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**REPORT OF THE REVIEW GROUP ON THE WHO RESEARCH PROGRAMME  
ON FACTORS AFFECTING INFANT AND YOUNG CHILD FEEDING AND REARING**

Padua, Italy

29-31 October 1984



WORLD HEALTH ORGANIZATION



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PREFACE

As part of the WHO/UNICEF Joint Nutrition Support Programme, a WHO global programme of research and research policy promotion is being developed. The focus of the programme is the identification, description and measurement of factors determining the rearing and feeding of infants and young children. The research is predicated on the growing realization that malnutrition is not simply, or only, a food supply problem, but can also be a function of more complex biosocial and behavioural determinants affecting child feeding and rearing and which are likely to influence the health and wellbeing of young children. The overall objectives of the programme are:

- to contribute to the long-term development of health and nutrition programmes aimed at JNSP countries, by promoting and supporting both technically and financially, the development of national research into the biosocial, ecological and economic factors influencing the manner in which infants and young children are cared for and fed, and how diseases affecting them are perceived and managed;
- to promote and support the establishment of multi-disciplinary operational research groups within national health and nutrition programmes and, through the experience of the JNSP funded projects, demonstrate the effectiveness of such research in health development and programme policies.

## 1. INTRODUCTION

In order to help WHO review its proposed programme, and advise on the direction and approach being followed, a group of nutrition and public health experts was convened at the University of Padua, Italy, on 29-31 October 1984, in order to:

- review the WHO Joint Nutrition Support Programme research component on factors affecting infant and young child feeding and rearing practices in the context of the overall JNS Programme and other national and international health promotion programmes, and advise WHO on how it might increase its relevance to the needs of JNSP and other countries;
- review and advise WHO on research approaches, giving particular consideration to the combination of qualitative and quantitative methods, and their implications for national research resources;
- review and advise WHO on its overall JNSP research programme strategy including identification and selection of national research institutions and groups, technical and financial assistance needs, and coordination of national research programmes as a multi-national endeavour;
- assist WHO in identifying how best national institution strengthening can be undertaken through the JNSP research programme with a view to ensuring the relevance and involvement of the multi-disciplinary research teams in other later research projects.

The report which follows builds on the background document provided to the Review Group and incorporates all their comments, suggestions and recommendations.

1.1 The past 50 years have seen remarkable steps forward in the development of health sciences and in the technical capacity to control a variety of infections and chronic diseases. Within the area of infant health and nutrition, however, progress has been dramatically limited, especially in developing countries and among low socio-economic groups, where the underlying cause of 50% to 60% of all morbidity and mortality experienced in the 0-5 year old age group continues to be the high prevalence of malnutrition and related diseases. High infant and child mortality and morbidity is, according to most observers, the primary obstacle to the attainment of major social and economic improvements in many developing countries and continues to represent a massive drain on human and economic resources.

1.2 As integral parts of family health promotion both national and international agencies have invested, and continue to invest, extensive resources into the management and control of child nutrition, especially through education programmes, food aid, agricultural extension, family planning, expanded immunization and control of diarrhoeal diseases. All these are aimed, in one way or another, at improving the condition of the child and reducing the prevalence and severity of malnutrition.

1.3 Difficulties have been encountered in some areas, however. The acceptance of family planning in some regions, for example, has remained persistently low despite all the emphasis placed on it; in others, nutrition education programmes appear to have had little or no impact on dietary practices even though they have been presented as routine parts of antenatal programmes with good attendances by mothers; immunization activities in some communities have similarly failed to attract families with high-risk infants, and in many areas have certainly been unable to make families understand the need for repeat visits for "booster" vaccinations.

1.4 Numerous reasons can be proposed why these and other nutrition programmes have not been more effective in their attempts to reach children and mothers in high-risk target groups. One of the most important is a continuing lack of knowledge about the psycho-social factors affecting family decisions on health care and utilization of health care systems. Similarly, there is a marked paucity of information available to health planners on child

rearing and feeding and biosocial characteristics of growth and development during early childhood and the unique role played in somatic health by child-rearing practices. Partly in response to this lack of information, child health and nutrition programmes, as well as those in family planning, have tended to assume a universality of problem and commonness of approach irrespective of setting or problem. Only occasionally have they recognized the need to, or been able to, undertake detailed situation analyses and examine, systematically, the nature, magnitude and interaction of social and behavioural factors affecting them.

1.5 Not surprisingly, nutrition for much of the past two centuries has primarily been the domain of the physiologist and the biochemist. But over the past 25 years there has been an increasing awareness that the problem is far broader and more involved than can be effectively dealt with by these disciplines alone. Indeed, experience gained from research and the results of intervention programmes suggests that in the case of the young child few areas of health better demonstrate the complexity of the precarious relationship between man and his socio-ecological environments than does nutrition and infection.

1.6 During the latter 1970s when the WHO Regional Offices evaluated the role and opportunities for nutrition action in their Member States, one of the demands that repeatedly emerged was for the strengthening of national capabilities to undertake applied research in this area. With the limited resources available to it at the time, WHO responded and was able, in two regions, to support small pilot surveys of the factors influencing weaning practices in communities where malnutrition was prevalent. This coincided with a growing interest on the part of national institutions to undertake multi-disciplinary research in nutrition and health, and a growing awareness on the part of health planners that biosocial events and behaviour need to be described and addressed early in the process of programme formulation. More than ever before, there is a recognition of the vital role such information can play in permitting interventions to be specifically targeted and designed in a way that may improve the likelihood of their acceptance, their effectiveness, and their relevance to the needs of high-risk groups.

1.7 The coming together of the interests of the Italian Government, WHO and UNICEF, in a Joint Nutrition Support Programme permits us to take up the challenge of nutrition in some of the least developed countries and provides an added opportunity to expand and "institutionalize" an applied biosocial research component in health planning.

