

VITAMIN K

Coagulation vitamin

Vitamin K activity is shown by vitamin K₂ vitamin K₁ and menadione. Menadione is at least three times as potent as vitamin K.

Measurement:-

In mgms or mcg - ability to prevent haemorrhage in young chick. Menadione is used as standard.

Physiology:-

Vitamin K is necessary for production to prothrombin which is converted to thrombin which is itself necessary for formation of fibrin. Bile salts are essential for absorption. Storage is negligible, but most of it is stored in liver.

Daily allowance:-

Is not yet established. May be 1 - 2 mg.

Sources:-

Green leaves of alfalfa, spinach, cabbage, cauliflower pork liver.

Bacterial action in intestine responsible for synthesis of vitamin K. is body.

Deficiency:-

Generally not known. In a new born infant vitamin K in intestines is not established for a week or so following birth, therefore infant is susceptible to haemorrhagic disease. To prevent this vitamin K 1 mg per day is given to pregnant women during the last month of pregnancy. Deficiency may also result from oral therapy with sulphur drugs and antibiotics over a prolonged period, because they interfere with intestinal flora. Severe diarrhoea, sprue, coeliac disease, severe ulcerative colitis interfere with absorption of vitamin K leading to tendency for haemorrhage. When there is insufficiency bile salts, menadione is administered with bile salts.

Vitamin K administered during liver damage is ^{futile} ~~futile~~ because absorption then is adequate.

Introduction:-

A polish chemist Funk, first coined the term "Vitamine", thereby meaning Vital amines. The final 'e' was soon dropped. Vitamins now describe a group of patient organic compounds other than proteins, fats and carbohydrates. They occur in minute quantities in foods and are essential for some specific body functions of maintenance and growth.

Classification:-

1. Water soluble vitamins,
2. Fat soluble vitamins.

Measurements:-

nature
Before the chemical/of vitamins was discovered, potency was measured only by their ability to promote growth or to cure a deficiency when test dose were fed to experimental animals. Thus measurements is known as 'bioassay' and is expressed in terms of units. Vit. A & D are still measured in international units i.e. I.U. Other vitamins are measured by 'chemical assay' and expressed in milligrams or micrograms i.e., mg or mcg. $1 \text{ mg} = 1000 \text{ mcg}$ or μg . "Microbiologic assay" is that method by which vitamins are measured by their ability to promote growth of microorganisms.

Supplementation:-

Of diet with vitamins is essential when:-

1. a diet is severely deficiency in vitamins through ignorance or poor eating habits.
2. during growth, pregnancy and lactation.
3. when absorption is impaired.

Fat soluble vitamins.

VITAMIN A

Vit. A was the first fat soluble vitamin to be discovered. In some ways, it is related to chlorophyll i.e., the green colouring matter of plants. Carotene which is a precursor of Vit. A, occurs abundantly in the dark green vegetables and in yellow vegetables and fruits.

Characteristics:-

In its pure form Vit. A is a pale yellow crystalline compound which occurs naturally and can also be synthesized chemically. It is soluble in fats but insoluble in water. It is relatively stable to heat, acids and alkalies but is easily oxidized. Oxidation is prevented to a great extent by Vit. E. The ultimate source of all vitamin A is in carotene which is synthesized by plants and converted to vitamin A by man.

Measurement:-

Is done by biological assay and chemical assay and expressed as International units. I. I.U = Vit. A activity of 0.344 mcg of pure vitamin A acetate.

Physiology:-

Vit. A is more rapidly absorbed than carotene. Bile is essential for absorption of carotene but not of vit.A. Absorption is facilitated by fats. Once absorbed, ^{it enters thoracic duct via lacteals} and finally empties into general circulation.

Factors:-

Interfering with fat absorption will also interfere with absorption of vit. A. e.g., mineral oils taken immediately after meals. Body has a great capacity to store vit. A. 95% of vit. A is stored in liver.

Functions:-

1. All vitamins are essential for growth. Vitamin A is specially needed for skeletal growth and normal tooth structure.
2. Maintenance of normal vision in dim light vitamin A and protein - Rhodopsin (Visual purple which is essential for vision in dim light). Visual purple and light - retinene and protein vitamin A is essential for complete and rapid regeneration of rhodopsin

deficiency. i.e., Nyctalopia - inability to see well in dimlight eg., on entering a darkened theatre. For ^{diverse} this is a great hazard. Rests are dark adaptation test with biophotometer, blood carotene and ~~ixt~~ vitamin A level apart from dietary history,

2. Epithelial changes: are marked throughout the body. Shrinking, hardening and degenerations of cells, i.e. Keratinization. Susceptibility to infections is thereby increased. Mucous membranes of eyes nasal passages, middle ear, lungs, and genitourinary tract are affected.

Skining changes - skin becomes dry, rough, scaly, Keratinized epithelium - plus sebaceous glands, to cause goose - pimple like follicles, appear on forearm, thighs, buttocks, shoulder, back and abdomen.

Eyes:- may be affected varying from mild to severe and irreversible changes. Photophobia, itching, burning, inflammation of lids, dryness of eye and eyelids from impairment of glands i.e. ^{lacrymal} ~~keynmal~~ Xerophthalimia may result. Cornea is dry, inflamed, Oedematous leading to ulceration. Absence of lacrymal secretion favours infection. Finally Keratomalacia sets in with permanent blindness.

Prevention and treatment:-

1. recommended daily allowance necessary.
2. remove or cure conditions interfering with effective utilization of food.
3. prescribe therapeutic dose of vitamin A i.e. 25,000 to 50,000 I.U. daily.

Hyperitaminosis:-

May be due to ⁱⁿ digestion of an excess of 50,000 I.U. over a prolonged period causing:-

1. loss of appetite.
2. Dryness and cracking of skin.
3. Swelling and pain in long bones.
4. Bone fragility.
5. Enlargement of ^{liver} ~~Givert~~ spleen.

3. Vitamin A is essential for integrity of epithelium especially of mucous membrane which line eyes, mouth, glands, gastrointestinal tract and genitourinary tract.
4. In experimental animals normal reproduction and lactation cannot take place without vitamin A.

Daily allowances-

3000 I.U. of Vit. A	for adults
6000 "	of carotene
1500 "	for infants
5000 "	for children
6000 - 8000 I.U.	for pregnancy and lactation.

Food sources:-

Green leafy vegetables:-

e.g. Spinach, turnip, tops beet, greens.

Yellow vegetables:-

e.g. carrots, sweet potatoes, pumpkin.

Yellow fruits:-

e.g. Apricot, peaches.

Animal sources:-

e.g. Fish liver oils, milk, butter, fortified margarine, whole milk cheese, liver egg yolk.
1 Egg provides 1/10th daily allowance.

Retention of food value:-

Vitamin A is stable at usual cooking temperatures. Long, slow cooking is detrimental to vitamin A. Simly - dehydration and rancidity of fat affect it adversely.

Canned and frozen foods retain vitamin A value for 9 months or even longer.

Deficiency:-

Of vitamin A result from inadequate intake, faulty absorption eg. chronic diarrhoea, sprue, liver disease, pancreatic dysfunction and use of mineral oil immediately after meals eg. liquid paraffin.

Symptoms:-

1. Night blindness: is one of the earliest signs of vitamin A

VITAMIN D

Vitamin D is chemically a distinct sterol compound possessing antirachitic properties. In pure form it is white, odourless crystal, soluble in fats and fat solvents, but insoluble in alkalies and oxidation. ^{It is stable to heat, acid}
↓
water

Precursors:-

1. Vitamin D₂ (Calciferol) is found in plants.
2. Vitamin D₃ (Activated 7) dehydrocholesterol occurs in fish liver oils and develops in skin on exposure to ultraviolet rays.

Physiology:-

Man can synthesize provitamin D₃ in the body. Activation takes place in the skin on exposure to U.V.R. Vitamin D₃ from skin and vitamin D₂ from diet are stored mainly in liver. Body conserves vitamin D carefully.

Measurement:-

Rachitic rats are used. They are borne of rat mothers fed rachitic on diet. They are also fed rachitic diet. No calcification takes place at ends of long bones. Then measured amount of vitamin D is fed for 7-10 days to produce a good calcium line in ends of long bones. This is calcium line test.

1 I.U. of vitamin D = activity of 0.25 mcg of pure crystalline vitamin D.

Functions:-

Vitamin D regulates absorption and anchorage of calcium and phosphorous by:-

- (i) rendering intestinal mucosa more permeable to calcium salts and also
- (ii) by regulating level of alkaline phosphate in serum thereby governing deposition of calcium phosphate in bones and teeth, i.e., maximum utilization of calcium is assisted.

Daily allowances:-

Need is small for adults. Those not exposed to sufficient sunlight, adolescent children, pregnant and particularly the Muslim women who observe purdha system, lactating woman, premature infant and also underdeveloped infants need 400 I.U. of vitamin D for building of new skeletal tissue.

Sources:-

Natural foods are poor sources of vitamin D. Small amount is present in egg yolk, liver, and fish egherring, sardine, tuna and salmon fish liver oils, cold liver and halibut oil also contain vitamin D. Sunlight cannot always be depended upon to supply the body with adequate U.V.R. for synthesis of vitamin D. Because, these rays are easily strained out by dust, fog, smoke, clothing and ordinary window glass. Fortification of milk i.e. 400 I.U./quart of milk could be an ideal solution because milk is consumed by growing children and because it contains calcium and phosphorus whose utilization it favours.

Deficiency:- Occurs where there is prolonged insufficient intake of vitamin D or in dark, overcrowded section of cities where sunshine cannot penetrate through fog, smoke, and soot. Dark skinned individuals are more susceptible than those with white skin.

Manifestations are:- 1. Rickets, 2. Tetany, 3. Dental caries, 4. Osteomalacia.

Rickets:- Deficiency of vitamin D, ^{due} to inadequate absorption of calcium ^{and} phosphorus from the intestine. Thereby faulty mineralization of bone and tooth structures results. Thus, the inability of soft bone to withstand stress of weight leads to skeletal malformation.

A fully developed case of ricket shows:-

1. Delayed closure of fontanelles softening of skull, i.e., cranobabes bossing of the forehead hotcross bun.
2. Soft fragile bones which are widened at ends of long bones. Bowing of legs and enlargement of costochondral junction results in rows of knobs resembling beads:- called ^{Rickety} Rectific rosary. Projection of the sternum produces pigeon breast. There is also depression of ribs and narrowing of pelvis apart from kyphosis.
3. Enlargement at wrists, ankles and knees may be manifested as knock knees.
4. POORLY developed muscles and lack of muscle tone produces. (pot belly formation). There is also delayed walking.
5. Restlessness and nervous irritability.
6. Low ~~inorganic~~ ^{inorganic} blood phosphorus with high serum phosphatase.

II Tetany:- Results from abnormal calcium ^{phosphorus} and ~~poor~~ ^{poor} metabolism due to

- i. failure of absorption of calcium or vitamin D.
- ii. insufficient dietary calcium and vitamin D.
- iii. from disturbance of parathyroids.

Symptoms:- Short flexion of wrists and ankle joints, muscle twitching, cramps and ~~convulsions~~. *convulsions*

Treatment:- Calcium for acute spasms liberal diet in calcium and vitamin D. concentrate.

III Dental carries:- Delayed ^{dentition} ~~dentition~~, malformation of teeth and predisposition of dental carries.

IV Osteomalacia:- Is adult rickets which results from failure of calcification in respect of other metabolic processes. Caused by lack of vitamin D and calcium. Also, possible when there is interference with fat absorption. One third of cases may be due to inherent resistance to vitamin D.

This is specially common in our women who are pregnant or lactating and who are indoor most of the time, also among Muslim women who observed 'purdha'.

Symptoms:-

- i) softening of bones - so severe as to produce deformities specially in bones of legs, spine, thorax and pelvis.
- ii) pain of rheumatic type in bones of legs and lower part of back.
- iii) general weakness specially difficulty in climbing ~~stairs~~ stairs, patients have haswaddling gait.
- iv) spontaneous multiple fractures.

Treatment:- High protein and high caloric diet. Therapeutic doses of vitamin D.

Hypervitaminosis:- Nausea diarrhoea weightless, ^{polyuria} ~~polyuria~~ nocturia, fatigue, renal damage, calcification of soft tissues, eg., heart, blood vessels, bronchi, and tubules of kidneys.

HEALTH AND NUTRITION EDUCATION

NUT-4 136

An opinion questionnaire on some basic concepts
by Dr. S. Zellecks, Health Educator, WHO, Entebbe, Uganda

The following statements are designed to find out your personal opinions about various aspects of health education. Although some of them may be controversial, you should feel free to respond to each question without considering this to be a form of examination. Please note the following points:

- (1) You should check 'Agree' if you accept the statement as it stands, 'Doubtful' if you feel you cannot express an opinion at this time, and 'Disagree' if you feel the statement as it stands should be changed even in minor respects.
- (2) For better understanding of the basic concepts in Health Education, there will be a discussion period based on your responses to the statements after you return the second copy duly completed.
- (3) Your name or signature will not be required.

	Agree	Doubtful	Disagree
1. A person's knowledge, experience, attitudes and beliefs are responsible for his behaviour.	✓		
2. Opinion-leaders are people with more knowledge and ideas than others.	6	8 ✓	15
3. In a community where the behaviour of the individual or group adversely influences the state of health, it is imperative to enlist the active co-operation and participation of the community in all activities aimed at improving its health standards. When such is the case, emphasis should be given to those activities directed at inducing favourable changes in the health behaviour of the individual or group.	✓		
4. The more we can teach people about health, the healthier they are likely to become.	✓		
5. In any given society the most effective way of influencing favourably the health behaviour of the individual and/or group is through health education -- the application of the principles and methods involved in the educational process.	✓		
6. The aim of health education is to make everyone thoroughly health conscious.	✓		
7. The best way to educate a large population in health matters is with mass media.	✓		
8. There is an educational aspect to the duties and responsibilities of all health and allied workers in the performance of their daily tasks.	✓		
9. It is necessary that all health and allied workers undertake adequate theoretical and practical training in the principles and methods of health education in order to be able to discharge effectively the educational components of their respective duties and responsibilities.	✓		

	Agree	Doubt- ful	Dis- agree
10. In any given community the group which is likely to be most effective in instigating favourable changes in health behaviour through health education should be the team of health and allied workers directly engaged in that community.	✓		
11. To ensure a high degree of receptivity for a learning situation, it is very useful to inject an atmosphere of entertainment in that situation.	✓		
12. The solution to a given health problem is the same in all communities.			✓
13. Health education is essentially the same as health propaganda or health information or health instruction.		✓	
14. In health and nutrition education one must constantly bear in mind the economic factor and always remember the fact that, in general, the families whose nutritional needs are the greatest are usually also the ones who have the least means for buying what they need.	✓		
15. Lay persons and community members should take part in the planning of health programmes at all levels.	✓ 18	4	7
16. Nutrition education activities, as in health education, must be part of the national policy and plans adapted to local conditions. This should include establishment of a service unit centrally located within an appropriate Ministry and organized in a manner to enable it to assume the direction, supervision and evaluation of its field activities on a national scale.	✓		
17. That Africans do attach a high value to their health is indicated by the fact that in many languages the greeting and/or farewell expressions are wishes of good health.		✓	
18. Health education is concerned with the promotion of health and the prevention of disease and not with curative work.	✓		
19. Nutrition and education has sometimes been the subject of co-operation between government departments as well as several specialized agencies of the UN. This approach should be continued and intensified.	✓		
20. Health and nutrition education of the child must be an integral part of general education rather than a special subject taught during a specific hour.		✓	
21. The common dish where the meal is shared by a group or family, should be discouraged as an undesirable practice on grounds of hygiene.		✓	
22. A survey of knowledge of the psychc-sociological and cultural ways of life of a community is an absolute pre-requisite for undertaking health and nutrition education in that community.	✓		

	Agree	Doubt-ful	Dis-agree
23. If 70% or more of the people in a community see a health education film, then this is a successful use of that film.			✓
24. In health education for the general public, one must set out the health facts clearly and in logical order.	✓		
25. Health and nutrition education in the context of a developing society is more effective if the 'aristocratic' approach is used. This means winning first the support and co-operation of those who are in a position of authority or influence in the community.	✓		
26. Non-medical healers and curers indigenous to the community should be prohibited from practice.			✓
27. The best methods of health education are face-to-face, inter-personal methods.	✓		
28. In health and nutrition education, the starting point is from the existing attitudes, beliefs, and practices of the community in question.	✓		
29. In order to avoid confusion, community members should not be involved in programmes until the medical and health experts have made up their minds about what is needed.			✓
30. The most important point in nutrition education of the general public is to identify the smallest changes which can be introduced in the traditional dietary practices for maximum improvement. This should be followed by teaching, with the utmost clarity and simplicity, the value of these changes as well as the manner in which they can be effected successfully.	✓		
31. Learning will occur mostly when and where people want to learn.	✓		
32. Nutritional problems can be solved through a dynamic effort in health education even in the absence of services for curative as well as prophylactic counter-measures.			✓
33. Human behaviour is one of the important factors which determine the state of health of the individual, family and community.	✓		
34. Health education may be defined as the teaching of health facts so that people may look after their health better.	✓		
35. The most competent person to do health education is the doctor.			✓
36. It is extremely difficult to inspire with a sense of urgency a population affected by malnutrition and to spring them into action for the appropriate preventive measures. This is partly due to the fact that malnutrition usually occurs in chronic evolution rather than in spectacular epidemic.	✓		

37. Poor communities with relatively heavy disease loads need medical services and facilities rather than health education.
38. Many people do not have the intelligence to profit from health education.
39. Once people are shown how reasonable a suggestion is, they usually follow it.
40. Better health is the basis for greater productivity and improved national economy.

