SEMINAR ON NUTRITIONAL PROBLEMS IN THE WEANING PERIOD

EM/SEM.NUTR.PROB.WEAN.PRD./OC.27

Addis Ababa, 3-15 March 1969

THE NUTRITIONAL PROBLEMS IN THE WEANING PERIOD IN JORDAN

by

S. Hijazi, M.D., M.P.H.+

Introduction

In most developing countries a variety of factors such as inadequate and unbalanced food production, low stage of economic development and hence the poverty of the population in general, lack of education, poor environmental sanitation, inadequate health services and warand immigration, contribute to the prevalence of malnutrition in its various forms. A country like Jordan is no exception.

Interest in Nutrition in Jordan was initiated by pediatricians in central hospitals and clinics dealing with children. Different symptons caused by lack of one vitamin or more were recognized by the pediatricians.

However the recognition of kwashiorkor and marasmus occurred in the early fifties. Protein Calorie Malnutrition (PCM) was first noticed amongst Palestinian Refugees children in Jericho Area. Later the interest was taken up by the Augusta Victoria Hospital

+ Head, Nutrition Division, Ministry of Health and on the staff of the Government Children Hospital, Amman - Jordan.

in Jerusalem and the Luzmila Hospital in Amman where refugee sick children were referred for treatment.

In 1958, when the Government Children Hospital was established in Amman, it became part of our routine work to see and treat cases of PCM. A report on the cases of PCM admitted to that hospital in 1959 was published in the Journal of Tropical Pediatrics (Dec. 1962).

The Present Nutritional Problem

The main nutrition problem in Jordan concerns infants and young children of the preschool age group. Protein malnutrition affects up to 12% of preschool children as a clinically demonstratable condition. In addition, 30 to 40% of children are undernourished and form the reservoir from which fresh clinical cases can appear at any time given the additional stress of infection which is a common hazard of life in Jordan. The WHO study completed in 1965 has revealed that about 8% of children of this age group suffer from clinical vitamin A deficiency (Xerophthalmia) and a large majority have a subclinical deficiency as indicated by the low levels of vitamin A in serum.

Causes of Malnutrition in the Weaning Period

The principal causes of malnutrition in the weaning age are a. inadequate and unsatisfactory feeding of children between the age of 6 months and two years, and b. respiratory and gastrointestinal infections. The two act synergistically and set up a vicious circle. It is however necessary to demonstrate that one can achieve the control within the framework of the existing basic health services

with the help of the nutrition Department of Health Ministries.

Inadequate and unsatisfactory supplementary feeding has its origin partly in the relative unavailability of nutritious foods suitable for infants, and partly in the local traditions and taboos which limit the use of even those foods which are locally available. Thus there are two aspects of the control programme which must be attended too simultaneously.

There is a strong probability of producing a suitable food mixture being developed now in Jordan, intended for supplementary feeding and would be available at a reasonable price.

The Present Picture of Weaning Nutrition in Jordan.

This subject will be illustrated by the results obtained from the Nutrition Survey on infants and preschool children in Jordan in 1962 and the Nutrition Survey carried on during the last three months of 1968 on the displaced persons in the Emergency Camps in Jordan.

The dietary findings of the first survey 1962 showed the following facts about the weaning nutrition in Jordan:

1. Fifty percent of the children were completely dependent upon breast milk up to the age of 4 months and 25 percent received nothing but breast milk until after 8 months of age. Ten percent were only receiving breast milk at one year of age.

Breast feeding was supplemented with "other milk" only in about 20 percent of the children by 4 months of age, in 12 percent at 8

months and in fewer than 5 percent at one year of age, solid foods began to appear in the diet of about 10 percent of the children at around 4 months of age. At 8 months 18 percent of the children were receiving solid food plus breast and other milk, and at one year 40 percent of the children were receiving solid foods and other milk in addition to breast milk. From the age of 4 months to one year a relatively consistent 8 to 12 percent of children were given solid foods in addition to breast milk.