1.8 The goal of the JNSP/WHO research programme on factors affecting infant and young child feeding and rearing practices is to promote and support national research activities that may help answer and unravel part of that complexity, and in so doing help ensure national development of effective measures to improve infant health. This research is seen as constituting a vital part of national actions to attain the goal of Health for All by the Year 2000, a goal to which the WHO and its Member States, is firmly committed.

## 2. OBJECTIVES

2.1 The programme is predicated on the recognition that unless national surveys of key factors are encouraged and supported, the effectiveness of health and nutrition intervention programmes will continue to be limited, and the needs they are designed to meet will persist.

2.2 As part of the larger WHO/UNICEF Joint Nutrition Support Programme, which is currently working with fifteen national programmes to improve nutritional and health conditions through a variety of intervention strategies, the research component is directly aimed at the application of new knowledge in the JNSP country programmes. The research strategies being developed will be gradually replicated in other than just the JNSP countries, using alternative funding sources but building on the JNSP network.

2.3 The overall objectives of the programme are:

- (a) to contribute to the long-term development of health and nutrition programmes aimed at JNSP countries, by promoting and supporting, both technically and financially, the development of national research into the biological, social, ecological and economic factors influencing the manner in which infants and young children are cared for and fed, and how diseases affecting them are perceived and managed;
- (b) to promote and support the establishment of multi-disciplinary operational research groups within national health and nutrition programmes and, through the experience of the JNSP funded projects, demonstrate the effectiveness of such research in the health development process.

3. SCOPE

3.1 A major challenge common to all human societies is the need to secure the "safe passage" of the infant from birth to the time when he or she can consume the normal family diet and become more physically independent. Although breast-feeding, which is being widely studied and promoted, is basic to the early well-being of the child, it is not, in itself, sufficient to guarantee continued healthy growth and development. It constitutes only a part of a much larger process of nutritional, social and emotional care that is uniquely critical, in the human species, to this period of life. However, in moving from breast-feeding to other aspects of the management of the nutritional condition of the young child, it becomes clear that there is a lack of information on these other aspects that parallels the lack of knowledge on breast-feeding in the mid-1960s.

3.2 The process of transition from infancy and total reliance on breast milk to childhood and the ability to survive on "family food" is not only a matter of physiological maturation. Over the first 24-30 months of growth, anatomical and physiological developments in the gastro-intestinal and enzyme systems (which permit the child to consume adult food) are paralleled by other physical and developmental changes. Mobility increases dramatically, first with the ability to crawl, then to walk; communication skills increase rapidly; by the end of this period, many young children are able to verbalize many of their needs and feelings, however simply.

3.3 Increased mobility also means increased exposure to environmental threats - to pathogens and accidents. Consumption of new foodstuffs means an increased risk of food-borne diseases. Not surprisingly, the transition to childhood is characterized by an increase in illness episodes. The management and care of the child during illness and stress becomes a significant and integral component of the nurturing process.

3.4 Because the transition from infancy to childhood is such a configuration of nutrition and care, in this report the phrase "weaning process" is used to refer to the range of nutritional and behavioural changes that occur between birth and the time when the young child is able to consume the family diet. It refers to the psychosocial dynamics of developmental maturation and the somatic response to increased exposure to infectious stimuli, as well as to changes in nutritional needs and behaviour.

3.5 Certain difficulties of definition unfortunately arise because the term "weaning" has traditionally been used to refer to nutrition alone; even within this more restrictive nutritional frame of reference, however, the character and duration of the process is different in different societies and social groups. When weaning begins and when it ends is thus not easily demarcated. Given the complexity of psycho-social maturation, child-caring behaviour and illness management, additional difficulties of definition can be anticipated.

3.6 Nevertheless, for purposes of operational definition, the period referred to in this paper as the weaning period is from birth through the introduction of foods that are complementary to breast-milk and then through sevrage (the complete cessation of breast-feeding) to the point in the post-sevrage period when the child is expected to eat and survive on everyday family food.

3.7 Within this time frame, and recognizing the range of biological and psycho-social events taking place and marking the development of the child, a number of questions merit attention. Be they positive or negative, a variety of forces are constantly impinging on the mother-child dyad and on the family as a whole. These help form the character of the individuals involved, their inter-relationships, their knowledge about, and attitude to, the extra-familial world. Survival of the family as a biologically productive unit, and the survival of the infant as the product and responsibility of that unit depends, in great part, on the coming together of these social, biological and economic forces in particular configurations or, alternatively, their absence.

3.8 The research programme's goal is to foster the identification of these forces and describe how in responding to them, the needs of the family, the mother and the infant are structured. If these can be well described, it may become possible to design health care systems and actions around them and for them rather than in spite of them. It had originally been proposed to refer to these factors as "determinants". The term and concept "determinants", however, may be too definitive, giving the impression that the absolute presence or absence of given conditions necessarily produces different gradations of child health/disease. The use of the term "factors" will provide greater flexibility and scope for a discussion of the variability in characteristics or conditions in question.

#### 4. RESEARCH PERSPECTIVES

Two principal levels of research are likely to be required with regard to child health and nutrition.

##### 4.1 Community and Family

4.1.1 The first level involves an analysis of community and family characteristics with regard to feeding and rearing practices. Such issues as family resources and maternal time allocation, household composition, household distribution of foods, responsibilities for child care and patterns of caring, beliefs and practices with regard to the etiology and management of disease, existence and utilization of formal and informal health care systems, women's work and social status, will all be included within this level of analysis.

4.1.2 The research called for at this level will involve the use of observation techniques, community based surveys, the generation of information through informed sources and other methodological techniques that are now standard among many of the behavioural sciences.