Agree	Doubtful	Disagree
		✓
		✓
✓		
✓		

Vernier Tape for Circumferential Measurements

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Mid-arm circumference has been one of the most widely used indicators for the assessment of nutritional status especially during childhood because the tape is an inexpensive and readily portable instrument and measurement of this parameter is easy and simple.^{1,2} In the last few years there has been a trend to provide the tape to non-nutritionists for screening 'at risk' neonates, infants and children in rural population in developing countries.³⁻⁹ The non-nutritionists may not be well-versed in the use of the tape and so the tape has to be so designed that measurements are replicable in their hands. Some investigators have advocated the use of mid-arm circumference as an indicator for assessment of improvement in nutritional status especially following nutritional supplementation. This necessitates greater precision because the differences in the measurement before and after supplementation are likely to be no more than a few millimetres. There is, thus, a need to redesign the tape to obtain greater precision and replicability in circumferential measurements. Defining the problems with the currently existing tape and currently used techniques for circumferential measurement is an essential pre-requisite for attempts to improve the design of the tape or technique of measurement.

Currently available tapes and currently used techniques of measurement of mid-arm circumference

The classical method of obtaining circumferential measurements using a non-stretch tape is shown in Fig. 1. The markings of the tape face away from the skin of the subject and towards the observer. The tape is crossed diagonally to bring the point of origin to the same level as the final marking. A tape usually is marked up to 1 mm, and therefore the readings are read-off in millimetres.

In most of the tapes the markings begin at an end and there is no space to hold the tape. Some nutritionists hold the tape at zero end and also use the zero marking as the beginning to measure circumference. In this case inevitably a portion of the finger gets included in the measurement. This can result in observer errors amounting to 2-3 mm. Others catch the zero end between the thumb and the forefinger and cross over the tape (as shown in Fig. 1). Taking a measurement from a point 4-5 cm away from the zero end poses no problem to a trained nutritionist; but

subtractions of this nature may pose problems in the hands of field workers. It is thus essential that in the improved design of the tape, marking should begin 2-3 cm away from the end of the tape so that the tape could be comfortably held.

One of the crucial factors in accurate measurement of mid-arm circumference is the snugness of the fit. The tape should be firmly held against the skin but not crimp the skin. Most nutritionists develop a 'feel' for this. But the less-trained observers tend to tighten the tape until the skin crimps. If it is stressed during their training that the tape should not be held too tight against the arm, they wind the tape loosely so that a small space is left between the tape and the arm, especially where the tape crosses over. These two procedures can lead to errors of up to 2-3 mm. Providing space just sufficient for the thumb and the forefinger to hold the tape might prevent the observers from exerting too much force and tightening the tape and at the same time provide sufficient pull so that the tape snugly fits the arm.



FIG. 1. Measurements of mid-upper arm circumference. (Source: Assessment of nutritional status of the community, by Dr. Jelliffe, D. B. WHO Monograph No. 53, Geneva, 1966, p. 77.)

Yet another approach to prevent excessive tightening of the tape round the arm is to increase the width of the tape. Most of the currently used tapes are 1.0-1.5 cm in width. Tapes which are 2-3 cm in width have been designed. The wider tapes certainly eliminate the tourniquet effect. However, such an innovation poses a problem if classical cross-over (Fig. 1) method of measuring the circumference is used. In the cross-over technique, the measurement made is not horizontal but diagonal. Errors due to diagonal measurement with tapes of varying width over a range of circumferential measurements are shown in Table I and Figs. 2, 3. It is obvious that the errors become significant when the circumferences measured are small and/or when the tape is wide.

Attempts have been made to design tapes with a slit near the zero mark so that the tape passes through this slit after encircling the part. These tapes have also been provided with a space before zero so that they could be readily held between the finger and the thumb. Such tapes have been successfully used in

measuring mid-arm circumference of the neonates (Belsey: personal communication).

However, two more problems will remain unsolved. The fibreglass tapes marked in millimetres are quite useful when the examination is conducted in bright light by young adult nutritionists. The same, however, may not be easy if an older individual (e.g. the traditional birth attendant who is usually in her forties) examines a neonate inside a house where lighting is poor. It would be a great help under these circumstances, if widely spaced markings are provided on the tape. Providing a centimetre tape with a vernier attachment so that the broad divisions can be read-off easily by all observers even in indifferent light, would go a long way in ensuring precision under adverse conditions.

In all the designs of the tape currently in use, the readings are taken over a curvature. Reproducibility in measurement would increase if provisions are made so that measurements are taken on a straight plane along the long axis of the tape.

TABLE I
The degree of error in measuring the arm circumference with tapes of different widths

Reading on the tape	A Tape width—10 mm				B Tape width—12.5 mm				C Tape width—15 mm				D Tape width—17 mm				E Tape width—20 mm			
	True reading		Over reading		True reading		Over reading		True reading		Over reading		True reading		Over reading		True reading		Over reading	
	(mm)	(%)	(mm)	(%)	(mm)	(%)	(mm)	(%)	(mm)	(%)	(mm)	(%)	(mm)	(%)	(mm)	(%)	(mm)	(%)	(mm)	(%)
20	17.3	2.7	15.5	15.6	4.4	28.1														
25	22.9	2.1	9.1	21.6	3.3	15.5	20.0	5.0	25.0											
30	28.3	1.7	6.1	27.3	2.7	10.0	26.0	4.0	15.5	24.7	5.3	21.4								
35	33.5	1.5	4.4	32.7	2.3	7.1	31.6	3.4	10.7	30.6	4.4	14.4	28.7	6.3	21.9					
40	38.7	1.3	3.3	38.0	2.0	5.3	37.1	2.9	7.9	36.2	3.8	10.5	34.6	5.4	15.5					
45	43.9	1.1	2.5	43.2	1.8	4.1	42.4	2.6	6.1	41.7	3.3	8.0	40.3	4.7	11.6					
50	49.0	1.0	2.1	48.4	1.6	3.3	47.7	2.3	4.8	47.0	3.0	6.3	45.8	4.2	9.1					
55	54.1	0.9	1.7	53.6	1.4	2.7	52.9	2.1	3.9	52.3	2.7	5.1	51.2	3.8	7.3					
60	59.2	0.8	1.4	58.7	1.3	2.2	58.1	1.9	3.3	57.5	2.5	4.3	56.6	3.4	6.1					
65	64.2	0.8	1.2	63.8	1.2	1.9	63.2	1.8	2.8	62.7	2.3	3.6	61.8	3.2	5.1					
70	69.3	0.7	1.0	68.9	1.1	1.6	68.4	1.6	2.4	67.9	2.1	3.1	67.1	2.9	4.3					
75	74.3	0.7	0.9	73.9	1.1	1.4	73.5	1.5	2.1	73.1	1.9	2.7	72.3	2.7	3.8					
80	79.4	0.6	0.8	79.0	1.0	1.2	78.6	1.4	1.8	78.2	1.8	2.3	77.5	2.5	3.3					
85	84.4	0.6	0.7	84.1	0.9	1.1	83.7	1.3	1.6	83.3	1.7	2.1	82.6	2.4	2.9					
90	89.4	0.6	0.6	89.1	0.9	1.0	88.7	1.3	1.4	88.4	1.6	1.8	87.7	2.3	2.6					
95	94.5	0.5	0.6	94.2	0.8	0.9	93.8	1.2	1.3	93.5	1.5	1.6	92.9	2.1	2.3					
100	99.5	0.5	0.5	99.2	0.8	0.8	98.9	1.1	1.1	98.5	1.5	1.5	98.0	2.0	2.1					
110				109.3	0.7	0.6	109.0	1.0	0.9	108.7	1.3	1.2	108.2	1.8	1.7					
120				119.3	0.7	0.5	119.1	0.9	0.8	118.8	1.2	1.0	118.3	1.7	1.4					
130				129.4	0.6	0.5	129.1	0.9	0.7	128.9	1.1	0.9	128.4	1.5	1.2					
140							139.2	0.8	0.6	139.0	1.0	0.7	138.6	1.4	1.0					
150							149.2	0.8	0.5	149.0	1.0	0.6	148.7	1.3	0.9					
160							159.3	0.7	0.4	159.1	0.9	0.6	158.7	1.2	0.8					
170										169.2	0.8	0.5	168.8	1.2	0.7					
180										179.2	0.8	0.5	178.9	1.1	0.6					
190													188.9	1.1	0.6					
200													199.0	1.0	0.5					

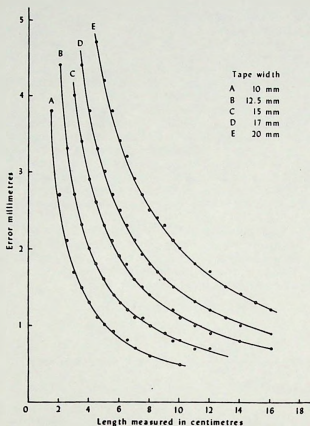


FIG. 2. Errors in millimetres for varying lengths of measurements (for different tape sizes).

Design of the modified tape

The newly designed tape incorporates design features to overcome all the above enumerated problems. The tape consists of two parts, the main tape and the vernier.

The tape is made of any flexible non-stretch material including thick paper, plasticized paper or fibreglass. It is 1.5 cm wide and half a metre in length. The zero mark of the tape begins about 3 cm from the end and markings up to centimetre are made on the tape.

A somewhat thicker material such as thin board material used for visiting cards, plasticized paper or fibreglass, measuring 12 cm x 3 cm is used for construction of the vernier scale. The vernier scale is constructed in the middle 9 cm by dividing it into 10 equal parts (the scale marked with vernier division is shown in Fig. 4).

The method of attaching the tape to the vernier is shown in Fig. 4. The zero end of the vernier has a slit (Fig. 4), through which the tape is passed after being wound round the part to be measured. This procedure ensures that errors due to diagonal measurement are avoided. The space on either end of the vernier pro-

vides just sufficient space for a finger and a thumb to hold the vernier and the tape. Therefore, it is impossible to exert too strong a pull and cause the tourniquet effect.

Method of use

The tape is wound round the part to be measured. The vernier scale is held in hand and the tape is inserted through the slit into the triangular space. The slit end of the vernier is held between the left forefinger and the thumb. The tape with the vernier is held between the right forefinger and the thumb. The two ends are gently pulled so that the tape tightens firmly on the surface of the skin without causing crimping or wrinkling of the skin. The centimetre marking on the tape which has crossed the zero mark in the vernier indicate the circumference in centimetres. Next step is to find out which of the vernier divisions coincide with any of the centimetre markings on the tape. Whichever vernier division coincides, so many millimetres are to be added. For example, if the zero of the vernier lies after the 10 cm mark on the tape and 7th division of the vernier coincides with centimetre line

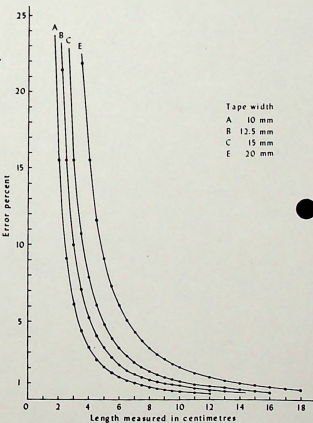


FIG. 3. Errors in per cent for varying lengths of measurements (for different tape sizes).

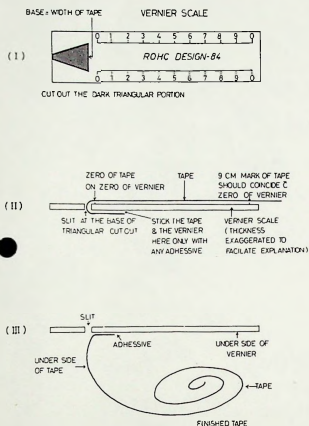


FIG. 4. Design of the vernier tape.

on the tape, then the measurement made is 10.7 cm (Figs. 5-7).

Discussion

The requirements for a tape to obtain accurate measurement of body circumference are:

- (i) it should be convenient to hold the tape so that the right amount of pull can be exerted;
- (ii) the axis of pull should be along the axis of the tape; measurement should be taken when tape surfaces lie parallel on the horizontal plane;
- (iii) the markings must be widely spaced to facilitate easy reading and at the same time precision up to 1 mm should be ensured.

All these requirements have been met in the tape design presented. The two ends of the vernier strip provide the means to hold the tape ends so that the right amount of pull can be exerted and at the same time undue tightening would be avoided. If necessary a strain gauge device could be attached to the tape to indicate the correct amount of tension. The design of the tape permits the tape and vernier to lie in the same horizontal plane. This further enhances the accuracy of reading because measurement over a curvature is avoided. The slit design of the vernier scale ensures that the tape is placed such that the long axis of the two ends coincide. Since measurements are taken along the long axis of the tape, errors due to diagonal measurement especially in wider tapes are eliminated. The widely spaced markings on the tape and vernier allow easy reading and yet provide the same precision of measurement as tapes marked in millimetres. All

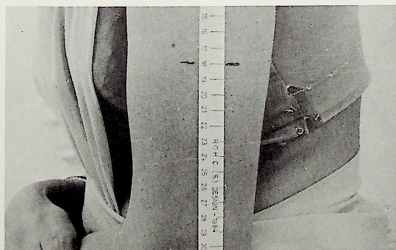


FIG. 5. Measurement of mid-upper arm circumference using the vernier tape.

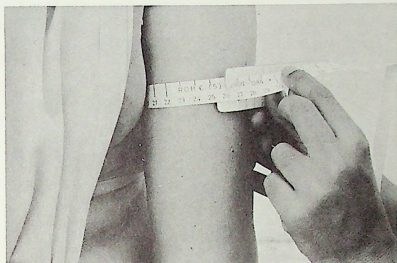


FIG. 6. Measurement of mid-upper arm circumference using the vernier tape.

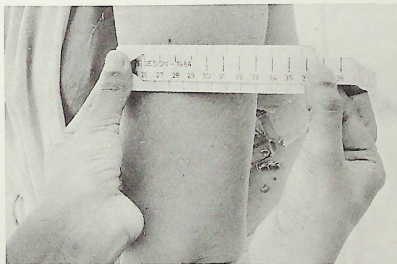


FIG. 7. Measurement of mid-upper arm circumference using the vernier tape.

these steps ensure the accuracy and reproducibility of the measurements even when taken by non-nutritionists.

It is easy to learn how to use the vernier tape. A couple of demonstrations are sufficient to acquaint the person with its use. Practice over 2-3 days on about 50 subjects is all the training needed by any individual to produce reliable, reproducible measurements.

The tape can readily be mass-produced at very low cost. It is possible to make tapes of varying lengths (20 cm or less for measuring mid-arm circumference of neonates, half a metre for measurement of mid-arm circumference, chest circumference and head circumference in children and one metre or longer for measurement of abdominal girths in pregnant women). Disposable varieties can be made by printing the tape on thick paper. Such tapes can be supplied to tradi-

tional birth attendants as a part of the delivery kit. A more durable variety could be printed on a plasticized paper or fibreglass and given to workers involved in large scale community based nutritional surveillance programmes.

Summary

Factors responsible for observer errors in the currently available tapes and currently used techniques of measurement of body circumference are discussed. Design of a modified tape with a vernier attachment which eliminates observer errors and enhances reproducibility even in non-nutritionists' hands is presented.

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Milk products seem the most innocent items on the international marketing scene. Yet as one giant food multinational has discovered, making money from milk substitutes has its headaches. As the World Health

Organisation meets in Geneva to attempt tough new regulation of the \$6 billion world trade in milk products,

James Bellini unravels the tangled story of intrigue and accusation.

