SEMINAR ON

NUTRITIONAL PROBLEMS IN THE WEANING PERIOD

ADDIS ABABA 3-15 MARCH 1969

WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR THE
EASTERN MEDITERRANEAN

WORLD HEALTH ORGANIZATION
Regional Office for the
Eastern Mediterranean

EM/NUTR/43
EMRO 0169

JULY 1969

ENGLISH ONLY

REPORT ON THE SEMINAR ON

THE NUTRITIONAL PROBLEMS IN THE WEANING PERIOD

Addis Ababa, Ethiopia

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1969

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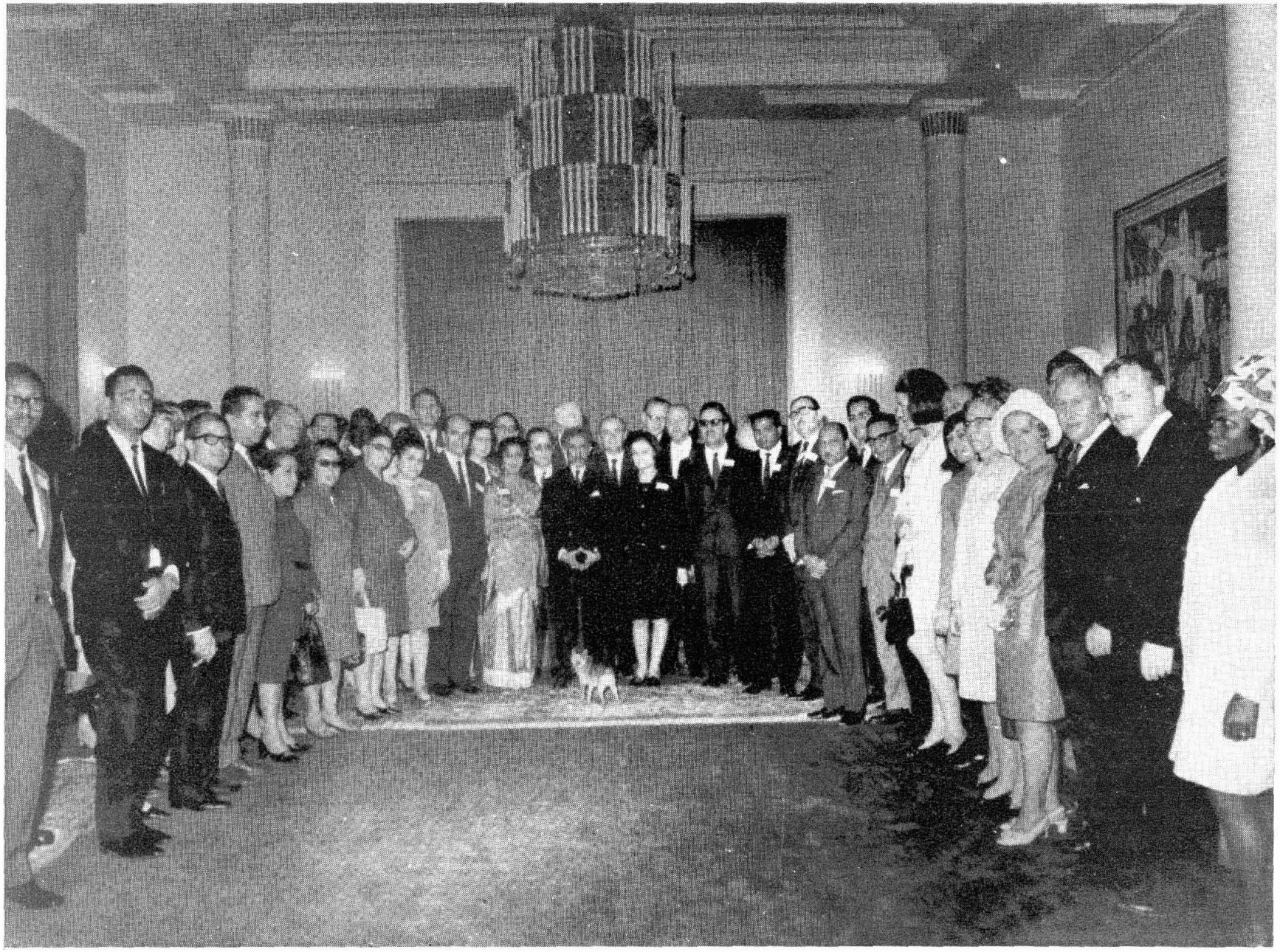

Pictured with H.I.M. Emperor Haile Selassie are participants to the Seminar on Nutrition Problems in the Weaning Period, sponsored by WHO in Addis Ababa from 3-15 March 1969.

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I INTRODUCTION

The Seminar on Nutritional Problems in the Weaning Period was held at Africa Hall, Addis Ababa, from 3 to 15 March 1969. It was planned and organized following the Recommendations made by the Regional Committee for the Eastern Mediterranean at the Eighteenth Session in Cyprus, August 1968, where nutrition of the weaning child has been considered of sufficient importance to justify the convention of the special technical meeting.

The purpose of the Seminar has been to review the Nutritional Problems in the Weaning Period; to consider the improvement of existing patterns and basic information required for the planning of weaning food programmes at family and community level as well as the medical, technological and administrative aspects of weaning food production.

To assist in the preparation of the Seminar a National Preparatory Committee had been formed in Addis Ababa (Annex A) which accepted responsibilities for the arrangements for the Meeting. A group of senior paediatricians, MCH experts and nutritionists from the following countries of the Eastern Mediterranean Region had been invited.

The participants came from the following countries:-

Ethiopia, Iran, Iraq, Jordan, Kuwait, Libya, Pakistan, Somalia, Sudan, Tunisia, United Arab Republic in the Eastern Mediterranean Region, and from Kenya, Tanzania and Uganda in the African Region. A list of participants, observers, representatives from the United Nations Specialized Agencies and other organizations, and WHO Secretariat is included in Annex A of this report.

The Seminar was opened by H.E. Ato Yohannes Tseghe, Minister of State, Ministry of Public Health, Imperial Government of Ethiopia who stressed the importance of adequate nutrition and its implications on health and growth in early age. He stated that unless immediate action is taken by developing countries to solve the nutritional problems of the weaning period, the future generations cannot develop into happy and healthy

citizens, who would effectively contribute to the economic and social progress of these countries.

On behalf of Dr. A.H. Taba, Director of the World Health Organization Regional Office for the Eastern Mediterranean, Dr. D.O. Hasenbring, Public Health Administrator, Health Organization, presented the Address of the Regional Director to the Seminar. In this Address, Dr. Taba expressed his appreciation to the Imperial Government of Ethiopia of the invitation to convene the Seminar in Addis Ababa. He thanked in particular the National Preparatory Committee, representatives of the host country, and the Swedish International Development Authority (SIDA) for their valuable assistance. Emphasizing the importance of the Seminar theme, Dr. Taba briefly exposed in this Address the major problems to be discussed by participants as follows: "It is the main purpose of this Seminar to review the nutritional problems of the weaning period and to discuss realistically existing possibilities of their solution. Particular emphasis will have to be given to the discussion of the development of weaning food programmes on a country or inter-country basis".

II ELECTION OF OFFICERS AND ADOPTION OF THE PROVISIONAL AGENDA

At the first plenary session, Dr. Demissie Habte, Deputy Director of the Ethio-Swedish Paediatric Clinic, was elected Chairman; Dr. H.A. Kushkush, Deputy Under-Secretary for Health, Ministry of Health, Sudan, and Dr. A.A. Sharif, Assistant Under-Secretary of State, Ministry of Public Health, Libya, Vice Chairmen; and Dr. A.K. Awan, Professor of MCH, Institute of Hygiene and Preventive Medicine, Lahore, Pakistan, Rapporteur. At a later session, Dr. S.E.A. Ali Taha, Paediatrician, Medani Hospital, Sudan, was elected Rapporteur to assist Dr. Awan in the work.

The provisional agenda was adopted and procedures of the Seminar laid down by the Chairman.

All participants were provided with a set of working papers in advance of the Seminar. A list of these papers is included in Annex E.

III INTRODUCTION TO THE NUTRITIONAL PROBLEMS IN THE WEANING PERIOD

During the latter part of the first plenary session, the nutritional problems in the weaning period in general, and with particular regard to the Eastern Mediterranean Region, were considered in two introductory papers presented by Professor B. Vahlquist and Dr. O.M.S. Mellander respectively. These introductory statements were intended to delineate areas of relevant importance, to provide a clear definition for the term "weaning period", and to orient Seminar participants in their deliberations.

1. Definition of Weaning and the Weaning Period

Weaning - biological nutrition is arranged before birth via the blood of the mother and after birth by the mother's milk. Thus, artificial substitutes for the biological nutrition of the foetal period are, in fact, impossible, and possible only under optimal conditions for the nursing period. In the light of this concept, Dr. Mellander proposed that any substitution of the biological nutrition is weaning, if the weaning starts when the biological nutrition is still sufficient, e.g. before 6-7 months of age, it is an unphysiological weaning. When it starts after that period, it is a physiological weaning. In both cases, the food used as a substitute for the mother's milk must provide nutrients qualitatively and quantitatively comparable to breast milk. Protein as the most limiting factor of the diet is of special interest in this connection; quantitatively protein requirements are closely related to age, being highest per kg. body weight for the youngest; and qualitatively the requirements are also different and more specific in the young.

Weaning Period - basically, the weaning period is defined as the total period during which breast milk is being replaced by other foods, but still available to some extent, with reasonable adjustment to the adult food. Ideally, weaning should not start earlier than at about six months of life and be completed at 2-3 years to cover the post-weaning phase, which has become identified with the overwhelming problems of protein-calorie malnutrition and other deficiencies.

2. General Nutritional Problems of the Weaning Period

In introducing this subject, special emphasis was given for the need to ensure optimal environmental conditions for every child during the formative early years; the "life or death" importance of prolonged breast-feeding for large population groups in developing countries; the dangers of early and "unphysiological weaning" and the serious vicious circle between infection and malnutrition.

The types of nutritional deficiencies with high prevalence in the weaning period are, notably, the severe types of protein-calorie malnutrition - marasmus and kwashiorkor - and a whole pattern of transitory forms between the reasonably well defined extremes. The frank and severe cases only represent "the top of the iceberg". For each such child there may be 10 to 20, or more, others who are all in various stages of mild to moderate malnutrition. Of common occurrence are also iron deficiency anaemia; endemic goitre due to iodine deficiency; vitamin A deficiency, which has been rightly emphasized in recent years; rickets, and less commonly vitamin C and thiamine deficiencies - scurvy and beri beri.

The widespread nutritional deficiencies seen in the developing countries are often a natural and a direct consequence of the way of living, largely influenced by environmental conditions and the socio-economic structure within the family setting. Thus, it is obvious that the attack must be carried out on the broadest possible basis, involving combined combat against both malnutrition and infection. This requires the coordinated effort of large groups, with often very modest knowledge in the field of health and nutrition. In this regard, the following four problems were delineated as requiring special consideration by the Seminar :

a. The need for improved education of all professional groups involved in the special nutritional needs of the young child, and the ways in which these needs can be best covered by modest available resources.

b. The necessity of improving, very greatly, the knowledge of basic practical nutrition for the large groups of professional personnel in MCH services.

c. The urgency of speeding up mass campaigns of immunization at an early age against those infectious diseases which are known to be great killers, and for which highly efficient immunizing agents are available, e.g. tuberculosis, measles, pertussis, diphteria, poliomyelitis, smallpox and tetanus.

d. The urgent need of introducing into the training of physicians and other health personnel, the concept of the paramount importance of preventive care in all situations dealing with human beings, in particular, expectant mothers, infants and children.

3. Nutritional Problems in the Weaning Period with Particular Regard to the Eastern Mediterranean Region :

Malnutrition and under-nutrition are prevalent in many countries of the Region. The most exposed and most vulnerable age-groups are the children below four years of age.

The first phase of malnutrition, usually begins during the weaning period due to lack of suitable weaning foods and poor feeding habits. Nutrition surveys performed, or underway, within the Region, indicate that as much as 60 to 80 per cent of all children between 6 months and 2 years are found to be malnourished from the beginning of the weaning period. The wide-spread and early undernutrition, in combination with infectious diseases, constitutes the dominating reason for the high mortality rate in the age-group 1-4 years. In most developing countries, this rate is estimated to be 20 to 50 times higher than in the developed countries. Another consequence of early undernutrition, is that the children who survive and reach school age are fundamentally different from normal and retarded, not only physically, but also mentally.

Due to urbanization, change of food habits, sophistication of foods as well as to lack of knowledge about sound nutrition, families are often not in the position to maintain adequate diet. Although most dietary

surveys, previously performed in the Region, do not give specific data for the intake of children under 2 years of age, recent surveys from six representative districts in different parts of Ethiopia indicate that in the age group 1/2 - 2 years, the food actually given to children is insufficient in calories, protein, iron, calcium, vitamins A and C. Also the fat content of the diet is in some districts so low, or of such composition, that risk for essential fatty acid deficiency can occur.

Improvement of weaning and young children's nutrition can be achieved in two ways:

a. By education and redistribution of food within the family.

b. By introducing special protein-rich foods as weaning foods and supplementary foods for pre-school children.

Knowledge and improvement of traditional home-made weaning foods was considered important. In this respect, MCH services constitute the proper channel in the transfer of information to the mother. However, these services are now devoting most of their time for cure rather than education and prevention. Furthermore, improvement of weaning nutrition by education and change of habits is naturally not possible, if the basic food available is insufficient or of poor quality. Early (unphysiological) weaning is not at all possible under such conditions. Cow's milk will not be available in such amounts to cover the needs of children. Thus, it would be necessary to produce artificial "milk substitutes" of domestically available raw materials, such as those made available as a result of research initiated and supported by FAO/UNICEF/WHO, INCAP and SIDA, namely, "Superamine", "Incaparina", and "Faffa".

The feeding of young children in the Region, is still commonly regarded as the sole responsibility of the parents. However, the organization of applied nutrition programmes and MCH services, in order to improve the weaning situation, is the main responsibility of Governments. A Nutrition Department (or Institute, if existing) within the Health Ministries, is the appropriate body to plan and co-ordinate the action programme.

The urgent need for concerted governmental efforts, required to ameliorate the nutritional problems in the weaning period, calls for immediate action along the following lines:

a. It is of fundamental importance that baseline data be collected from representative samples of the population for proper diagnosis of the weaning period nutrition situation. Surveys with regard to weaning habits, level of nutrition and related socio-economic factors, frequency of malnutrition (especially protein-calorie malnutrition), local production and availability of weaning foods are much needed. Mobile survey teams, a close collaboration between nutritionists and medical personnel and an integrated approach in fact-finding were considered important.

b. Action programmes adapted to conditions found in the surveys require inter-ministerial collaboration. Governments, assisted by multilateral or bilateral aid, are in a good position to initiate and to support weaning food programmes, and to arrange for the necessary integration of medical, agricultural, economical and industrial activities.

IV (A). COUNTRY REPORTS

Country Reports were presented by participants from Ethiopia Iran, Iraq, Jordan, Kuwait, Kenya, Pakistan, Somalia, Sudan, Tanzania, Tunisia, Uganda and United Arab Republic.

1. Present Position of Weaning Nutrition

The pattern of breast-feeding was fairly similar in all countries where studies had been performed. In rural areas, prolonged breast-feeding was reported to be the rule, extending from 1 to 2 years and, in some localities, even up to 3 or 4 years. However, in urban and peri-urban areas there was a general tendency toward early cessation of breast-feeding (including low-income groups), early introduction of diluted cow's milk, if available, or starchy low protein cereal gruels.