##### 4.2 Policy

4.2.1 A second level of research will involve the study of such factors as national and international policies that influence nutrition, health, education, employment, etc., in the study populations concerned. Fortunately, considerable data already exist in these areas and some UN agencies have put together the results of surveys on these subjects in a format which is readily retrievable. Reviews of existing literature and the preparation of annotated bibliographies, which national researchers can utilize in preparing their proposals and in developing a background perspective against which community based studies can be evaluated, will need to be undertaken.

4.2.2 Assessments of the extent and direction of commercial advertising and media presentations on issues relating to feeding and caring for young children should also be made together with reviews of national legislation concerning availability of food, distribution of food, women's work and maternity protection. It may not always be possible to describe and analyze policy level factors in the same detail as community and family organization and behaviour but every attempt should be made to provide sufficient detail against which family responses to child rearing can be considered.

#### 4.3 Selection of Issues to be Studied

4.3.1 The study of child rearing in its more holistic sense necessitates a much broader representation of disciplines than would an examination of the child in terms of its purely nutritional or health status. Since one of the objectives of the programme is to promote and support the establishment of inter-disciplinary research teams, all centres participating in the programme should be encouraged to look at child health and nutrition from this broader perspective, namely, such factors as are likely to influence supervision, socialization, stimulation, as well as the response of the family to onset of illness and its treatment, the use of foods pre- and during weaning, and feeding practices.

4.3.2 Of course, ultimate responsibility for determining which issues merit study, and whether an analysis of the second level data referred to above is called for, will always remain a national prerogative and will be predicated on the nature of the problems, the availability of information on them, and the "retrievability" of this information.

4.3.3 Decisions as to which factors to study will also necessarily be influenced by the operational applicability of the information being sought. As far as the JNSP activities are concerned, emphasis should always be placed on operational rather than academic research, and the need for survey data to lend themselves to immediate "translation" into programme policy alternatives. Research projects should thus be designed around operational problems, the study of which is likely to improve local health and nutrition systems and their ability to respond to popular needs and problems.

4.3.4 Among the types of problems that may be considered are a series of issues concerning feeding practices per se, household economic conditions, women's work, and the organization of household tasks in relation to child care, and cultural beliefs and knowledge related to feeding and disease management. Because of the magnitude of the social and demographic changes taking place in many developing countries, a common theme in all the studies should also be the examination of rural/urban differentials with regard to the above. Such themes as the role of social marketing, the acceptability and utilization of oral rehydration solutions, and the improvement of the role of health care systems, should also be considered.

#### 4.4 Guidelines

4.4.1 In view of the operational nature of the research being proposed, and the need for the surveys to be related to nationally identified priorities, considerable variability can be anticipated between countries. There will be situations, however, where it is appropriate to provide national survey teams with "guidelines" on possible research themes; these should be developed on the basis of previous research and core factors that have consistently been shown to influence child feeding and rearing practices and child health.

4.4.2 While "guidelines" should not attempt to be exhaustive nor be presented as a pre-requisite for research support, it should be borne in mind that they can provide a basis for inter-country comparability and, from the point of view of the overall JNSP programme, they may help provide the basis for generalizable conclusions relevant to other countries and situations.

#### 5. POSSIBLE THEMES FOR RESEARCH

The topics outlined below are not intended to be either comprehensive or definitive in terms of the research that should be covered by the JNSP projects. They draw on selected case study materials and are meant as examples of the type of questions that merit consideration by multi-disciplinary teams working in collaboration with JNSP country-staff.

They are issues that in themselves may not necessarily constitute answers to the better delivery of health care, or the improvement of health and nutrition in given groups. On the other hand, there is growing evidence to suggest that unless attention is given to the explicit and measured description of the prevalence and character of biosocial behaviours and features such as these, health planning will continue to be a question of universal, standard "packages" for problems which are generally perceived as global and unifactoral.

## 5.1 Household Economic Conditions

5.1.1 There is a large, and ever-growing literature in nutritional epidemiology linking the economic conditions of the household to nutritional status. In this context a range of factors has been examined, including cash income, land availability, livestock holdings and other productive property, access to labour markets, outlets for sale of products and related economic variables.

### 5.1.2 Cash Income and Socio-Economic Status

Socio-economic status and income have been related to initiation of supplements, sevrage and nutritional status of infants and young children; research results seem to indicate that higher income is often associated with earlier supplementation and weaning (cf. Datta Banik 1975).

The pattern of earlier cessation of breast-feeding in higher income families has been well-described in the WHO nine-country study (1981) where the association of shorter duration of breast-feeding with higher economic status was found in virtually all of the nine countries surveyed.

### 5.1.3 Land availability

It has often been suggested that total landholdings, i.e. the amount of land available for household food production and the character of the land, will influence the adequacy of food in relation to household needs for rural families and in fact a number of studies have shown that young child malnutrition is associated with inadequate land to meet family needs. In a study in the Kosi Hill area of Nepal, Nabarro (1984) examined the relationship of size of landholding to the adequacy of cereal production for household needs. He found that families with the greatest deficit of home-produced staple grains spent proportionately more of their food budget on cereals, and less on meat, fats, fruits and vegetables. They thus had a low consumption of high energy density foodstuffs. Strategies such as this to deal with inadequate harvests, plus the commitment of all household labour (including maternal labour) to income-generating activity during the time of staple food shortage may help to explain seasonal undernutrition in young children.

## 5.2 Maternal Time Allocation and Child Care

5.2.1 One of the characteristics frequently not appreciated by investigators is the multiplicity of women's roles and responsibilities and how these impact on child-rearing and care. To date there has been inadequate examination of the interaction between domestic and economic responsibilities and their management of child feeding and care.

