BIOCHEMISTRY AND NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Snack meals for feeding centres (Malay)

Institute for Medical Research, Report No. 28, Kuala Lumpur, 1954; 4 p

A list of suggested menu for 24 days for use in feeding centres was presented. Details of the necessary recipes, including ingredients and method of preparation were also included (the menus and recipes were given in Bahasa Malaysia). The nutrient content of the various meals were reported. The short report also discussed the aims of having such snack meals, and cost of the meals. It was emphasized that the menu suggested provided a useful snack meal and not intended to replace any of the normal home meals.

496. DIVISIONS OF BIOCHEMISTRY AND NUTRITION, INSTITUTE FOR MEDICAL RESEARCH

Snack meals for feeding centres (Tamil)

Institute for Medical Research, Report No. 36, Kuala Lumpur, 1954; 3 p

A list of 5 meals were given, suggested for use in feeding centres in Tamil schools. The ingredients and cost of each meal were given. The list also gave some suggested supplements to be added to the meals whenever funding permitted. General notes on the use of the menus were included.

497. ELIZABETH B. CHEEK

Petua Untuk Kesihatan

MacMillan, London, 1955

Publication not available.

498. ELIZABETH B. CHEEK

Good health through good feeding – a Malayan guide to good health

MacMillan, London, 1955

Publication not available.

499. I.A. SIMPSON, ELIZABETH CHEEK and SOH CHIN CHAI (Editors)

Applied nutrition in Malaya

The Caxton Press Ltd., Kuala Lumpur, 1957; 176 p.

The publication contains a collection of “background papers” prepared for the use of participants who attended the first training course in Applied Nutrition, held in the Institute for Medical Research, Kuala Lumpur, late in 1956. These papers were written by various authorities on nutrition in the country, and were of direct relevance to nutritional problems and conditions in the Federation of Malaya. The eight chapters in the publication dealt with various topics, ranging from the basic principles of nutrition to the nutritional problems in the community and nutrition education methods. Appendices to the publication included a review of the state of nutrition in the country from 1953–1955, some superstitious customs during childbirth observed in Kuala Lumpur, a discussion on supplementary feeding programmes in schools and better communication methods for nutrition education.

500. ELIZABETH CHEEK

Nutrition and health education in the Federation of Malaya

The Indian Journal of Child Health, November 1958; pp. 767–773

Several aspects of nutrition and health education were discussed. The problem of covering all areas of the country satisfactorily due to poor communications was pointed out. Besides government departments, namely education, health, social welfare, labour and co-operative development departments, various voluntary agencies could also make significant contributions. The roles that home science classes and rural health centres could play in health education were discussed. A nutrition course for government officers, held in Selangor in 1956, was said to be useful. A “travelling exhibition” or “travelling school” was set up in 1957, to visit rural areas and bring the knowledge of food and farming to the rural people.

501. ELIZABETH CHEEK

Nutrition education and health education in the Federation of Malaya

The Indian Journal of Child Health, November 1958; pp. 773–778

The article gave a somewhat detailed description of the various organizations, both governmental and voluntary, involved in nutrition and health education in the country. A list of publications and books written locally, dealing with health and nutrition, was given.

502. E.B. CHEEK

Nutritional problems of Malayan families: recommendations for raising the level of nutrition

Magazine of the Health and Sanitary Inspectors' Union, Federation of Malaya, 1(5):36–44, 1958

Some aspects of the demographic data in the Federation of Malaya were discussed, including population size, distribution, structure and growth. The situation on food production in the country was briefly described. Some mortality rates were also presented. Some of the problems with which the family unit faced were discussed in the light of the figures presented for the whole population. Recommendations for raising the level of nutrition were put forward. It was felt that both short-term and long-term schemes had to be speeded up.

503. ELIZABETH B. CHEEK

Makanan bagi ibu yang mengandung

Community Health, 5, 1959

Publication not available.

504. ROSALIE FRITZ

Major factors influencing the status of nutrition in the Federation of Malaya and some implications for nutrition education in home economics

Thesis presented to the Faculty of the Graduate School of Cornell University for the degree of Master of Science, 1960; 60 p. + 27 p. of appendices

The geographic and social forces in the Federation which will have an influence, either directly or indirectly, on the living patterns of the people, were described. Emphasis was placed on the fact that the society is made up of various ethnic groups. A general view of the nutritional status of the population was given. Dietary patterns of the various ethnic groups and their relation to attitudes and values were discussed. A dietary study of 41 girls (age ranging from 11–19 years) in the Treacher Methodist Girls School Hostel, Taiping, was reported. A quantitative study based on the amounts of food purchased during a 4-week period was carried out to ascertain the nutritional adequacy of the hostel diet. Foods purchased were weighed and calculated for their nutrient contents. Obtained values were compared with recommended allowances. Adequacy of the diets were commented upon. General recommendations for improv-

ing dietary patterns of the population at large were given. Factors influencing dietary choices were discussed. Nutrition education was seen as a tool for changing habits and patterns. The greater involvement of the home economics teacher in nutrition education programmes was discussed in some detail.