Behind the closed doors of Nestlégate



PRIVÉ

The row has all the ingredients of a classic political thriller. A vast multinational with annual turnover of \$11 billion in food, pharmaceuticals and cosmetics; most of its brands are household names throughout the world. Accusations of secret payments and kickbacks to research institutions and doctors' associations. A leading international business publication allegedly used as a weapon to discredit unwelcome pressure groups and beat a boycott. Congressional hearings, leaked confidential documents. Not to mention claims of death and suffering on genocidal scale in dozens of Third World countries. And at the centre of the growing storm - a man-made baby food sold worldwide as part of the attack on malnutrition and poverty!

The company is Nestlé. And right now its corporate policymakers, led by Managing Director Arthur Furer, must be cursing the day, 114 years ago, that their predecessors made the fateful decision to diversify into new types of food products for the baby market. In the history of marketing no product has scored more failure grades than their harmless-sounding 'infant formula'. No corporate venture could be launched with such apparently virtuous intentions, yet in time provoke such vehement worldwide opposition as the tinned powder that lies behind Nestlégate, as the episode has been dubbed.

This month, at a high level meeting of the World Health Organisation in Geneva - ironically just a short train ride from the multinational's Vevey headquarters - the row is set to reach crunch point. A draft voluntary code aimed at regulating the promotion of baby foods in the less-developed world is to be debated and, if approved, given the formal backing of governments. The code would change the rules of a marketing game that has brought the major baby food companies Nestlé above all, massive profits and the vociferous criticism of church bodies, medical groups and community workers.

A growing market

Milk is big business around the world; it grows with the third world population explosion that in 1980 added 124 million new mouths to the milk-consuming universe (only seven million in Europe). Many third world governments, strapped by low-productivity agriculture, have grasped eagerly at milk-substitutes to supplement poor diets for their rapidly ex-

panding new-born citizenry. International agencies have spent millions on educating mothers to meet this problem of inadequate diet. It is this fast-growing market for milk products that the food multinationals sought to capture. Latest estimates put the third world sales of infant formula at nearly \$1 billion a year.

The arithmetic of milk demand and supply suggests a vast potential sale for the right products. Medical specialists estimate that if the world's entire population of new mothers were in full lactation, total world supply of breast milk would amount to a colossal 30 billion litres of milk a year. At US supermarket prices this output would have a retail value in excess of \$15 billion annually. But, due to poor food production, chiefly in the less-developed economies, low protein intake has cut this potential supply by 12 billion litres. The shortfall is equal to a world market for milk substitutes worth more than \$6 billion.

And this gap is likely to stay wide in the years ahead. The forecasts of the UN agency, the Food & Agriculture Organisation, indicate that milk

war economic boom, with its accompanying worldwide population explosion brought unparalleled riches to major exporters of milk substitutes. Nestlé, Abbott Bristol-Myers and Wyeth became surrogate mothers to literally millions of infants through Africa, Asia and South America. Nestlé alone was to build a sales turnover worth \$500 million in this one sector, adding handsomely to their yearly profits of \$700 million before tax. It is this commercial achievement, and the consequences of Nestlé's worldwide marketing strategies, that lie at the centre of Nestlégate.

Soft sell marketing

During the 1970s, health groups and consumer watchdogs gathered mounting evidence suggesting that the growing use of infant formula in the third world countries was reaping a harvest of dangerous, even fatal, malnutrition and disease - the exact opposite of the supposed objective of Nestlé's marketing offensive. The

said the critics, was causing death and disease on epidemic scale as poorly-educated mothers misused the company's products. As one source in the Kenyan medical fraternity puts it: "Virtually every child who enters Kenyatta State Hospital in Nairobi with dysentery and vomiting has been bottle-fed from the early weeks of infancy." Similar horror stories emanate from Malaysia, South America and remote corners of the Asian mainland. "Nestlé kills babies" ran the title of a tract published by a Swiss-based action group in 1974. The Nestlégate scandal had begun.

The Nestlé board reacted swiftly to the charges. And after a protracted libel case the company won judgment against the action group. But the fines imposed - 300 francs against each of the 13 defendants - hardly suggested massive retribution by the court. Since then the Nestlégate saga has blown up into a full-scale confrontation.

Nestlé is caught, not with a product that is unsafe inherently, but with a marketing outlook which fails to accommodate the vastly differing standards in third world countries. Illiterate mothers are deeply vulnerable where products need added water. In Congressional testimony in the United States, Dr. Oswald Ballerín, president of Nestlé Brazil (Nestlé headquarters in Vevey wanted nothing to do with the US hearings on the infant formula row) agreed that his company's products should not be used when local water was impure nor where mothers were unable to understand the preparation instructions.

A typical illustration comes from Java. A local doctor sets out the facts: "Condensed milk sells for 150 rupiahs for a small tin. A labourer in rural areas earns roughly 40 rupiahs a day. As a result, people dilute it. 10 parts water to one part milk, until it becomes a very thin emulsion." Thus, ignorant mothers, believing these magic western products to be substitutes for breast feeding and dietary supplements, supervise the destruction of their own infants' precarious health.

Other critics point to the apparent reluctance of Nestlé to spend their immense promotion budgets on teaching locals to care for themselves. Research in Kenya has shown that for 60 Kenyan cents a day a mother could raise her protein intake sufficiently to feed her children naturally. This sum was cheaper than relying on even the least expensive commercial substitute. Surveys in the Ivory Coast indicate that natural feeding could cost \$300 to \$400 a year less than artificial alternatives. But then, with a \$500 million market at stake, Nestlé's reluctance is understandable. The company replies that its booklet on breast feeding, published in 1975 was a major contribution. However, the book contains none of the diagrams or pictures that are essential in illiterate third world communities.

THE DRAFT CODE: A SUMMARY

- Applies to marketing of breastmilk substitutes, other milk products, foods, beverages, feeding bottles.
- No advertising or other promotion to general public.
- No provision of samples of products to pregnant women, mothers or families.
- No point-of-sale advertising, special displays, coupons, premiums, loss-leaders, etc.
- No distribution of gifts or utensils to promote use of milk substitutes.
- Marketing personnel not to seek contact with pregnant women or young mothers.
- Health authorities in Member states to promote the Code; governments to legislate to apply the Code.
- No use by companies of health care systems to promote sales, nor use of 'mothercraft nurses', etc.
- Labels to provide improved information and not to discourage breastfeeding; labels to carry warnings that artificial products are no proper substitute.
- Draft Code to become effective 1 March 1982.

demand will rise by some two per cent a year to 1990. Growth in global supply is set to rise by a good deal less; in the mid-1970s, for instance, it was expanding by just 0.6 per cent annually. Rising fuel costs, the expense of proper storage and distribution facilities, themselves complicated by the hygiene requirements of a highly perishable commodity, conspire to make milk an unattractive business prospect, especially in hot climates where local infrastructure is traditionally non-existent.

A typical episode in the effort to raise natural milk output is the recent attempt by Iranian agencies to boost natural milk supplies through importing 200,000 head of milk cows. The project turned into a pipe-dream, gathering such a massive herd from major farming countries would take the wrong side of 20 years to accomplish.

It is hardly surprising that the post-

company was spending millions of dollars in a carefully contrived campaign introducing milk substitutes to poorly educated mothers with low incomes and no real experience in the preparation of processed foods. From Java to the jungles of Africa, the Nestlé message was rammed home. Remote villages, wonder-struck by their first battery-powered TV sets, were regaled with glossy commercials for Nestlé products such as *Milkmaid* sweetened condensed milk. Ran the catchy jingle: "Grow up speedily, my dear little one. Drink Milkmaid Sweetened Condensed Milk." The TV campaigns backed up several years of expensive promotion by the milk multinationals - including prizes, coupons and endorsements by sports heroes.

For Nestlé the promotion tactics captured a growing market. But health authorities were becoming increasingly uneasy. The Nestlé milk run,



The boycott battle

The saga entered a new and potentially expensive phase for Nestlé in June 1977. A pressure group, INFACT, was formed in the United States and a boycott of infant formula companies was announced. The Minneapolis offices of Nestlé were picketed in what was to grow into a full scale offensive. A long list of high-earning Nestlé products was put at risk: Crunch Nescafé, Quik, Nestea, Taster's Choice, as well as associated Libby products.

Nestlé dismissed the boycott as the work of disaffected church and agitational consumerist groups seeking to discredit the multinationals. Nestlé senior management, through their spokesman Oswaldo Ballarin, told a US Congressional Subcommittee that Nestlé investigations had determined that the attack on the company "is actually an indirect attack on the free world's economic system". The grandiose reaction nevertheless overlooked the spreading dimensions of the story. One instance came to light in a startling US television programme screened by CBS, a programme which suggested a worldwide network of sophisticated pay-offs.

The CBS team had found details of a commission system operating in the Dominican Republic through collaboration between the Big Four in infant formula: Nestlé, Abbott, Bristol-Myers and Wyeth. Under the scheme, a percentage of all local sales of pharmaceutical goods was refunded to the local doctors' association for their own use. The total involved in one year amounted to some \$80,000. If operated as normal practice elsewhere in the third world, the commissions involved would be on a colossal scale.

Thus, the anti-Nestlé lobby gained strength by the month from a growing number of sources. By 1978 even officials at the World Health Organisation had become involved. An unofficial WHO working group called for a ban on "the advertising of food for nursing infants" and strict limits on public advertising of milk substitutes as well as curtailment of free samples and sales promotion materials. The more Nestlé attempted to rebut criticisms - as with Dr. Ballarin's testimony - the more the effort backfired. The exercise was fast becoming a self-damaging public relations campaign largely paid for by Nestlé. Ironically, the victim of the boycott, the US Nestlé company, neither manufactured nor sold the infant formula products complained of. And the counter-lobby formed by the companies themselves - the International Council for Infant Food Industries (ICIFI) - seemed only to exacerbate the argument.

While the diplomatic wrangle continued, with WHO and its pressure group supporters on one side and ICIFI and the milk multinationals on the other, Nestlé decided on a more subtle counter-attack. Internal Nestlé documents now reveal a plan to influence public opinion through channeling money into a US think-tank and to secure thereby favourable coverage in the business press on the infant formula issue.

Wheel of fortune

The think-tank involved is the Ethics and Public Policy Center, a Washington-based tax-exempt institution set up to examine business issues. The Nestlé senior management worked to generate a pro-Nestlé reaction to the boycott brigade, thereby salvaging some of the tatters of



Protest button: fracas over formula

Nestlé's near-ruined image

At a discreet lunch in an equally discreet Washington restaurant, Ernest Lefever, the founder and president of EPPC, proposed to Herman Nickel, a *Fortune* editor that he be commissioned to write a study for EPPC on the infant formula confrontation. The fee would be \$5000. The fee was to be paid in March 1980, the date for submission of the manuscript. In March 1980 the Nestlé company gave the Center a cheque for \$5000, both Lefever and the Nestlé management insist the timing of the payment was sheer coincidence.

In late Spring of 1980, an article appeared in *Fortune* that attacked religious leaders associated with the Nestlé boycott. In a key phrase, these activists were condemned as "Marxists marching under the banner of Christ". Nickel maintains that the phrase was not his, that it was inserted by *Fortune* editor Richard Armstrong. But the specific authorship of the article, and the exact nature of the fees paid to Nickel, are of little relevance alongside the broader issue. A major business publication had become directly involved in a serious

corporate confrontation and some of its key journalists were penning articles which were far from critical of a one-sided corporate campaign. Certainly, the Nestlé management were triumphant when the article appeared. International Vice-president Ernest Saunders was to spend much time in the United States in subsequent months planning best use of the *Fortune* item for the Nestlé anti-boycott campaign.

According to a leaked Nestlé memorandum, "there must be maximum exploitation of the opportunities presented by the *Fortune* article and the Ethics and Public Policy Center's willingness to undertake additional activity. Mr. Ward (Thomas Ward, Nestlé's Washington lawyer) informs us that there are ways in which this matter can be handled..."

In 1980 Nestlé gave EPPC \$25,000. It was the largest single donation from a list of 26 corporate benefactors. Though the evidence is inconclusive, there appears to be a close connection between large Nestlé contributions and the further use of the *Fortune* article to back the anti-boycott campaign. Shortly after receiving \$25,000 from Nestlé, EPPC rented a mailing list of 'community leaders'. The *Fortune* article reprinted and somewhat appropriately - re-titled by EPPC as *Crusade Against the Corporation: Churches and the Nestlé Boycott*, was then distributed to several thousand opinion-makers. *Fortune* charged only a 'token fee' of \$150 for the reprinting costs. Previous reprint arrangements had been charged at 10 cents a copy, or at least double the EPPC deal. The agreement represented a disguised donation by *Fortune* to EPPC worth several thousand dollars. Bristol-Myers, meanwhile distributed thousands of reprints to their shareholders and author Herman Nickel received an undisclosed royalty.

The wheeler-dealing behind the *Fortune* episode high-lighted the plotting behind the diplomatic facade of the Nestlé public face. Senior editors at *Fortune* protest their innocence of conspiring to bend the hearts and minds of leading opinion-makers in the direction of the Nestlé cause. But they made little effort to prevent the wheels of the Nestlé PR machine from rolling onwards, carrying bundles of *Fortune* copy onto the battlefield. Nevertheless, the gambit seems once again doomed to boomerang back onto the Vevey headquarters.

You know WHO

The latest stage of the Nestlégate drama, the Geneva conference of WHO should be the last. Technically, an endorsement of the code on promotion of baby foods should carry great weight with governments. But the evidence suggests that yet more wheeler-dealing is undermining the painstaking work of WHO officials

and blowing a large hole in proposed rules. Dr. K.W. Redings from Samoa, one of the members of the policy-making executive board, has already voiced his fears: "the code has so many loopholes that an unscrupulous manufacturer could drive a herd of milk cows through it".

Certainly, the apparently tough requirements of the code disguise four major concessions to the milk multinationals. They can still distribute 'information' about their products without proper supervision such a rule can easily be abused. Secondly, the code is merely a recommendation. In this sense, it comes down to the enthusiasm of individual governments to make it effective. Thirdly, the code makes no insistence about health warnings on product labels and, fourthly, even admits that baby foods can be beneficial in cases where breast-feeding is impossible for medical reasons.

Thus, the campaigners who saw WHO as their champion now see it as a potentially toothless watchdog that will let the poacher escape once again. All along, Nestlé have encouraged WHO to act as arbiter. Said Nestlé chief Arthur Furer of the October 1979 gathering of WHO, "Our policy has been to view that event as the proper forum for discussion of all questions related to these problems." But, say the cynics, Nestlé have merely realised that in the WHO they have found a body that will take all the flak on their behalf, and leave them a free hand to carry on regardless.

Already, Nestlé has brought pressure to bear on WHO officials - themselves granted little real power by member governments. Early this year the company-backed front organisation ICIFI applied for affiliate status with WHO. Nestlé Vice-President Ernest Saunders, who has worked so hard to milk the *Fortune* article of its pro-Nestlé-by-products, wrote to individual members of the WHO executive board warning that Nestlé would not co-operate with the code if the affiliation request was not dealt with promptly. And Dr. Stanislas Flache, one of the six assistant director-generals of WHO until last summer, was immediately signed up on his retirement to become the first full-time secretary-general for ICIFI - a body regarded by many as having objectives diametrically opposed to those of WHO, at least on the infant formula issue.

And out in the field, in distant corners of the baby food market where WHO influence is insignificant, the signs are that the companies are not keen to stop consumer advertising - or 'demarket', as the proponents of the code term it. Last year, IBFAN (the International Baby Foods Action Network) recorded 682 violations in 50 separate countries. The milk multinationals reply that they cannot possibly control every facet of the local subsidiary operations. A bizarre res-

ponse, since by the same token they cannot guarantee to maintain specific standards of hygiene at that same local level, even though this is the crux of the Nestlégate dispute.

Thus, this latest meeting of WHO with its much-proclaimed regulatory code at the top of the agenda, could mark merely another sorry chapter in corporate responsibility. In the absence of an effective international body to monitor worldwide marketing and use of potentially hazardous products - whether made so by company or consumer is largely irrelevant - the multinationals must do it by themselves. And so far there is little evidence of a common line.

The British pharmaceutical company Glaxo, for instance is deeply cautious about selling products to illiterate and untrained parents. "Glaxo do not encourage under-privileged populations to use infant milk powder", is the response from Glaxo senior management. Many comparable companies share the same view. Some such as Nestlé do not in 1979, as the Nestlégate saga gathered speed, the company went on record with its blunt reply: "Will Nestlé abandon the third world? We will not".