### 5.2.2 Infant feeding and women's work in traditional societies

Much of the research in this area has focused on breast-feeding. In earlier years there was a tendency to regard breast-feeding in traditional societies as an activity that was so universal and essential that it was uninfluenced by other factors, except maternal health. This has been shown to be far from true.

Among the Keneba, in The Gambia (McGregor et al 1961), women have a wide range of responsibilities which change over the course of the yearly cycle. Women's daily

responsibilities include domestic tasks of food preparation, collecting firewood, carrying water, and other household maintenance chores. During the dry season, the young infant is described as being seldom far from his mother and nursed on demand; maternal work activities during this period appear to be compatible with this pattern of care and feeding.

When the wet season begins, however, women's work patterns change with the pressures of agricultural work. Farms are hoed in May and early June; seeds are planted in June and early July. From August to early October the women transplant rice nowadays to tidal swamps located at a distance of 6-8 miles on the River Gambia. Harvesting begins in October and the work is described as difficult and involving long hours.

The length of time an infant can expect to receive his mother's close or undivided attention may depend on his time of birth in relation to the farming season. Children born toward the end of the year are likely to be 6 months old when the mother begins cultivating rice the following year, and more likely to be left behind in the village while the mother labours in the fields. In contrast, the child born earlier in the year will be carried to the rice fields during the first rainy season, also remaining in close proximity to her in the village throughout the next dry season, and thus, in effect, being suckled on demand for a significantly longer period of time, rather than experiencing convenience feeding and early supplementation. From a nutrition strategy point of view, the situation described among the Keneba is significant and may be more widespread than had previously been assumed.

#### 5.2.3 Infant feeding and women's work in non-subsistence communities

In a study in the Philippines, Popkin (1978) reported that with mother's labour force participation, total household welfare benefited, but young child welfare was negatively affected. The greatest difference in dietary intake between infants of working and non-working mothers was found in consumption of Vitamin A, most of which came from a soup whose preparation is time-intensive; the negative effect of time appears to have been weaker than the positive income effect, where increased income may have led to an increase in protein and calorie consumption. Overall, children from the lower income families appear to have been rather more adversely affected by the mother's working than were upper-income children.

Other reports have indicated the difficulty working women have in breast-feeding even when provided nursing breaks. Congested traffic problems which prohibit easy travel between home and work often make breast-feeding and child care a stressful activity.

### 5.3 Household Composition

5.3.1 Family structure, as well as women's economic responsibilities, have the potential to considerably influence the care and feeding of young children. The presence of other household members who can assume child care responsibilities may influence the decision of an economically-constrained mother to choose between the use of her time for economically-productive work or other domestic and child-care activities.

#### 5.3.2 Child Care and Infant Feeding

Misra (1979) reports that in India, when a woman left a small child at home while she went out to work, the mother-in-law often performed the weaning doula's role and fed the child. If the woman had no mother-in-law, however, she left the child with an older daughter, generally between the ages of 8 and 14; after this age the daughter herself generally found wage-earning employment too.

### 5.3.3 Child Caretakers and Infant Feeding

The child "nursemaid" is common in many societies. For example, among the Gusii of Kenya, the responsibility for corn and millet cultivation falls upon women, who then delegate the care of infants and young children to child nurses. The responsibilities of these nurses include feeding, cleaning and long hours of carrying their young charges.

When child care is delegated to others, especially older children, the quantity and quality of food given to the infant may suffer. The quantity of intake is also related to the quality of child care. In The Gambia when the Keneba mother was in the fields, her children were dependent upon someone else feeding them and providing them with water to drink (McGregor et al 1961).

In another study, the wide differences in dietary intake between two groups of Ghanaian children, a village group and another from an orphanage, were attributed in great part to the behaviour of adults concerned with child feeding. The orphanage staff was reported to play an active role in feeding the children. Meals were supervised, smaller children were given help in eating, children were encouraged to eat and offered second portions. The village mothers, on the other hand, adopted a more indifferent attitude; small children were not offered second portions; the child was frequently left to feed himself from a plate of food left beside him on the ground (Woolfe et al 1977).

### 5.3.4 Household Composition and Infant-Feeding

Butz and Davanzo (1981) found that women from households where there were parents, grandparents or other adult relatives were more likely to initiate breast-feeding; but they were less likely to breast-feed for a long time than were women from nuclear families. They suggest that this is probably related to the tendency of housemates to help feed the infant, thus allowing the mother to wean it earlier than she might otherwise. The fact that these associations were not discernable prior to 1960, suggests that without modern weaning foods, the mother presumably perceives other adults as less satisfactory feeding substitutes. The presence of servants was found to affect breast-feeding practice in the same direction, but was not statistically significant. These relations between the availability of alternative child-care givers and duration of breast-feeding were found to vary among ethnic groups, being strongest among the Chinese; Malay mothers showed no significant tendency to alter their nursing behaviour.

### 5.3.5 Marriage Patterns and Infant Feeding

Divorce or separation, which is a frequent occurrence in some societies, can affect infant feeding. For example, Jelliffe et al (1963) notes that among urban Acholi, parental separation was associated with earlier sevrage. In Cameroon, a woman returns to her natal home accompanied by her nursing child; however, a weaned child, even at a very young age, may remain at the father's compound. It also has been suggested that practices such as this may affect the child's nutrition, through either a change in economic and food resources, or by a change in caretaker (Price, personal communication 1983).

A number of investigators have suggested that declining polygamy in African societies is also affecting infant feeding practices. Traditionally, post-partum abstinence from sexual relations extended through the entire period of lactation; in households with co-wives, there may be less pressure to resume sexual relations. In support of this hypothesis, Meldrum and Didomenico (1982) found that Oje Market women, who now breast-feed for shorter durations than previously, often refer to themselves as "the only wife of the husband".