In some countries (e.g. Ethiopia), butter was given during the first few days (sometimes continuing for 1-2 months) "to grease the intestines",

but the actual weaning process i.e. introduction of additional food was not usually started until 4 to 6 months; still in other areas a significant percentage of children received breast milk alone up to 1 year of age. Wherever cow's milk was available, it was given first priority as additional food. It was noted, however, that in urbanized communities where such milk had to be purchased by low-income mothers, it was given very diluted and handled in an unhygienic way, thus causing gastro-intestinal infections with high mortality. Quantitatively and qualitatively, inadequate weaning foods based on cereal gruels, pastes and porridges were commonly given up to an age when adult food was introduced. The so-called family level weaning foods were reported to be in an experimental stage, or recently introduced in the teaching of mothers, but not in general use. However, it was reported from Kuwait (population about 470,000) that the semi-bedouin population was weaned almost entirely on imported milk and other high quality products and for which economic and hygienic facilities were available.

2. Basic MCH Services, Especially for Children Below two years.

Basic MCH services carried out in health centres or in specialized centres, were reported to have an insufficient coverage, especially, in rural areas of the geographically large countries, while, for instance, in Kuwait coverage of the age group 0 to 2 years was reported to be good.

A slow but encouraging improvement in MCH services seemed to take place and in view of the marked shortage of highly trained and specialized personnel, the importance of training and utilization of auxiliary personnel was recognized as a necessity.

Free distribution of milk as well as a dispersed vaccination programme during the first year were considered by some participants as a necessary attraction to ascertain a regular attendance. However, inherent difficulties in view of the irregularity and scarcity of milk supply was pointed out. Some practical and immunological consideration need to be given to vaccination schedules - in some areas a home "compact" immunization programme might achieve better coverage.

3. Mortality Rate Figures in Infancy and Pre-School Age

Mortality rate figures in infancy and pre-school age reported from several countries, were the results of special studies in limited areas or quoted from National Statistical Offices. In the latter category, figures were often grossly erroneous due to inadequate reporting. Infant mortality rate figures in special prospective or retrospective studies, varied from less than 100 to 200 per 1 000 live births, mostly about 130-150, dependant on, and related to MCH services available in the area. Reliable pre-school mortality rate figures on a country basis were not available, but those reported varied between 4.5% (Kuwait, although admittedly too low) and 12.1% (West Pakistan).

4. Frequency of Kwashiorkor, Marasmus and Other Forms of Malnutrition

It was reported that up to 3 months, or a little later, the growth of infants was satisfactory and comparable to that in industrialized countries. After this age, a general growth retardation took place resulting from combined inadequate nutrition and infections (mainly gastro-intestinal and respiratory).

Protein-calorie malnutrition (PCM) was without doubt the most common type of malnutrition, although as is well known, the full extent of the problem cannot be elucidated from hospital admission figures, due to under-reporting of the malnutrition component in the complex - infectious disease - malnutrition. Such figures are, therefore, only partly useful when trying to get an overall picture of the malnutrition situation. Furthermore, some reports dealt with deaths from malnutrition in total hospital admissions, while others reported total admissions of this condition. A strong need was felt for a systematic and uniform method of reporting, differentiating between the clinical conditions kwashiorkor, marasmus and mild-moderate PCM gradients. The last mentioned, should not only be a clinical diagnosis, but should be supported by anthropometric measurements and reported as weight for age ratio levels below standard, according to Jelliffe (Ref.: The Assessment of the Nutritional Status of the Community, WHO Monograph Geneva, 1966). Not until such criteria are met that it would be possible to

get an overall picture of the magnitude of the problem (although known to be great), and to compare the situation in different areas and countries.

Vitamin A deficiency was reported to be common, mainly in West Pakistan, Iraq and Jordan; ariboflavinosis in West Pakistan and Tunisia; and in most countries rickets as well as nutritional anaemia.

Nutritional marasmus was stressed as a more severe problem than kwashiorkor and increasing in importance, especially in urban and peri-urban areas, due to early falling off of breast-feeding and inadequate supplementation in these transitional, low socio-economic societies. Special attention should, therefore, be directed towards the preventive aspects in these areas.

IV (B) PROJECT REPORTS

The nutrition projects in Ethiopia, Iran, Sudan and Pakistan were presented, especially with regard to the weaning nutrition situation in relation to the work of available institutions. In addition, outlines were presented of the development of two commercial weaning food projects outside the Region - Incaparina in Guatemala, and Superamine in Algeria.

The project reports complemented the country reports in giving further information on the prevalence of nutritional deficiencies, detected by comprehensive, or pilot survey studies, reporting on the pattern of weaning food practices and availability of suitable weaning foods. Food composition tables, were reported in preparation, or in preliminary issues, from Ethiopia and Iran. The Institute in Iran was presently involved in studies centred around the biochemistry of malnutrition in clinical material and animal experiments, dehydration in malnutrition, mal-absorption, favism, evaluation of protein quality, etc.; had recently set up a programme for evaluation of the nutritional effect of lysine addition to bread, and was giving institutional feeding services. An Iranian formulated weaning food, planned to become

ultimately commercialized, was being contemplated with UNICEF assistance, and an outline of the planning stages in terms of composition, testing (animal and human) and marketing was given.

The Nutrition Institute in Ethiopia (formerly Children's Nutrition Unit), reported on the development and marketing of the supplementary food FAFFA, which after having been on the market for about 1 1/2 years, showed a slow but encouraging sales and acceptance progress. In addition, the Institute had been, and is engaged in collection of dietary and medical baseline data; date on "privileged children" (to obtain a local anthropometric, clinical and biochemical standard); and testing as regards acceptability of weaning foods (processed as well as of family level type). Recently, a 2-vear longitudinal study of children in an applied nutrition rural programme was completed and evaluated. Studies on iron intake and storage had been performed (the Ethiopian diet being extremely rich in iron - in the order of 300-500 mg per day for adults). A great stress is being laid on nutrition education of MCH and other staff, and on market research or acceptance of FAFFA.

The main objectives of the National Nutrition Institute in Pakistan (PAKISTAN 0038) is to develop pilot programmes for the control of malnutrition among mothers and children, and to use the experience gained from such pilot programmes for the dual purpose of demonstration and training. Three coordinated pilot nutrition programmes had accordingly started in 1968 in Islamabad, Dacca and Karachi. They are orientated towards mothers and children, and are concerned with collection of baseline data, educational activities, development of weaning and supplementary foods and nutrition training of MCH workers.

The Applied Nutrition Programme in Sudan (APN) (with assistance from WHO/FAO/UNICEF), started in 1966 with long-term goals, to improve the nutritional status of the population by all available means. Prevalence studies of PCM as well as more comprehensive PCM surveys, had been conducted at MCH centres and at hospital OPDs and were reported in detail. Achievements of, and future plans for a Pilot Project Area (Kalakla), were

outlined as well as plans for future weaning nutrition activities in the field of processed and home-made weaning foods. The desirability of assessing PCM with clear-cut clinical and anthropometrical criteria, even in large scale prevalence studies, was pointed out in the discussion, despite difficulties encountered in conducting surveys due to limited resources and untrained staff.

As was briefly stated, the development, testing and commercialization of Incaparina (Guatemala) and Superamine (Algeria) was also reported under Agenda Item IV. The introduction of these two products (some of them developed or commercialized in the EMRO Region) so far represents slightly different approaches in terms of length of time required to introduce the products on the market, and the preceding biological and human testing procedures considered necessary; the composition (Incaparina with cotton seed flour as protein concentrate, and/or animal protein; Superamine with no less than 57% pre-cooked pulses and 10% DSM); target groups (Incaparina "family food" and Superamine mainly directed towards small children); mode of introduction on the market and in several other aspects.

Incaparina was introduced in 1963, after extensive testing on the market in Guatemala, and has later been introduced to Colombia and other Central American countries; the sales in 1968, totalling about 3 000 tons with a steady increase every year. Since 1965 the sales have been profitable. Consumer studies performed lately indicate that the product is well known and used by the whole family in accordance with the advertisement ("family food", "protein food like meat"), and the progress is evaluated in terms of sales increase rather than improved nutritional status. Although the product, when used for the latter purpose, has proved effective in the prevention and treatment of protein malnutrition.

Superamine on the other hand was launched on the market as late as December 1967, and through systematic and hard hitting introductory campaigns, the sales in Algeria are projected for 1969 to total 20 tons per month. During the market building process, the product is

subsidized, but the break-even point is scheduled at a production of 600 tons yearly. (For further cost comparisons see under Agenda Item VII)

V METHODOLOGY AND EXISTING MEANS AND WAYS TO DEAL WITH THE PROBLEMS

1. The Role of Social Anthropology in a Weaning Nutrition Programme

The importance of studying and identifying nutritional problems in their total cultural and socio-economic context was given special consideration by the Seminar. Social anthropology has a key role, and makes valuable contribution during the various phases of a nutritional project's development: e.g. planning, collection of baseline data, applied pilot programmes and the final implementation phase.

Professional personnel and specialists, insufficiently prepared through traditional academic training require re-orientation, in order to assess and attack nutritional problems in the most efficient manner. Experience derived from actual participation in a weaning nutrition programme, may also be advantageous. Thus, the Seminar stressed the need for integrating Social Anthropology with health-nutrition teams and in the teaching of health personnel at all levels.

2. Demography and Vital Statistics

For adequate planning and evaluation of nutritional programmes, certain types of demographic and vital statistical data are needed. Information about the age and sex composition of populations; birth rates; death rates, especially in infants and in the child population 1-4 years of age, is essential. However, this information is not easily available in countries of the Eastern Mediterranean Region.

Under the prevailing circumstances, surveys and enquiries seem to be the best means for obtaining baseline demographic data, especially if they are of a multi-purpose nature. A multi-purpose survey is useful, because it provides information about general health conditions,

and can be conducted by non-professional workers. Special surveys, designed to collect specific information, are very informative but very costly.

In planning and conducting a survey, it is important that the objective of the survey, or research, be clearly defined, and that particular attention be given to the sample under survey. Sample selection and sample size will have to depend on the type of information intended by the survey. The questionnaire needs to be carefully planned and pre-tested on a pilot project, in order to obtain valid and clear answers from the surveyed population.

The National (rural and urban) Sample Survey initiated by the Imperial Ethiopian Government in 1963, thus far, conducted in 12 of the 14 provinces and in 195 towns, was cited as an example of a multi-purpose survey aiming at collecting data on population, vital statistics, labour, agriculture, livestock, cash income and expenditure, consumption, marketing, etc. The results of a special survey (prospective) on infant mortality and fertility, conducted in five selected towns of Ethiopia by the Ministry of Public Health and the U.S. Agency for International Development (AID), were also presented. They showed a birth rate of 40 per 1 000 population, an infant mortality rate of 152 per 1 000 live births, with 59 per cent of the less occurring within the first month of life.

The terms "incidence" and "prevalence" were defined to avoid ambiguity in usage by participants. Thus, "incidence" was defined to mean, "the occurrence of a new event in a specific period of time", and "prevalence", "the total number of events in a specific period of time".

The dangers and apprehension created by grossly erroneous official data for vital and health figures (especially infant mortality rates) in developing countries were pointed out. As a step towards improvement of the present situation, two suggestions of relevant importance were made:

a. "A Central Statistical Institute", would be a more suitable government organ to assume responsibility for the registration of vital

events within a country than the local Ministry of Public Health.

b. It seemed urgent that WHO should be requested to take action in this field, and by supplying standards and consultants should promote and support the realization of statistical analysis of well-defined population groups (utilizing prospective and/or retrospective techniques) and also consider the breakdown of 1-4 year mortality figures to figures for second and third years mortality.

3. Food Consumption Surveys in Protein Food Development Projects

In attempting to appraise the protein food problems and in formulating protein food development programmes, the knowledge of food consumption is essential. Techniques used for conducting food consumption surveys may be classified into three main categories:- a) interviewing with recall lists; b) food accounts; c) direct measurement of food. Each of these techniques could be used in various combinations. The choice of any one of the three techniques or combinations of them, depends on the specific purpose of the survey, available resources, and such local factors as food habits, the variety of foods normally consumed, and the form in which the food enters the household.

Since protein deficiency - combined with calorie deficiency is more acute in infants and young children, accurate knowledge of the distribution of the food supply among family members is of considerable importance. The specialized techniques developed for investigating individual diets, vary in intensity from a qualitative record of the diet history and food habits, to the strictly quantitative assessment by laboratory method of the amount and composition of consumed foods.

4. Surveys of Consumer Attitudes and Habits in Relation to Usage and Purchase of New Foods

Attention was drawn to the forms of research required following the diagnosis of a national or local protein-calorie malnutrition problem, and the formulation of food mixtures designed to alleviate this problem among infants and young children. Under such conditions, baseline

data required for the development of marketing programmes differ substantially from those required by the nutritionists. In particular, the tastes, beliefs, habits, needs and values of product consumers and purchasers within families, need to be investigated.

At the village community level, it was suggested that socio-anthropological survey methods need to be adopted. National or regional programmes directed towards mass consumption of new food mixtures manufactured on an industrial scale should, generally, be preceded by social surveys which permit qualification of usage and attitude patterns, in order to expose common denominators in consumer behaviour. Product names, package design and "prestige" factors should be investigated in such surveys, and should go hand-in-hand with the diagnosis of nutritional needs and the formulation of mixtures.

Furthermore, it was pointed out that problems expected to arise in putting a weaning food into actual use do not seem to be technical, i.e. problems of formulation, but rather commercial i.e. problems of marketing. Thus, studies on marketing need to continue after the product is actually on sale, in order to determine the needs of change in promotion policy.

5. Family Dietary Surveys, Including Weaning Foods

In order to develop a nutrition programme, it is necessary to obtain basic dietary data for the community served by the programme. The collection of food consumption data can be done in different ways, and the type of survey is determined by the nature of the required information. If the main purpose is to study the nutritive intake of pre-school children, the most valuable data would be obtained through a household dietary study, combined with a questionnaire on the general feeding habits of children. Relevant economic, agronomic and social background data are also essential. Before the onset of the survey, orientation and background knowledge about the area and the training of personnel must be taken into consideration.

A household dietary survey should include weighing, or measuring, the food consumed by the child, data on food preparation and, if possible, preparation of food dishes for laboratory analysis.

Dietary surveys, recently conducted in Ethiopia, showed the following results :

a. Most infants were breast-fed. The duration of breast-feeding, however, varied in different places.

b. Additional food was started sometime between 1 and 3 months of age, but good additional food was almost non-existent.

c. The diet for pre-school children was, on the average, deficient in calories and protein and in most other essential nutrients. The protein consumed was of low biological value and, in most places, the amount of animal protein in the diet was unsatisfactory.

During the deliberations, it was pointed out that the results of dietary surveys should not be interpreted in isolation of clinical and biochemical data on nutritional status. The need to compare results with reference standards and for local food composition tables, were emphasized. In relation to the very low fat intake reported in the surveys, reference was made to bio-chemical signs, of essential fatty acid deficiency (abnormal fatty acid composition of blood lipids). The finding might mean an additional limiting factor in the lipo-protein metabolism so important for many biological functions, especially those of the central nervous system. Should this prove to be the case, essential fatty acids need to be considered in the formulation of processed infant foods.

Although school children in the surveyed communities showed evidence of stunted growth, their physical capacity, tested by the use of a bicycle ergometer (calculated per kg. body weight, and per capita), compared well with European standards; unlike the adults whose physical capacity was moderately, or considerably, reduced. In the light of this information, it was suggested that stunted growth in itself must not necessarily mean

impaired function. Undoubtedly, great deal of adaptation takes place, otherwise, the sequelae of severe malnutrition in early age would have been worse.

