Food and Nutrition in PHC Programme - M Bac

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Curriculum vitae

Martin Bac qualified as "Arts" in Holland in 1975 and after a few years of hospital experience in his home country, he came to the Gelukspan Community Hospital (Bophuthatswana) in 1977 as Medical Superintendent. During his time at Gelukspan he received a M Prax Med, as well as a MD from Medunsa. In 1988 he moved to Pretoria and became the Director of the Nutrition Institute at Medunsa. Martin's main interests are primary health care and nutrition and he has published scientific articles in this field. He is married to Mies and they have 4 sons.

Summary

Nutrition plays an important role in the etiology of many health problems in developing as well as developed communities - in maintaining health as well as in the treatment of diseases. The promotion of food supply and proper nutrition are amongst the basic activities in primary health care programmes, and it also involves agriculture, animal husbandry, food industry and the community itself. Health workers need a good knowledge of applied nutrition for the management of the health problems of the individual patient and of the community.

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Nutrition; Diet; Nutrition Disorders; Primary Health Care.

Introduction

The promotion of food supply and proper nutrition are among the basic activities in PHC (Primary Health Care) programmes. As a result, it involves not only the health care sector, but also agriculture, animal husbandry, food industry and last, but not least, the community itself.

Nutrition plays a significant role in the etiology of the major health problems of developing as well as developed communities. Together with lifestyle and the environment in which people live, nutrition is one of the major determinants of health and disease in the individual person, the family and the community at large.

Several of the minimum norms for Health for All are a direct reflection of the food availability and the nutritional status of a community eg at least 90% of newborn infants have a birthweight of at least 2 500g and at least 90% of children have a weight-for-age that corresponds to the reference values.[1]

All guidelines and strategies to promote health include recommendations on healthy nutritional practices, eg promotion of breastfeeding, food enrichment programmes to avoid common deficiencies, reduction in the intake of saturated fats, increase of dietary fibre, and others.

Nutrition intervention programmes should form an integral part of PHC. Cost-effective low technology strategies are available and effective in Southern Africa.

Food Supply

The supply of food has declined in many African countries and the same applies to the real per capita income. According to Unicef,[2] the local food production in sub-Saharan Africa fell by 7% during the 1960s and 25% during the 1970s, climaxing in the disastrous crop failures of 1983 and 1984. Food imports have increased ten-fold during the two decades. In 1975, food production in sub-Saharan Africa fell below what is considered by the FAO (Food and Agricultural Organization) as the minimum for a healthy diet - 140 kilograms of cereals per capita per year. In 1984, production is estimated to have slipped below 100 kilograms per capita. Even without the drought, the expected production would have declined to the 100 kilogram mark in 1988, based on current trends.[3] The production of food in South Africa since 1950 is summarised in Table 1.

... Food and Nutrition

The average consumption per capita of the most important foods is shown in Table 2. One should keep in mind that these are average figures for the population as a whole and one can safely assume that we find in South Africa the same pattern as elsewhere in the world, namely an excess intake of energy and fat in the developed communities, while in the developing communities, many live below the poverty line on marginal diets. The high prevalence of coronary heart disease and protein energy malnutrition are some of the consequences of the different diets.

Since 1950 there has been a decline in the consumption of grains and red meat but a marked increase in the consumption of vegetables, fruits, dairy, chicken, and fats and oils.

The average consumption per capita compares very well with the recommended daily intakes.[4] The average energy intake per capita is 9 500 kJ/day. Fats and oils (55g/day) contribute less than 25% of the energy and half of it in the form of vegetable oils. Protein intake of animal and vegetable origin amounts to 70g per day and contributes about 12,5% of the calories. Cereals (350g/day) and sucrose (100g/day) make the biggest contribution to the total energy intake.

Nutrition

Mother and child health services form one of the most important activities in the PHC programmes because fertile women and children form such a big part of the population in developing countries. The other reason is that they consist of two vulnerable groups with a high morbidity and mortality, often due to nutrition-related problems.