#### 5.4 Health Beliefs and Infant Feeding

##### 5.4.1 Breast-Milk as a Harmful Food

Cross-culturally, a number of events or conditions often tend to be blamed for, or be the cause of, "bad milk". Foods consumed by the nursing mother are often thought to harm the infant, and many culturally-inspired food restrictions on the lactating woman are designed to protect milk quality. Sometimes witchcraft is also thought to be the responsible agent causing the mother's milk to spoil and make the baby ill. From a village near Mysore, India, Misra (1979) reports that a woman may say that she has snakes in her breast; a baby who she then suckles will not survive. In this situation two courses of action are possible: (a) avoid suckling, relying on the use of substitute milks, or (b) extract the snakes from the breast, thus making it safe to nurse the infant, but which is difficult to accomplish.

In many cultures, a new pregnancy is thought to severely spoil breast milk, making it unsafe for the nursing child. Throughout much of West Africa abrupt sevrage is associated with the mother's "discovery" that she has conceived again.

##### 5.4.2 Harmful Foods in the Transition to Household Diet

Apart from guarding against "spoilage" of breast milk, many societies restrict the types of foods given to infants and young children during the transition to household diets. Frequently, it appears to be high protein foods that are withheld from small children. Chopra and Gist (1966) report that in India high quality proteins are consumed only occasionally, and then in small quantities; infants and children may frequently receive only the broth, which might contain vegetables, but no meat. They indicate that some mothers believe that meat, fish and eggs are the cause of digestive troubles in infancy. They are sometimes suspected of causing parasites and therefore are seldom given to children. In Mexico, protein-rich foods, especially meats, are reportedly withdrawn from the diet of children up to the age of two years if they develop symptoms that are thought to be caused by "worms". In certain areas of Africa the flesh of particular animals is restricted from the diets of children for fear that the traits of the animals will be transferred to the child. One common fear is that egg consumption will influence a child to become a thief.

Locally-available non-protein food items may also be restricted for a variety of health-related reasons. For example, Sanjur et al (1970) report that in Mexico even in healthy children, the most frequently avoided foods are fruit, avocado, beans and pork meat. Children are also warned against eating hot peppers, or too many thick tortillas for fear that they might cause colic.

The fear of intestinal complaints - indigestion, vomiting and abdominal pain - is a frequently-reported reason for food avoidances. Cruz et al (1970) cite several food taboos in the Philippines: sweet potatoes are feared to cause gas; corn is thought to cause abdominal pain; acidic fruits are believed to be responsible for vomiting and abdominal pain.

##### 5.4.3 Maternal Recognition of Nutritional Requirements

The mother's ability to assess the state of her child's health, as well as her understanding of children's special needs during illness can influence the management of child feeding. Signs that are indicative of compromised child health may be unnoticed or misinterpreted; Moodie (1982) notes that apathy may be regarded as good behaviour. "He is not a troublesome child", ... "He sits just where he sits". Sebrell and King (1970) suggest that in many places apathy, listlessness and oedema are considered merely normal phases in childhood development. In other areas symptoms which Westerners associate with malnutrition are attributed to other factors. For example, Gerlach (1964) reports that the Northeast Coastal Bantu view such symptoms as evidence of the parents having violated the taboo on sexual intercourse during

lactation. Another common interpretation is that the child is suffering from jealousy. In some cultures, failure to progress developmentally may be regarded as personal preference rather than a condition to be viewed with concern.

## 5.5 Characteristics of the Infant

5.5.1 Many developmental psychologists argue that a child's behaviour, and to a considerable extent his physical development as well, must be seen as the outcome of an interactional process between the child and his or her caretakers. Each acts upon and influences the other; the infant is not merely a passive receiver of the caretaker's attention.

### 5.5.2 Chronological Age and Developmental Characteristics as Determinants of Feeding Practices

Some cultures structure the introduction of complementary food by chronological age rather than physical development and need. For example, in Nepal a baby's "first food" (rice) is supposed to be given at 5 months of age for girls and 6 months for boys (G. Pfau, personal communication). Giving the first food is a "rite of passage" in Nepalese culture, and is accompanied by a religious ceremony that signifies the child has reached a new developmental stage.

Industrialized cultures also tend to use chronological age as a marker for introducing foods, and child-rearing manuals typically include advice about "appropriate" (chronological) ages for the introduction of types of foods. The extent to which advice about "the age of introduction" for complementary foods is common to other cultures is not clear, nor is there good data on the extent to which physicians and parents in industrialized societies actually use age (as contrasted with developmental or behavioural indicators) as the basis for introducing foods.

### 5.5.3 Sex of the Infant and Feeding Practices

It is not uncommon for recommendations on feeding regimes to be different for boys and girls. The explanation for differential length of breast-feeding by Ethiopian informants in the Arsi study (Knutsson & Mellbin 1969) was that boys should be breast-fed longer because of their need for "greater strength". Data from the Arsi study showed that males are, indeed, weaned later than girls; at 5 months 79% of the boys were still breast-fed compared with 59% of the girls. However, in another Ethiopian community (Sidama), there was no sex difference in age of weaning, despite the cultural recommendations. The authors do not offer any hypotheses to explain why cultural prescriptions were followed in one community and not in the other.

The question of sex differences in infant feeding practices merits further exploration. For although many societies do not explicitly refer to the child's sex as a determinant of feeding practices, differential mortality of male and female infants strongly suggest *de facto* differences (cf. Chen et al 1981; Peltó 1983); this is so even though available data may not appear to denote sex differences in either age at weaning or age of introduction of solid foods. Whether or not there are sex differences in the quality and types of foods given during the weaning process is almost impossible to determine on the basis of current data, but this too may merit consideration.