6. Critical Review of Clinical Screening Methods

The main steps in conducting clinical screening methods for community diagnosis of malnutrition were discussed, and the following types of surveys were considered:

a. Breast-feeding, artificial feeding, supplementary feeding and weaning practice survey. If the results of such a survey indicate that the above practices are not properly carried out, then there is need to explore the situation more fully for the occurrence of protein-calorie malnutrition (PCM).

b. Protein-Calorie Malnutrition (PCM) surveys are of two types: (1) PCM prevalence surveys, and (2) PCM Comprehensive Surveys.

A PCM prevalence survey was considered important, because it serves as a preliminary step in determining whether a comprehensive PCM survey is needed or not. It is generally recognized that the latter type of survey is costly, requires more and better trained personnel as well as special facilities for data analysis (i.e. computers).

For each type of the above mentioned surveys, common points of relevant importance were reviewed, namely:- objectives; material and methods used; tabulation and analysis of the obtained data. Mention was also made of the significance of recording non-nutritional as well as nutritional clinical signs and the relationship of the latter category of signs to the socio-economic pattern of the area.

7. Biochemical Screening of Early Protein-Calorie Malnutrition

The diagnosis of early malnutrition is often difficult, and simple biochemical screening methods would be most helpful as a complement to clinical examination and anthropometric measurements. A review was

given of the biochemical methods most commonly used for the evaluation of early protein-calorie malnutrition.

a. Urea and Creatinine Excretion

The 24-hour excretion of urea - the end product of protein metabolism - gives an approximate information about the level of protein intake. The reduction of muscle mass results in a decreased excretion of creatinine derived from muscle creatine. The creatinine co-efficient (i.e. the number of mgs. of creatinine eliminated from the body per kg. of body weight during a twenty-four hour period), is supposed to be proportional to the total muscle mass, and has been widely used as an indicator of body composition.

The use of urea excretion and the creatinine co-efficient for the assessment of nutritional status is, however, seriously limited by the difficulty of collecting 24-hour urine specimens in field studies. For that reason, the determination of the ratio:- urea nitrogen/ creatinine, or urea nitrogen in per cent of total protein in fasting urine samples - have been used for the estimation of protein intake. It has been claimed that even random specimens of urine would be adequate for this purpose. Low ratios have been found in several field studies in groups of poorly nourished children. The value of these ratios, however, has also been questioned.

b. Total Serum Protein and Albumin

The total serum protein level is reduced in severe protein malnutrition, mainly due to a reduction of the albumin fraction. Unfortunately, neither the total protein nor the albumin determinations are of much value for the diagnosis of early malnutrition. Serum proteins are synthesized with a relatively high priority, and are not significantly reduced until the malnutrition has become clinically manifest.

c. Serum Amino Acids

Several investigations have revealed that changes in the amino acid pattern of blood serum occur early, if the food is inadequate in protein. The total alpha-amino-nitrogen tends to decrease, but the most obvious change is the reduction of several essential amino acids (i.e. valine, methionine, leucine and isoleucine).

The total alpha-amino-nitrogen level of blood serum has been utilized for the evaluation of protein nutrition. However, this test is less sensitive than the estimation of some of the single amino acids. Unfortunately, a complete amino acid analysis is still a tedious procedure, which requires expensive equipment. Therefore, it is unsuitable in field studies. For that reason, Whitehead in 1963, introduced a much simpler chromatographic screening test for the evaluation of the serum amino acid pattern. A group separation of the amino acids is achieved by one-dimensional paper chromatography in a solvent of butanol/acetic acid/water. The spots containing the amino acid valine - methionine and leucine - isoleucine are markedly reduced in most cases of protein malnutrition. A semi-quantitative estimation can be done by cutting the spot containing the non-essential amino acids, glycine-serine-glutamine, and the spots containing valine-methionine and leucine-isoleucine. The stain is extracted by aliquots of methanol. The extracts are read in a photometer, and the ratio of the absorbance value for glycine-serine-glutamine to the sum of the absorbance values for valine-methionine and leucine-isoleucine is calculated. The ratio is normally below 2.5. Ratios above 3.0 indicate a deficient protein intake. The amino acid screening has proved to be useful in field studies, but it should be kept in mind that changes in the amino acid pattern can occur much more rapidly than weight changes. Thus, the amino acid pattern gives information about the quality of protein intake for the period which precedes the examination rather than on the actual nutritional status.

Urinary Hydroxyproline:

Ziff and co-workers have presented experimental evidence indicating a close relationship between growth rate and urinary hydroxyproline excretion. They suggested that the increased excretion during growth is a result of the presence of an increased amount of metabolically active soluble collagen in the tissues, which is available for breakdown. These results indicate that measurement of urinary hydroxyproline may provide a useful index of growth activity. In order to overcome the difficulty of collecting 24-hour specimens, Whitehead suggested the use of the hydroxyproline/creatinine ratio in random specimens of urine as an index of nutritional status and rate of growth. The creatinine is calculated per kg. of body weight, and the hydroxyproline index is obtained by the following formula:

$$\text{Hydroxyproline Index} = \frac{\text{Millimol.hydroxyproline per litre x kg body weight}}{\text{Millimol.creatinine per litre}}$$

Hydroxyproline indices below normal, have been found among malnourished children in Uganda. They rose to normal with treatment and recovery. Nutrition surveys of localized communities in East Africa have also indicated that the hydroxyproline index may be of value in field studies.

VI GENERAL ASPECTS ON THE APPLIED PHASE OF WEANING NUTRITION

1. Importance of Breast-Feeding

The mammalion lactotory apparatus is both efficient and species specific. In the early months of life, the milk of each species seems to be a complete food for its young. Originally, breast-feeding was universally accepted by all human societies and cultures as the only suitable pattern for infant feeding. In nomadic and agrarian societies breast-feeding, actually, had no competitor. Lactation and its adequacy asserted the fitness of the female to perform her biologic role and lactation management was fully integrated with mothercraft and infant rearing. In industrialized cultures, however, the natural food of the human infant and the natural way of feeding are being phased out by artificial baby foods and artificial ways of feeding, advanced by skilled manufacturers, and applied on an extensive scale by health personnel.

Breast-feeding, accessory as it might appear to industrialized societies, still remains a necessity for the developing countries, especially that in the face of a rapidly expanding population, these countries are not able to make the necessary adjustments for mass production and mass application of artificial baby foods. The overwhelming problem of protein-calorie malnutrition and other deficiency states, at the root of much disease and death in infancy and early childhood, can best be prevented by improving rather than disrupting current breast-feeding practices. In most instances, breast-feeding, or lack of it may mean life or death to the child, especially during the first year of life.

1.1 Advantages of Breast-feeding

The advantages of breast-feeding for the infant have been widely recognized. Breast milk is a complete clean food, and there is no doubt at all that by far the safest way of feeding a baby, particularly if the social circumstances, hospital arrangements or sanitary conditions

are poor, is direct from the mother's breast. The indicators for human milk adequacy may be summarized under four headings:- favourable growth and development in the early months of life; good health and relatively low morbidity and mortality rates as compared with bottle-fed infants living under poor conditions; digestibility and low solute load; emotional satisfaction. Although the first three indicators have lost some of their signif-icance in the developed countries, their impact continues to be very meaningful for infants in the developing countries.

Breast-feeding is also advantageous to the mother, if adequately nourished and if her body stores are not depleted by a large number of pregnancies and nursing infants. The known maternal advantages are, at least, four in number:- a low incidence of breast cancer; baby-spacing; emotional satisfaction; simplicity and convenience. Human milk is readily available, easy to administer, no preparation or bottle-boiling is required; and the cost for its synthesis by the mammary gland is compatible with the purchasing power of even low-income mothers.

1.2 Incidence of Breast-Feeding and Time Trend

Wide differences in the incidence of breast-feeding in different parts of the world are now evident, however, the time trend indicates a continuing decline.

In the post World War II era, the declining trend in the developing countries became evident in urban and peri-urban sectors of the population, especially among upper-income groups. However, breast-feeding has not appreciably decreased in rural communities since no such social, or economic situation exists to favour artificial feed-ing, nor is processed or safe milk available at a reasonable cost.

Whereas mothers in the upper-income groups in developing countries have, on the whole, satisfactorily managed to artificially feed their infants, the low-income groups have met with numerous failures. Since

the latter comprise the largest sector of the population a declining incidence of breast-feeding, with the associated health, economic and social hazards should constitute a source of concern for health workers, nutritionists and parents throughout the developing countries.

Factors related to the continuing decline in the incidence of breast-feeding between and within countries in different parts of the world, could not be due to maternal inadequacy alone, other factors must also be responsible for such variations. Today, as ever, at least 80-90 per cent of all mothers could nurse their babies for 6 months or more, if only they were fully convinced of the importance of such an action. Although factors related to lactation failure are not all clearly understood, on the whole, they are a by-product of modernization, urbanization and affluence, changes in family life, women's emancipation and gainful employment outside the home, changes in attitudes and value system, the availability of tinned baby food and commercial pressure, medical services and the simplicity of bottle-feeding in industrialized countries. In most instances, these factors operate jointly, and as Jelliffe observes, "deserve further investigation on a world basis, especially in areas where breast milk is still the principle source of protein, both on a personal and a community basis".

1.3 Lactation Management

The success of the lactation process is primarily dependent on the intact physical state of the mammary gland, and the physiologic mechanisms which control its development and functional capacity. Thus, a knowledge of the factors (anatomical and physiologic), which control the lactation process is essential for adecuate management and the prevention of lactation failure.

Points that require special emphasis in the management of lactation are:- ante-natal preparation for breast-feeding; suckling stimulation; the time nursing begins after birth; feeding schedules; mother-baby separation; and medical factors.

The quality of ante-natal care is one factor that appears clearly to affect the success or failure of breast-feeding more than any other maternal factor (i.e. age, parity, social class or gainful employment outside the home). In ante-natal care advice should include motivation and promotion of favourable attitudes towards breast-feeding, care of the breasts and diet. Breast-milk adequacy, both quantitative and qualitative, is largely dependent on the maternal diet during pregnancy and lactation. In fact, maternal diet in these two phases, should be viewed as an integral part of infant feeding. In the undernourished women, the physiologic cost of lactation may be met from maternal tissues, although there is some evidence to indicate that absorption and utilization of nutrients may be improved during lactation, but not as much as during pregnancy.

The availability of medical services and Western trained health workers has had a tremendous impact on the declining incidence of breast-feeding. Pre-natal care deficient in health education; obstetric sedation; a rapid turn-over of maternity cases; and conflicting feeding advice - all tend to discourage breast-feeding. A frequent way in which the baby comes to reject breast-feeding is by being taught other techniques of sucking at the newborn nursery that are not appropriate to the breast. It has now become established that supplementary bottle-feeding interferes with the milk supply. In medical practice where physicians were highly motivated to promote breast-feeding, their positive attitudes favourably influenced breast-feeding.

1.4 Breast-Milk Composition, Volume and Calories

Milk is not constant in composition from one human or animal to another at all periods of lactation, or even hourly through the day. The composition of milk is related not only to the amount secreted and the stage of lactation, but also to the timing of its withdrawal (whether early or later in the feeding or pumping), and to the individual variations among lactating mothers. These latter variations may

be affected by such variable as maternal age, parity, health and social class. While maternal undernutrition does not greatly affect the protein and carbohydrate (lactose) concentrations of the milk, fat, vitamins, and some minerals may be lowered, and the total volume is generally decreased.

Information on the volume of milk secreted at various stages of lactation is meagre. However, the WHO Expert Committee on Nutrition in Pregnancy and Lactation, accepted an average milk yield of 850 ml (600 calories) per day, and considered that adequacy of lactation could best be judged by satisfactory growth of the infant during the period where it is exclusively breast-fed. Under such conditions, a gain of 800 gm $\pm$ 20 per cent per month during the first 6 months of life may be regarded as satisfactory.

1.5 Duration of Breast-Feeding

Suckling is often stated to be the best galactagogne; its restriction actually inhibits lactation. The duration of lactation varies according to local patterns of breast-feeding. If suckling is continued lactation does too. However, there is usually a gradual fall in the amount of milk after 12 months.

In developing countries, breast-feeding should, by all means, be encouraged up to at least 12 months of age, and as an additional source of food much longer than that, and up to 18-24 months or more. Even if the breast-milk after the baby has passed 6 months of age is not covering its nutritional needs in all aspects, especially with respect to iron, it is nevertheless almost always far better than any artificial substitute which can be offered. Furthermore, it was pointed out that even if a breast-fed and otherwise healthy baby by unsatisfactory weight gain indicates underfeeding, it is, at least within reasonable limits, much better for a baby to be slightly under-nourished at the breast than to be introduced too early to highly dangerous formula food types as supplements. Solid foods should be introduced with great caution and only after 6 months of age.

2. Risks of Early Weaning and the Changing Pattern of Malnutrition

Weaning is an essential part of breast-feeding. It should be done gradually when the infant would have doubled his birth (or erupted the first deciduous tooth) by the age of 5-6 months.

Weaning is a period of physical and psychologic stress for the infant. Weaning from affection, like weaning from mother's milk, may be gradual and reconciliatory, or it may be abrupt, alienating or severing the infant from his maternal secure base with accompanying physical and emotional disturbances. The success of the weaning process entails two basic factors: 1) What foods to be given; and 2) how should these foods be given? Problems related to these factors can only be ameliorated through education; adopted feeding advice; improvements in personal hygiene, sanitary and housing conditions. The availability of milk and weaning foods alone are not sufficient for successful weaning. With new foods and feeding bottles, traditional weaning practices may even become worse. The dangers of introducing new tinned foods and feeding bottles to developing communities have been emphasized in recent years, especially by Welbourn and Jelliffe.

Normal weaning (physiological weaning) starting between 6-7 months, has traditionally been based on the use of cow's milk as the main protein carrier, at least until about 2 years of age. Under appropriate supervision, and if mixed foods are introduced successively, such normal weaning could be considered a safe and uncomplicated procedure.

For the majority of children in the Region, however, milk is not available and, traditionally, the mothers have to rely on home-made weaning foods, based on the same foods as used by the rest of the family. As has been demonstrated by recent surveys (Ethiopia), this usually means that the weaning diet will be based mainly on cereals and other vegetable material, low in protein and deficient in essential amino acids. Furthermore, the methods used for cooking and preparation

of the infant food are very unsatisfactory. If available, milk (fresh or processed) would be used in very diluted or highly concentrated formula, due to errors of measurement; and fish and meat would not be used at all as weaning food.

Although the traditional patterns of weaning in the Region are in many ways deficient, some new elements have been introduced through affluence and health services which, in some instances, have aggravated the situation. Of these, early supplementation (e.g. by 1-3 months) and unsupervised feeding of solid foods; unnecessary reasons for weaning and errors of diagnosis and treatment (e.g. weaning because of anti-Rh agglutinins in breast milk, doubting the suitability of breast milk for the infant without adequate evidence, misdiagnozing or overdiagnozing allergy, lactose intolerance and breast milk jaundice due to pregnandiole) were given special consideration.

Early (or unphysiologically) weaned children are extremely susceptible to malnutrition, show higher frequency of certain acute infections and also notable differences in serum biochemistry as compared to normally weaned children. This is not surprising, in view of the fundamental chemical and biochemical differences between the natural food for infants, breast milk, and the natural food for calves, cow's milk. If performed under sub-optimal hygienic conditions and, especially, if no cow's milk or milk-based weaning foods are available, early weaning is a real disaster to the child and should be avoided by all means.

Early failure in breast-feeding with the concomitant bottle-feeding of highly contaminated poor diet, has been found instrumental in inducing a change in the pattern of malnutrition among infants and children in Iran and Chile. Observations made in these two countries at urban and rural levels, clearly indicated a tendency for the prevalence of malnutrition in the young to shift from the pre-school kwashiorkor to the infant type marasmus. Thus, the risks of early malnutrition with permanent physical and mental sequalae were stressed.

It was also pointed out that actions to alleviate the problem in "this new form", should not be only directed to the purely nutritional context, but account must be made of the interrelated factors associated with urbanization and industrialization in the rapidly changing developing countries.