The biggest challenges in this field are a reduction of the high prevalence of low birthweight, prevention of growth failure and protein energy malnutrition, while in the pregnant and lactating mothers, anaemia forms a significant problem.

Health for All-norms reflect directly the nutritional status of a community

A number of simple cost-effective strategies are available to prevent or alleviate these problems, namely:

- antenatal care (maternal weight gain)
- prevention of anaemia by routine supplementation of all pregnant women with iron and folic acid
- fetal growth monitoring with fetal growth charts
- identification of fetal growth retardation and intervention by treating the cause, eg anaemia, UTI, hypertension
- active promotion of the early establishment of breast-feeding after delivery (importance of colostrum)
- to supply each and every baby with a Road to Health Card on discharge from the clinic or the maternity ward
- regular *monthly* weighing and growth monitoring during the first 2 years of life, thereafter 2-3

Table 1: The Production of food in South Africa 1950-1987 (1 000 Tons)

	1950	*1960*	*1970*	*1980*	*1987*
Grains	2 278	5 433	7 988	11 620	10 789
Vegetables	689	1 081	1 664	2 674	2808
Fruits	509	963	1 485	2 033	2 239
Dairy	1 793	2 675	2 775	2 798	2 654
Meat	569	563	691	878	787
Fats & Oils	25	57	96	260	150
Eggs	48	75	106	166	170
Sugar	509	954	1 399	2 126	2 263
Beans & peas	59	71	57	84	92
Peanuts	61	142	218	241	91
Mabella beer	674	927	825	1 059	932
Chickenmeat	32	42	116	430	549

Source: Department of Agricultural Economics and Marketing, RSA.

Table 2: The average per capita consumption of the most important foods in South Africa (Kg/Year)

	1950	*1960*	*1970*	*1980*	*1987*
Grains	156	153	154	149	126
Vegetables	41	55	65	75	70
Fruits	21	30	36	32	36
Dairy	67	78	61	54	45*
Meat	48	37	36	30	25
Chickenmeat	2,3	2,4	5,2	13	16
Eggs	3,3	3,7	4,1	5,0	4,6
Fats & Oils	1,2	2,6	4,0	5,8	6,9
Sugar	34	38	36	37	37
Beans & peas	3,6	3,1	2,2	2,6	2,4
Peanuts	0,5	2,8	1,2	1,9	1,4
Mabella beer	50	54	37	34	26

* The consumption of fresh milk has decreased from 62 kg/year in 1950 to 33 kg/year in 1987 but the use of condensed and powdered milk increased from 3,6 kg/year in 1950 to 10,7 kg/year in 1987, so the real intake of milk has increased and not decreased.

Source: Department of Agricultural Economics and Marketing, RSA.

monthly weighing up to the age of 5 years

- supplements of iron and Vit D, especially for low birth weight babies and children with poor weight gain
- active intervention and treatment of growth failure with informed involvement of mother
- education on correct weaning mixes and practices
- growth protection by prevention of infectious diseases especially measles, diarrhoeal disease (DD) and whooping cough
- use of ORT (Oral Rehydration Therapy) during episodes of DD
- early introduction of feeding after infections and other illnesses
- provision of supplements (multivitamin syrup, milk powder, legumes, PVM) for children with PEM while the cause of their PEM is assessed and treated
- megadose treatment with Vit A for all children with signs of xerophthalmia, or protein energy malnutrition (PEM) (200,000 IU orally and repeat after 1 day and 1 week).
- careful monitoring of all PEM cases, eg take better history, examine child, weigh more frequently
- family spacing.

None of the abovementioned activities need a high level of training, expensive equipment, or difficult clinical assessment. All health workers in clinics, outpatient departments and private general practice can easily implement these activities.

For those mothers and children who do not respond satisfactorily to this approach, further investigation in a hospital is indicated in order to establish the possible cause of treatment failure eg TB, urinary tract infections, etc.