## 5.6 Disease Management

5.6.1 While malnutrition in the infant and young child is often a function of inadequate supply of food, poor food intake, or poor quality food, it can also be the result of infection and resulting debilitation. Frequent diarrhoeal disease episodes in the young child, for instance, if not appropriately treated can effectively produce malnutrition. How the sick infant is treated depends in great part on the knowledge, attitudes and beliefs of the family, local health care practices and health systems.

5.6.2 Studies in Cali, Colombia, suggest that the mother's perception of malnutrition and her general knowledge about the etiology of diarrhoea were the main predictors of the likelihood of severe diarrhoeal episodes in children (Bertrand & Walmus 1983). In Peru, studies on the same theme suggest that diarrhoea is not seen as an infectious disease but is rather explained within a framework of a broader hot-cold dichotomy; because it is felt to be a product of "cold" foods, breast-feeding is interrupted when diarrhoea occurs (Escobar et al 1983). In Zimbabwe, on the other hand, De Zoysa et al (1984) found that although social and spiritual factors were felt to be causes of diarrhoea, the majority of mothers who were surveyed saw contamination as the problem and in seeking remedies, effectively used a combination of folk and health centre prescribed remedies. The main predictive characteristic of whether the child was taken to a health centre was the mothers' classification of the disease into a "physical" or "social" category.

5.6.3 Similar findings have been reported among Chinese families in Hong Kong with regard to the timing and type of remedy sought for sick infants; a variety of "hot"/"cold", "wet"/"dry" qualities were claimed to affect "body energy" and nutritional needs and condition (Koo 1984).

5.6.4 The extent to which folk beliefs can interfere with the effective application of medication is described by Shahid et al (1983) in a rural community of Pakistan where diarrhoea during and after measles is considered by mothers to be beneficial for body cleansing, etc. As a result, oral rehydration solutions were not accepted because it was felt they would stop the diarrhoea and produce an accumulation of toxic fluids.

## 5.7 Feeding Practices

### 5.7.1 The Effect of Pre-Lacteal Feeds and Colostrum Rejection

The widely prevalent practice of discarding colostrum presents a serious challenge for public health research; together with the effects of pre-lacteal feeds, which also have an impact on health, colostrum rejection has not been adequately examined. Indeed little emphasis has been placed on the biological or social impact of such early feeding practices. The benefits of colostrum are now so well known that it is difficult to understand why cultures in a number of different ecological settings have developed and maintained a practice that appears to be so dysfunctional.

In rural Peru, for example, neonates are given a sweet oil, such as almond oil, for three days postpartum to help clear out the meconium (Wellin 1955); Huenemann and Collazos (1954a, 1954b) report that some babies in tropical areas are given salad oil as a laxative. Flores et al (1964) report that in rural Guatemalan communities children are often given oil or medicinal syrup after birth to "clean the child internally"; in two southern Guatemalan Ladino communities, 35% of the mothers reported administering purgatives during the neonatal period in the belief that the child's stomach required "cleaning out or strengthening." Sugar water, cooking oil or other substances were used for this purpose.

In South Asia pre-lacteal feeds are also commonly used for their laxative effects, the traditional use of opium being gradually replaced by the use of bottled proprietary preparations. In India, Aryurvedic herbal preparations mixed with honey are given to the baby to loosen the meconium and also as a tonic; Datta Banik (1975) notes the widespread belief that "Janam Ghutti", a proprietary preparation consisting of honey mixed with indigenous herbs, acts as a laxative and tonic. In the Philippines, Cruz et al (1970) found that a majority of mothers gave a Vitamin B extract and castor oil immediately after birth in order to induce the passing of any undigested material from the time spent in utero. Many women also used ampalaya juice, based on the advice of elders or midwives immediately after birth so as to make the infant vomit any amniotic fluid swallowed during delivery.

The idea of colostrum as a harmful substance is relatively widespread. Among a number of groups in Papua New Guinea, it is typically discarded with little evidence of alternative feeding during the first three days of life. In India, where it is considered to be unsuitable for human consumption, it is not uncommon to let the colostrum ooze from the breast and remain unused. Harfouche (1981) notes that in the Eastern Mediterranean region (e.g. Oman) the infant is not put to the breast immediately after birth because it is widely believed that colostrum is harmful. In Pakistan, colostrum is reportedly considered "tabooed," and until the true milk begins a mixture of skimmed buffalo or cow's milk, diluted with ghee, sugar and honey, is given. Reports from Africa show considerable variation in the use of colostrum. Among the Nyanwezi of Tanzania, Jelliffe (1962) reports that colostrum is believed to "stick to a child's ribs," causing pneumonia and infants are fed on millet and water until breast milk comes in.

#### 5.7.2 Feeding Methods

The transition from breast milk as the sole source of food to a mixed diet designed to accustom the child to adult foods, is a critical one. It is during this period, when the immune system of the infant may not be well developed, that new foods can increase the risk of contamination and infection. The methods used to feed complementary foods to the infant may also affect both the quantity of food consumed by the child and the potential pathogens to which the child is exposed.

"Hand feeding" is particularly characteristic of parts of Africa. Osuhor (1980) reports that the "forced feeding hand method" is still widely practised among the Hausas in Northern Nigeria where the infant is immobilized across his mother's lap with his head held down. The mother's hand serves as a container from which water, gruels or other liquids are poured into the child's mouth. Often the child's nostrils are blocked by the mother's other hand, forcing him to swallow the food in order to breathe. Choking is a frequent occurrence; food particles may be aspirated into the respiratory tract and pneumonia or lung abscesses are a potential danger.

In other countries, pre-lacteal feeds are dipped from the mother's fingers into the baby's mouth during the first three or four days after birth. Among Indian peasants studied by Misra (1979), porridge and rice are fed by hand, little by little, from the mother's or grandmother's fingers. Robson (1972) reports that among the Ngoni (Tanzania), where infants were hand-fed during early weaning, the caretaker usually did not wash her hands prior to feeding the infant.