Practically no children were completely "weaned" i.e. offered no breast milk, until after 3 months of age. At 4 months only 4 percent had been weaned; at 8 months, 15 percent; at 12 months, 25 percent, but not until between the 15th and 16th months had 50 percent of the children been weaned. Ten percent of the children were still receiving some breast feeding at 26 months of age.

Not until the 14th month did any convincing number appear to be transferred to a non-milk diet and only 10 percent failed to receive milk at the 17th month. At 5 years 60 percent of the children were receiving milk plus solid foods. At this age 40 percent received no milk at all.

In this study it was noticed that when one compares the weaning age of boys and girls it appears that there is a tendency to wean girls at a slightly younger age than boys. For example, 50 percent of the girls were weaned at about 14 months of age, 50 percent of the boys at approximately 16 months of age. Similarly, after 6 months of age there appeared to be a tendency toward slightly earlier weaning during the winter quarter and slightly later (about one month) weaning during the fall quarter. These differences existed from about the 6th months to about the end of the second year.

Children who were receiving solid foods in addition to breast milk showed tendency to be taller and heavier than those who did not receive such foods during the second 6 months of life.

For children between one and two years of age who have been weaned, there seems to be a slight advantage in growth for those receiving solid foods only over those receiving other milks as well as other foods. The difference tends to disappear about the end of the second year.

It appeared that children younger than 6 months of age who received solid foods were at least as well advantaged as those receiving breast milk only.

The dietary findings of the Second Survey (1968) regarding weaning nutrition were:

82.6 percent of males and 83 percent of females of the age group 1 - 6 years, were weaned at the age of 18 months for both sexes. And only 12% of males and also of females were still breast fed. Youngest among them was 13 months old and oldest was 24 months old. Average age for both males and females was 17 months. Only 2 percent of males and 1 percent of females were weaned at the average age of 6 months due to mothers' pregnancies. As for milk consumption, 61.4 percent of males and 61 percent of females had one cup of milk (100 cc) daily, most of whom drink it at kindergarten. 84 percent of both males and females got some solid foods during the weaning period and the next table shows percentages kinds consumed.

The Most Common Food Items[1] Given During the Weaning Period for Males and Females in the Displayed Persons Camps.

Food Item	No.	Percent
Milk	45	53
Rice	20	24
Cooked vegetables or just sauce	18	21.4
Apples and / or bananas	15	17.8
Biscuits	15	17.8
Boiled potato	14	16.6
Tea	11	13
Eggs	10	12
Raw tomato	10	12
Laban	9	10.7
Bread	6	7
Meat or just gravy	5	6

It is to be noted that no differentiation was noticed or registered between boys and girls in the many interviews and dietary findings made, as that felt in the 1962 Survey.

These children were very poorly fed during the weaning period due to (a) lack of main nutrients, (b) ignorance of mothers concerning importance of feeding after weaning. Many mothers believe that if the weaned child is receiving milk, then there is no need to feed him any other food. (c) shortage and lack of common foods and accommodations in the camps. The low percentage of other items consumed, compared to the highest percentage of milk given, not

only proves the above mentioned point but displays the poor feeding pattern also - in most cases one item of the whole list would be given to the weaned child. Many would survive all through several weeks (not less than 5 weeks) on mashed apples and bananas, or rice or dried chickpeas, or starch or only biscuits. Also a few mothers had to wean their children since the former had not any more breast-milk to feed her child because the mothers themselves did not have much to eat. Accumulation of these points let these children subject to infection associated together with malnutrition.

School children of the age groups 10 to 13 years believed that they were too old to be offered milk at school, also they showed their disgust of the powdered milk, offered in the liquid form to youngsters at school by UNRWA, and not offered to those older than 10 years. This shows the importance of having public health education at schools (boys and girls) so students would get acquainted with the nutritional value of foods.