The Nestlé approach has long been that the developing countries offered the only real growth markets. The Nestlé annual report for 1973 put it in a nutshell: "in the developing countries our own products continue to sell well thanks to the growth of population..." By 1980 the annual report was pointing to strong growth in Latin America and Asia. Between 1973 and the end of the decade, Asia's contribution alone to Nestlé's turnover rose from Sw Fr 1.2 billion to Sw Fr 2.6 billion. More than Sw Fr 7 billion in sales of all Nestlé products now come from the developing markets of Latin America, Africa and Asia.

With markets like these, it is hardly surprising that the men of Vevey fight to preserve their grip. The growing risk, however, is that market position is being protected and expanded with tragic consequences, certainly in products where hygiene careful preparation and sensible use are key ingredients of the products themselves. For milk substitutes such as Similac, Lactogen and comparable baby foods, many of them the results of Vevey marketing strategy, the risks are ever-present. And Nestlé have yet to silence the critics who say they are oblivious to those risks.

It seems clear that a WHO code emanating from the May meeting in Geneva will not calm the fears of pressure groups around the world who say the billion dollar infant formula industry is killing its customers. Nor will it guarantee that Nestlé will adopt a new stance of responsibility towards the products that have brought the company such angry criticism.

And ever-increasing profits. ☐



ಪ್ರತಿದಿನ
ತರಕಾರಿಗಳನ್ನು
ಉಪಯೋಗಿಸಿ

NUT-4

ತರಕಾರಿ ಅಥವಾ ಕಾಯಿಪಲ್ಲೆಗಳು.

ತರಕಾರಿಗಳು ಸಮೃದ್ಧ ಅಹಾರದಲ್ಲಿ ಬಹಳ ಮುಖ್ಯವಾದ ಪದಾರ್ಥಗಳು. ಅವುಗಳಲ್ಲಿ ಹೆಚ್ಚಿನ ಅಂಶ ಅನ್ನಾಂಗಗಳು ಮತ್ತು ಲೋಹಾಂಶಗಳು ಇರುವುದರಿಂದ ಅವುಗಳು ದೇಹ ರಕ್ಷಣೆಗೆ ಬೇಕಾಗುವ ಅಹಾರಗಳೂ ಆಗಿವೆ. ಅವು ಆಹಾರಗಳಿಗೆ ಒಳ್ಳೆಯ ಬಣ್ಣವನ್ನೂ, ಪರಿಮಳವನ್ನೂ ಕೊಡುವುದಲ್ಲದೆ, ಅಹಾರವು ಹೆಚ್ಚು ರುಚಿಸುವಂತೆಯೂ, ಹೊಸವನ್ನೂ ಹೆಚ್ಚು ಸಹಿಸುವಂತೆಯೂ ಮತ್ತು ಅನೇಕದಾಯಾಂಶವಾಗಿಯೂ ಮಾಡುವುದು.

ತರಕಾರಿಗಳನ್ನು ಈ ಕೆಳಕಂಡಂತೆ ವಿಂಗಡಿಸಬಹುದು—

ಹಸಿರು ಸೊಪ್ಪು ತರಕಾರಿಗಳು.—(ಉದಾ: ದಂಟಿನ ಸೊಪ್ಪು, ಬಸಳಿ, ಪುದಿನಾ, ನುಗ್ಗೆ(ಎಲೆ, ಇತ್ಯಾದಿ).

ಗೆಡ್ಡೆ ಮತ್ತು ಗಣಸುಗಳು.—(ಉದಾ: ಅಲೂಗೆಡ್ಡೆ, ಸಂವರ್ಣಗೆಡ್ಡೆ, ಈರುಳ್ಳಿ, ಮರಗಣಸು, ಇತ್ಯಾದಿ).

ಇತರ ತರಕಾರಿಗಳು.—(ಉದಾ: ಪುರುಕೀಕಾಯಿ, ಬಿದಿನೆಕಾಯಿ, ಬೆಂಡೆ, ಸೋರೆ ಕಾಯಿ, ಇತ್ಯಾದಿ).

ಹಸಿರು ಸೊಪ್ಪು ತರಕಾರಿಗಳು :—ಇವುಗಳು ಲೋಹಾಂಶಗಳಾದಫಾಸ್ಫೊರಸ್ ಮತ್ತು ಕಬ್ಬಿಣ ಗಳನ್ನು ಮತ್ತು ಅನ್ನಾಂಗ 'ಎ' (ಕ್ಯಾರೋಟಿನ್ ರೂಪದಲ್ಲಿ) ಮತ್ತು ಅನ್ನಾಂಗ 'ಸಿ'ಯನ್ನೂ ಹೆಚ್ಚಿನ ಪ್ರಮಾಣದಲ್ಲಿ ಹೊಂದಿರುತ್ತವೆ. ಇವುಗಳು ಹೆಚ್ಚಿನ ಪ್ರಮಾಣದಲ್ಲಿ ಪೌಷ್ಟಿಕಾಂಶ ಗಳನ್ನು ಒದಗಿಸುವುದೇ ಅಲ್ಲದೆ ಕಡಿಮೆ ವಿಚ್ಛೇದನೀಯವಾಗಿರುತ್ತವೆ. ಸೊಪ್ಪುಗಳು ಹಸಿರಾದಿ ದ್ದವು ಕ್ಯಾರೋಟಿನ್‌ಗಳನ್ನು ಹೆಚ್ಚಾಗಿ ಹೊಂದಿರುತ್ತವೆ. ಈ ಕ್ಯಾರೋಟಿನ್‌ಗಳನ್ನು ಹೆಚ್ಚಿನ ಪ್ರಮಾಣದಲ್ಲಿ ತೆಗೆದುಕೊಂಡರೆ ಕಣ್ಣುಗಳಿಗೆ ರಕ್ಷಣೆಯನ್ನು ಒದಗಿಸುತ್ತವೆ.

ಅನ್ನಾಂಗ 'ಸಿ'ಯು ಮೂಳೆಗಳ ಬೆಳವಣಿಗೆ, ಹಲ್ಲುಗಳು ಮತ್ತು ಒಸಡುಗಳು ದೃಢ ವಾಗುವುದಕ್ಕೆ ಸಹಾಯ ಮಾಡುತ್ತವೆ. ಇದನ್ನು ನೀವು ನುಗ್ಗೆ(ಎಲೆ)ಗಳಿಂದ ಹೆಚ್ಚು ತಡೆಯಬಹುದು. ಕೋಸುಗೆಡ್ಡೆಯು ಹೊಂದಿನ ಎಲೆಗಳಲ್ಲಿ ಅನ್ನಾಂಗಗಳು ಒಳಗಿನ ಎಲೆ ಗಳಿಗಿಂತ ಹೆಚ್ಚಾಗಿ ಇರುತ್ತವೆ. ಬೀಟ್‌ರೂಟ್ ಗೆಡ್ಡೆಯ ಮೇಲಿನ ಎಲೆಗಳು, ಚಾಮುಂಗಡ್ಡೆ ಮೇಲಿನ ಎಲೆಗಳು ಅನ್ನಾಂಗ 'ಬಿ2' (ಕ್ರೋಮೋಪ್ರೋವಿನ್) ಅನ್ನು ಹೊಂದಿರುತ್ತವೆ. ಇವುಗಳು ಅತಿ ದುಬಾರಿಯು ಪ್ರೋಟೀನ್ ಅಹಾರ ಪದಾರ್ಥಗಳಾದ ಯಕೃತ್ತು ಮತ್ತು ಹಾಲು ಇತ್ಯಾದಿ ಗಳಲ್ಲಿ ಸಿಕ್ಕುತ್ತವೆ.

ಎರಡು

ದಿನವಹಿ 125 ಗ್ರಾಂಗಳಷ್ಟು ಹಸಿರು ಸೋಪ್ಪು ತರಕಾರಿಗಳನ್ನು ತೆಗೆದುಕೊಳ್ಳುವುದರಿಂದ ನವೆಂಬರ್ ದಿನಕ್ಕೆ ಸಾಕಾಗುವಷ್ಟು ಅನ್ನಾಂಶಗಳು ಮತ್ತು ಲೋಹಾಂಶಗಳು ಸಿಕ್ಕುತ್ತವೆ. ಇದು ಬಾಲ್ಯಾವಸ್ಥೆಯಲ್ಲಿ, ಗರ್ಭಿಣಿಯರಲ್ಲಿ ಮತ್ತು ಬಾಣಂತಿಯರಲ್ಲಿ ಅಪಕೃತಿಯಿಂದಾಗಿ ಹೆಚ್ಚಿನ ಅಂದವ ಅನ್ನಾಂಶಗಳನ್ನು ಮತ್ತು ಲೋಹಾಂಶಗಳನ್ನು ಒದಗಿಸುತ್ತದೆ.

ಗೆಡ್ಡೆ-ಗೆಣಸುಗಳು.— ಇವುಗಳು ಮುಖ್ಯವಾಗಿ ಒಪ್ಪುಪದಾರ್ಥಗಳು. ಉದಾ : ಮರ ಗಣಸು, ಅಲೂಗೆಡ್ಡೆ, ಸುವರ್ಣಗೆಡ್ಡೆ, ಸಿ. ಗಣಸು, ಕ್ಯಾರೆಟ್, ಜಾಮಗೆಡ್ಡೆ, ಇತ್ಯಾದಿಗಳು. ಇವುಗಳಲ್ಲಿ ಶೇಕಡ 30-35 ರಷ್ಟು ಸಕ್ಕರೆ ಒಪ್ಪುವ ಅಂಶವಿದ್ದು ದಾನ್ಯಗಳಿಗೆ ಒದಲಾಗಿ ಉಪಯೋಗಿಸಬಹುದಾಗಿದೆ.

ಈ ಮೇಲ್ಕಂಡವುಗಳಲ್ಲಿ ಕ್ಯಾರೆಟ್-ಕ್ಯಾರೋಟಿನ್‌ನನ್ನು ಹೆಚ್ಚಾಗಿ ಹೊಂದಿರುತ್ತದೆ. ನಿಮ್ಮ ಅರೋಗ್ಯ ರಕ್ಷಣೆಗೆ 75 ಗ್ರಾಂಗಳಷ್ಟು ಗೆಡ್ಡೆ ಗೆಣಸುಗಳನ್ನು ಸೇರಿಸುವುದರಿಂದ ನಿಮ್ಮ ಆಹಾರವು ಸಮತೋಲನವಾಗುತ್ತದೆ.

ಇತರ ತರಕಾರಿಗಳು.— ಇವುಗಳು ಬಟಾಣಿ, ಹುರುಳೇಕಾಯಿ, ನುಗ್ಗೆಕಾಯಿ, ಸೌತೆ ಕಾಯಿ, ಬೆಂಡೇಕಾಯಿ, ಟೊಮಾಟೋಕಾಯಿ, ಇತ್ಯಾದಿಗಳು. ಇವುಗಳು ಅನ್ನಾಂಶಗಳು ಮತ್ತು ಲೋಹಾಂಶಗಳನ್ನು ಒಳ್ಳೆಯ ಪ್ರಮಾಣದಲ್ಲಿ ಒದಗಿಸುತ್ತವೆ. ಹಾಗಲಕಾಯಿ, ಟೊಮಾಟೋ ಗಳು ಕಬ್ಬಿಣ ಲೋಹಾಂಶವನ್ನು, ಅನ್ನಾಂಶ 'ಸಿ'ಯನ್ನು ಹೆಚ್ಚಿನ ಪ್ರಮಾಣದಲ್ಲಿ ಒದಗಿಸುತ್ತವೆ. ಹೆಚ್ಚು ಸಿಗುವ ನೆಲೆಕಾಯಿ ಅತಿ ಹೆಚ್ಚಿನ ಪ್ರಮಾಣದಲ್ಲಿ ಅನ್ನಾಂಶ 'ಸಿ'ಯನ್ನು ಒದಗಿಸುತ್ತದೆ. ಒಂದು ನೆಲೆಕಾಯಿಯಲ್ಲಿರುವ ಅನ್ನಾಂಶ 'ಸಿ'ಯು 2-3 ಕಿತ್ತಲೆ ಹಣ್ಣುಗಳಲ್ಲಿರುವಷ್ಟು ಕಿತ್ತಲೆ ರಸಕ್ಕಿಂತ 20ರಷ್ಟು ಹೆಚ್ಚಿನದಾಗಿರುತ್ತದೆ. ಅದುದರಿಂದ ಇವುಗಳನ್ನು ನಿಮ್ಮ ಆಹಾರ ಗಳಲ್ಲಿ ಸೇರಿಸಿಕೊಳ್ಳುವುದರಿಂದ ಪೌಷ್ಟಿಕ ಆಹಾರ ಕೊರತೆಯನ್ನು ತಡೆಗಟ್ಟಬಹುದು. ದಿನವಹಿ 75 ಗ್ರಾಂಗಳಷ್ಟು ಇತರ ತರಕಾರಿಗಳನ್ನು ಸೇರಿಸಬೇಕು.

ತರಕಾರಿಗಳನ್ನು ಅಡಿಗೆ ಮಾಡುವುದಕ್ಕೂ, ಉಪಯೋಗಿಸುವುದಕ್ಕೂ ಕೆಲವು ಸೂಚನೆಗಳು—

1. ತರಕಾರಿಗಳನ್ನು ಕೊಯ್ಯುವುದಕ್ಕೆ ಮೊದಲು ನೀರಿನಲ್ಲಿ ತೊಳೆಯಿರಿ.
2. ಅದಷ್ಟು ದೊಡ್ಡದಾದ ಜೊರುಗಳಾಗಿ ಕೊಯ್ಯಿರಿ.
3. ಅಡಿಗೆ ಮಾಡುವುದಕ್ಕೆ ಬಹಳ ಮುಂಚೆ ತರಕಾರಿಗಳನ್ನು ಕೊಯ್ಯಬೇಡಿ ಮತ್ತು ಸಿಪ್ಪೆ ಸುಲಿಯಬೇಡಿ.

4. ನೀರು ಕುದಿಸಿ ಮೇಲೆ ತರಕಾರಿಗಳನ್ನು ಹಾಕಿ.

5. ಗೆಣ್ಣೆ ಗೋಸುಗಳನ್ನು ಸಿಪ್ಪೆಯ ಸಮೇತ ಬೇಯಿಸಿರಿ. ಇದರಿಂದ ಪೌಷ್ಟಿಕಾಂಶದ ನಷ್ಟ ಕಡಿಮೆಯಾಗುತ್ತದೆ.

6. ತರಕಾರಿಗಳನ್ನು ಬೇಯಿಸುವುದಕ್ಕೆ ಬೇಕಾಗುವಷ್ಟು ನೀರಿನಲ್ಲಿ ವಜ್ರತ್ರ ಬೇಯಿಸಿ. ಬೇಯಿಸಿದ ಮೇಲೆ ಮೆಣ್ಣಾದ ನೀರನ್ನು ಚೆಲ್ಲಬೇಡಿ—ಅದನ್ನು ಹುಳಿ ಅಥವಾ ಸಾರಿಗೆ ಉಪಯೋಗಿಸಿ.

7. ಅದಷ್ಟು ಕಡಿಮೆ ಸಮಯದಲ್ಲಿ ತರಕಾರಿಗಳನ್ನು ಬೇಯಿಸಿ.

8. ತರಕಾರಿಗಳನ್ನು ಬೇಯಿಸುವಾಗ ಹಾತ್ರೆಯ ಮೇಲೆ ತಟ್ಟೆ ಮುಚ್ಚಿ ಬೇಯಿಸಿ.

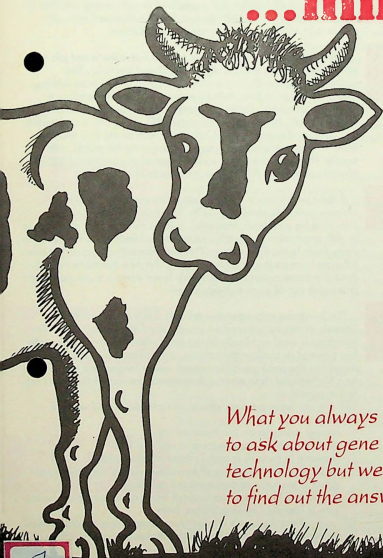
9. ಬಿಸಿಯಾಗಿರುವಾಗಲೇ ಊಟಮಾಡಿ. (ಕೋಸುಂಬರಿ, ಪಚ್ಚಡಿ ಇತ್ಯಾದಿ).