3. Family Level Weaning Foods

It is only in recent years that the matter of home-made weaning foods has been brought up for discussion at high level conferences of UNICEF, FAO and WHO. Thus, a special Ad-hoc group for feeding the pre-school child has been lately established within the Protein Advisory Group (PAG).

In every developing country there are a great many traditional, home-made dishes intended especially for the weaning child. Some of them are nutritious and valuable, but many more are not, often to the extent that they are practically void of any nutritious value. In the developed countries, the scene has completely changed, first through education about the preparation of better food in the homes and then later through the intervention of food industry.

There is no question that food industry could, and should come also to the support of the people of the developing nations with products especially adapted to their needs, traditions and economy. It would be a tragic mistake, however, to believe that such products could become of decisive importance for the vast majority of the people in the immediate future. Simple calculations reveal that although commercialized, cheap, high-protein weaning foods of Incaparina-type are making a slow but encouraging progress, they are consumed in most regions by only a small proportion of children in the early ages on a regular day-to-day basis. For many years to come, the majority of these children would have to rely on what is available in the home in terms of raw material for their weaning food. Thus, it remains to pursue with the greatest energy both the development of

better programmes for home-made weaning foods, and the development of sound programmes for nutritious, inexpensive, industrial products for pre-school children. There must be a complete understanding and integration between these two programmes with only one goal in sight:- the improvement of currently unsatisfactory feeding conditions for the young children.

As a step towards the improvement of traditional, home-made weaning foods (often quantitatively and qualitatively insufficient in relation to consumers), a practical outline based on the concept and principle of double, triple and quadruple mixes, (coined by Jelliffe) was considered by the Seminar. The mixes contain in various combinations, principally, the following ingredients:- a staple (provides the main part of calories), legumes, animal protein and dark green leafy vegetables. They are designed to achieve the best possible amino-acid balance, to increase the biological value of the vegetable protein through mutual amino-acid supplementation; lysine-deficient cereals being complemented by lysine-abundant pulses; the biological value, if possible, further improved by addition of animal protein and/or dark green leafy vegetables. Examples of the proposed mixes are given below.

1. Double Mix:- Cereal staple + legume or animal protein or dark green leafy vegetable.

2. Triple Mix:- Cereal-legume mix + animal protein or cereal + animal protein + dark green leafy vegetable or cereal + legume + dark green leafy vegetable.

3. Quadri Mix:- Cereal + legume + animal protein + dark green leafy vegetables.

Triple and quadruple mixes are to be preferred to ensure intake of the most possible nutrients at a particular meal. Care has to be taken in preparation, to preserve Vitamin C, and especially to make the legumes digestible (i.e. removal of skins, etc.).

Animal protein is almost always in short supply and has to be used in the most advantageous way. All possible efforts in nutrition education should be made to redistribute it within the family to the weaning age children. The animal protein available for the child should be given through the day and intermixed with as many meals as possible.

Teaching of improved recipes of which there are a great potential number in the Region should be done at MCH centres, and great stress should be laid on actual demonstration. These to be conducted in a familiar surrounding, utilizing cheap, simple equipment, within the economic reach of the mothers, and using, whenever possible, previously attending mothers in the teaching. The feeding of children in Nutrition Rehabilitation Centres should also be based on such recipes.

In order to promote the continued improvement and use of home-made weaning foods, the Seminar considered it necessary to include in the recommendations a proposal for a WHO monograph on family level weaning foods and a manual with recipes scientifically based as regards amino acid pattern, content of vitamins, minerals and other nutrients, for use as a world-wide standard reference.

4. FAO's Stand regarding the Family Level Approach

4.1. The Nutrition Division of FAO (Kapsiotis) fully supports the family level approach in dealing with problems of infant and child feeding. This is based partly on the necessity to have the mother and the father and, if necessary, the grandmother of a family in agreement over the feeding of their children and, conversely, because mal-distribution of food within the family is one of the prime causes of malnutrition in the weaning and pre-school child age groups.

4.2. There are a number of different approaches which can be made to the family. Aside from those made by health personnel, the importance of which is stressed; approaches may take the form of nutrition education campaigns, food promotion campaigns, home economics programmes, agricultural extension programmes, and education in schools. All of these programmes

can, and should pay particular attention to the problems of infant and child nutrition, whilst to some extent, their immediate approach may be to individual members of the family. For school children, this is obviously the case - the approach should always be such that it is both acceptable to, and understood by, all other family members.

4.3. The type of approach used, will vary in different situations. Thus, if we are concerned with promoting a formulated protein food in an urban area, a food promotion campaign may be the first requirement, backed up by nutrition education through appropriate channels, including MCH services. In rural areas where the approach to improving child nutrition may have to take the form of improvements in subsistence agriculture, the primary approach may be through agricultural extension, backed up, perhaps, by a home economics programme. In some cases, as for instance in applied nutrition programmes, the primary approach may be through the community and involve agricultural extension, school teaching, home economics, and health services. The fact that this is aimed at a community in no way diminishes the concept that it is designed for the family.

4.4. Since a number of different types of approaches are possible, it is always necessary when more than one approach is being used, to ensure adequate coordination between the different types of programmes or campaigns. The confusion which can be caused if, for instance, MCH services on the one hand and a home economics programme on the other, are teaching even slightly different things, may be sufficient to negate the effects of both efforts.

VII 1. THE COMBAT AGAINST PROTEIN-CALORIE DEFICIENCY DISEASE THROUGH LOCAL FOOD PRODUCTION

2. PANEL ON PROCESSED INFANT FOODS

Agenda item VII was devoted to the important subject "Processed Infant Foods", part of which was arranged as a panel, with four papers given as an introduction followed by a lively discussion. In addition,

two papers were presented on the economic implications and on the marketing aspects of the commercializing of such processed foods.

1. Combat Against Protein-Calorie Deficiency

This presentation dealt mainly with food that can be produced and consumed at the family or village level, without special processing. It served as a bridge to the special discussions on processed weaning foods which followed in the panel.

Provision of sufficient calories is one aspect of the combat against PCM and recent results with high yielding cereal grain varieties are encouraging. There is the possibility of improving quantity and quality of protein in cereal grains through genetics. Another food group that lends itself to field cropping is the grain legume - soy and other beans, peas, pulses. Here, as in the case of vegetables in kitchen-gardens, for example, the availability of good quality seeds and their proper use is very important. In some areas fat intake is very low. The introduction of high fat fruits of which there are a number, may be of interest. National Governments should see that adequate supplies are available and should promote their proper use. There is great scope for "village level technology", involving simple methods for processing and preserving foods that at present are subject to considerable waste.

For families that must grow their own foods - an "Applied Nutrition Programme" of assistance has been developed by FAO/WHO/UNICEF, in collaboration with other UN agencies. (see also item VIII). The main goal of this type of programme is to get families to grow and use foods for an adequate diet. They may have to sell part of their production of vegetables, fruits, poultry products, fish, etc., but the use of at least a part to improve family nutrition should be encouraged. There is also an increasing development of youth clubs that produce food for markets. Here, a nutritional orientation should be possible.

2. Processed Infant Foods

Among the many aspects to be considered when formulating high protein infant foods, the protein concentrate to be used is of fundamental importance.

The availability of dry skin milk (DSM) is mainly dependant on a fluctuating world surplus and is presently not produced in sufficient quantities in the countries which are in the process of establishing plants for processed infant foods. It has, therefore, to be imported and "stretched" as much as possible (5-10% in mixtures).

Fish protein concentrates for use in weaning foods are produced in Chile, Morocco, USA and Sweden on pilot plant scales, and would be a promising protein source in the years to come.

Another promising protein source is that derived from oilseeds - soya bean, cotton-seed, peanut, sunflower and coconut - although certain toxicological problems deserve continuous attention.

During the past few years protein concentrates from single cells, yeast and bacteria, cultivated on petroleum products and intended for human use have attracted a great deal of interest, and pilot production and testing is under way.

WHO has assumed the responsibility for human tests on all products developed or distributed as part of the international FAO/WHO/UNICEF programme for the development of protein-rich foods, while FAO and UNICEF chose the responsibility for the tests preceding human trials. Five centres throughout the world are at present collaborating with WHO and testing these new protein-rich foods with infants and children. Thus, 5 mixtures based on wheat and pulses and soya flour as main protein sources, 7 mixtures on maize and soya, 3 mixtures of Incaparina type and also a mixture of soya flour and barley have been tested.

The testing for suitability and safety includes precise identification of the foodstuffs, biological evaluation by animal testing according to standard methods, bacteriological and chemical analysis, study of possible

toxicity using laboratory animals and, finally, carefully controlled acceptability tests with children in the age period under consideration and including growth and metabolic testing in all cases when unconventional ingredients or conventional ingredients in unconventional concentrations are used in the mixture.

The toxicological tests include investigations for presence of pesticides, fungicides, solvent residues, mould toxins (e.g. alfatoxin) as well as for presence of antimetabolites (e.g. antitryptic factor in soya flour) gossypol in cotton seed flour, haemagglutinins and haemolysins in certain pulses.

The acceptability tests should, whenever possible, be conducted at the local level where the products will be used. This will help in the promotion of the product and will contribute to the education of professional people engaged in MCH or paediatric work.

In order to make the product nutritious, attractive and acceptable, certain other considerations have to be made. The caloric value of a product based on cereal, with one or more high protein sources, (total crude protein content 20%) is about 350 calories per 100 g. Addition of fat or oil to increase the caloric content poses some difficulties, as anti-oxidants then have to be added, and plastic flexible packaging material will not be sufficient to guarantee a satisfactory shelf-life. More expensive tin container packaging methods must be used. Also in certain other aspects, processed weaning foods of this type cannot be considered "complete".

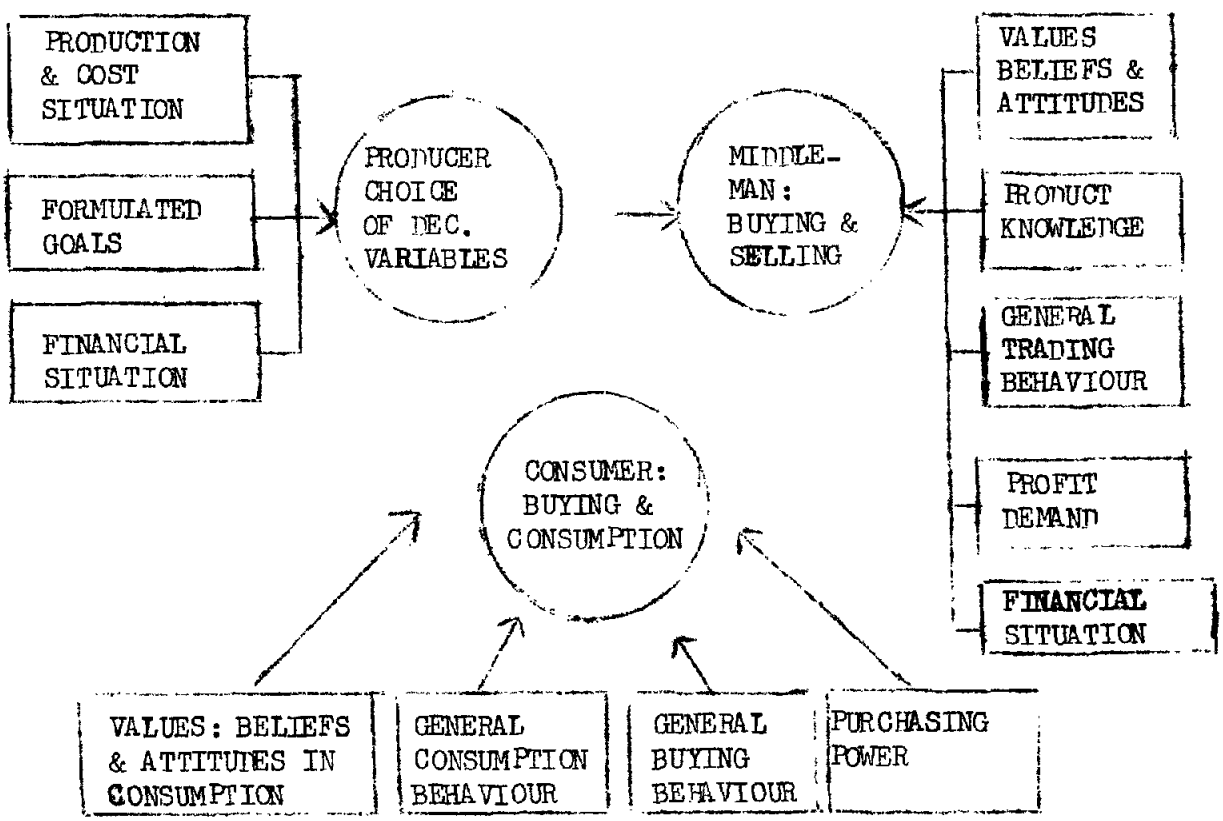
Addition of vitamins and minerals should be made in agreement with local health authorities and the WHO/FAO nutrition officers, taking into consideration existing deficiency states in the country as well as what may be provided through the basic diet which the weaning food is to supplement..

Flavouring and addition of starch splitting enzymes to improve the organoleptic characteristics, should be considered in order to suit the consumer's preferences.

In projects designed to introduce supplementary food mixtures into the diets of malnourished infants and pre-school children in developing countries, efforts have been directed primarily towards the utilization of raw materials and processing methods which facilitate the sale of such high-protein foods at the lowest possible unit cost. Economic industrial production requires a radical change of weaning practices in terms of thousands of families within a short period of time. It is, therefore, vital that governments, industry, medical nutritionists and others engaged in the formulation of protein rich infant food projects should realistically evaluate investment needs before venturing into industrial production. Particular attention should be given to manpower resources, research, administration, promotion, subsidies and government welfare purchases, to ensure a dynamic policy of market expansion. In this connection, it was emphasized that a close cooperation with the medical profession, MCH personnel and others, was needed when marketing a weaning food product and that nutrition education should be part of promotion campaigns.

The final step, the marketing of the product has proved to be the most difficult one. A great number of decisive factors are at play and inter-acting on and between the three poles:- producer - middleman - consumer. A graphic summary is given below :

THE INTERACTION SYSTEM IN THE
COMMERCIALIZATION OF NUTRITIONAL PRODUCTS



It is important when marketing and promoting a product to take all these variables into account, understand the interplay and direct the promoting efforts accordingly. In other words, a continuous evaluation is a necessity.

The retailer price is, of course, one of the crucial factors as the vast majority in developing countries, particularly in rural areas, have a low purchasing power.

A comparison of the cost of 100 g protein derived from Superamine, Faffa, Incaparina and DSM was made. It was, however, rightly pointed out that even if the price is expressed in US$, this has a slightly different meaning in different countries depending on the standard of living, purchasing power, etc. - such implications have to be taken into account when making direct comparisons (also, account should be made of the difference in biological value, absorbability, etc. between DSM and the other products as well as the "artificial" prices on DSM). Allowing for all these factors, it can be seen from the following table, that 100 g. protein in Incaparina, is the cheapest buy. However, it must be noted that the prices of any of the products when compared to imported baby food preparations are attractively low.

COST OF 100 g. PROTEIN IN SUPERAMINE, FAFFA, INCAPARINA AND DSM IN US CENTS

	"Institutional price"	Retail price
Superamine	22.0	26.6
FAFFA (20% prot.)	-	16.7 subsidized price 21.4 true price +)
Incaparina (27.5%) protein	12.1	1 lb. bag 16.1 Guatemala 75 g. bag 19.4 (Colombia 9.1 ++)
Dry skim milk +++) (33% protein)	13.3	53.2

+) True price (i.e. unsubsidized price)
++) Packing cost, salaries, etc lower in Colombia
+++) Brand imported to Guatemala

The discussion further centered around the question of free distribution and to what extent this might hamper marketing efforts, legislation and protection against false claims, quality control, possibilities of export or cooperation between small neighbouring countries in setting up jointly a production and marketing unit.