MCH Centres Activities in Jordan For the Year 1965

No. of MCH Centers in 1965 - 38 Centers	
No. of Pregnant Women registered at MCH centers	24241
No. of Pregnant Women who came for consultation	5595
No. of childbirths at home	389
No. of home visits to lactating women	307
No. of mothers who registered after parturition	1560
No. of registered children of the age group 0-1 year	7219
1-5 years	5193
No. of children who came for consult of the age group 0-1 year	11977
1-5 years	14626
No. of children vaccinated against smallpox and tripple vaccine	1082
No. of home visits to children of the age 0-1 year and 1-5 years	1973

Annual Report of the MCH Services for the Years 1965 and 1967+

Classification	Children				Mothers			
	0 - 1 year		1 - 6 years		Antenatal		Postnatal	
	1965	1967	1965	1967	1965	1967	1965	1967
Those who paid regular visits to the centers	67739	53779	71720	53913	32737	36968	436	597
First visit to the center	5853	9298	3476	4160	8347	9141	281	349
Second visit to the center	80261	41651	70765	42569	28705	20578	333	704
Examined by the Medical Doctor	26458	21475	24089	19260	20304	17097	824	997
Weak and Malnourished Children	12249	7377	11711	7393	1031	798	52	26

Smallpox Vacc.			Triple Vacc.		Polio Vacc.	
	1965	1967		1965	1967	1965	1967
1st vacc.	549	10326	1st dose	3120	3711		13537
Revacc.	119	2688	2nd dose	2756	3235		4186
Other vacc.	16	—	3rd dose	2378	2926		
			booster	—	336		727

Hemoglobin	Determinations	
	1965	1967
Hb above 70 %	3104	3658
Hb below 70 %	2454	2015

+ Services done in the West Bank of Jordan are included only in the first 3 months of 1967.

(Cont'd) Annual Report of MCH Services

	1965	1967*		1965	1967*
No. of assistants trained at the center	68		No. of monthly childbirths at home	2474	2004
No. of practical midwives trained at the center	1290		No. of home visits to expecting mothers	8082	6665
No. of class demonstrations illustrated at the center	6246	4994	No. of home visits to lactating mothers	21005	14499
No. of mothers who attended the class demonstrations	110387	73925	No. of home visits to children	31170	20229

* Services done in the West Bank of Jordan are includedonly in the first 3 months of 1967.

Total Monthly Expenditures, 1965

Food Item	Unit	Amounts Purchased Monthly	Amounts Consumed Monthly	Amounts leftover Monthly	Average No. of Beneficiaries		
					0 - 1 year	1 - 6 years	Mothers
Whole Milk	kg	27202,5	26029	1173,5	8371	4077	188
Skimmed Milk	kg	69701,5	64932	4769,5	19464	36791	7557
Cod liver Oil	1 pill	41578	28069	13509	337	268	634
Calcium lactate	1 pill	28198	17491	10707	51	230	625
Iron Sulfate	1 pill	168823	116344	52479	21	242	2545
Multivitamin	1 pill	442273	229723	212550	9197	9883	12234

Statistical Data+

1. Death rate for the whole population in Jordan for the year 1961 is 18 per 1000.
2. Average number of reported deaths of children below 5 years of age is 6799 for the years 1959 / 63.
3. Average number of deaths of children under 5 years revised for 66.7 percent of underregistration, 1959 / 63 is 11334.
4. Children of age group below 5 years in 1961 Census revised for underregistration is 310345.
5. Deaths per 1000 for children below 5 years is 36.52 for the years 1959 / 63.
6. Probability of dying in the age group 0 - 12 months is 116 per 1000.
7. Probability of dying in the age groups 1 - 4 years is 58 per 1000.
8. Crude birth rate as calculated from births reported during the years 1959 / 63 is 45 per 1000 for the whole population.

Frequency of Malnutrition in Jordan

Frequency of treating malnourished cases in hospital will be illustrated in two reports for the years 1959 and 1962. The first report deals with the protein calorie malnutrition status in Amman (Pharoan, 1962) where 28% of total admissions to the Children Hospital were suffering from PCM.

+ From the Hashemite Kingdom of Jordan, Departments of Statistics, Analysis of the Population, Statistics of Jordan. Prepared by the Demographic Section under the supervision of Dr. Hilde Wander, U.N. Demographe, Volume I, Amman 1966. Dept. of Statistics Press.