ಹಸಿರು ಸೋಪ್ಪುಗಳ ಸಾಲಾದನ್ನು ದಿನವೂ ಉಪಯೋಗಿಸುವುದರಿಂದ, ಸರಿಯಾದ ರೀತಿಯಲ್ಲಿ ತರಕಾರಿಗಳಿಂದ ಅಡಿಗೆ ಮಾಡುವುದರಿಂದ, ನಿಮಗೆ ದಿನನಿತ್ಯಕ್ಕೆ ಸಾಕಾಗುವ ಅನ್ನಾಂಗ 'ಸಿ'ಯು ದೊರಕುತ್ತದೆ. ತರಕಾರಿಗಳನ್ನು ಸರಿಯಾದ ರೀತಿಯಿಂದ ಜೋಪಾನವೆ ಮಾಡುವುದರಿಂದ ಅವುಗಳ ಪೌಷ್ಟಿಕಾಂಶಗಳು ನಷ್ಟವಾಗುವುದಿಲ್ಲ. ಅವುಗಳು ಹೆಚ್ಚಿದ್ದರೆ ಉಚ್ಚಿನ ಕಾಯಿ ವಾತುಮದು ಅಥವಾ ಒಣಗಿಸಿ ಸಂಗ್ರಹಿಸಬಹುದು.

ತರಕಾರಿಗಳು ಬಹಳ ಮುಖ್ಯವಾದುದರಿಂದ ಅವುಗಳನ್ನು ನಿಮ್ಮ ಕೈತೋಟದಲ್ಲಿ ಮತ್ತು ಬಾಲ್ಕನಿ ತೋಟಗಳಲ್ಲಿ ಬೆಳೆಯುವುದರಿಂದ ದಿನವೂ ಆಹಾರಕ್ಕೆ ನಿಮಗೆ ತಾಜಾ ತರಕಾರಿಗಳು ದೊರಕುತ್ತವೆ.

ಜನಾರ್ದನ್ ಮತ್ತು ಲಂಟಿಂಬಯೋಷನಾ ಸಂಚಾಲಕರಾಯರ
ಬೆಂಗಳೂರು-9,

How do you like your ...milk?



*What you always wanted
to ask about gene
technology but were afraid
to find out the answer*

BST is the first hormone of the new biotechnological generation. It is a test product for the pharmaceutical industry and if its use is authorized in the Community, it will lead to a whole series of new hormones for pigs, poultry and fish. The Community has not yet taken a decision on whether it should be authorized or banned. In the last analysis it is consumers who have to answer the question:

Do you like milk . . .

With or without genetically engineered hormones?

What is bovine growth hormone?

Bovine growth hormone, BST (bovine somatotropin) is a protein hormone that all healthy cattle produce in sufficient quantities. In the young animals it regulates muscle formation and growth, whereas in adult cows it controls milk production.

What is genetically engineered bovine growth hormone?

Genetically engineered bovine growth hormone is not produced by cattle but by genetically manipulated bacteria. The bacteria are altered using biotechnology to produce something which is foreign to their own organism. BST is not therefore a "natural hormone". It can be produced in large quantities in "bioreactors". In many EEC countries BST is already being tested on calves and cows. In some countries such as the UK, the milk from these experimental animals is going into the public milk supply. Plants for the large-scale industrial production of BST are already producing BST at Sandoz-Kundl in Austria.

Why the need for this new hormone?

If the new hormone is administered to cows regularly it increases their milk yield by 7-14%. The milk yield per cow can therefore be improved. However, there is no room for an increase in milk production since milk quotas are already imposed on each dairy farm in the Community. The pharmaceutical industry is now offering farmers the prospect of using the new hormone to produce the same quantity of milk with fewer cows, i.e., to get even more milk out of each individual cow.

What does the BST hormone mean for the animals treated?

The hormone only operates reliably if it is injected into the animals at regular intervals - usually once every two weeks. The hormone is used especially at the time when the cow's milk yield has been at its peak, after calving, and is about to drop. The BST maintains the peak yield for several weeks longer and keeps it at a higher level than normal throughout the rest of the cow's lactation period.

BST use can have adverse effects on cow health and welfare causing:

- tender swellings on the injection site;
- fertility problems and increased embryo loss;
- increase in mastitis (painful udder inflammation);
- increase in the incidence of lameness (due to the feeding of greater amounts of concentrated cereals);
- failure to gain weight and loss of body condition score, as the cow is literally "milking off her back".

BST may affect the cow's immunity to disease and could be used to overstretch worn out cows. All this makes the cost of BST unacceptable in welfare terms.

What does the BST hormone mean for farmers?

The authorization or banning of BST will have a decisive impact on the conditions for future milk and meat production. Hormones and performance-enhancing drugs are used primarily in industrial mass production units which no longer have anything in common with traditionally farming. If the use of BST is authorized throughout the EEC, it will be used immediately in large intensive farms. This will bring down the price of milk, thus forcing small farmers either to do the same thing or to go out of business. BST treatment produces the desired results in terms of higher yields in only some 60% of cows. Every cow reacts differently and requires the right amount of fodder if it is to maintain a very high yield. Computer management and continuous veterinary monitoring is thus the only way of securing the desired gain and keeping the increased risk under control. BST will mean that farmers too will have to join the high-tech world, an extension of the trend towards the industrialisation of agriculture. The US Congress has estimated that if BST were authorized in the USA, only farms with a herd of more than 50 could survive. One third of US dairy farmers would have to give up production. On a basis of these calculations, not even half the dairy farms in Europe would have a chance of survival. One independent report estimates that if BST were licensed in the UK, by 1994-95 there would be 10% more dairy farmers going out of production than if it were not licensed.

What does the use of BST mean in terms of milk quality?

Only healthy animals can be expected to produce healthy food. If cows are under constant pressure to produce higher yields, this will inevitably affect milk quality. Greater susceptibility to disease will result in increased use of drugs. It is also feared that BST milk will have a lower protein content and a higher fat content. However, milk consists not only of carbohydrates, fat and protein. Important nutritional elements such as orotic acid are not present in such high quantities where milk yields are higher. On the other hand hormone milk contains a higher percentage of dead cells and white blood corpuscles.

Does the hormone have side effects on human health?

The producers maintain that there should be no side effects since BST residues cannot be detected in milk. However, their research work has concentrated on improved yields rather than on the analysis of residues. The growth hormone is apparently tolerated by the human organism. It is, however, unclear whether hormones fragments will have side effects on the human body. If cows injected with BST require more concentrates, it must also be assumed that there will be increased pesticide residues and fungal toxins in the milk which it is known can cause cancer.

What does the use of BST mean for the dairy industry?

Dairies will be able to buy milk more cheaply. On the other hand, existing processing difficulties will be compounded. Milk from high yield cows with a high consumption of concentrates, kept in intensive large-scale units with increased drug inputs has already considerably reduced the keeping qualities of milk and its suitability for cheese making. The average quality of milk will fall if more and more cows are producing lower quality milk and farmers with less intensive production are put out of business. Greater consumer concern for natural and properly produced

Could BST help to reduce hunger in the Third World?

foodstuffs will inevitably create marketing problems for the dairy industry if it processes and markets milk from BST-treated cows.

Hunger in the Third World is not generally caused by insufficient technical solutions but rather by inequalities in the distribution of resources. Thanks to the green revolution and the export of agricultural technology from industrialized countries to the Third World, India is now in a position to export wheat. However, its population continues to suffer from hunger. The BST growth hormone is also being tested in India. While it is conceivable that high yield cows will soon produce more milk in India thanks to BST, they will consume even more cereals and probably have to be kept in air-conditioned sheds belonging to the large land-owners. Trials show that BST does not work as efficiently at high temperatures, so it may be not just a costly but also an ineffective exercise for dairy farmers in India and other developing countries. A growth promotant for cattle will not solve the food problems of the Third World but will increase inequalities and dependence.

Would it not be possible to ban the production and use of BST?

In the Community a whole series of synthetic hormones have already been banned following the 1980 veal hormone scandal. The genetically engineered cattle growth hormone does not come within the scope of this ban. Under Community law it is treated as a high-grade veterinary medicinal product and can at present be tested under the relevant directives. In September 1988 the European Parliament called for an international ban on the use of growth hormones in livestock farming – including BST. The producers contend that a ban would increase the risk of a black market and the illegal production and distribution of hormones.

Has the existing hormone ban proved effective to any extent?

The Community ban on certain synthetic hormones has not in fact managed to prevent infringements occurring in a number of Community countries. This is primarily due to the fact that the ban applies only to the use of hormones and not to their production and the use of hormones can be detected only at a later stage in meat. In addition, the use of drugs and fattening agents is the rule rather than the exception in large scale livestock farming. As long as industrialized livestock farming is widely encouraged in the Community and is not cut back to an ecologically acceptable scale, it will be virtually impossible to enforce a strict ban on hormones.

Could a ban on BST be properly enforced?

The production of BST requires highly complex genetic engineering plants. Only four multi-national firms currently have the necessary technological know-how to manufacture this product. They are Monsanto, Eli Lilly, Cyanamid and Upjohn. Unlike synthetic hormones, which are simple to produce even illegally, a ban on BST could be enforced easily at the production stage. If representatives of these firms nonetheless maintain that it would be impossible to enforce a ban on BST, this can only mean that in the event of a ban they would produce BST illegally.

Can this trend
continue?

To date, approximately half a billion dollars has been invested in the development of BST. This means that the producing firms and politicians are both under pressure to market the new generation of hormones. The producers are spending a great deal on advertising to present the new growth hormone as harmless, useful and natural. For them a ban on BST would mean not only a considerable economic loss but might also threaten other genetically engineered products which are controversial owing to their unquantifiable risks to humans and the environment. The industrial application of biotechnology and genetic engineering is in its infancy. There is still time to reverse decisions and develop alternatives.

What can I do?

At present only a small number of people are able to imagine how genetically engineered products such as the BST cattle growth hormone will actually affect their lives in practical terms. Please discuss this issue with other people. Throughout Europe there are consumer, animal welfare and farmers organisations which have taken a stand on this issue and are running information campaigns about cattle growth hormone. Only if pressure is brought to bear on national governments and the EEC Commission will it be possible to get through a Community-wide ban. Let your Members of Parliament and your milk suppliers know that you are not prepared to accept the legalisation of BST. A consumer boycott of BST milk would have far-reaching consequences that no politician can afford to ignore. Should BST be licensed, insist that milk from treated cows is labelled as such.

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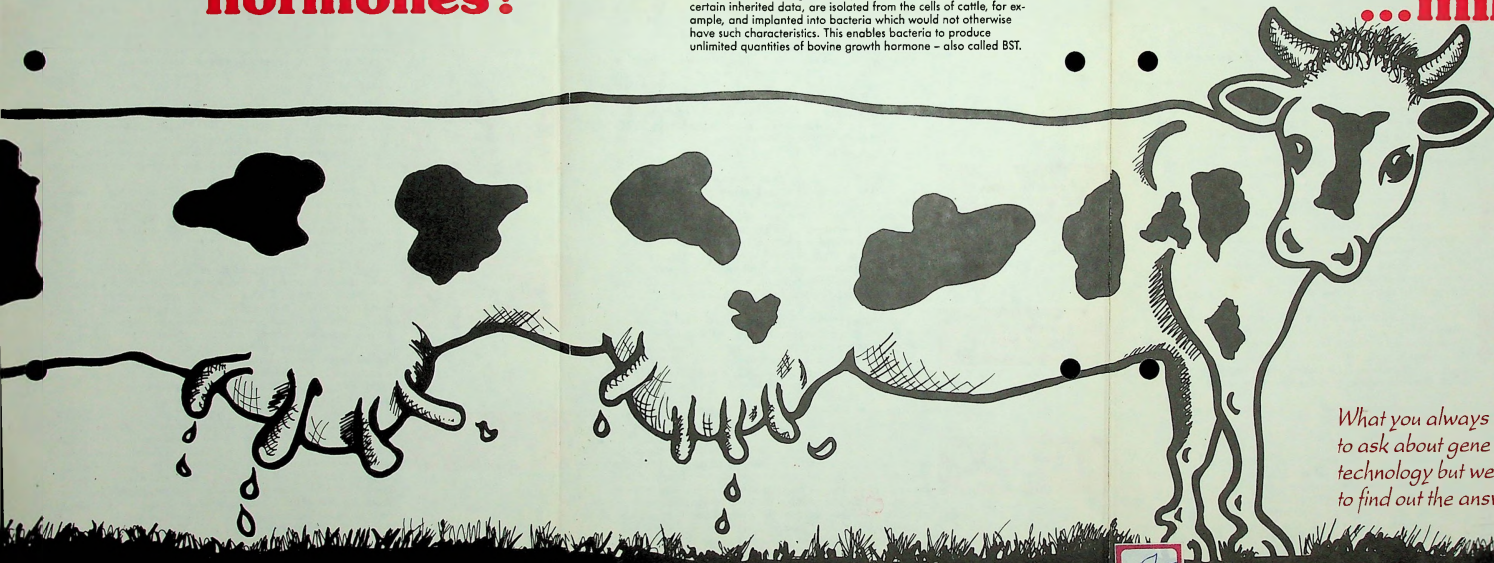
Tel.: 0135-23374



**...genetically
engineered
hormones?**

Hormons are vital to life. They regulate many physical functions in humans and animals. However, as an aid to meat production they have fallen into disrepute and since 1988 their use has been banned in the European Community, although, as recent incidents show, their illegal use continues. The pharmaceutical industry is now producing a new generation of hormones which it describes as "natural". These new hormones are produced by genetic engineering which means that they are the result of technical, microbiological manipulation. Genes, which contain certain inherited data, are isolated from the cells of cattle, for example, and implanted into bacteria which would not otherwise have such characteristics. This enables bacteria to produce unlimited quantities of bovine growth hormone - also called BST.

NOT-4.
**How do you
like your
...milk?**



*What you always wanted
to ask about gene
technology but were afraid
to find out the answer*

**...with or
without... »»»»**

**...genetically
engineered
hormones?**

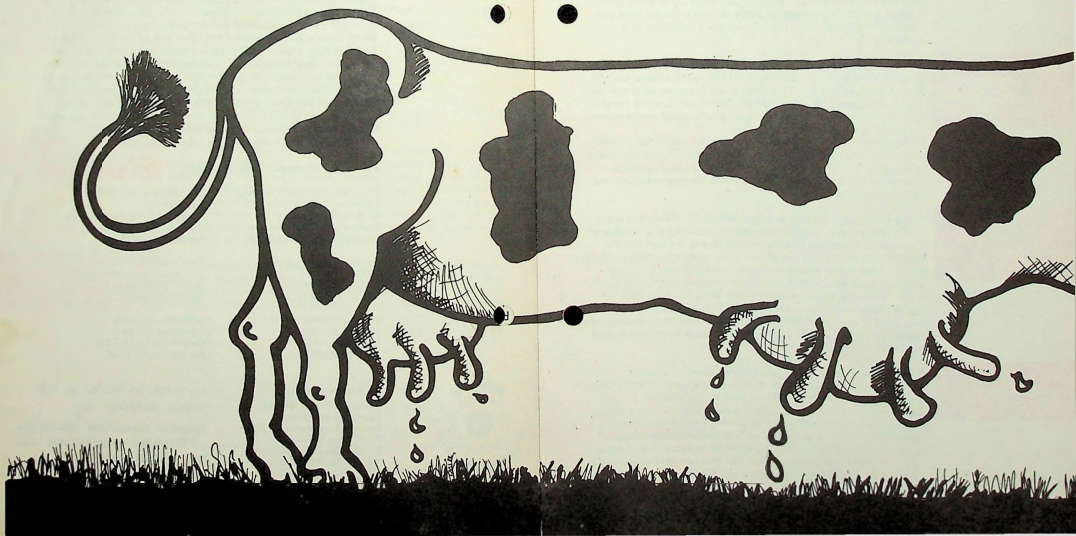


TABLE - 1

NUT-4

B-COMPLEX TABLETS

Brand Name	Elemental iron in mg	Vit. B1 mg.	Vit B2 mg.	Vit B6 mg.	Vit B12 mcg.	Vit PA mg.	Nic- acid mg.	Cap. panto. mg.	Vit. C mg.	Price in paise for equivalent dose (based on price in June 81.
Complex B Glaxo	-	3	1	0.5	5	-	30	1	-	-1 tablet of 4 paise.
Libex	-	3.3	3.3	1	2.66	.33	30	-	50	14.6 (1T = 44 paise)
Becozyme -C	-	3	3	2	2	-	10	5	40	9.3 (1T = 46.5 paise)
Cobadex Forte	-	5	2.5	1	1	.5	7	1	20	4.45 (1 T=44.5 paise)
Beplex	-	10	2.5	0.5	-	-	25	3	-	1 T = 4.25