Regarding free distribution, there appeared to be general agreement that such distribution could be advantageous, provided that it was carefully controlled to avoid the development of "a black market", that it was directed particularly towards undernourished and indigent families or to institutions, and that the publicity value of give away programmes (e.g. initial promotion campaigns) was not allowed to affect sales programmes and public confidence in the product ("poor man's food").

It was further agreed that it should fall upon the appropriate health authorities to be responsible for the legislation of the product, to protect it against false claims and to institute quality control.

High transport costs in relation to the total cost makes long distance export problematic, but could be contemplated as an initial feasibility trial. Efforts should, however, be made to set up joint programmes between small neighbouring countries with good communications and similar socio-economic setting.

Finally, the problem of favism (a hemolytic disease provoked in certain susceptible individuals by ingesting, inhaling, or coming in contact with Vicia fava i.e. broad beans) was considered, due to its prevalence (severe and abortive forms, mostly occurring in infants and children in spring) in Iran, Irac and some other countries of the Region. The Seminar noted that FAO/WHO/UNICEF Protein Advisory Group (PAG), has considered this problem. A team of experts, now recruited, will be conducting in June 1969, an epidemiologic study in Iran, UAR and Tunisia.

VIII MCH SERVICES AND WEANING NUTRITION

1. Role of MCH Services in the Improvement of Nutrition in the Weaning Period

During the last two decades, great emphasis has been given to MCH care in the Eastern Mediterranean Region. Women and children less than 15 years of age, constitute about two-thirds of the population and are vulnerable to the hazards of disease and death, therefore, all countries have come to realize the importance of their care. It is also worth noting that information made available to the WHO Seminar on the Health Needs of the Pre-School Child, held in Karachi from 26 February to 2 March 1968, collected from countries of the Region through questionnaire returns, indicated that the children from 1-5 years form 10.5 - 15 per cent of the population, and that the most important causes of death were gastro-enteritis, respiratory infections and preventable communicable diseases (especially measles and pertussis), often on the basis of underlying malnutrition. Thus, weaning malnutrition is a serious public health problem, which requires a multi-disciplinary approach by all the basic health services and, in particular, MCH services.

It is generally recognized that MCH services are especially concerned with the preventive care of mothers and young children. Their approach is family centred with major emphasis on health and nutrition education, growth and development and immunization. Priority in care, is usually placed on infants and young children (0-2 years), due to their high vulnerability and to the interest that mothers give to this age group. Therefore, in view of their inherent functions and the age group covered by such functions, MCH services could play a key role in weaning nutrition and the combat of the vicious circle between infection and malnutrition. Furthermore, female health workers (nurses, midwives, health visitors, etc.) connected with MCH services have easy access to mothers, and are most suited to carry health and nutrition education into the homes. If trained, they also could be

of assistance in collecting baseline data necessary for the development and continued improvement of weaning applied nutrition programmes.

MCH services in the Region, however, are not at present as effective as they could be in regard to weaning nutrition, immunization and other basic functions, for the following reasons:-

1. MCH services are still few in number, and their care only reaches a small percentage of the population, especially in rural and peri-urban sectors where the need is great.

2. Rampant illness in the Region, particularly in the weaning period, exerts heavy pressure on available services, with the expected consequence of devoting the major part of effort and time for curative rather than preventive care.

3. Most MCH services are understaffed, and their personnel are hardly prepared, through formal, or in-service training, to carry adequate work in the field of weaning nutrition.

4. Unfortunately, in some instances, newly developing programmes in weaning nutrition and in family planning (i.e. Pakistan) are established in isolation of existing MCH services, and tend to play a competitive rather than a complementary role. Lack of integration dilutes efforts; often leads to unnecessary duplication of activities in the same locality; and, in the face of marked shortage of manpower, tends to drain the personnel of already understaffed services.

In its deliberations, the Seminar emphasized the need to strengthen and expand MCH services in the Region, both governmental and voluntary, and to exert all possible effort in order to integrate weaning nutrition and family planning programmes with these services. While coping with the heavy load of curative work as a secondary level of prevention, special concern should be maintained for health promotion and primary preventive care. This could best be handled by allocating special work sessions for this purpose. The Seminar also suggested that the marked

shortage of manpower may be surmounted by more and better utilization of auxiliary personnel, especially Dayas.

A more adequate preparation of professional personnel in weaning nutrition at the undergraduate level, and through continuing education by refresher courses and in-service training, was deemed necessary for satisfactory MCH service performance in applied nutrition programmes. It was also pointed out that female health and social personnel, connected with rural health centres, nurseries, day-care centres, social welfare and community development centres as well as Dayas and agricultural extension workers, are in a position to contribute to the improvement of weaning nutrition, and should be assisted to improve their knowledge in this field.

2. Inclusion of MCH Training in the Undergraduate Paediatric Curriculum with particular regard to the Preventive Aspects of Nutrition in the Weaning Period

For the medical schools in the developing countries, teaching students preventive paediatrics is even more important than in the technically more advanced parts of the world. The obvious and well-known reasons for this are related to the whole socio-economic structure; large child population; lack of adequate sanitary and medical services; high infant and child morbidity and mortality, dominated by preventable infections, parasitic and nutritional diseases. By an exclusively curative approach, it would be impossible to solve the problems of child health in these countries. Consequently, the need for inclusion of preventive paediatrics in the medical curriculum is well established.

The reason for teaching maternal and child health as an essential part of preventive paediatrics is also obvious. The main objectives are: to make the student conceive the child not merely as a medical "case", but to view the mother and child as a biological and social entity, as members of a family, a group and a community; to see the origin of disease in its socio-economic and epidemiologic context; to realize the multifactorial etiology in the causation of nutrition disorders, and the multidisciplinary approach required to combat the

interrelated medical, social, economic, cultural and psychological factors.

The prevention of weaning malnutrition should form an essential part of the undergraduate curriculum. Training in Maternal and Child health, aiming at the prevention of malnutrition, will only be successful, if made an integral part of a comprehensive teaching programme in preventive paediatrics as well as in preventive medicine.

An integrated, inter-departmental programme to be introduced throughout the years of study in medical schools, seems to offer the best solution, provided the problems of teacher shortage and teacher training are resolved.

To be effective, teaching in preventive paediatrics, including Maternal and Child health, needs to be given within the traditional environment of the teaching hospital. Furthermore, extra-mural, community-oriented teaching programmes are an essential supplement.

Community teaching in preventive paediatrics may be easily provided through existing MCH centres in peri-urban sectors and shanty-towns. The necessity of developing rural community teaching programmes, based on the Health Centre prototype, was given special emphasis. Alternative solutions (i.e. "teaching safaris" or mobile units, etc.) were also considered together with some of the difficulties involved in their realization.

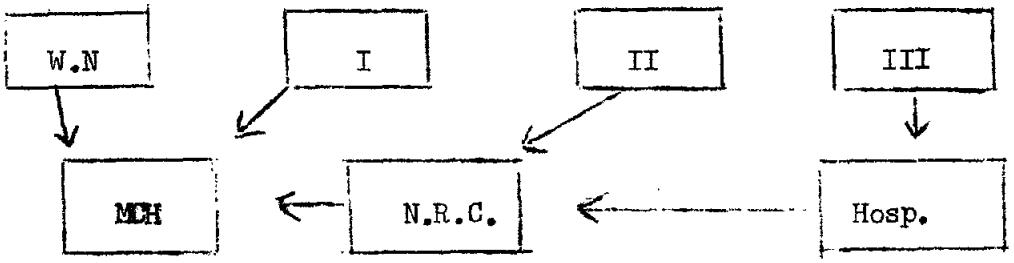
3. Nutrition Rehabilitation Centres

The concept of Nutrition Rehabilitation Centres was introduced by Bengoa, based on a scheme which divides children in the community into two groups :- nourished and malnourished, with further division of the latter category into three gradients - mild, moderate and severe, as shown below.

1. Nourished (well baby or healthy child)
2. I Mildly malnourished (1st degree)
   II Moderately malnourished (2nd degree)
   III Severely malnourished (3rd degree)

Six such centres have been established in Latin American countries to deal primarily with the intermediate cases (i.e. moderately malnourished), who are provided with semi-ambulatory care after a short hospitalization period due to severe malnutrition, or because they are unable to recuperate at home, and find difficulty in coming for ambulatory care provided by an Out-Patient Department. The objectives of the centre are:- 1) to rehabilitate the child; and 2) to educate mothers. Thus, the Incap modality (described to the Seminar), presented in the following scheme, was named "Nutritional Educational Rehabitation Centre" rather than "Nutrition Rehabilitation Centre", in order to emphasize the important educational aspect of the service programme.

Schemetic Presentation*



The MCH service provides care for the well and mildly malnourished child; the hospital service (often costly, and unsuitable for long-term convalescence due to cross-infection and other reasons) is meant to deal with the severe cases; and the Nutrition Rehabilitation Centre is intended to fill the gap between the two extremes. In rehabilitating the child and educating the mother, such centre, if well supervised and operated, could play a decisive role in the

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* W.N. = well nourished child who attends MCH services

I = child with 1st degree malnutrition, also attends MCH services

II = child with 2nd degree malnutrition (intermediate), attends Nutrition Rehabilitation Centre, coming directly from home or after admission to hospital.

III = child with 3rd degree malnutrition, requires hospitalization.

prevention of malnutrition recurrence in the rehabilitated child as well as the occurrence of new cases in other siblings.

The centres are usually placed in simple and very modest facilities. In Incap, a regular house simulating the home setting, was rented close to the Health Centre for this purpose. Twenty to thirty children are admitted at a time with their mothers, who are assigned in turns to assist in the care of the child, and in buying and preparing the food. Mothers are also taught about nutrients, feeding of children and the recovery process. Since no medicines are administered, mothers get to realize that drugs are not necessary for nutrition rehabilitation. The director of the centre is a school teacher, who is trained in nutrition education, and operates the services under the supervision of the physician in charge of the adjacent Health Centre.

Although the N.E.R.C. has several advantages (i.e. effective care, reduced cost, spare hospital beds for the severe cases), it also has some limitations. This type of service can only operate in urban communities due to lack of transportation in rural areas. Children are usually kept for fifteen days with the possible risk of outbreaks of communicable diseases, although they are all immunized on admission. Mothers often like to follow their own ways. The need for adaptation to the local setting was also cited as a limiting factor.

In evaluating the effectiveness of the service, the following criteria are used :

1. Performance and growth of the child during and after the rehabilitation phase.
2. Changes in family feeding and dietary habits.
3. Performance of other children in the family.
4. Number of cases coming from the same community with second and third degree malnutrition.

4. General Aspects on the Applied Phase of Weaning Nutritional Projects - Educational Aspects

Nutrition of the child is in good part the responsibility of his parents, hence, education of the parents is the key solution for better child nutrition aiming at the improvement of his nutritional health.

The objectives of nutrition education should be determined before the onset of the programme. Community diagnosis and base-line data are essential for the delineation of nutritional problems to be solved and the study of resources and limitations as a bench-mark for evaluation.

Family food habits are of a dynamic nature. They change slowly while getting adapted to the changing setting. The educator meets with greater success if his teaching moves in the right direction of change. Unless the family develops incentives for the improvement of feeding practices, the response to nutrition education may not be favourable. The following were suggested as possible useful incentives at the family level:- health (e.g. cure of disease is a better incentive than health promotion); improvement of economic and social status; religion and the support of religious leaders.

Educational aids and media should be chosen with care to ensure maximum effectiveness. They should be simple, easy to grasp by illiterate population groups, cheap and adapted to the local culture. The use of the local language is essential.

The choice of educational channels and approaches depends upon the level of development and administrative patterns of the community as well as the availability of suitable service programmes.

MCH centres constitute the natural channel for the improvement of feeding practices as an effective step towards the improvement of the nutritional health status of young children. Health visitors need to extend their educational activities to the homes, in order to reach mothers with poor attendance records.

Paediatric hospitals and out-patient departments can play an effective role in weaning nutrition education. In the hospital, mothers are extremely receptive to education. If hospitals are properly accommodated, mothers should be allowed to stay with their sick children, and paediatricians need to integrate preventive care and nutrition education with curative practices.

Social welfare centres are becoming increasingly popular. Child care is one of their basic functions. In such centres, nutrition and health education can be successfully combined with the improvement of family income through training in homecraft, cultivation of kitchen gardens and better keeping of poultry as a source of protein.

Nutrition education activities should reach all the family. Fathers, often a limiting factor, may be reached through trade-unions, clubs, agricultural and veterinary units, mosque or church. Children may be easily reached through schools. Nutrition education combined with school feeding should be a basic function of the school health programme.

5. Weaning Food Programmes as a Part of Co-ordinated Applied Nutrition Programmes

Applied Nutrition Programmes - ANPs - initiated in 1958/59, have been defined by an FAO/ HO Technical Committee as "A comprehensive type of inter-related educational activities aiming at the improvement of local food production, consumption, and distribution, in favour of local communities, particularly mothers and children in rural areas".

Nearly sixty ANPs are at present in operation throughout the world, most of them being sponsored by FAO, WHO and UNICEF. Although the activities within ANPs differ from one country to another, the concept and the scope of this type of programme call for co-ordinated educational activities between agriculture, health and education authorities and other interested agencies, with the aim of raising the levels of nutrition of local populations.

Weaning food activities are usually a component of ANPs. However, due to shortage of personnel only some ANPs include special feeding programmes for infants and pre-school children, and as a rule mainly consist of milk distribution and nutrition education.

When the setting up of a special weaning food programme is envisaged in a country where an applied nutrition programme is in operation, it would be advisable to integrate all (or most) activities in a single programme, as the same personnel and institutions are likely to be involved in the two projects. Furthermore, nutrition is so intimately related to agricultural production, economic situations, health, disease control, environmental sanitation, food hygiene, etc., that an isolated approach to the weaning problem could be considered as unsound and may be ineffective.

Weaning foods can be used in several ways within the activities of ANPs as in nutrition education of mothers based on practical demonstrations in MCH centres, dispensaries, day-care nurseries, nutrition rehabilitation centres and hospitals. ANPs can also be used for the evaluation of a weaning food programme. However, ANPs are at present mainly directed towards rural communities, living mostly at subsistence level. Under such conditions, the introduction of new processed weaning foods should not interfere with foods of similar nutritive value, which are locally produced and prepared and consumed at home.

IX WORKING GROUP DISCUSSIONS

In order to stimulate a free and less committing discussion, Seminar participants were divided into three "Working Groups", a day before the closing session. The aim was to get views of participants on the action that could be taken, within the available means and resources, to promote nutritional health in the weaning age in their respective countries, and what assistance from UN organizations was needed.

The three groups included the following country participants and WHO staff :

I. Ethiopia (Chairman: Dr. Demissie Habte), Somalia, Tunisia, Kenya, WHO: Drs. Munoz, Vahlquist, Behar.

II. Iraq (Chairman: Dr. Tam'an Amin Zaki), Jordan (absent), Sudan, Pakistan, Tanzania, WHO: Drs. Donoso, Jallad, Hofvander.

III. UAR (Chairman: Dr. Rushdia Rushdi) Iran, Libya, Kuwait, Uganda, WHO: Drs. DeMaeyer, Barakat, Harfouche.

In addition, available staff from FAO and UNICEF (Messrs. Kapsiotis, Wilkie and Demere) circulated between the groups to participate in the discussions.

Each of the three groups adopted its own discussion procedure, and presented to the Seminar a set of recommendations which were later discussed in the final plenary session. It must be noted, however, that country participants made recommendations and suggestions in their personal capacity and did not speak on behalf of their respective Governments. For group recommendations see Annex F.