In the second report, the total number of admissions to the Children Hospital during 1965 was 1131 cases, out of which 195 cases (17%) were suffering from malnutrition:

Total Calorie Malnutrition	29 cases
Protein Calorie Malnutrition	166 cases

These cases were almost evenly distributed in accordance with their residency areas: 50.7% were from urban areas and 49.3% from rural areas.

Socio - Economic Status:

181 cases belonged to families of low socio - economic status, 6 cases were illegitimate - referred from the Baby Home in Amman, and 8 cases belonged to families of fair socio - economic status.

Accompanying or Precipitating Factors:

out of total number of admissions:

122 patients had acute gastroenteritis
34 patients had respiratory infections
18 patients had otitis media
5 patients had measles

Age Incidence	No. of cases
1 - 3 months	34
4 -11 months	78
1 - 4 years	75
5 - 9 years	8

Mortality in Relation to Age	Death Percent per Age
1 - 3 months	50 %
4 -11 months	34.5%
1 - 4 years	28 %
5 - 9 years	37.5%

Sex Distribution:
Boys 41%, girls 59 %

Hospitalization

The 1965 report shows a drop of 11% in the number of PCM cases compared to that of 1959 report. In contrast to the referrals in 1959, those referred in 1965 were recognized by the referring physician as cases of malnutrition for the great majority of them.

Data on frequency of malnutrition in outpatient clinics is limited although evidence of the increasing numbers of PCM cases after 1967 War is at hand. In the Government Pediatric Clinic, in the year following the War, 197 cases of PCM were treated, compared to 72 cases only in the year before.

Data on frequency of malnutrition is illustrated by statistical figures in the 1962 Report and the 1968 Nutrition Survey carried out in the displaced persons camps upon the request of the World Health Organization. The 1962 Survey showed definite presence of malnutrition as revealed in the weight - height patterns, dietary findings, low vitamin A and Carotene levels, low riboflavin excretion, anemia and clinical symptoms of marasmus, prekwashiorkor and kwashiorkor. The most impressive clinical finding was that in every district, marasmus and prekwashiorkor were diagnosed clinically, occurring within

1.2 to 6.1 percent of boys and 3.5 to 12.1 percent of girls examined. Kwashiorkor was diagnosed in 0.4 to 1.2 percent of children in all districts.

The findings of the last survey showed definite presence of malnutrition as revealed by clinical, dietary and hematological data. The most impressive findings were the presence of prekwashiorkor in high percentages especially in the age group 0 - 12 months.

Marasmus was present in 2.6 percent of the age group 0 - 1 year, while prekwashiorkor was present among 25 percent of the same age group, in 10 percent of the same age group.

Hemoglobin and hematocrit levels were low or deficient in 75 percent of children in the age group 0 - 3 years.

In general the environmental conditions of the displaced persons donated poor hygiene as exemplified by the high prevalence of acute conjunctivitis, scabis, pediculosis and flea bites.

Objectives of a Nutrition Programme in Jordan During the Weaning Period.

1. To control protein malnutrition and vitamin A deficiency in infants and preschool children through (a) provisions of appropriate supplementary foods at health centers, b. educating the mothers at health centers, about malnourished children, thus preventing the latter from developing into probable hospital cases.

2. To collect data about normal patterns of growth and physical development of healthy Jordanian children.

3. To collect information on the physiological and biochemical characteristics of healthy and malnourished Jordanian children including the trace elements status.

4. To continue the study of dietary and food habits of the Jordanian population.

5. To assist the Jordanian Government with analytical checks on the fortification programme of certain foods stuff: flour fortified with vitamins and iron, and edible vegetable, fat with vitamin A.

Development of Protein Rich Formulae

An important and practical approach for supplying the required amounts of dietary protein in areas where animal protein is expensive and not much available, would be through the development of vegetable protein mixtures. This approach is illustrated in the development of Incaparina in Central America, Multipurpose foods in India, Laubina in Lebanon and others. Their mixtures are intended for supplementary feeding of infants and young children of low socio - economic classes.