B-COMPLEX INJECTIONS

Complex B glaxo	-	5	.5	1.5	5	-	25	2.5	-	0.5 ml : 17
Bejectal	-	5	1	2.5	-	-	0.75	2.5	-	0.5 ml : 34

TABLE - 2
MULTIVITAMIN TABLETS

Brand name	Vit.B1 mg.	Vit.B2 mg.	Vit.B6 mg.	Vit.B12 mcg	Vit. FA mg.	Nic. acid	Ca- Pantc. mg.	Vit A I.U.	Vit. D IU mg.	Vit. C mg.	Mine- rals	Iron solt mg	Price in paise for equivalent dose. (based on prices in June 1981).
Vimgran	3	3	1	2	0.1	20	5	5000	500	50	-	-	13.5 = 1 Tablet
Vitaminets Forte	10	2	3	1	-	10	10	4000	400	50	-	-	18 = 1 Tablet
Multivita- plex Forte	2.5	2.5	.5	1.25	.25	25	-	5000	3.7	38	-	-	10 (19.5 = 1T)
<u>MULTI VITAMIN SYRUP</u>													
Multivita- plex	3.5	2.7	1	-	-	20	-	5000	1000	50	-	-	5 ml = 38.65
Becadex	1.5	1.2	-	2.5	-	10	-	3000	500	40	-	-	5 ml = 21.45
Visyneral	1.5	0.6	1	2	-	10	2	3000	1000	50	-	-	5 ml = 32.75
<u>MULTI VITAMIN DROPS</u>													
ABCDEC	1	0.4	1	-	-	5	2	5000	1000	50	-	-	0.6 ml. = 14.2
Vitamin M drops	1.5	1.2	.5	-	-	10	-	5000	1000	50	Mn Zn	K 17.27	0.6 ml = 17.08
Alvite	10	2	1	-	-	20	-	5000	500	30	-	-	55
Vi-Syneral	5	0.5	1.5	-	-	10	-	5000	400	25	-	-	48

TABLE NO.3
IRON WITH MULTIVITAMIN TABLETS

Brand Name	Vit B1 mg.	Vit B2 mg.	Vit B6 mg.	Vit B12 mcg.	FA Folic acid mg.	Vit C mg	Cap panto. mg	Nic acid mg	Elemental Iron in mg.	Price in paise for equivalent dose (based on prices in June 81)
Iberol	1	1	0.5	4.6	.33	25	1	5	52.5	6.3 (1 tablet costs 19 paise.)
Exifol	2	2	1	100	5	50	3	10	45	1 T = 59
Fesovit	2	2	1	-	-	50	-	15	45	1 T = 60.3
Fersolate + Complex B Glaxo	3	1	.5	5	-	-	1	30	60	1 T = 7.5 paise.
----- IRON WITH FOLIC ACID AND VIT B 12 -----										
Ferplus				66 5	1	150			66	1 tablet = 34.3
Femitinic				10	1	150			66	1 T = 41.8
Macrafclin with iron				10	1	-			66	1 T = 6.5
Autrin				9	1.2	90			70	20.76 (1T = 34.6) (34.6 x 3/5)
Rediplex				10	1	100			68.6	21.3 (1T = 32) (32 x 2/3)
Fersolate									66	3.5
Imforon F12				668	3.2				66.4	154
Uniferon F12				66.4	3.2				66.4	76

(Tables prepared by Nitin Sane, Pune).

TABLE - 1

B-COMPLEX TABLETS

Brand Name	Elemental iron in mg	Vit. B1 mg.	Vit B2 mg.	Vit B6 mg.	Vit B12 mcg.	Vit FA mg.	Nic-acid mg.	Cap. panto. mg.	Vit. C mg.	Price in paise for equivalent dose (based on price in June 81.
Complex B Glaxo	-	3	1	0.5	5	-	30	1	-	-1 tablet of 4 paise.
Libex	-	3.3	3.3	1	1.66	.33	30	-	50	14.6 (1T = 44 paise)
Becozyne -C	-	3	3	2	2	-	10	5	40	9.3 (1T = 46.5 paise)
Cobadex Forte	-	5	2.5	1	1	.5	7	1	20	4.45 (1 T=44.5 paise)
Beplex	-	10	2.5	0.5	-	-	25	3	-	1 T = 4.25

B-COMPLEX INJECTIONS

Complex B glaxo	-	5	.5	1.5	5	-	25	2.5	-	0.5 ml : 17
Bejectal	-	5	1	2.5	-	-	0.75	2.5	-	0.5 ml : 34

TABLE - 2

MULTIVITAMIN TABLETS

Brand name	Vit. B1 mg.	Vit. B2 mg.	Vit. B6 mg.	Vit. B12 mcg	Vit. FA mg.	Nic. acid mg.	Ca-Panto. mg.	Vit A I.U.	Vit. D IU mg.	Vit. C mg.	Minerals	Iron mg	Price in paise for equivalent dose. (based on prices in June 1981).
Vimgran	3	3	1	2	0.1	20	5	5000	500	50	-	-	13.5 = 1 Tablet
Vitaminets Forte	10	2	3	1	-	10	10	4000	400	50	-	-	18 = 1 Tablet
Multivitamin Forte	2.5	2.5	.5	1.25	.25	25	-	5000	3.7	38	-	-	10 (39.5 = 1T)
<u>MULTI VITAMIN SYRUP</u>													
Multivitamin plex	3.5	2.7	1	-	-	20	-	5000	1000	50	-	-	5 ml = 38.65
Becadex	1.5	1.2	-	2.5	-	10	-	3000	500	40	-	-	5 ml = 21.45
Visyneral	1.5	0.6	1	2	-	10	2	3000	1000	50	-	-	5 ml = 32.75
<u>MULTI VITAMIN DROPS</u>													
ABCDEC	1	0.4	1	-	-	5	2	5000	1000	50	-	-	0.6 ml. = 14.2
Vitamin M drops	1.5	1.2	.5	-	-	10	-	5000	1000	50	Mn Zn	K 17.27	0.6 ml = 17.08
Alvite	10	2	1	-	-	20	-	5000	500	30	-	-	55
Vi-Syneral	5	0.5	1.5	-	-	10	-	5000	400	25	-	-	48

TABLE NO.3
IRON WITH MULTIVIT. MIN TABLETS

Brand Name	Vit B1 mg.	Vit B2 mg.	Vit B6 mg.	Vit B12 mcg.	FA Folic acid mg.	Vit C mg	Cap panto. mg	Nic acid mg	Elemental Iron in mg.	Price in paise for equivalent Dose (based on prices in June 81)
Iberol	1	1	0.5	4.6	.33	25	1	5	52.5	6.3 (1 tablet costs 19 paise.)
Exifol	2	2	1	100	5	50	3	10	45	1 T = 59
Fesovit	2	2	1	-	-	50	-	15	45	1 T = 60.3
Fersolate + Complex B Glaxo	3	1	.5	5	-	-	1	30	60	1 T = 7.5 paise.
----- IRON WITH FOLIC ACID AND VIT B 12 -----										
Ferplus				66 5		1	150		66	1 tablet = 34.8
Femitinic				10		1	150		66	1 T = 41.8
Macrafolin with iron				10		1	-		66	1 T = 6.5
Autrin				9		1.2	90		70	20.76 (1T = 34.6) (34.6 x 3/5)
Rediplex				10		1	100		68.6	21.3 (1T = 32) (32 x 2/3)
Fersolate									66	3.5
Imforon F12				66.8		3.2			66.4	154
Uniferon F12				66.4		3.2			66.4	76

(Tables prepared by Nitin Sane, Pune).

TABLE - 1

B-COMPLEX TABLETS

Brand Name	Elemental iron in mg	Vit. B1 mg.	Vit B2 mg.	Vit B6 mg.	Vit B12 mcg.	Vit FA mg.	Nic- acid mg.	Cap. panto. mg.	Vit. C mg.	Price in paise for equivalent dose (based on price in june 81.
Complex B Glaxo	-	3	1	0.5	5	-	30	1	-	-1 tablet of 4 paise.
Libex	-	3.3	3.3	1	1.66	.33	30	-	50	14.6 (1T = 44 paise)
Becozyme -C	-	3	3	2	2	-	10	5	40	9.3 (1T = 46.5 paise)
Cobadex Forte	-	5	2.5	1	1	.5	7	1	20	4.45 (1 T=44.5 paise)
Bejectal	-	10	2.5	0.5	-	-	25	3	-	1 T = 4.25

B-COMPLEX INJECTIONS

Complex B glaxo	-	5	.5	1.5	5	-	25	2.5	-	0.5 ml : 17
Bejectal	-	5	1	2.5	-	-	0.75	2.5	-	0.5 ml : 34

TABLE - 2
MULTIVITAMIN TABLETS

Brand name	Vit.B1 mg.	Vit.B2 mg.	Vit.B6 mg.	Vit.B12 mcg	Vit. FA mg.	Nic. acid	Ca- Panto. mg.	Vit A I.U.	Vit. D IU mg.	Vit. C mg.	Mine- rals	Iron solt mg	Price in paise for equivalent dose. (based on prices in June 1981).
Vimgran	3	3	1	2	0.1	20	5	5000	500	50	-	-	13.5 = 1 Tablet
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Multivita- plex	3.5	2.7	1	-	-	20	-	5000	1000	50	-	-	5 ml = 38.65
Becadex	1.5	1.2	-	2.5	-	10	-	3000	500	40	-	-	5 ml = 21.45
Visyneral	1.5	0.6	1	2	-	10	2	3000	1000	50	-	-	5 ml = 32.75
<u>MULTI VITAMIN DROPS</u>													
ABCDEC	1	0.4	1	-	-	5	2	5000	1000	50	-	-	0.6 ml. = 14.2
Vitamin M drops	1.5	1.2	.5	-	-	10	-	5000	1000	50	Mn K Zn	17.27	0.6 ml = 17.08
Alvite	10	2	1	-	-	20	-	5000	500	30	-	-	55
Vi-Syneral	5	0.5	1.5	-	-	10	-	5000	400	25	-	-	48

TABLE NO.3

IRON WITH MULTIVITAMIN TABLETS

Brand Name	Vit B1 mg.	Vit B2 mg.	Vit B6 mg.	Vit B12 mcg.	FA Folic acid mg.	Vit C mg	Cap panto. mg	Nic acid mg	Elemental Iron in mg.	Price in paise for equivalent dose (based on prices in June 81)
Ibercl	1	1	0.5	4.6	.33	25	1	5	52.5	6.3 (1 tablet costs 19 paise.)
Exifcl	2	2	1	100		5	50	3	45	1 T = 59
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(Tables prepared by Nitin Sane, Pune).

Spirulina

A Wonder Gift Of Nature

The microplant is the richest source of protein, vitamins and minerals.

Although the green revolution has increased the availability of foodgrains, protein-calorie-malnutrition is prevalent in many parts of the world. People who are poorly nourished and undernourished represent approximately one-eighth of the human population.

According to the 1979 report of World Food Council (WFC), about one billion people suffer from chronic undernutrition, and about three-fourths of them live on the Indian subcontinent, South East Asia and in Africa. Among them, children and women are the most vulnerable and they suffer from protein-calorie-malnutrition.

We see two major strategies to fight the protein-calorie-malnutrition:

One: Increasing calorie supply by ensuring availability of sufficient food. This has a direct bearing on the total foodgrains production.

Two: Ensuring availability of protein both in terms of quality and quantity.

Well, as far as the first point is concerned, we are self-sufficient i.e., in the production of sufficient or surplus amount of foodgrains for our growing population: The second i.e., the availability of protein, both in terms of quality and quantity, can be achieved either through ani-

mal protein or soya protein.

Searching alternatives

Statistical data show that most Indians prefer rather vegetarian sources of protein. But, sadly, the per capita consumption of

such pulses in the Indian subcontinent has decreased from 54 g/day to 44 g/day as per FAO production year book 1983.

The decline may be due to the spectacular increase in cereal grain production. However, the pulse production over the years has more or less stagnated not only in India but in the world as a whole.

Keeping these facts in view, scientists in India and all over the world made a search for alternative renewable sources of protein. Hence, the relevance of algae and other forms of micro-organisms as sources of Single Cell Protein (SCP) that gained increasing attention during the last three decades. Among them, *Spirulina*, a microplant placed under blue green algae or cyanobacteria, dominated the world scenario.

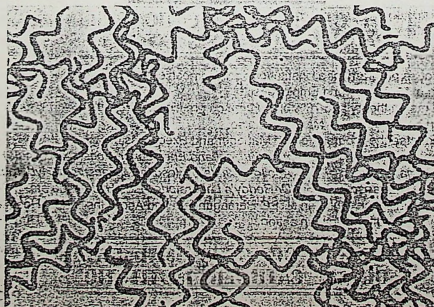
The cyanobacteria's origin dates back to 3.2 billion years ago. These organisms

are a link between bacteria and plants, but due to dominance of chlorophyll and other blue and yellow pigments, they are placed under microplant category.

Spirulina got its name due to its spiral shape. It is the richest source of protein, vitamins and minerals in the world. It also possesses an abundant amount of natural pigments, blue, green, orange and yellow.

Dominance of blue-green pigments

Spirulina got its name due to its spiral shape. It is the richest source of protein, vitamins and minerals in the world. It also possesses abundant amount of natural pigments, blue, green, orange and yellow.



Microscopic view of Spirulina

gives its reference as blue green algae. The algae are nothing but micro and macro plants which are green in colour and found abundantly in all sorts of water bodies ranging from pools, puddles and ponds to rivers and oceans.

Spirulina is also a typical algae form discovered for the first time from Mexico and Chad lakes. The lakes, alkaline in nature, possess lots of bicarbon-

ates, nitrates, sulphates and phosphates — a staple diet of spirulina.

Tribes of Mexico belonging to Aztec and those of Chad were voracious eaters of this microplant. They also marketed it in the local and national markets as a staple and healthy food.

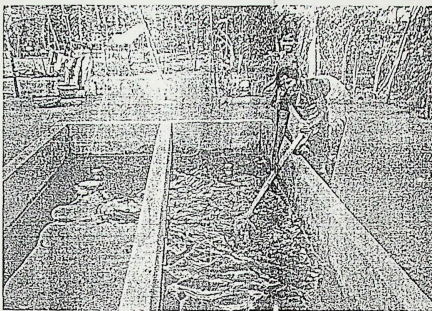
They consumed it mostly during drought periods when food grains were scarce. The Europeans who carried out various expeditions in North America and Africa brought this microplant to their laboratories and were astonished to see that its protein content was over 70%. In addition, it contained 18 aminoacids, including 8 essential ones out of 10 recommended by WHO, besides numerous vitamins, minerals, lipids, carbohydrates and natural pigments in abundance.

With the further progress in science and technology, attempts were made all around the globe to tame this microplant or to grow in artificial ponds. Result: a new dimension to a new technology leading to green revolution.

Scientists, especially in USA, Mexico, Israel and India, did pioneering work in this field because this plant was locally available and easily adapted itself to local conditions.

The late Dr C.V. Seshadri, Director of Shri AMM Murugappa Chettiar Research Centre, Madras, played a vital role and introduced its mass cultivation technology to Indian panorama in the early '90s.

The same biotechnology is now available in India and South East Asia to fulfill



Spirulina pond at SC colony, Kurinthampara, Tamil Nadu

the needs of major food, pharmaceutical and cosmetic industries all over the globe.

Medically, this microplant also deals a lot with some chemo-preventive therapeutic applications mainly in areas of cancer, heart ailments, diabetes, constipation, liver cirrhosis, pancreatic pains, wounds, night blindness, anaemia, rheumatoid arthritis, ageing ulcer, increased lactation and for the normal well-being of the human body.

It is a rich source of B-carotene, almost 18 times more than carrot. Being a precursor of vitamin A and a potent antioxidant, it helps in maintaining healthy eyes,

Medically, this microplant also deals a lot with some chemo-preventive therapeutic applications mainly in areas of cancer, heart ailments, diabetes, constipation, liver cirrhosis, pancreatic pains, wounds, night blindness, anaemia, rheumatoid arthritis, ageing ulcer, increased lactation and for the normal well-being of the human body.

skin and all tissues. Protects eyes from conjunctival xerosis, oral and other body parts from oncological lesions and manifestation, thus averting risks of getting cancer.

The National Institute of Nutrition, Hyderabad, under Indian Council of Medical Research has already established the effective nutritional and long-term toxicological aspects of spirulina.