X CONCLUDING SESSION

During the final plenary session - 14 March 1969 - the Seminar discussed, amended and approved the recommendations prepared by the Drafting Committee. The Seminar Secretary, Dr. O.M.S. Mellander, and Seminar Chairman, Dr. Demissie Habte, gave the concluding statements.

On behalf of Dr. A.H. Taba, Director of WHO Regional Office for the Eastern Mediterranean, Dr. Mellander expressed thanks and deep appreciation to the Imperial Government of Ethiopia and, in particular, the Ministry of Public Health. He also thanked the Chairman and members of the Preparatory National Committee; Dr. O. Adeniyi-Jones, WHO Liaison Officer with ECA; the Director and staff of the Children's Nutrition Unit; representatives of FAO, UNICEF and SIDA; the Chairman,

Vice-Chairmen, rapporteurs and Seminar participants as well as WHO Advisers, Consultants and Secretariat. Dr. Mellander ended his statement by saying: "I am confident that upon your return to your countries every one of you will spare no effort for the implementation of the recommendations of this Seminar. I conclude by wishing you all a happy return to your countries".

In pointing to the benefit derived from the Seminar, Dr. Demissie Habte concluded: "I believe I echo all of the participants' feelings if I say that this Seminar has been a tremendous success. We have learned a lot of new facts, we have been forced to review a number of old concepts, and we can go back to our respective countries better prepared, better armoured to fight one of the most major public health problems of the Region".

XI CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION

The Seminar having thoroughly discussed the manifold nutritional problems during the weaning period of the child in this Region and beyond;

Recognizes that malnutrition in early childhood is still widespread in all countries;

Emphasizes that malnutrition during the weaning period should still be regarded as an imminent danger to life and health of the coming generation, with doubtless repercussions on progress and socio-economic development;

Urges Government Authorities concerned as well as pertinent national and international organizations to seriously consider means and ways of remedy recommending in particular:

1. BASELINE DATA

That as baseline for further action surveys be carried out,

especially aiming at the problems of the pre-school child in its total socio-economic context, and fulfilling the following criteria:

a. Include the collection and analysis of vital and health statistics; data on nutritional status, foods available and consumed paying due regard to seasonal variations.

b. Comprise well-defined and reasonably sized samples of rural and urban sectors representing the total population under study.

c. Are repeated at regular intervals to indicate the time trend of development.

d. Are planned and executed with the assistance of statistical and, if possible, also socio-anthropological expertise and making use of standards already provided by WHO and FAO (e.g. D.B. Jelliffe:- The Assessment of the Nutritional Status of the Community - WHO Monograph Series No. 53, 1966).

e. With a view to implement the above, the Seminar recommends the establishment of "A Mobile WHO Survey Team", to advise and assist in fact-finding nutrition surveys upon request from countries within the Region.

2. BREAST-FEEDING AND WEANING

Breast-feeding continues to be a necessity for infants and pre-school children in the Region. Weaning before the age of six months (i.e. unphysiologic weaning) results in increased incidence of early protein-calorie malnutrition and other nutritional deficiency states. In order to promote breast-feeding and combat its declining incidence, it is recommended that :

a. Rural mothers - usually experts in breast-feeding - be encouraged to continue this practice.

b. Great efforts be exerted to motivate urban and, in particular, peri-urban low-income mothers to adhere to the practice of breast-feeding and prolong its duration as much as possible.

c. Special consideration be given to breast-feeding by mothers in upper-income groups, because of their social prestige and influence as pace-setters.

d. Special attention be given to the early managment of the lactation process, especially in primiparae and in multiparae with lactation problems.

e. Weaning should not start until about the age of six months, to be gradually completed by the age of one and a half - two and a half years of age.

f. Abrupt weaning and early - unsupervised supplementation of breast milk should be discouraged.

g. The types of weaning foods that can be given as supplement to breast milk should be especially studied, together with the way they can be administered. Especially the formulation, teaching and use of family level weaning foods should be strongly emphasized.

3. FAMILY LEVEL WEANING FOODS

In order to get a necessary scientific base for the formulations of family level weaning food recipes, it is recommended that WHO sponsors the issue of a monograph and a manual on this subject with due regard to the following items:

a. Staple foods, feeding practices and local kitchen measurements in the various countries and regions, with examples of recipes scientifically based as regards amino acid pattern, content of vitamins, minerals and other nutrients.

b. Nutritional problems and needs in the weaning period should be briefly outlined with emphasis on the importance of breast-feeding, and a review should be made of alternative feeding possibilities in terms of processed weaning foods.

4. PROCESSED WEANING FOODS

a. Governments and particularly Public Health Authorities should give strong support to the production and distribution of industrially processed weaning foods, on the basis of joint WHO/FAO/UNICEF assistance and in close collaboration with existing MCH services.

b. Governments and Public Health Authorities should also participate in ensuring the safety, high nutritive value, palatibility and low cost of processed foods. In this connection, the problem of favism should also be considered.

c. When deemed necessary for economic and other reasons, distribution of a given product in more than one country should, if possible, be encouraged and facilitated.

d. Legislation concerning the control of the composition and value of weaning foods in the market, and for prevention of misleading standards for their promotion is recommended.

5. COMBAT AGAINST INFECTIONS

Since malnutrition in early age derives from a combination of faulty nutrition and multiple infections, it is necessary to complement Applied Nutrition Programmes with combat against infections. This should comprise:

a. Major efforts to improve environmental sanitation and to ensure a satisfactory water supply.

b. Mass immunization programmes to be carried out during the first year of life against preventable diseases, i.e. tuberculosis, smallpox, diphtheria, tetanus, pertussis, poliomyelitis and measles.

6. SPECIFIC PREVENTIVE NUTRITION ACTION PROGRAMMES

In addition to programmes aimed at combating malnutrition in general, also programmes aiming at the eradication of specific nutritional deficiencies should be given special consideration.

a. In countries of the Region where endemic goitre is of public health importance, it is desirable that immediate preventive action be undertaken by appropriate means such as distribution of iodized salt.

b. It is urgent that programmes be planned aiming at the eradication of specific vitamin deficiencies (especially vitamin A and D deficiencies) and of nutritional anaemias, which in many areas are extremely prevalent among infants and children in the weaning period.

7. MCH AND NUTRITION EDUCATION AND REHABILITATION SERVICES

7.1 MCH Services

a. Since MCH services are in a key position in all programmes concerning better health for young children and, more specifically also for better nutrition in the weaning period, it is urgent that these services be strengthened and expanded for a more complete coverage of the child population in the Region. Special consideration should also be given to the training of physicians, midwives and health visitors responsible for operating the services.

b. In view of the marked shortage of manpower, efforts should be exerted to make more and better use of auxiliary personnel, and to encourage the active cooperation of non-governmental workers and agencies in MCH work.

c. In planning and operating MCH services, an integrated approach, including nutrition education and family planning, needs to be emphasized.

7.2 Nutrition Education and Rehabilitation Services

a. The establishment of Nutrition Education and Rehabilitation Centres as proposed by Dr. J.M. Bengoa, WHO, HQ, is strongly recommended.

b. Different modalities in relation to local circumstances and facilities should be considered, but ideally, Nutrition Education and Rehabilitation Centres should be an integral part and expansion of the existing health services.

8. EDUCATION AND TRAINING

Education and training in nutrition should be promoted at all levels.

a. The key personnel to be reached is the staff of MCH services, but also other groups should be included (i.e. agricultural extension officers, home economists, social workers, etc.).

b. The programmes, inasmuch as possible, should make use of material from the pertinent area, and comprise various activities:-

i. Workshops, seminars, etc. arranged on a regional basis.

ii. Nutrition courses for university graduates, preferably on inter-country basis.

iii. Nutrition courses for intermediary and low level personnel.

iv. Field training and field surveys.

v. Fellowships.

c. The Seminar strongly urges that the under-graduate teaching of paediatrics in Medical Schools of the Region be more community oriented, and include as much as possible of the social and preventive aspects of child health.

9. NUTRITION UNITS (OR INSTITUTES)

a. Each country should establish a properly staffed nutrition unit or department at the appropriate ministerial level for the coordination and normalization of all nutritional activities.

b. Where Nutrition Institutes already exist, their activities should be integrated with the programmes of the governmental agencies responsible for applied nutrition programmes. If new Institutes are created, they should be a joint effort of Ministries of Health and of Agriculture, and be established as Food and Nutrition Institutes.

10. WHO PUBLICATIONS

The present mode of distribution of WHO publications should be reviewed by the Organization in consultation with Ministries of Health, with the aim of safeguarding the widest possible dissemination of the valuable technical information among health workers in the Region and throughout the world.

11. NUTRITION SOCIETY

That a "Nutrition Society for the Region" be formed, to promote collaboration and dissemination of information among nutritionists concerned with the basic and applied aspects of nutrition, in general, and with weaning nutrition, in particular.

12. RESEARCH ACTIVITIES

a. A study of ways and means to promote breast-feeding in industrialized sectors of the Region.

b. A study of family-made weaning foods, with special regard to the nutritive value of foods as consumed.

c. A study of model immunization calendars intended for children below one year of age in developing countries.

d. A study of the effects of free distribution of commercialized weaning foods to selected institutions (i.e. hospitals, MCH services, and the like) on the marketing of such products.

e. A study of the teaching of paediatrics in the Region, with the particular aim of assessing the emphasis given to social and preventive paediatrics at the undergraduate level to serve as baseline for action.

13. FUTURE SEMINAR

It is highly desirable that the World Health Organization holds another Seminar on Nutritional Problems in the Weaning Period in the coming few years, to review the implementation of recommendations made by this Seminar and to re-assess the whole weaning nutrition situation. Also the nutritional problems of pregnant and lactating mothers should be considered at this second Seminar.

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	Dr I. Al Nouri	(Iraq)
	Dr A.K. Awan	(Pakistan)
	Dr M. Anwar	(Pakistan)
	Dr M. Mzingi	(Tanzania)
	Dr G. Donoso	(WHO)
	Dr G.H. Jallad	(WHO)
	Dr Y. Hofvander	(WHO)
GROUP III	Dr N. Amborsoumian	(Iran)
	Dr G. Roushan	(Iran)
	Dr Y. Shaker	(Kuwait)
	Dr A.I. Mansour	(United Arab Republic)
	Dr R. Rushdi	(United Arab Republic)
	Dr S.R.K. Sebikari	(Uganda)
	Dr M.R. Barakat	(WHO)
	Dr E.M. Maeyer	(WHO)
	Dr J.K. Harfouche	(WHO)

PROVISIONAL AGENDA

I	Opening of the Seminar.
II	Election of Officers and Adoption of the Agenda.
III	Introduction.
IV	Review of the Nutrition Situation during the Weaning Period and of Infant Feeding Projects.
V	Methodology and Existing Means and Ways to Deal with the Problems.
VI	General Aspects on the Applied Phase of Weaning Nutrition Projects.
VII	Processed Infant Foods.
VIII	MCH and Weaning Nutrition.
IX	Working Group Discussions on Selected Topics.
X	Discussion of Working Group Reports.
XI	Field Visits.
XII	Summary of Conclusions and Recommendations.
XIII	Closing of the Seminar.

PROGRAMME OF THE SEMINAR

1. MONDAY, 3 March 1969

AFRICA HALL - PLENARY HALL

9.00 a.m. - 10.00 a.m.	-	REGISTRATION OF PARTICIPANTS
10.00 a.m. - 10.45 a.m.	-	OPENING SESSION
		Address by H.E. Ato Y. Tseghe, Minister of State, Ministry of Public Health
		Message of Dr. A.H. Taba, Director, WHO - EMR
10.45 a.m. - 11.15 a.m.	-	RECESS
11.15 a.m. - 1.00 p.m.	-	FIRST PLENARY SESSION (Agenda Item Nos. II & III)
	-	Election of Officers: A Chairman, 2 Vice-Chairmen, Rapporteur.
	-	Adoption of the Agenda
	-	NUTRITIONAL PROBLEMS IN THE WEANING PERIOD, by Professor B. Vahlquist, WHO Temporary Adviser - Agenda Item No. III

AFRICA HALL - CONFERENCE ROOM

3.00 p.m. - 5.00 p.m.	-	NUTRITIONAL PROBLEMS IN THE WEANING PERIOD WITH PARTICULAR REGARD TO THE EASTERN MEDITERRANEAN REGION, by Dr. O. Mellander, WHO Regional Adviser on Nutrition - Agenda Item No. III

2. TUESDAY, 4 March 1969

9.00 a.m. - 10.30 a.m.	-	SECOND PLENARY SESSION (Agenda Item No.IV)
	-	COUNTRY REPORTS - Agenda Item No. IV
10.30 a.m. - 11.00 a.m.	-	RECESS

TUESDAY, 4 March 1969 (Cont'd)	- SECOND PLENARY SESSION (Cont'd)
11.00 a.m. - 1.00 p.m.	- COUNTRY REPORTS (Continued) - Agenda Item No.IV
3.00 p.m. - 5.00 p.m.	- COUNTRY REPORTS (Continued) - Agenda Item No. IV

3. WEDNESDAY, 5 March 1969

9.00 a.m. - 10.30 a.m.	- THIRD PLENARY SESSION (Agenda Item Nos. IV & V)
	- THE NUTRITION PROJECT IN ETHIOPIA ESPECIALLY WITH REGARD TO WEANING NUTRITION ASPECTS, by Dr. R. Eksmyr, CNU, Addis Ababa - Agenda Item No. IV
	- THE NUTRITION PROJECT IN IRAN ESPECIALLY WITH REGARD TO WEANING NUTRITION ASPECTS, by Dr. H. Hedayat, Director, Food and Nutrition Institute, Teheran, Iran - Agenda Item No. IV
	- THE NUTRITION PROJECT IN SUDAN ESPECIALLY WITH REGARD TO WEANING NUTRITION ASPECTS, by Dr. J.A. Munoz, WHO Medical Nutritionist, Nutrition Division, Khartoum - Agenda Item No. IV
10.30 a.m. - 11.00 a.m.	- RECESS
11.00 a.m. - 1.00 p.m.	- THE NUTRITION PROJECT IN PAKISTAN ESPECIALLY WITH REGARD TO WEANING NUTRITION ASPECTS, by Dr. M.R.Barakat, WHO Medical Officer, Nutrition Institute, Islamabad - Agenda Item No. IV

WEDNESDAY, 5 March 1969 (Cont'd)	THIRD PLENARY SESSION (Cont'd)
11.00 a.m. - 1.00 p.m.	- INCAPARINA: ITS DEVELOPMENT, COMMERCIAL DISTRIBUTION AND ACCEPTABILITY IN LATIN AMERICA, by Dr. M. Behar, WHO Temporary Adviser, and Dr. R.L. Shaw, Nutritionist, INCAP, Guatemala City, Guatemala - Agenda Item No. IV
	- SUPERAMINE TESTING AND INTRODUCTION IN ALGERIA, by Dr. A. Raoult, Nutrition Adviser, WHO, Algiers, and by Mr. N.A. Wilkie, Chief, Food Promotion Section, Nutrition Division, FAO, Rome, Italy - Agenda Item No. IV
3.00 p.m. - 5.00 p.m.	- DISCUSSIONS ON THE ABOVE

4. THURSDAY, 6 March 1969

9.00 a.m. - 10.30 a.m.	- FOURTH PLENARY SESSION (Agenda Item No.V)
	- DEMOGRAPHY AND VITAL STATISTICS, by Mr. J. Thilleman, WHO Statistician, Advisory Services on Vital and Health Statistics, Addis Ababa - Agenda Item No. V
	- SURVEYS OF CONSUMER ATTITUDES AND HABITS IN RELATION TO USAGE AND PURCHASE OF NEW FOODS - by Dr. I. de Garine, Chief, Food Habits Section, Food and Agriculture Organization, Rome, and N.A. Wilkie, Chief, Food Promotion Section, Nutrition Division, FAO, Rome - Agenda Item No.V
10.30 a.m. - 11.00 a.m.	- RECESS