#### 5.7.3 Pre-Mastication

In parts of South-East Asia (Thailand, Burma), New Guinea and East Africa, pre-mastication of food is common. Although this may involve the transfer of pathogens from the adult to the infant, Jelliffe et al (1962b) have suggested that "... the finely chewed, ptyalin-reinforced paste, although perhaps superficially undesirable and unaesthetic, may be less dangerous bacteriologically than foods prepared and served in unclean utensils in dirty and squalid surroundings". Intengan (1976) reports that among low-income families in 10 villages located in the north-eastern region of Thailand, infants under the age of one year are commonly given glutinous rice that has been masticated by the mother and later roasted. A variant of pre-mastication is tongue feeding, said to be practised in Nigeria among some more traditional families. The mother chews food into a pulp, and then transfers it to the baby's mouth with her tongue.

#### 5.7.4 Sevrage

The period during which the infant is finally taken from the breast can represent a natural extension of growth and new needs, or a socially imposed behaviour that is not "anticipated" by the child. From both a psycho-emotional and nutritional point of view, the process of sevrage can be harmful and traumatic. It is usual in many countries to do this on a gradual basis, and it is common to introduce other foods once

or twice a day, while breast-feeding continues during the evening and night. The practice is said to allow the mother increasing freedom to work, attend market and other activities, and to accustom the child to semi-solid foods. As the child develops a taste for these, he reportedly gives up the breast willingly.

#### 5.7.5 Abrupt Weaning

Not all weaning is gradual however and abrupt weaning practices are frequently described in the literature, perhaps in part because their dramatic nature calls attention to them. In many cultures, the primary reason for sudden weaning is the mother's discovery that she is pregnant. Harfouche (1981) reports that in the Eastern Mediterranean late abrupt weaning is most commonly ascribed to the onset of a subsequent pregnancy, while the major cause for early abrupt weaning is said to be 'inadequacy' of breast milk.

A number of methods are employed to enforce abrupt weaning. From Nigeria, DiDomenico reports the use of red pepper, or the juice of a bitter leaf, which is spread on the breast. Gumede (1978) notes that the South African traditional Zulu method of discouraging a child who persists in demanding to be breast-fed is to smear the breast with aloe leaf. Guthrie (1967) reports that a number of substances are used in the Philippines, including ginger, bitter melon or ointments. Jelliffe et al (1962a) note that the process of separation of the child from the breast is sometimes reinforced by the application of substances such as tobacco, quinine, garlic, ginger, red pepper or soot. Harfouche (1981) describes the use of quinine, hot pepper, castor oil, etc., to frighten a child into rejecting the breast. Shostak (1981) reports the use of a bitter root or, more recently, tobacco resin among the !Kung San. Other unpleasant substances used to discourage nursing include cactus juice, henna or strong spices (Egypt); lemon juice (Tonga); and bitter herbal concoctions (Tanzania, Nigeria).

#### 5.8 Summary

The above themes or issues reflect many of the findings in recent surveys of infant feeding and rearing practices. In different country situations there may, of course, be other aspects of feeding and rearing practices that merit study. The themes presented here do not attempt to be exhaustive and are rather designed to be indicative of the types of issues that can be taken up and should certainly be taken into consideration in the design surveys.

### 6. RESEARCH PROPOSALS

6.1 As indicated earlier the identification of problems calling for analysis, and the preparation of proposals for submission to the WHO/JNSP research programme will depend on nationally defined priorities, country programme formulations, and the research capacity available locally.

6.2 However, in order to make best use of the opportunity afforded by the programme, the research perspective assumed by national investigators should always be to answer questions that are of major relevance to local JNSP programmes. Research staff should thus try to be in constant contact with health administrators responsible for the JNSP country formulations and research proposals should reflect this in their selection of "problems", be they issues relating to determinants of feeding or rearing. This can be encouraged by seeking the collaboration of JNSP administrators in developing research priorities and hypotheses.

6.3 All research proposals should be automatically reviewed and approved by appropriate ministries and JNSP "authorities" before submission to WHO. Submission to WHO will follow regular channels, i.e. through the WHO Programme Coordinator, the Regional Office, and then to Geneva. Copies of proposals will then be sent by the Geneva office to the JNSP Senior Management Group for information.

6.4 National investigators will be visited prior to their preparation of proposals and, wherever possible, WHO staff and consultants will review local needs and issues together with prospective research teams. Guidelines for preparation and submission of proposals will be made available and assistance will be provided in drafting.

6.5 In reviewing proposals for funding, priority should be given to those proposals that can demonstrate:

- (a) relevance to health care system needs and their operational objectives;
- (b) relevance to national JNSP (PHC community-based) projects;
- (c) practical application to national needs and plans;
- (d) multi-disciplinary and inter-sectoral themes;
- (e) indication of research "team" ability to undertake research with appropriate support;
- (f) sound research design;
- (g) plan of follow-up to research including national workshop, where appropriate, to review results and policy implications;
- (h) time frame that does not exceed 5 years;
- (i) potential applicability to ecologically similar situations elsewhere.

6.6 Proposals will be reviewed by an external Review Group selected by WHO for its disciplinary breadth, its experience in the area of feeding and rearing studies, and its familiarity with the needs and resources of developing countries. The Review Group should meet at least once per year in order to assess the progress of the programmes, and should ideally meet in one or more of the JNSP participating countries.

6.7 Reviewers will also be expected to provide WHO and investigators with assistance in refinement of proposals and with technical support in the implementation of surveys wherever this is felt appropriate. They will be expected, as part of this role, to act as consultants to the countries in question as and when required.