Chlorophyll or

green blood — structurally similar to haemoglobin — is substantially present along with iron in bioavailable form to curb anaemia. It is also the one and only vegetable source of cyanocobalamin for effective erythropoiesis, simultaneously strengthening protein sheath surrounding the nerve fibres.

Presence of essential fatty acids like Alpha Gamma linolenic and linoleic acids makes it a potent tool to curb heart ailments, obesity, arthritis and for proper functioning of cell membranes, precursors of prostaglandin, regulating the safety of all tissues, especially those hit by hypercholesterolic conditions.

Recent studies carried out by scientist at Bangalore, Ooty and Jaipur show that daily intake of spirulina at 2-5g dose helps in wound and ulcer healing. It also reduces SGPT and SGOT enzymes levels in blood, thus helping in prevention of chronic liver cirrhosis.

Presence of some other vitamins like biotin (Vit. H), tocopherol (Vit. E), thiamine, riboflavin, niacin, folic acid, pyridoxic acid etc in appreciable quantities also nourishes the human body besides B-carotene and vitamin B12 i.e. cyanocobalamin.

Vitamin E prevents ageing, helps in betterment of skin and hair. Thus it has become an irreplaceable ingredient in shampoos, soaps, face creams and other cosmetic ingredients.

Analysis and experiments carried out in various research laboratories world-

wide has pinpointed a fact: spirulina is a wonder gift of nature — a well-balanced food with lots of chemo-preventive and therapeutic applications besides its use in cosmetics and it has no side-effects.

Further, more toxicological and nutritional studies with a variety of animals ranging from fishes, silkworms to poultry have revealed that spirulina is a good feed to use as it shortens the development periods, im-

parts new colour to fishes and to egg yolks and increases their working capacities besides increasing their life-spans.

Spirulina has also been tested and proved as a best supplementary feed for shrimps, prawns, fishes, silkworms, poultry, pigs etc.

Cosmetics — the threshold area awaits a great future from spirulina. It also contains green, yellow, orange and blue pigment upto 20% level.

They are non-carcinogenic and easy to be incorporated in various facial mask formulations. Phycocyanin is marketed as luna-blue in Vietnam and Taiwan for eye-lashes and facial masks. These pigments not only improve the facial value but also increase immunity and retards ageing, if taken orally.

With wide applications of spirulina in food, feed, therapeutic, to cosmetic fields today's major food, pharmaceutical and cosmetic industries are poised to tap this natural gift of nature.

Presently only three companies in India are producing this rare plant for the Indian and international market. The annual production is around 250 tonnes a year. This fact is based on UN recommendation that a healthy medium-size adult should consume 20 kg of protein/year. This would take approximately 4 million hectares or 1 billion acres of desert land in warm climates. That is about 16,000 square miles or just 1% of all U.S. agricultural land.



Women from earthquake-affected area of Latur Dist. undergoing training in Spirulina cultivation

Spirulina alkaline to saline waters, loves desert conditions, enough sunlight and moderate to high temperature ranges. On per acre yield basis, Spirulina consumes just 1/10th of water consumed by soyabbeans but gives twenty times more protein as it can accumulate upto 70% protein on dry weight basis.

Besides this, spirulina liberates tonnes and tonnes of pure oxygen into the environment through its photosynthetic machinery by consuming tonnes and tonnes of carbon dioxide. Thus, spirulina is not only a good food, feed, cosmetic, therapeutic and chemopreventive ingredient but

Spirulina consumes just 1/10th of water consumed by soyabbeans but gives twenty times more protein as it can accumulate upto 70% protein on dry weight basis.

also an environmentally friendly micro-plant, which is a true gift of nature to mankind. Recolina, Notoxid, Sunora Spirulina and Multinal are its marketable brands available in Indian market.

Besides the rather costlier commercial availability of spirulina in India, it has also been made available to poor people of our country by Shri Anna Murugappa Chettiar Research Centre in the form of one

project or the other like large-scale nutritional supplementation programmes carried out by MCRC by feeding spirulina to 5000 pre-school children for a year in Pudukottai District of Tamil Nadu under the aegis of department of Biotechnology, Ministry of Science and Technology, Government of India, New Delhi.

Similarly, many women in Tamil Nadu are producing the algae in their courtyards through technical help from MCRC. In the same connection, MCRC is presently engaged in giving employment to hundreds of women in earthquake-hit areas of Latur and Osmanabad districts through spirulina production.

The project SERVE — Spirulina for Employment Generation and Rehabilitation of Victims of Earthquake is the first of its kind on the globe. It aims at not only tackling the problems of health and malnutrition in the area but also to give a sustained income to earthquake victims. It is also sponsored by DBT, MST, Government of India, New Delhi.

In the near future, feeding the algae at 1g/day dose to malnourished children of the area will not only improve their health and mental status but will also come close to the dream of our late Prime Minister, Smt. Indira Gandhi that, "No child should go to sleep undernourished".

(Text and photos, Courtesy: Shri AMM Murugappa Chettiar Research Centre, Tharamani, Madras 600113.)

FOOD AND NUTRITION

The Central Theme of each *Tibetan Health* covers one of the important activities of Primary Health Care (PHC). Previous issues have looked at Maternal and Child Health, Immunization, Water and Sanitation and Health Education. Here we will consider the role of Food and Nutrition in PHC, particularly as it relates to Tibetan communities in India and Nepal.

Introduction

For Tibetans, as for people of many other cultures, food fills more than the belly. It plays important roles in spiritual and daily life that are not directly related to its nutritive value, yet may influence peoples lives very significantly. These aspects of food have important implications when considering nutrition. After water, food is the most essential ingredient for human survival. As our primary source of nutrition the socio-political power of food is enormous, at all levels—individually, in the family, in the community, for the country, and globally—where other determinants such as finance and political expediency often lose sight of its basic function (nutrition), so that despite adequate global food production, huge numbers of the worlds population continue to starve.

From the strict health perspective obviously the nutritive aspect of food is the most important in immediate terms. However the socio-political aspects cannot be ignored and until they are addressed health care services will always be faced with nutrition related problems caused by the inequitable

distribution of food.

Nutrition for Tibetans

How we eat is largely determined by how our mothers fed us, what food is cultivated and readily available, how it is prepared and consumed, how it is stored. This is traditional knowledge that we do not question and eating practices that have evolved over many years are usually nutritionally sound and suitable for the conditions in which they have arisen. It is when the conditions change, such as with industrial development or migration that inappropriate continuation of the old practice may compromise the nutritional status and health of the family. The climate and conditions of the Tibetan plateau in no way prepared the fleeing exiles of the late 1950s and early 60s for the conditions they were to meet in India. The extreme dryness and cold that they were used to combined with the relatively low population density mitigated against the survival of most of the micro-organisms that commonly cause infectious disease in warmer, moister, more populous places. Thus traditional Tibetan food practices did not protect against the rapid invasion and multiplication of germs capable of causing infectious diseases. Practices such as drying of food for later consumption and the inadequate reheating of food, while suitable and economic for Tibetan conditions have indirectly led to much sickness and even death when continued under Indian conditions. The other thing to change in the new environment was the type of food available. Then too, the actual composition of the traditional Tibetan diet, with its high fat and salt content

appropriate for the different metabolic requirements of a cold dry climate was not appropriate for the new conditions, both in terms of life-style and availability. For most Tibetans even the basic staple carbohydrate was different, wheat or rice instead of barley. Everything was different, the basic foodstuffs available, the methods of preparation and storage, the metabolic requirements of the people and the unseen army of pathogenic organisms waiting to invade unprotected food, causing diseases previously not experienced.

Thus the conditions for good nutrition for Tibetans in pre-1950s Tibet were quite different from those of Tibetan refugees in India, (and probably different again from those of the Tibetans who are now remaining in Tibet.) Information about the state of nutrition in Tibet prior to the Chinese occupation is all anecdotal (i.e. only available indirectly through personal accounts). Similarly, reliable and medically significant information about the current health status of the indigenous Tibetans is difficult to obtain. However eye witness accounts refer to specific deficiency diseases—blindness and eye disease from vitamin A deficiency, anaemia from iron deficiency, goitre from iodine deficiency, rickets and scurvy—and generalized protein - energy malnutrition with stunted growth.

The situation of the Tibetan refugee population in India and Nepal is not much better elucidated, with little in the way of anthropomorphic (growth measurement) studies on the first generation of children to grow up here. Those who came to India as children suffered appalling hardship on the journey which, when compounded by ex-

posure to new infectious diseases meant many of them died. They subsequently grew up in huge residential schools where the basic nutrition, especially in the early years was often insufficient for optimal growth. Other factors such as the massive changes in lifestyle and disruptions to families, could be expected to have had negative effects on the growth of these children. The second generation children appear to be both taller and heavier than their parents.

What is Nutrition ?

Nutrition is the study of food and the way our bodies use food. The science of nutrition has made great advances over the past few decades but that has not necessarily helped us in our practical understanding and implementation of the theory in our daily eating habits. Preoccupation with the fine details of calorie counting and what constitutes a "balanced" diet tends to ignore the important realities of food supply, the ability to buy etc. Briefly, the food we eat can be described as :-

BODY BUILDING FOOD (proteins) — for example eggs, meat, dahl and milk.

ENERGY GIVING FOOD (carbohydrates and fats) — for example flour, rice and sugar are carbohydrates and butter and oil are fats.

& PROTECTIVE FOODS (vitamins and minerals) — these are found in fruit and vegetables.

These three types of food are all essential to sustain life in amounts and proportions that vary according to age, state of health and other factors. Protein foods tend to be expensive and are therefore often relatively

LOBSANG'S STORY

Lobsang went into the small restaurant, sat at his usual table and waited for his food to be served. They were late today which annoyed him, like the flies buzzing round all morning disturbing his concentration had annoyed him. So many small things annoyed him these days—no water last week then no electricity last night when he was supposed to be finishing a piece of work for that irritating woman who wanted everything done the day before she ordered it. Then his sister's son had written saying he needed money, reminding him that he hadn't yet paid the boy's school fees. The abrupt arrival of a plate of rice and dahl interrupted his thoughts. He didn't bother to look round to see who served it, *dkon mchog gsun, rice and dahl again!* He was sick of rice and dahl. All through his school years he'd had to eat it and it hadn't stopped now. Impatiently he reached for the jar of chillie powder and laded two spoons on to the food. No taste, two more, plus some salt for good measure. What had the doctor said? Less salt and chillie because the stomach aches that he had been getting lately could be due to an ulcer and he should try to eat less salt anyway so he didn't get high blood pressure when he was older. He pushed away the half eaten plate, reached into his pocket and took out his last cigarette. When he was older - ha! He was only twenty three. When he was older he'd worry about those problems then. Right now he had enough to worry about anyway. As he flicked the ash from the tip of the cigarette onto the plate he remembered guiltily that the doctor had also told him that he should give up his smoking. He knew she was right there - it cost him too much, it upset his mother (whom he'd promised he would give up), and it made him cough all the time and too quickly out of breath when he played football with his friends in the evenings. Quite how smoking could also cause his stomach aches he wasn't sure, but she said it did ... and it too could cause high blood pressure and even cancer in the lungs and mouth. Last week he had caught his youngest brother smoking with his friends which had made him inexplicably angry. He had hit him hard across the face, knowing as he did so that the anger was partly directed at himself. Guilt for own role in the boy's smoking and for not having been able to give up.

His head ached. May be that was why he was in such a bad mood today. Last night he'd had too much to drink again. Well what else was there to do after the electricity went off? That was another thing that he had promised his mother he would stop. And another cause of his stomach problems according to the doctor! Quickly he tried to shut out the recollection of the blood he had vomited up just that morning. It frightened him. When his room mate had seen it he had urged him to go back to the doctor. Lobsang had told him to mind his own business and then he'd taken two of those chalky white antacid tablets which were supposed to help. They just made him feel more nauseated. May be he would go to the doctor. He hoped it wouldn't be the same one he'd seen before, with her gratuitous advice and chalky medicine which didn't help him.

Lobsang is not a real person. His story is made up from the stories of many people and it helps to illustrate how bad habits in eating, drinking and lifestyle can combine to cause health problems, in this case peptic ulcer (see box). When he saw the doctor that day (unfortunately for Lobsang it was the same doctor!), she was concerned that he had vomited blood and noticed that he was looking very pale and had lost weight since his first visit. She thought he probably did have an ulcer and it was bleeding after having been irritated by the alcohol Lobsang had drunk the night before.

To properly diagnose an ulcer the best method is to look down into the stomach and upper intestine with a long tube called a gastroscope or endoscope. (See page 22 of this issue.) If there is no endoscopy service available then special x-rays using a white substance called barium to outline the walls of the stomach and intestine can be done. The person swallows the barium then x-rays

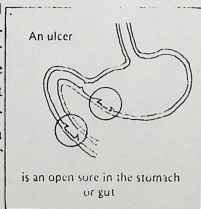
are taken as the it passes down through the gullet to the stomach and then the first part of the small bowel. The white barium shows up on the x-ray film and will outline any defects in the walls of the intestine, such as an ulcer.

If some one is found to have an ulcer by endoscopy or barium x-ray, or if an ulcer is highly suspected on clinical grounds, then the best medicine to heal it, is a drug which prevents acid secretion in the stomach; such, as cimetidine or ranitidine. However these drugs are expensive and need to be taken for four to six weeks to heal the ulcer and there is a high chance of relapse (i.e. the ulcer coming back again). Occasionally people need surgery to stop an ulcer bleeding or to prevent it from recurring.

With peptic ulcer disease, as with many other diseases, what we eat is important. Other diseases which are common amongst Tibetans that are directly or indirectly related to what we eat and drink, (among other things), are arthritis, diabetes, high blood pressure and alcoholic liver disease. Once these diseases are established allopathic medicines can not cure them, neither pills nor injections. Medicines can help people to feel better and may ameliorate the condition while they are being taken, but then they need to be taken continuously for many years. The best cure is *prevention*. What we eat and drink is our own responsibility therefore our health as determined by our diet and lifestyle is our responsibility. If we eat, drink or live unwisely the health consequences are ours.

Epigastric Pain and Peptic Ulcer Disease

Epigastric pain, or pain in the centre of the upper abdomen often comes after eating too much spicy or greasy food or drinking too much alcohol. These make the stomach produce extra acid which causes a discomfort or burning feeling in the stomach. Frequent or lasting epigastric pain is a warning sign of an ulcer.



An ulcer is a chronic sore in the stomach or intestine, caused by too much acid. It can be recognised by a chronic, dull (sometimes sharp) pain in the stomach. Often the pain lessens when the person eats food or drinks milk. The pain gets worse 2 to 3 hours after eating, if the person misses a meal, or after drinking alcohol or eating chillie or fatty foods. The pain is often worse at night.

If the ulcer is severe, it can cause vomiting, sometimes with blood. Stools with blood from an ulcer are usually black like tar.

International Conference on Mental Peace and Global Health

—Organized by the Department of Health, hosted by the Department of Health and Council for Religious and Cultural Affairs.

—Dharamsala, November 12th—15th, 1990.

Three years ago, Mrs. Namgyal Lhamo Taklha, (then Director of the Tibetan Medical and Astrological Institute), was challenged to host a conference on Mental Peace and Global Health. In November this challenge was realized when participants from 10 countries, plus many observers, met and presented their individual or group views. As reiterated by each speaker, the topic is vast and open to many different interpretations, of which their own could be a but a tiny contribution - thus as the meeting progressed listeners were treated to wide range of views ranging from the scientific and clinical to the inter and intrapersonal and we were privileged to be addressed by two very learned Tibetan Buddhist scholars, Ven. Khamtul Rinpoche and Ven. Lobsang Gyatso, and others, on the Tibetan Buddhist philosophical approach to mental peace.

The conference was opened by Kalon Kalsang Yeshe and welcome speeches were made by Mrs. Namgyal Lhamo Taklha and Mr. Moury (Belgium). The first session then proceeded as follows :-

Dr. Dan Goleman (U.S.A.) spoke first about the influence of emotions on health, particularly about the advances in the past decade in the field of immunology, linking the functions of the immune system with the brain and central nervous system and how positive and negative psychological states affect the immune system, and thus our health.

He was followed by Dr. Francois Majois (Belgium), who gave a talk titled *Cancer and Psychology*, which discussed the possible influences of the psychological state on the initiation, promotion, progression and finally, treatment of the cancer process. Again the role of the immune system in regulating cancer growth was emphasised, with exciting implications for prevention by vaccination. She finished by saying that much more research needs to be conducted at all levels before definite conclusions can be drawn.