THURSDAY, 6 March 1969 (Cont'd) — FOURTH PLENARY SESSION (Cont'd)

11.00 a.m. - 1.00 p.m. - FOOD CONSUMPTION SURVEYS IN PROTEIN FOOD DEVELOPMENT PROGRAMMES - by Dr. M. Cresta; Nutrition Officer, Food Consumption Section, Food and Agriculture Organization, Rome, Italy - Presented by Dr. G.D. Kapsiotis - Agenda Item No. V

11.00 a.m. - 1.00 p.m. - FAMILY DIETARY SURVEYS INCLUDING WEANING FOODS, by Miss R. Selinus, Nutritionist, Swedish International Development Authority (SIDA), Stockholm - Agenda Item No. V

4.30 p.m. - 6.30 p.m. - VISIT TO THE PALACE

5. FRIDAY, 7 March 1969

9.00 a.m. - 10.30 a.m. - FIFTH PLENARY SESSION (Agenda Item No.V)

- THE ROLE OF SOCIAL ANTHROPOLOGY IN A WEANING NUTRITION PROGRAMME by Dr. K.E. Knutsson, Director, CNU, Addis Ababa - Agenda Item No. V

- WEANING FOOD PROGRAMMES AS A PART OF CO-ORDINATED APPLIED NUTRITION PROGRAMMES, by Dr. A. Raba, Medical Officer, Nutrition Unit, WHO, Geneva - Agenda Item No. V Introduced by Dr. S. Haraldsson, CNU, Addis Ababa

- THE PRESENT UNICEF POLICY WITH REGARD TO WEANING FOOD PROGRAMMES, by Dr. L.J. Teply, Senior Nutritionist, UNICEF, New York, U.S.A. - Agenda Item No. V

FRIDAY, 7 March 1969 (Cont'd)		FIFTH PLENARY SESSION (Cont'd)
10.30 a.m. - 11.00 a.m.	-	RECESS
3.00 p.m. - 5.00 p.m.	-	VISIT TO CHILDREN'S NUTRITION UNIT
6. SATURDAY, 8 March 1969	-	VISIT TO CHILDREN'S NUTRITION UNIT'S (CNU) FIELD ACTIVITIES IN MOJO AND NAZARET
7. SUNDAY, 9 March 1969	-	FREE
8. MONDAY, 10 March 1969		
9.00 a.m. - 10.30 a.m.	-	SIXTH PLENARY SESSION (Agenda Item No.VI)
	-	THE IMPORTANCE OF BREAST-FEEDING, by Dr. J.K. Harfouche, Professor of Maternal & Child Health, American University of Beirut, Beirut, Lebanon - Agenda Item No. VI
	-	FAMILY LEVEL WEANING FOODS, by Y. Hofvander, WHO Consultant - Agenda Item No. VI
	-	FAO's STAND REGARDING "THE FAMILY LEVEL APPROACH," by Dr. G.D. Kapsiotis - Agenda Item No. VI
10.30 a.m. - 11.00 a.m.	-	RECESS
11.00 a.m. - 1.00 p.m.	-	THE CHANGING PATTERN OF MALNUTRITION IN THE CHILD, by Dr. G. Donoso, Dr. M. Sadre and Dr. A. Emami, Medical Officers, Food and Nutrition Institute, Teheran - Agenda Item No. V
	-	GENERAL DISCUSSIONS ON AGENDA ITEM No.VI
3.00 p.m. - 1.00 p.m.	-	VISIT TO LIDETTA MCH CLINIC OR DUKE OF HARRAR HOSPITAL (Optional)

9. TUESDAY, 11 March 1969

9.00 a.m. - 1.00 p.m.

- SEVENTH PLENARY SESSION (Agenda Item No.VII)
- THE COMBAT AGAINST PROTEIN-CALORIE DEFICIENCY DISEASE THROUGH LOCAL FOOD PRODUCTION AND CONSUMPTION, by Dr. L.J. Teply - Agenda Item No. VII
- PANEL ON PROCESSED INFANT FOODS WITH INTRODUCTIONS ON THE FOLLOWING ITEMS:
- RAW MATERIALS TO BE CONSIDERED WITH SPECIAL REGARD TO PRODUCTION OF PROTEIN CONCENTRATES OF ANIMAL OR VEGETABLE ORIGIN, by Professor G. Agren, Professor or Medical Biochemistry, University Hospital, Uppsala - Agenda Item No. VII
- THE FORMULATION OF PROCESSED INFANT FOODS, by Dr. G.D. Kapsiotis - Agenda Item No. VII
- THE WHO PROGRAMME OF TESTING OF PROTEIN-RICH FOOD MIXTURES, by Dr. E.M. DeMaeyer, WHO Medical Officer, Nutrition Research, WHO, Geneva - Agenda Item No.VII
- NATURALLY OCCURRING TOXIC SUBSTANCES IN FOODS, WITH SPECIAL REFERENCE TO FAVA AND FAVISM, by Dr. G. Donoso, Dr. H. Hedayat, Executive Director Food and Nutrition Institute, Teheran, H. Ghavifekr and H. Khayetian, Food and Nutrition Institute, Teheran - Agenda Item No.VII

TUESDAY, 11 March 1969 (Cont'd) SEVENTH PLENARY SESSION (Cont'd)

3.00 p.m. - 6.00 p.m.

- PANEL ON PROCESSED INFANT FOODS (Cont'd)
- BIOCHEMICAL SCREENING OF EARLY PROTEIN-CALORIE MALNUTRITION, by Dr. K. Björnesjö WHO Visiting Professor of Biochemistry, Institute of Medical Sciences, Addis Ababa Agenda Item No. V
- CLINICAL APPROACH OF THE ASSESSMENT OF THE NUTRITION PROBLEMS DURING THE WEANING PERIOD, with special reference to clinical nutrition screening methods by Dr. J.A. Munoz, M.D. MPH, WHO/EMRO Public Health Medical Nutritionist Assigned to THE APPLIED NUTRITION PROGRAMME IN SUDAN - Agenda Item No. V

10. WEDNESDAY, 12 March 1969

9.00 a.m. - 10.30 a.m.

- EIGHTH PLENARY SESSION (Agenda Item Nos. VII & VIII)
- EXPERIENCE IN MARKETING A SUPPLEMENTARY FOOD MIXTURE FOR CHILDREN IN ETHIOPIA, by Professor B. Wickström, Professor in Marketing, Gothenburg School of Economics and Business Administration, Gothenburg, Sweden - Agenda Item No. VII

WEDNESDAY, 12 March 1969 (Cont'd) EIGHTH PLENARY SESSION (Cont'd)

- PROTEIN-RICH FOODS FOR INFANTS: THE INVESTMENT FACTOR,
  by Mr. N.A. Wilkie, Chief, Food Promotion Section, Nutrition Division, Food and Agriculture Organization, Rome Italy - Agenda Item No. VII

10.30 a.m. - 11.00 a.m. - RECESS

11.00 a.m. - 1.00 p.m.
- ROLE OF MCH SERVICES IN THE IMPROVEMENT OF NUTRITION IN THE WEANING PERIOD,
  by Dr. G. Jallad, WHO Regional Adviser on Maternal and Child Health, EMRO, Alexandria - Agenda Item No. VIII
- EDUCATIONAL ASPECTS,
  by Dr. M.R. Barakat, WHO Medical Officer, Nutrition Institute, Islamabad - Agenda Item No. VIII

3.00 p.m. - 5.00 p.m.
- NUTRITION EDUCATION AND REHABILITATION SERVICES
  by Dr. M. Behar, Director, Institute of Nutrition for Central America and Panama (INCAP), Guatemala City, Guatemala - WHO Temporary Adviser - Agenda Item No. VII
- Discussion on Agenda Item No. VIII
- INCLUSION OF MCH TRAINING IN THE UNDERGRADUATE PAEDIATRIC CURRICULUM WITH PARTICULAR REGARD TO THE PREVENTIVE ASPECTS OF NUTRITION IN THE WEANING PERIOD,
  by Professor Y. Larsson, Director, Ethio-Swedish Paediatric Clinic, Addis Ababa - Agenda Item No. VIII

11.	THURSDAY, 13 March 1969	- NINTH PLENARY SESSION (Agenda Item No.IX)
	9.00 a.m. - 1.00 p.m.	- WORKING GROUP DISCUSSIONS - Agenda Item No. IX
		- FREE AFTERNOON
12.	FRIDAY, 14 March 1969	- TENTH PLENARY SESSION (Agenda Item No.X)
	9.00 a.m. - 1.00 p.m.	- Presentation and Discussion of Working Group Reports, Agenda Item No. X
		- Presentation of Conclusions and Recommendations of the Seminar, Agenda Item No. XII
	3.00 p.m. - 5.00 p.m.	- ADOPTION OF RECOMMENDATIONS - Agenda Item No. XII
13.	SATURDAY, 15 March 1969	
	9.00 a.m.	- VISITS TO:
		a) Tuberculosis Centre
		b) Leprosarium
		c) CNU Orphanage

LIST OF BASIC DOCUMENTS

1. Provisional Agenda EM/SEM.NUTR.PROB.WEAN.PRD./1 Rev.1

2. Programme EM/SEM.NUTR.PROB.WEAN.PRD./2 Rev.2

3. List of Participants EM/SEM.NUTR.PROB.WEAN.PRD./3

4. NUTRITIONAL PROBLEMS IN THE WEANING PERIOD - by Professor B. Vahlquist, Professor of Paediatrics, University Hospital, Uppsala, Sweden - WHO Temporary Adviser EM/SEM.NUTR.PROB.WEAN.PRD./4

5. NUTRITION OF THE WEANING CHILD - by Dr. O. Mellander, WHO Regional Adviser on Nutrition EM/SEM.NUTR.PROB.WEAN.PRD./5

6. INCAPARINA: ITS DEVELOPMENT, COMMERCIAL DISTRIBUTION AND ACCEPTABILITY IN LATIN AMERICA - by Dr. M. Béhar, Director, Institute of Nutrition for Central America and Panama (INCAP), Guatemala City, Guatemala WHO Temporary Adviser, and Dr. R.L. Shaw, Nutritionist, INCAP, Guatemala City EM/SEM.NUTR.PROB.WEAN.PRD./6

7. WEANING FOOD PROGRAMMES AS A PART OF CO-ORDINATED APPLIED NUTRITION PROGRAMMES - by Dr. A. Raba, Medical Officer, Nutrition Unit, WHO, Geneva EM/SEM.NUTR.PROB.WEAN.PRD./7

8. THE CHANGING PATTERN OF MALNUTRITION IN THE CHILD - by Dr. G. Donoso, WHO Medical Nutritionist, Food and Nutrition Institute, Teheran, Dr. M. Sadre and Dr. A. Emami, Medical Officers, Food and Nutrition Institute, Teheran EM/SEM.NUTR.PROB.WEAN.PRD./8

9. FAMILY LEVEL WEANING FOODS - by Dr. Y. Hofvander, Associate Professor of Paediatrics, University Hospital, Uppsala, Sweden - WHO Consultant EM/SEM.NUTR.PROB.WEAN.PRD./9

10. THE IMPORTANCE OF BREAST-FEEDING - by Dr. J.K. Harfouche, Professor of Maternal and Child Health, School of Public Health, American University of Beirut, Beirut, Lebanon - WHO Consultant EM/SEM.NUTR.PROB.WEAN.PRD./10

11. THE WHO PROGRAMME OF TESTING OF PROTEIN - RICH FOOD MIXTURES - by Dr. E.M. DeMaeyer, WHO Medical Officer, Nutrition Research, WHO, Geneva EM/SEM.NUTR.PROB.WEAN.PRD./11

12. THE COMBAT AGAINST PROTEIN-CALORIE - DEFICIENCY DISEASE THROUGH LOCAL FOOD PRODUCTION AND CONSUMPTION - by Dr. L.J. Teply, Senior Nutritionist, UNICEF, New York, U.S.A. EM/SEM.NUTR.PROB.WEAN.PRD./12

13. ROLE OF MCH SERVICES IN THE IMPROVEMENT OF NUTRITION IN THE WEANING PERIOD - by Dr. G. Jallad, WHO Regional Adviser on Maternal and Child Health, Regional Office for the Eastern Mediterranean ..... EM/SEM.NUTR.PROB.WEAN.PRD./13 /

14. PROVISIONAL CONCLUSIONS AND RECOMMENDATIONS OF THE SEMINAR EM/SEM.NUTR.PROB.WEAN.PRD./14

OTHER CONTRIBUTIONS BY PARTICIPANTS

1. BIOCHEMICAL SCREENING OF EARLY PROTEIN-CALORIE MALNUTRITION - by Professor K. Björnesjö, WHO Visiting Professor of Biochemistry, University of Medical Sciences, Addis Ababa EM/SEM.NUTR.PROB.WEAN.PRD./OC.1

2. GENERAL ASPECTS ON APPLIED PHASE OF WEANING NUTRITION PROJECTS - EDUCATIONAL ASPECTS - by Dr. M.R. Barakat, WHO Medical Officer, Nutrition Institute, Islamabad, West Pakistan EM/SEM.NUTR.PROB.WEAN.PRD./OC.2

3. THE APPLIED NUTRITION PROGRAMME IN SUDAN WITH PARTICULAR REFERENCE TO WEANING NUTRITION, by Dr. A.J. Munoz, WHO Medical Nutritionist, Nutrition Division, Ministry of Health, Khartoum, Sudan EM/SEM.NUTR.PROB.WEAN.PRD./OC.3

4. NATURALLY OCCURRING TOXIC SUBSTANCES IN FOODS, WITH SPECIAL REFERENCE TO FAVA AND FAVISM - by Dr. G. Donoso, Dr. H. Hedayat, Executive Director, Food and Nutrition Institute, Teheran, Iran, H. Ghavifekr and H. Khayetian, Food and Nutrition Institute, Teheran EM/SEM.NUTR.PROB.WEAN.PRD./OC.4

5. EXPERIENCE IN MARKETING A SUPPLEMENTARY FOOD MIXTURE FOR CHILDREN IN ETHIOPIA - by Professor B. Wickström, Professor in Marketing, Gothenburg School of Economics and Business Administration, Gothenburg, Sweden EM/SEM.NUTR.PROB.WEAN.PRD./OC.7

6. WEANING NUTRITION PROJECT IN PAKISTAN - by Dr. M.R. Barakat.. EM/SEM.NUTR.PROB.WEAN.PRD./OC.8

7. RAW MATERIALS TO BE CONSIDERED WITH SPECIAL REGARD TO PRODUCTION OF PROTEIN CONCENTRATES OF ANIMAL OR VEGETABLE ORIGIN - by Professor G. Agren, Professor of Medical Biochemistry, University Hospital, Uppsala, Sweden EM/SEM.NUTR.PROB.WEAN.PRD./OC.9

8. DEMOGRAPHY AND VITAL STATISTICS WITH PARTICULAR REGARD TO NUTRITIONAL PROBLEMS IN THE WEANING PERIOD - by Mr. J. Thillemann, WHO Statistician, Advisory Services on Vital and Health Statistics, Addis Ababa EM/SEM.NUTR.PROB.WEAN.PRD./OC.10

9. BASIC MCH SERVICES IN THE SUDAN - by Dr. H.A. Kushkush, Deputy Under-Secretary for Health, Ministry of Health, Khartoum, Sudan EM/SEM.NUTR.PROB.WEAN.PRD./OC.11

10. WEANING NUTRITION AND MALNUTRITION IN THE GEZIRA - by Dr. S.A. Taha, Paediatrician, Medani Hospital, Wad Medani, Sudan EM/SEM.NUTR.PROB.WEAN.PRD./OC.12