505. DEREK LLEWELLYN-JONES

Nutritional supplements in pregnancy (with special reference to the developing countries)

The Medical Journal of Malaya, 16(4):260–266, 1962

Data from a few dietary surveys of the general population in Malaya were presented to show indirectly that the diet of the pregnant women in the country was inadequate. It was concluded that among women in the lower income groups, deficiencies in protein, vitamin A, vitamin B complex and iron were the most serious. Nine proprietary preparations available locally were examined to determine their adequacy in supplementing to the diets of these women. Finding that these preparations were expensive and did not correct the deficiencies found among Malayan women, a formula containing the necessary vitamins and minerals in their needed amounts was proposed. It was felt that the formula suggested could be readily accepted by the patients and the cost of the daily supplement "need not exceed that of two cigarettes".

506. DATIN LADY THOMSON

Current programs in Malaya

Transactions of a Far East Symposium on Nutrition, Saigon, March 12 to 16, 1962; pp. 231–241

The various programmes initiated in Malaya to improve rural conditions, where malnutrition was said to be rampant, were described. It was recognized as essential to increase rice production. Attention was also given to increasing meat and dairy production. Health centres were increased and the activities of these centres described, which included nutrition and health education, preventive inoculations and distribution of skim milk. A "travelling exhibition", which was said to give good results in education efforts, was described. The role of the Institute for Medical Research was briefly discussed.

507. FLORENCE A. THOMSON and ELIZABETH MERRY

Weight increase in toddler children in the Federation of Malaya: a comparison of dietary supplements of skim milk and fish biscuits

British Journal of Nutrition, 16:175–183, 1962

Realising the importance of using foodstuffs other than skim milk from UNICEF for supplementary feeding programmes, studies were undertaken to determine the acceptability and nutritive value of fish meal in such programmes. In palatability trials of fish meal and fish biscuits in several hundred children, it was found that children of all races like these foods. An experiment on weight gain in children was next described. Twenty-one children were given fish biscuits, 13 received skim milk and

another 13 were in the control group with no supplements to their diet. Weight increase in the three groups of children were compared after four weeks of such supplementary feeding. Possible reasons for the greater weight increase observed in the group of children receiving fish biscuits were discussed. The results of a further trial of 40 older children were briefly reported.

508. W.R. STANTON

Grain legumes and the undernourished

The Malayan Agriculturist, 4:54–66, 1964

It was recognized that although the nutritional state in Malaya was favourably placed compared with many developing countries, there were sectors in the population which were characterized by widespread protein and vitamin malnutrition. The detrimental effects of malnutrition and sub-clinical deficiency to the well-being and progress of a society were emphasized. The article mainly discussed the need for increased protein production and improved protein quality to combat malnutrition. The various sources of proteins were pointed out and special attention was given to plant proteins, specifically the legumes. The biological quality of the legumes was discussed and those legumes thought most suitable were described. Some of the agricultural importance of growing legumes were briefly discussed.

509. DATIN LADY THOMSON

Family planning and good health

Family Planning Association of Selangor, Annual Report, 1964

Family planning was said to be generally accepted by all racial groups in the country. Factors that contributed to bringing about this acceptance were discussed. This was mainly attributed to awareness among the people of the hazards to health of big families. Moreover, the link between good health and good nutrition was better understood by the people. The need for continuing education of the people was emphasized.

510. Y.H. CHONG

Applied nutrition programmes -- a modern approach to combat malnutrition

Scientific Malaysian No. 1, pp. 33–36, 1968

It was recognized that malnutrition and related public health problems were best tackled in the form of coordinated long-term action programmes with multidisciplinary involvement – the applied nutrition programme. The stages involved in the implementation of such a programme were described in some detail. The first of such applied nutrition programme was scheduled to be launched in the country. Some of the programmes currently being implemented through the separate efforts of various ministries to improve the nutritional status of the population were described.

511. N.N. WAGNER and P.C. SUSHAMA

Services for children in a developing country: Malaya

Paper presented at the 45th Annual Meeting, American Orthopsychiatric Association, Chicago, March 20–23, 1968

Publication not available.