Primary health care workers should also have the knowledge and skills to prevent, diagnose and treat other common nutrition-related problems,

Nutrition intervention programmes should be an integral part of PHC

such as hypertension, obesity, hypercholesterolaemia, diabetes mellitus, constipation, peptic ulcer and spastic colon.

The following recommendations are universally applicable and are aimed at a reduction in the prevalence of these problems as well as certain forms of cancer, eg colon and breast cancer.

- fibre intake should be 20-30g/day
- total fat intake should be <30% of calories

- intake of saturated fatty acids should be <10% of calories
- transfatty acids should be limited
- intake of polyunsaturated fatty acids should not exceed 10% of calories
- cholesterol intake should be <300mg/day
- salt intake be limited to 3g Na/day
- alcohol intake be limited to 10-20g/day (50ml of ethanol)
- a normal weight (body mass index between 20 and 30) should be maintained by exercise and controlled food intake
- the intake of a variety of fresh unrefined foods with a high fibre content should be encouraged.[18,24]

Sir Richard Doll (1982) summarised it as follows:[15]

"Whether the object is to avoid cancer, coronary heart disease, hypertension, diabetes, diverticulitis, duodenal ulcer, or constipation... the type of diet that is least likely to cause disease is one that provides a high proportion of calories in whole grain cereals, vegetables and fruits; limits the intake of fats and, if oils are to be used, gives preference to liquid vegetable oils; includes very little dairy products, eggs and refined sugar; and is sufficiently restricted in amounts not to cause obesity."

Low birthweight, protein energy malnutrition, coronary heart disease, hypertension (and its complications), diabetes mellitus and breast cancer are all common diseases in the RSA and cause much suffering and high mortality rates in different age and population groups.

Table 3 gives a summary of the most important causes of death in 1984 in the RSA.[16]

This table gives only an overview of the mortality pattern and does not show that ischaemic heart disease forms more than fifty percent (50%) of the circulatory deaths in Whites and Asians, while cerebrovascular disease is the leading cause in Coloureds and Africans.

There is recent evidence[10,11,23] that different intervention strategies can have a significant impact on most nutrition-related problems. With a change in approach and much greater emphasis on prevention and health promotion, impressive results have been achieved abroad and locally. As a rule, combinations of health and nutrition interventions have been more effective than single interventions.

Maternal weight gain during pregnancy is related to the energy intake of the mother and has an effect on the birth weight of the newborn.[5,6] Food supplementation programmes in areas with high prevalence of LBW (Low Birth Weight) have been effective and resulted in better maternal weight gain, lower percentage of LBW babies and higher mean birth weights. The effect was only significant if enough extra calories were given and in the Guatemala study,[6] at least 20,000 extra calories

Table 3: Major Causes of Death in South Africa (1984)

Cause of Death	*Whites*	*Asians*	*Coloureds*	*Africans*
Neoplasms	++++	++	+++	++
Endocrine, nutritional and metabolic	+	++	+	+
Circulatory	+++++	+++++	++++	+++
Respiratory	+++	++	+++	++
Infectious/parasitic	+	+	+++	++++
Perinatal	+	+	++	++
Non-natural	+++	+++	++++	++++

Source: MRC (1987) = Review of South African mortality (1984)
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\+ <5%
++ 5-10%
+++ >10%
++++ >15%
+++++ >30%

were necessary to produce a significant reduction in the prevalence of LBW.

In an Indonesian study,[25] 10,000 extra calories were necessary to produce an increase of 50g in the baby's birthweight. This illustrates the inefficient conversion rate, and most of the extra calories are utilised by the mother. Food supplementation in expectant mothers is, however, indicated if the daily energy intake is low (below 1 600 Cal) and results in poor maternal weight gain during pregnancy. The same applies to food supplementation for lactating mothers.

Prentice[7] found that Gambian women were able to produce breastmilk which compared very well as far as quantity and quality are concerned with British mothers, during the dry season, on a diet which contained only 1 700 Cal per day. In the wet season, lactating mothers consumed only 1 200 Cal per day and as a result they lost weight and they produced less milk with a decrease in the concentration of all nutrients measured, with exception of lactose.