11. UNICEF PRESENT POLICIES WITH REGARD TO WEANING FOOR PROGRAMMES - by Dr. L.J. Teply EM/SEM.NUTR.PROB.WEAN.PRD./OC.14

12. NUTRITION AND WEANING IN IRAQ by Dr. L.A. Zaki, Associate Professor of Paediatrics, Baghdad Medical School and Children Hospital, Baghdad, Iraq, and Dr. I. Al-Nouri, Director, Arab Child Hospital in Baghdad, Baghdad, Iraq EM/SEM.NUTR.PROB.WEAN.PRD./OC.15

13. INCLUSION OF MCH TRAINING IN THE UNDERGRADUATE PAEDIATRIC CURRICULUM WITH PARTICULAR REGARD TO THE PREVENTIVE ASPECTS OF NUTRITION IN THE WEANING PERIOD - by Dr. Y.A.A. Larsson, Professor of Paediatrics, Faculty of Medicine, Haile Sellassie I University, Addis Ababa EM/SEM.NUTR.PROB.WEAN.PRD./OC.16

14. THE ROLE OF SOCIAL ANTHROPOLOGY IN A WEANING NUTRITION PROGRAMME by Dr. K.E. Knutsson, Associate Professor in Social Anthropology, Director of Ethiopian Nutrition Institute, Addis Ababa EM/SEM.NUTR.PROB.WEAN.PRD./OC.17

15. SEMINAR ON NUTRITIONAL PROBLEMS IN THE WEANING PERIOD - by Dr. D. Habté, Assistant Director of Ethio-Swedish Paeditric Clinic, Addis Ababa EM/SEM.NUTR.PROB.WEAN.PRD./OC.18

16. PRESENT POSITION OF WEANING NUTRITION BASIC MCH SERVICES, FREQUENCY OF MALNUTRITION AND MORTALITY RATES OF PRE-SCHOOL AGE GROUP IN IRAN - by Dr. N. Ambarsounian, Director, Farmanfarmaian Health Centre, Teheran, Iran, and Dr. G. Roshan, Director, Children's Section, Firouzgar Medical Centre, Teheran, Iran EM/SEM.NUTR.PROB.WEAN.PRD./OC.19

17. THE NUTRITION PROJECT IN ETHIOPIA ESPECIALLY WITH REGARD TO WEANING NUTRITION ASPECTS - by Dr. R. Eksmyr, Children's Nutrition Unit, Addis Ababa ... EM/SEM.NUTR.PROB.WEAN.PRD./OC.20

18. REPORT ON THE ACTIVITIES, PROGRAMME AND ACHIEVEMENTS OF THE FOOD AND NUTRITION INSTITUTE OF IRAN - by Dr. H. Hedayat, Executive Director, Food and Nutrition Institute, Teheran, Iran EM/SEM.NUTR.PROB.WEAN.PRD./OC.21

19. NUTRITIONAL PROBLEMS IN THE WEANING PERIOD - by Dr. R. Rushdi, Assistant Director, MCH Department, Ministry of Public Health, Cairo, U.A.R., and Dr. A.I. Mansour, Physician, Nutrition Institute, Ministry of Public Health, Cairo, U.A.R. EM/SEM.NUTR.PROB.WEAN.PRD./OC.22

20. REPORT FROM KUWAIT - by Dr. Y. Shaker, Head, Children's Section in Sabah Hospital, Kuwait EM/SEM.NUTR.PROB.WEAN.PRD./OC.23

21. DEVELOPMENT OF NUTRITION ACTIVITIES IN JORDAN - by Dr. S. Hijazi, Chief, Nutrition Division, Ministry of Health, Amman, Jordan EM/SEM.NUTR.PROB.WEAN.PRD./OC.24

22. COUNTRY REPORT - PAKISTAN - by Dr. M.A. Hussain, Clinician Leader, Directorate of Nutrition Survey and Research National Health Centre, Islamabad, West Pakistan..... EM/SEM.NUTR.PROB.WEAN-PRD./OC.25

23. NUTRITIONAL PROBLEMS IN THE WEANING PERIOD IN PAKISTAN by Dr. A.K. Awan, Professor and Head of the Department of Maternal and Child Health, Institute of Hygiene and Preventive Medicine, Lahore, West Pakistan EM/SEM.NUTR.PROB.WEAN.PRD./OC.26

24. THE NUTRITIONAL PROBLEMS IN THE WEANING PERIOD IN JORDAN - by Dr. S. Hijazi, Chief, Nutrition Division, Ministry of Health, Amman, Jordan..... EM/SEM.NUTR.PROB.WEAN.PRD./OC.27

25. THE INTRODUCTION OF SUPERAMINE IN ALGERIA - by Mr. N.A. Wilkie, Chief, Food Promotion Section, Nutrition Division, Food and Agriculture Organization, Rome, Italy EM/SEM.NUTR.PROB.WEAN.PRD./OC.28

26. FOOD CONSUMPTION SURVEYS IN PROTEIN FOOD DEVELOPMENT PROGRAMMES - by M. Cresta, Nutrition Officer, Food Consumption Section, Food and Agriculture Organization, Rome, Italy EM/SEM.NUTR.PROB.WEAN.PRD./OC.29

27. SURVEYS OF CONSUMER ATTITUDES AND HABITS IN RELATION TO USAGE AND PURCHASE OF NEW FOODS - by I. de Garine, Chief, Food Habits Section, Food and Agriculture Organization, Rome, Italy, and N.A. Wilkie, Chief, Food Promotion Section, Nutrition Division, Food and Agriculture Organization, Rome, Italy EM/SEM.NUTR.PROB.WEAN.PRD./OC.30

28. THE FORMULATION OF PROCESSING INFANT FOODS - by Dr. G.D. Kapsiotis, Chief, Food Industries Development Branch, Nutrition Division, Food and Agriculture Organization, Rome, Italy EM/SEM.NUTR.PROB.WEAN.PRD./OC.31

29. PROTEIN-RICH FOODS FOR INFANTS: THE INVESTMENT FACTOR - by Mr. N.A. Wilkie, Chief, Food Promotion Section, Nutrition Division, Food and Agriculture Organization, Rome, Italy EM/SEN.NUTR.PROB.WEAN.PRD./OC.32

30. CLINICAL APPROACH OF THE ASSESSMENT OF THE NUTRITION PROBLEMS DURING THE WEANING PERIOD (WITH SPECIAL REFERENCE TO CLINICAL NUTRITION SCREENING METHODS) - by Dr. J.A. Munoz, WHO Medical Nutritionist, Nutrition Division, Ministry of Health, Khartoum, Sudan EM/SEM.NUTR.PROB.WEAN.PRD./OC.33

31. NUTRITIONAL PROBLEMS IN THE WEANING PERIOD AND HOW THEY CAN BE OVERCOME IN KENYA, - by Mrs. C.A. Ochoki, Nutritionist, Karen College, Nairobi, Kenya EM/SEM.NUTR.PROB.WEAN.PRD./OC.34

32. FAMILY DIETARY SURVEYS INCLUDING WEANING FOODS, - by Miss R. Selinus, Nutritionist, Department of Nutrition, University of Uppsala, Sweden EM/SEM.NUTR.WEAN.PRD./OC.35

33. NUTRITIONAL PROBLEMS IN THE WEANING PERIOD AND NUTRITION SERVICES IN TANZANIA, - by Dr. M. Mzingi, Nutrition Officer, Nutrition Unit, Ministry of Health, Dar-Es-Salaam, Tanzania EM/SEM.NUTR.PROB.WEAN.PRD./OC.36

34. PRESENT POSITION IN BREAST-FEEDING, WEANING, AND MCH SERVICES IN UGANDA, - by Dr. S.R.K. Sebikari, Paediatrician, Jinja Hospital, Jinja, Uganda EM/SEM.NUTR.PROB.WEAN.PRD./OC.37

LIST OF BACKGROUND MATERIAL

1. MALNUTRITION AND INFECTIOUS DISEASES - THE "SURVIVING CHILD" - by Dr. J.M. Bengoa, Chief, Nutrition Unit, WHO, Geneva.

2. NUTRITION REHABILITATION CENTRES* - by Dr. J.M. Bengoa

3. FOOD SUPPLY AND NEW PROTEIN RESOURCES, by Dr. E.M. DeMaeyer - WHO Chronicle, Vol, 22, No. 6, p. 225-235

4. ECOSOC, 1 October 1968 - The Protein Problem * with Addenda: E/4592/Add.1 (7 October 1968)*
   E/4592/Add.2 (8 October 1968)*
   E/4592/Add.3 (15 November 1968)*
   E/4592/Add.3/Corr.1 (19 November 1968)*

5. APPROACHES TO VILLAGE LEVEL INFANT FEEDING OF TROPICAL PAEDIATRICS - by Dr. D.B. Jelliffe - 1967, Vol. 13, Items I - IV

6. INFANT NUTRITION IN THE SUBTROPICS AND TROPICS - by Dr. D.B. Jelliffe - Monograph Series, No. 29, second edition 1968

7. CHILD NUTRITION IN DEVELOPING COUNTRIES - by Dr. D.B. Jelliffe - PHS Publ. No. 1822, FS 2.6/2:C 43

8. REPORT ON SEMINAR ON THE HEALTH NEEDS OF THE PRE-SCHOOL CHILD - Karachi, 26 February to 2 March 1968

(*) : Available in a small number of copies, one for each country.

WORKING GROUP RECOMMENDATIONS

Report and Recommendations of Working Group I

SOMALIA

1. The Government should make every possible effort to establish a Department of Nutrition in the Ministry of Health, headed by a national medical officer. This Department should seek the cooperation of the Ministries of Agriculture, Education, etc.

2. The Government should then request international assistance - in particular W.H.O. - to define and survey the nutritional needs of the country with special reference to the food and nutritional problems of the pre-school child.

   The information, thus obtained, should form the basis of further development in the field of food and nutrition.

3. Full advantage should be taken of existing training facilities in Somalia and neighbouring countries, to prepare personnel for future nutrition work. This should be undertaken as soon as possible.

4. The basic health services, including MCH should be strengthened and expanded.

TUNISIA

1. It is recommended that a Department of Nutrition be established within the Ministry of Health, headed by a national medical officer. This Department should be responsible for coordinating all food and nutrition activities in Tunisia, and should be provided with adequate personnel, laboratory equipment, etc. to be able to discharge its duties.

2. The Government should proceed immediately with the implementation of the second phase of the Processed Weaning Food Programme.

3. The implementation of the food enrichment programme on a national scale, should be deferred until pilot studies have unequivocally proved the benefits of such ventures.

4. Family planning programmes, when undertaken should be closely integrated with existing health services.

5. Due to the high prevalence of diarrhoeal disease among pre-school children, and its close correlation with nutritional status in this vulnerable age group, studies should be conducted with the assistance of WHO to assess the problem, e.g. etiology, epidemiology, curative and preventive measures, etc.

KENYA

The Department of Nutrition at the Ministry of Health should be strengtheneed by appointing a qualified medical officer to head it. This Department should coordinate all nutritional activities in the country, and should make use of all available information to plan further developments. In this regard, maximum use of existing training facilites in the field of nutrition should be made.

ETHIOPIA

1. It is strongly desirable that the Ethiopian Nutrition Institute be integrated within the framework of the existing health services of the Ministry of Public Health, and strengthens cooperation with other ministries engaged in food and nutrition activities.

2. The E.N.I. should continue its studies on the establishment of nutritional standards.

3. The basic health services of the country should be expanded, and nutrition activity should form an integral part of the services.

4. The weaning food project, should be strongly supported by the Ethiopian Government and expanded in accordance with the envisaged future plan of operation.

5. The E.N.I. should be responsible for training Ethiopian personnel in all fields of nutrition. In this connection, assistance should be sought from international agencies when and if required.

Report and Recommendations of Working Group II

The representatives of Working Group II coincided in agreeing that actions which could (and in some cases are) be taken to promote nutritional health in the weaning period in their countries are :

1. The assessment of the nutritional status of the population and the patterns of food consumption and availability, through surveys conducted on a nation-wide basis.

   The need for technical help from WHO and FAO in this field, is especially felt. Contribution in equipment and vehicles from UNICEF would be particularly welcome.

   In the four countries, the basic organization and resources (personnel and equipment) do exist and are being used within limited objectives.

2. The development and promotion of a weaning food of high protein value (made from raw materials produced within each country) is needed to combat the highly prevalent PCM.

The resources for this development vary from country to country, but cooperation within neighbouring countries in the manufacture and commercialization of high protein foods is not discarded.

The very definite possibility of setting up the manufacture and commercialization of these products with the financial aid of UNICEF and the technical assistance of WHO/FAO will be proposed and made clear by participants to their governments.

3. Because of the recognized interrelation between nutritional status and infectious disease, active measures to prevent infections (immunizations and promotion of environmental sanitation) should receive simultaneous attention with the purely nutritional actions.

In this respect, the present situation and the possibilities of action differ from country to country. Thus, while in Iraq mass immunization campaigns are carried out, in other countries only limited activity in this field can be practiced. Financial assistance from UNICEF is very much needed.

4. It is generally recognized that adequate MCH services are needed to promote good nutrition in the weaning age. This could be brought about mainly through education of mothers in improved techniques of infant and child feeding, food hygiene and the use of food supplements.

Although, the countries have varying schemes of MCH services, the participants feel that improvement could be attained through:

a) Raising the standard of existing services
b) Increasing the number of centres.
c) Improving the level of training of technical staff, with the objective of improving the quality of the work.

Help is needed in the form of :

a) Fellowships
b) Seminar and study groups
c) Dissemination of information, especially by making WHO/FAO publications available where needed.
d) Provision of supplementary foods, especially skim milk powder and CSM

5. The dehydration syndrome is the most common immediate cause of death in the malnourished child in countries of the Region.

It is recommended that a WHO study group elaborate a monograph giving the guidelines on the treatment and prevention of dehydration. Of particular interest, are the establishment of rehydration centres and the forms of treatment. A WHO monograph on the subject would be welcome.

Report and Recommendations of Working Group III

The following recommendations were unanimously agreed upon by participants :

1. To carry out nutrition surveys for the collection of basic data concerning weaning habits, nutritional status and food resources.

2. To carry out surveys on healthy children to develop national anthropometric standards, at least for children up to 2 years.

3. Production of weaning foods or recipes to be used at family level also weaning mixtures to be produced at country or inter-country levels.

4. Expansion and development of MCH services and preventive paediatrics to cover most of the population in the country.

5. Promotion of nutrition education activities and programmes, especially in the MCH and other services.

6. Encouragement of production of animal foods through better animal husbandry and development of fish-ponds.

7. Training in the fields of MCH, preventive paediatrics, social medicine and other fields relevant to weaning nutrition, both in teaching institutions and through regular in-service training.

8. Improvement of the collection and tabulation of health statistics, especially in relation to malnutrition.

Help and Support from UN Organizations :

1. Provision of technical WHO and FAO publications in a more effective manner, especially in countries with currency difficulties.

2. Provision of fellowships for training of technical and auxiliary personnel, especially in weaning nutrition, nutrition education and the processing, production and marketing of weaning foods.

3. Provision of technical and financial help for training workshops and seminars arranged on country level.

Inter-country recommendations :

1. To arrange regional training courses and seminars

2. Preparation of inter-country weaning foods, especially in-between small populated countres.

3. Analysis of common foods in the Region (e.g. in a regional research centre).

4. To advise on legislation concerning baby foods.

Individual Country Recommendations :

1. Provision of liaison relations between different MCH organizations in the country (Iran).

2. Development of nutrition rehabilitation centres (Uganda).

3. To establish well-baby clinics (Iran).

4. Collaboration of nutrition activities in the country (Iran).

5. UN Organizations to provide supplementary foods (Iran).