512. Y.H. CHONG

Malnutrition in childhood: its recognition and prevention

Majalah Jururawat Malaysia, 1(2):4–6, 1972

The detrimental effects of malnutrition to the child, the immediate family and the nation as a whole were briefly discussed. The use of toddler and infant mortality rates as indicators of malnutrition was touched upon. The common deficiency problems encountered in the country and their recognition were next discussed. Preventive measures for the individual and on a national scale were described. Socio-economic development, greater production and consumption of nutritious foods, the implementation of Applied Nutrition Programmes, nutrition education and family planning were among the topical discussed. Finally suggestions were put forward for the training of nurses, particularly those who work in rural areas, so that they may contribute to the prevention of malnutrition.

513. MOHD. NOR ALIAS

The Applied Nutrition Project (ANP)

Report of the National Seminar on The Role of Specialists in Promoting Family Health, 12–18 August 1973, Pulau Pinang, pp. 119–123

The commencement of the Applied Nutrition Pilot Project in Kuala Langat District in Selangor was described. Objectives of the ANP were pointed out. Progress of the Project and its proposed expansion were reported in brief. The various departments involved in this integrated and coordinated effort to combat malnutrition were listed.

514. I. COENIGRACHT

World Health Organization Assignment Report on Applied Nutrition in Malaysia – 5601 (mimeographed), WHO, 1973

Publication not available

515. SHAHARUDDIN HARUN

Formulation, organisation and implementation of a national food and nutrition policy

Paper presented at Seminar Kebangsaan Makanan dan Pemakanan Dalam Pembangunan Negara, 22–27th March, 1973, Malacca; 20 p.

Malaysia, like any other developing countries, faces a number of problems of rapid population growth rate and unemployment. She could not run from the fact that she

is facing the problems of malnutrition. This problem is rapidly becoming a problem of crisis proportion. Although virtually all developing countries have formulated plans to accelerate their economic and social development, only a few countries postulate nutritional improvements as one of their principal goals. The number of countries which have formulated special programmes to meet the nutritional needs of children is even smaller and this is usually drawn on an ad-hoc basis without integrating them in development plans. Malaysia is no exception. The need to implement a concrete and effective national food and nutritional programme was emphasized. General guidelines for the formulation, organisation and implementation of a national food and nutrition policy was described in some detail.

516. KASSIM ISMAIL

A case for an integrated food and nutrition policy in the national planning for Malaysia

Paper presented at Seminar Kebangsaan Makanan dan Pemakanan Dalam Pembangunan Negara, 22–27th March, 1973, Malacca; 25 p.

Some vital statistics of the population and disease situation in the country were briefly reviewed. That nutritional disorders is one of the major causes of the existing mortality rates and disease patterns was discussed. The economic impact of malnutrition on the individual (mental and physical development, and other productivity considerations) and on national economy was described. The essential connection between economic development and nutritional improvement was emphasized. Malnutrition is recognized as an interdisciplinary problem requiring a coordinated approach between the nutritionists, health education, educationists, economists, food technologists and planners. It was proposed that enough knowledge is available to justify substantial resource allocations to national food and nutrition oriented programmes.

517. JOGINDER SINGH

The role of the medical officer of health and rural health team in the care of the pre-school child

Bulletin of the Public Health Society, 7:45–49, 1973

The set-up of the Rural Health Unit and staffing of the Rural Health Team were described. The activities carried out were discussed, and included keeping of simple anthropometric records, distribution of skim milk to deserving children and nutrition education. The roles of the medical officer of health, in charge of the District Health Office, were described.

518. HALIMAH BINTE OTHMAN

Health and social programmes for the pre-school child -- II. Other government and private organizations

Bulletin of the Public Health Society, 7:40–44, 1973

The need for public social services to the pre-schoolers was emphasized. The pre-school centres set up by various bodies, individuals and voluntary organizations were said to

be unsatisfactory. The setting up of the first ten *Taman Bimbingan Kanak-kanak* (TBK) in the country by the Ministry of National and Rural Development, and planned to be operated with parent and community involvement, was described. The objectives and activities of the TBK were spelt out. Besides providing the children with educationally stimulating activities, suitable supplementary meals were also provided. The problems encountered in the running of the TBK were pointed out and solutions to overcome these were recommended. Future plans for further development of the programme were discussed.

519. RAJA AHMAD NOORDIN

An attempt at inter-departmental coordination for food and nutrition activities

Paper presented at Seminar Kebangsaan Makanan dan Pemakanan Dalam Pembangunan Negara, 22–27th March, 1973, Malacca; 11 p.

Realizing that malnutrition is influenced by various economic, educational, health and socio-cultural factors, a multi-pronged attack is deemed necessary, involving the economic, agricultural, educational, health and community development sectors, requiring inter-departmental coordination as well as active community support and participation. The Applied Nutrition Programme was thus initiated and started as a pilot project in 1969 in Mukim Tanjong Duabelas in Kuala Langkat district. The constraints encountered that hampered coordination were discussed.