## 7. INSTITUTION STRENGTHENING

7.1 One of the impediments to biosocial research in nutrition and child health has traditionally been the lack of institutions with appropriate research experience and personnel capacity. A principal objective of the JNSP Research Programme will thus be the strengthening of national capabilities to conduct the type of inter-disciplinary research that is likely to enhance the development of overall JNSP national programmes and other national health activities.

7.2 In the process of working with individual countries, the programme may need to identify institutions that already have some experience with inter-disciplinary research. Where it is possible to do so, these institutions should be strengthened with regard to their capacity to undertake work that is relevant to the goals of the national JNSP activity and with regard to their ultimate ability to in turn strengthen other national and regional centre capacities.

7.3 In large countries where it is possible to involve a number of already established institutions, it may be possible for one of those institutions to assume a coordinative role in the research programme.

7.4 Where there are no existing institutions with experience in this type of inter-disciplinary research, every attempt should be made to identify individual scientists in those countries who can be brought together through an institutional framework for the purpose of undertaking JNSP activities.

7.5 All centres that are selected will receive initial support from WHO for research staff training, equipment, meetings and seminars and technical assistance. WHO will assume some responsibility for seeking additional support from national and international sources to continue the strengthening process.

7.6 Because the general area of research being proposed is a relatively new one, especially with regard to its inter-disciplinary nature, special attention will need to be given to the question of training in research design and research management. The selection of locations for the organization of training will depend upon the expertise available in potential training centres, experience with training programmes for international participants, and the indirect institution strengthening role that the training courses will provide for the training institutions themselves.

7.7 In this latter regard, two centres have been tentatively identified. At the University of Dar es Salaam in Tanzania, which is one of the JNSP countries, local training programmes have been held and a sound inter-disciplinary team of researchers and teachers is available. The University of Padua, together with C.U.A.M.M. (a non-Governmental organization funded by the Italian Ministry of Foreign Affairs for training of primary health care workers in developing countries), also has considerable experience in training programmes for public health in developing country situations. The University of Padua and C.U.A.M.M. have already initiated a programme of collaboration with the University of Dar es Salaam.

7.8 It is proposed that WHO, in conjunction with the JNSP Senior Management Group, explore the possibilities of using the already existing programmes of cooperation between the University of Padua and the University of Dar es Salaam as a basis for development of training of potential national investigators from different disciplines, with the necessary exposure to the types of research design and research operation management procedures required in multi-disciplinary research. Selection of participants for such training will be made jointly by WHO and the JNSP country authorities but will be dictated primarily by the relevance of the participants to the national research programmes. It is proposed that UNICEF join in this endeavour in order to make the training exercise as cost effective and programme effective as possible.

7.9 The duration of the WHO/JNSP research support in each of the countries selected will depend on the needs of each institution. In general, however, the support will be limited to periods of up to five years. It is hoped that the institutions will then be able to attract support from other WHO programmes through participation in research projects, by acting as coordinating centres for multi-site studies, by providing consultant services to other institutions in the country or region, and by offering training courses within the scope of interest of other programmes such as Control of Diarrhoeal Diseases, Human Reproduction and Tropical Diseases Research.

7.10 Throughout this process technical support will be drawn from established universities throughout the world so as to provide as broad a range of experience and approaches as possible. Consultants will be recruited on an ad hoc basis; it is hoped that meetings of a core group of consultants will be possible at the same time as meetings of the Review Group in order to:

- (a) monitor progress of research;
- (b) update information on research methods and findings from other countries and make this available to JNSP countries;

- (c) assist in the "translation" of findings from JNSP research to policy alternatives and themes that can be taken up in the country programme.

7.11 Wherever appropriate, national and/or regional multi-sectoral workshops will be organized at the end of all research activities in order to provide an opportunity for different sector staff to review the data and establish implications and priorities for programme application. It is anticipated that by providing such a mechanism for "public" access to research findings, it will be possible to demonstrate the feasibility of multi-disciplinary research and further strengthen the establishment and maintenance of the team within the framework of national health activities and programmes.

7.12 In all the above activities, it is proposed that the JNSP Senior Management Group coordinate WHO and UNICEF activities so that, as above, the most cost and programme effective approach be established.

## 8. REVIEW GROUP CONCLUSIONS AND RECOMMENDATIONS

8.1 The Review Group finds the research approach proposed for the study of "Factors Affecting Infant and Young Child Feeding and Rearing" to be scientifically very sound and highly promising. The methodologies proposed are flexible, providing wide latitude for countries to adapt them to local needs and resources. The Report of the December 1983 Meeting on Determinants of Infant and Young Child Feeding and Care, which was also presented as a background document to the Review Group, is felt to provide a common framework around which national research activities could be designed.

8.2 The Review Group further recommends that:

- (a) the selection of projects should ensure as broad a geographical, cultural and ecological representation as possible so as to permit application of findings in other settings than JNSP countries, and preference in funding support should reflect this feature as well as the priorities specified under Section 6.5;
- (b) although the resources available for the research programme will be stretched when 8-10 projects are funded, consideration should be given to the potentially significant impact this research will have for countries undertaking such activities, and, therefore, possibilities for expansion to other JNSP countries should, nonetheless, be vigorously explored;
- (c) in the development of all the proposals, the process of urbanization and changing patterns of child care and feeding should be given special attention;
- (d) as part of the research programme's institution strengthening role, a network of communications should be developed between JNSP countries and efforts made to make bibliographical sources and textbooks available to all participating countries;
- (e) technical cooperation between the research groups in the JNSP countries should be fostered vigorously through whatever means are appropriate, including joint review meetings, inter-country consultantships, and joint report writing;
- (f) members of the Review Group should always be involved in assessing country needs and strengthening national research activities and be part of national site visits when and where appropriate.

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