Antenatal care can make a significant contribution to the outcome of pregnancy and reduce the perinatal mortality.[8]

Kennedy[9] has shown that the use of graphs to monitor maternal weight gain and fetal growth are very helpful to identify high risk pregnancies and fetal growth retardation at an earlier stage when intervention is often possible. In a rural community, he achieved very good results with this new approach. Others suggest using the combination of arm circumference and uterine height to prevent LBW.[17,18]

As far as healthy feeding practices are concerned, health workers can play a very important role in the promotion of breast-feeding. Several studies have shown the negative effects of certain hospital practices on the establishment of successful breast-feeding. Doctors and nurses especially in obstetric and paediatric wards, can do much to protect the newborn from the hazards of bottle-feeding by informing the mothers about the advantages of breast-feeding, eliminating harmful practices such as separating the newborn baby from the mother, offering of the bottle, and giving of free samples of breastmilk substitutes.

Several hospitals in this country have managed to remove feeding bottles altogether from the obstetric and paediatric wards. Breastfeeding is the routine and natural way to feed small infants and breastmilk substitutes are only prescribed in a few selected babies.[10]

Cup and spoon feeding is practical even in low birthweight infants who get expressed breast milk. Simple measures like these can help to instill healthy feeding and weaning practices in the community.

The role of nutrition in disease needs to be taught systematically to all students

Several nutrition and health intervention programmes in different countries have shown to be effective in reducing infant and child mortality in the past few years.[6,10,12,23]

Unicef's GOBI-FFF strategy to improve child survival in the developing world is also a combination of health and nutrition interventions. Unicef's claims that this programme can reduce infant and child mortality have been confirmed in this country. In a rural district this approach proved highly effective, not only in improving child survival, but also in reducing childhood morbidity, hospital admissions and marked improvements in the nutritional status of newborns and under-5 children were measured. The case fatality rate in the paediatric wards has declined from about 10% in 1976 to 2% in 1987.[10,13]

At the same time, there is renewed interest in the role of nutrition in the highly developed countries and communities, the main reason being the high prevalence of coronary heart disease, hypertention, cerebrovascular accidents, diabetes mellitus, breast and colon cancer.

All these illnesses have high mortality rates, even among the middle-age groups. Other common problems such as constipation, spastic bowel syndrome, hemorrhoids, obesity, osteoarthrosis are all related to and influenced by a person's diet and weight. It is very encouraging that there is recent evidence that dietary changes and changes in lifestyle can prevent and delay the occurrence of these diseases and lead to a reduction in mortality rates as has been shown for ischaemic heart disease[14,20,21,22]

The mnemonic for this approach is SAFE* and is seen by the WHO as one of the most important ways of improving the health status of the developed communities and to achieve a reduction in the prevalence of diet and lifestyle related diseases. Just like the GOBI-FFF strategy in developing communities, this approach also needs social marketing, community involvement and coverage of the whole population in order to be effective and show a demonstrable impact.

* *SAFE is the mnemonic for stop Smoking, reduce Alcohol intake, healthy Food and increased Exercise.*

... Many common problems in affluent communities are directly related to the person's diet and weight.

Conclusion

Nutrition plays a vital role in maintaining health as well as the treatment of many common major diseases. Doctors, nurses and other health workers need a good knowledge of applied nutrition and its application in the management of the individual patient and the community's health problems. The British Nutrition Foundation recognised that very little nutrition was taught to medical students either at undergraduate or postgraduate level and that it was rarely presented in a systematic way. It was recommended that teaching on the role of nutrition in disease begins at pre-clinical level and continues throughout medical training with emphasis on the practical applications of nutrition and prevention and treatment of disease and in the promotion of health in the individual and the community.[19]

It seems to me that these

recommendations are relevant for the training of health professionals in South Africa too.

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