520. RAJA A. NOORDIN

Health and social programmes for the pre-school child – I. Ministry of Health

Bulletin of the Public Health Society, 7:35--39, 1973

The role that the Ministry of Health had played in attempts to improve the nutritional and health status of the pre-school child was discussed. The setting up of Rural Health Units and Maternal and Child Health Clinics and their activities were described. Examining the progress of the rural health services scheme, it was said that there had been a steady improvement in the health status of rural children. However, toddler mortality rate was said to be still high in the rural areas, indicating that malnutrition remained as a problem in these areas. The need for further strengthening and consolidating the rural health services was emphasized. Plans for such improvements were outlined.

521. N.T. ARASU

Integrated approach to applied nutrition

Bulletin of the Public Health Society, 8:69--70, 1974

An integrated approach in solving the malnutrition problem was described. It involved not only the ministry of health, but also the ministries of rural economic development, education and agriculture (including fisheries and veterinary departments); state governments, district offices and voluntary agencies. Some of the achievements of the pilot Applied Nutrition Project, started in 1969 in the Kuala Langkat district were described.

522. Y.H. CHONG

Country strategy for nutritional surveillance

Bulletin of the Public Health Society, 11:27-29, 1977

The importance of a constant monitoring or surveillance of factors that affect the nutritional status was pointed out. A number of these factors or indicators of trends of malnutrition were discussed, amongst which were statistics on population, morbidity and mortality, food supply and consumption data, anthropometric and biochemical measurements. Indicators for the detection of overnutrition were also briefly discussed. The continuing surveillance of toxicants in foods was also felt important. It was felt that there was an urgent need to establish a body that has the responsibility, capability and authority to conduct nutritional surveillance for Malaysia. The functions of the proposed body were described.

523. HALIZA MOHD. RIJI

Report of the applied nutrition programme in Kuala Trengganu

Abstracts of Institute for Medical Research Scientific Meetings 1977; pp. 26-29

An attempt was made to evaluate the progress of the Applied Nutrition Programme in Kuala Trengganu (1974-1976). Extensive interviews and questionnaires were carried out to gather information on the current status of the Programme. From observations made, it was concluded that the ANP in Kuala Trengganu was not doing well. The various factors that contributed to the unsatisfactory situation were discussed. The weaknesses of the existing programme were pointed out. The need for the authorities concerned to undertake remedial measures was emphasized.

524. AHMAD ZAHARUDDIN IDRUS, ADELINA MUSTAPHA, CHUA ENG CHONG
and ZAINAB HASHIM

Developing "enriched formulae" for use by infants and children

Paper presented at the 2nd ASEAN Workshop on Food Habits, 7-11 July 1979, Kuala Lumpur; 5 p.

The three major types of products developed in the Malaysian Agricultural Research and Development Institute that may be used as supplementary foods were briefly described. Yuba, products prepared from soyabean milk, were said to be obtainable from simple technology and can be processed on a cottage basis. The ingredients used and the approximate nutrient content of Nutrina Snack Food were described. The development of Enriched Infant Food using soya protein isolate and tapioca starch was also reported.

525. MOHD. YUSOF LASIN

Analysis of the constraints prevailing in applied food and nutrition programmes and examination of the role of supplementary foods in community nutrition

Paper presented at the 2nd ASEAN Workshop on Food Habits, 7–11 July 1979, Kuala Lumpur; 15 p.

Recognizing that nutritional status is influenced by several factors, such as economic, socio-cultural, education, etc., an integrated approach was adopted to raise the health standard of the community. The approach consisted of a four prong strategy, which included improved economy and food production, education activities, health and sanitation activities, and supplementary feeding programmes. The launching of the AFNP in 1969 as a pilot project in Kuala Langat, Selangor, was described. Plans for the expansion of the Programme to other areas, development allocation and operating expenditure were outlined. Evaluation studies of some of these Programmes were reported. The constraints prevailing in the AFNP were discussed. The objectives of supplementary feeding programmes in the country were pointed out. The implementation of school supplementary feeding schemes was described in some detail.

526. RUTH K.H. LIM

Experience with the use of kaset infant food in an underserved urban community

Paper presented at the 2nd ASEAN Workshop on Food Habits, 7–11 July 1979, Kuala Lumpur; 7 p.

Low cost high protein Kaset Infant Food and Kaset Snack were distributed to 421 children living in an underserved urban community in the outskirts of Kuala Lumpur. A nutrition survey conducted previously had revealed that a large proportion of these children were under weight. The distribution of these supplementary food was described, and the amounts given indicated. Response of the recipients with regards to acceptability of the Kaset Infant Food and Snack was reported. It was felt that there was great scope for using these foods not only as supplementary foods to infants and toddlers, but also as one of the food items in school feeding programmes.

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