Dr. Kim Jobst (U.K.) concluded the first session with a very thought-provoking talk where he asked us to consider disease, mental and physical, as a manifestation of health. Shifting our perception of illness this way then permits us to see the "disease" process as a perfect system striving to regain its balance; to make use of suffering that is inevitable and, as doctors and healers, to help people more effectively.

The second day began with Dr. Myriam Leplat's (Belgium) paper on *Anxiety and Panic Disorders*, where she discussed how problems originating or exaggerated psychologically can be somatically, or physically, manifested and interfere with normal daily functioning. She was followed by Dr Barry Kerzin (U.S.A.) who talked about *Stress Related Disorders and the Immune System -- the Approach of Behavioural Medicine and*

INNER PEACE

"Be on the lookout for symptoms of inner peace. The hearts of a great many have already been exposed to inner peace and it's possible that people everywhere could come down with it in epidemic proportions. This could pose a serious threat to what has, up to now, been a fairly stable condition of conflict in the world.

"Some signs and symptoms of inner peace :

A tendency to think and act spontaneously rather than on fears based on past experience.

An unmistakable ability to enjoy each moment.

A loss of interest in judging other people.

A loss of interest in interpreting the actions of others.

A loss of interest in conflict.

A loss of the ability to worry -this is a very serious symptom.

Frequent, overwhelming episodes of appreciation.

Contented feelings of connectedness with others and nature.

An increasing tendency to let things happen rather than make them happen.

Frequent attacks of smiling.

An increased susceptibility to the love extended by others, as well as an uncontrollable urge to love them back."

- quoted by Dr. Kim Jobst, *Mental Peace and Global Health Conference* (source unknown).

Meditation Therapy. He explained the role of Behavioural Medicine in the treatment of psychosomatic disorders (such as headache), the modification of health risk behaviours, the maintenance of good health (i.e. disease prevention) and the maintenance of the immune system, and then went on to discuss stress related illness and specific therapies used in Behavioural medicine. He then briefly outlined the use of Mindfulness Meditation (University of Massachusetts) in the treatment of chronic illness. Two important

points were made :- The importance of motivation over the type of therapy used, and the healthy or positive aspect of suffering, in that it can lead to transformation.

The next session consisted of a talk by Dr. Colin Butler (Australia) on *Mental Peace and Global Ecological Medicine* and short presentations from the group from the U.K. who each made personal statements on the meaning of mental peace and global health for them as individuals in relation to their

lives and their work. Dr. Butler concentrated on the environmental and ecological aspects of global health, defining health as a state of balance and a *sustainable* state of mental and physical wellbeing (Maurice King) and outlining the major global diseases of nuclear pollution, ozone depletion, etc. He stressed the importance of increasing awareness of the urgency of these problems that face us all.

The afternoon session of the second day was devoted to Dr. Tenzin Chodrak (Tibet) who spoke about *Overcoming Torture*, his experiences during twenty one years of imprisonment in Tibet. In a very moving speech he outlined the extreme physical and mental hardships and deprivations suffered by prisoners and yet still asked us to remember that all Tibetans in Tibet, not only prisoners, are denied freedom of expression and movement with suppression of the basic human rights under Chinese rule. He attributes his extraordinary survival to the practice of his faith combined with his profound knowledge and use of the Tibetan medical texts.

Prof. Dorjee Gyalpo closed the day with a talk on the relationship between mind and body according to Tibetan medicine.

On the third day all the speakers were Tibetan. Ngawang Topchen, a young monk from Drepung Monastery who recently came to India, opened the first session with a description of the current situation in Tibet including the repression in the monasteries and his arrests for involvement in human rights demonstrations and subsequent treatment in prison. He again reiterated the importance of a strong Buddhist faith, both as a reason to continue to resist

Chinese rule in Tibet and the reason he was able to withstand torture and imprisonment.

Next, Ven. Lobsang Gyatso, Principal of the Buddhist School of Dialectics, Dharamsala, spoke on the *Buddhist Theory of Mind Control*. In an extremely interesting and well illustrated talk he proposed that the modern preoccupation with material and intellectual development leads only to frustration and unhappiness and that for greater mental peace more emphasis needs to be given to ethical development. He outlined the Buddhist approach to this—through a balanced understanding and acceptance of the law of cause and effect and Karma, the correct mental attitude may be obtained and mental illhealth due to self cherishment averted.

Dr. Tenzin Chodrak started the afternoon session with a talk on *Mental Health in Tibetan Medicine*. He was followed by Ven. Khamtrul Rinpoche speaking about *Buddhism and Health*. Rinpoche began by talking about health of the mind, explaining that once we understand the real (dependent) nature of mind we will be able to achieve equanimity and peace of mind. He went on then to the importance of taking care of the body (physical health), through exercise, nourishing food, relaxation, having good and sincere friends, extending knowledge, and cultivating and maintaining good communication with all people, including those from other cultures. Finally he was asked to speak to about his own special healing powers and techniques which he started to do in great detail much to the delight of everyone present. Unfortunately time ran out and the session had to be concluded.

The fourth and last day of the conference

consisted of a tour of the Tibetan Medical and Astrological Institute, conducted by Mrs. Tenzin Chodon from their Research Department, followed by another very interesting talk on the *History of Tibetan Medicine* by Mr. Jigme Tsarong, in which he traced the independent development of Traditional Tibetan Buddhist medicine originating from the teachings of the Buddha in 500-400 BC. As Buddhism died out in India and Nepal but went on to flourish in Tibet, so too did it's medicine, particularly the herbal pharmacology, which was preserved and developed into the unique art of modern Tibetan medicine. Mr. Tsarong predicts a new age for the spread of Tibetan medicine and sees it as a dominant force in world healing in the 21st century. He concluded with a brief introduction to the conceptual framework of Tibetan medicine. Mrs. Namgyal Lhamo Taklha closed the final session with a talk on *The Health Situation of the Tibetans in Exile*. Course participants had an audience

with His Holiness the Dalai Lama in the afternoon and then attended a special performance and dinner at the Tibetan Institute of Performing Arts.

The relationship between mind and body has fascinated man for centuries and is probably better appreciated by eastern medical systems, with their integral spiritual relationships, than by western allopathic medicine with it's scientific basis, which finds the concept of mind difficult to define and quantify. However, increasingly western scientific medicine is recognizing the significance of the state and functions of mind in all aspects of health and disease. This conference provided an important opportunity for medical professionals from Tibet, India and Western countries interested in the spiritual dimensions of health and healing to get together and exchange ideas and information, and to learn from one another.

ERRATA Vol. 4 No. 1 Summer 1990

There were two important printing errors in the previous issue of the Health Bulletin. On the cover page, *From the Director's Desk*, the lines in capital type should read :- PRIMARY HEALTH CARE IS AN ATTITUDE TO HEALTH WHICH CAN BE LEARNED. (The word 'to' was omitted.)

On page 17, first column, line 30, in parentheses, should read :- The Department of Health itself only came in to existence in 1981, not 1989 as written.

We also neglected to specifically acknowledge the source of some of the illustrations for this issue, Dr. David Werner's book, *Where There is No Doctor*.

3. Evaluation

B. P. Survey in Bylakuppe finds 23% of over 30's have high blood pressure.

Following the visit and health education talks given by Dr. Barry Kerzin in January/February 1990, the health staff at Bylakuppe decided to increase public awareness about the dangers of high blood pressure by conducting a blood pressure survey. They began by asking the camp leaders to call all those over 30 years of age for a blood pressure check up and announced the time for each place. Coverage was not 100% because there was no compulsion to attend the centres where the checks were held (i.e. each camp in the Old Settlement and two centres in the New Settlement). Check-ups were done until people stopped coming and health education talks about high blood pressure were given when large groups assembled. A total of 1398 people over 30 years of age were checked and 320, i.e. 23%, were hypertensive on that initial reading (diastolic blood pressure greater than 100 mm Hg)—the latter were rechecked and those with persistently high B.P. advised to attend either the allopathic or Tibetan medical doctors for treatment and investigation. (Some failed to go for re-checking).

The staff involved feel that this type of campaign, while not able to survey the whole population, was definitely beneficial for the interest and awareness it created. The results obtained suggest that routine annual B.P. checks should be done on all Tibetans over 30 years of age to detect "silent" high blood pressure which, if left untreated, can lead to major health problems later on. As with other health problems

prevention is better than detection once the problem is established. It is important to educate all Tibetans about the preventable causes of high blood pressure, particularly dietary factors (too much salt and too much fat including butter), smoking and alcohol.

The staff in Bylakuppe involved in this survey are to be congratulated for their initiative in undertaking and following up this project. They are also surveying toilet hygiene, before and after health education.

(Many thanks to Nurse Pelmo-la for her enthusiastic support for health promotion in Bylakuppe and for supplying us with the above information.)

Australian Medical Team Visits Mundgod

Preliminary report

Led by Dr. George Tippet, an anaesthetist from Melbourne, a six membered medical team spent 14 days in Mundgod in September/October this year. Their main aim was to investigate the cause and prevalence of upper gastrointestinal problems (mainly dyspepsia, or epigastric/upper abdominal pain) in the monks of Drepung and Gaden monasteries. To this end they conducted general examinations of the monks and lay people at both Lama Camps (total 770 examinations) including blood, stool & sputum tests and endoscoped those who had signs and symptoms of peptic ulcer disease. A total of 280 endoscopies were performed, 50 of which were on lay people. Laboratory samples were taken to London by the gastroenterologist of the team. A full report will follow once the samples have been analysed and results collated.

Upper gastrointestinal disease is an important problem amongst many adult Tibetans, causing a large degree of sickness and possibly leading to more serious disease later in life. The most reliable way to diagnose peptic ulcer disease is by endoscopy (looking down into the stomach and intestine with a flexible tube with a light source at the end of it, called a gastroscope.) This technology, while standard in most developed countries, is expensive to set up and maintain

in situations such as that of the Tibetan refugees in India. So there is a great need for the type of survey conducted by the Australians, to determine the extent and degree of peptic ulcer disease and correlation of gastroscopic findings with the signs and symptoms that the patient presents with. Studies such as this help to decide questions about drug treatment protocols and the cost effectiveness of establishing an endoscopy service for Tibetans.

4. Disease Control

TB Control in South India

To improve compliance with TB treatment and provide better continuity of care Dr. Passang Norbu, in Mundgod, will now be in charge of all the TB control in the South. Previously thirdline patients from the Tibetan settlements in South India were sent up to Dharamsala for investigation and initiation of treatment. These patients will now go to Doeguling hospital and receive all the services provided in Dharamsala. This will entail considerably less travel and hopefully improve patient compliance with treatment.

Also as part of the effort to improve TB control in the South, the hospital at Hunsur will now have a TB ward, with Nurse Pelmo from Bylakuppe acting as TB - Control - in Charge for the present. Dr. Tenzin Gelek, recently appointed Medical Officer in Bylakuppe, and Dr. Kalsang Phuntsok, from Kollegal, will visit Hunsur regularly to supervise the management of the TB patients and Dr. Passang Norbu will visit 2-4 times a year.

Despite concerted efforts to control the

spread of TB amongst the Tibetan refugee population in India, the incidence appears to be increasing. This may be due to several reasons — the introduction of new and unrecognized infective cases amongst newly arrived refugees from Tibet (where the prevalence of TB has been quoted as being as high as 15%), the ongoing problem of the mobile sweater seller population with their increased risk and the difficulties associated with their life style in establishing the diagnosis and maintaining proper treatment and other as yet poorly understood or investigated factors (including the possibility of genetically determined poor resistance to the TB bacillus). Again, the wide geographical separation of the Tibetan communities in India is a factor. By regionalising TB control in the south and providing better inpatient services, it is hoped to improve the case management aspect of TB control. Case finding is another problem and more attention will have to be paid to this by prioritizing *active* case finding, including vigorous contact tracing.

Re: Vit. A

Subject: Re: Vit. A

Date: Wed, 21 Nov 2001 11:34:42 +0000

From: "umesh kapil" <kapilumesh@hotmail.com>

To: sochara@vsnl.com

The guidelines are enclosed. The DNP report of ICMR would be soon sent to you

kapil

File Name: Vita-recf-MOEFWF /

Vita-a

National Consultation on Benefits and Safety of Administration of Vitamin A to Pre-school Children and Pregnant and Lactating Women held at New Delhi on 29th and 30th September 2000.

This National Consultation was conducted to discuss the cumulative scientific and epidemiological evidence on Benefits and Safety of administration of Vitamin A to preschool children and pregnant and lactating women. The aim was to provide objective guidelines to the Ministry of Health and Family Welfare, Government of India for future direction with respect to National Programme for Prophylaxis Against Blindness in Children Caused due to Vitamin A Deficiency. The list of invited participants is enclosed as Appendix I.

Conclusions and Recommendations

1. Issue: National Programme for Prophylaxis against Blindness in Children

Status Caused Due to Vitamin A Deficiency (VAD): Past and Present and changing profile of VAD and its current status.

1.1 Conclusions of the Discussions on Scientific Presentations

1.1.1 In India, the magnitude of clinical VAD has declined significantly but exists as a public health problem in scattered pockets.

1.1.2 The problem of clinical VAD varies from cluster to cluster within selected districts.

1.1.3 There is a need for a careful evaluation of the current profile of clinical VAD and the reasons for change in VAD profile in the country.

1.2 Specific Recommendations

1.2.1 The existing data on VAD should be analysed by independent groups of Epidemiologists, Statisticians, Nutritionists, Pediatricians, Ophthalmologists and Obstetricians to assess the current status of VAD.

1.2.2 The National Programme for Prophylaxis against Blindness in Children Caused Due to Vitamin A Deficiency requires re-examination and the time has come that VAD control should be a part of the primary health care.

1.2.3 The National Programme for Prophylaxis against Blindness in Children Caused Due to Vitamin A Deficiency should clearly define the quantifiable outcomes of implementation of the programme.

1.2.4 Since, multiple nutritional problems co-exist in the same population, while executing any programme to control them, a holistic approach should be adopted for combating nutritional deficiencies and vertical approach aimed at single nutrient should be discouraged.

2. Issue: Administration of synthetic Vitamin A to Pregnant and Lactating

Lab.
Nutrition V.A. / 6/1
IN
11/1

FN
AP
22/11

Women

2.1 Conclusions of the Discussions on Scientific Presentations

2.1.1 Pregnant and lactating women should be encouraged to improve their overall nutrition. Principles of consuming balanced diet with diversification in food items are necessary to maintain adequate macro and micro-nutrient status.

2.2 Specific Recommendations

2.2.1 As part of comprehensive antenatal and postnatal care, women should be screened for night blindness. If pregnant/lactating women have night blindness, they should be referred to physician in the nearby Primary Health Centre or any other health facility for appropriate management. In view of the potential toxic and teratogenic effects of high doses of Vitamin A, pregnant and lactating women with symptoms of night blindness should be treated with Vitamin A in dosage not exceeding 10,000 IU per day. They can be given Vitamin A till symptoms of night blindness disappear.

2.2.2 For sustainable elimination of VAD, production and consumption of Vitamin A rich foods must be strongly promoted in the community, particularly amongst pregnant and lactating women and children.

3. Issue: Administration of synthetic Vitamin A to children between 6 months- 60 months.

3.1 Conclusions of the Discussions on Scientific Presentations

It should be recognised that the National Programme for Prophylaxis against Blindness in Children caused due to Vitamin A deficiency was initiated in the country primarily to prevent blindness due to Vitamin A deficiency in young children and not to control childhood mortality.

3.1.1 Overall improvement in nutritional status of children is essential to reduce under five mortality and morbidity. This includes promotion of breast-feeding, appropriate complementary feeding, strategies to reduce LBW babies and prompt treatment of childhood illnesses.

3.1.2 Administration of Vitamin A with measles or polio vaccines does not interfere with their sero-conversion rates.

3.2 Specific Recommendations:

3.2.1 Available data are not robust enough to persuade us to recommend a policy of Vitamin A supplementation for the purpose of mortality reduction in children.

3.2.2 The current programme recommendations of periodic administration of Vitamin A, starting with measles vaccine at 9 months till 3 years of age should be persisted with.

3.2.3 To achieve optimal benefit of the National Programme for Prophylaxis against Blindness in Children Caused Due to Vitamin A Deficiency, high coverage (> 90%) of the target population must be ensured (at least for first 2 doses of Vitamin A).

3.2.4 Strengthening of routine immunization including measles vaccination will be an additional step to improve Vitamin A nutrition.

3.2.5 Screening for clinical symptoms and signs of VAD in children should become a part of primary health care. All children with clinical VAD are to be treated as per the standard schedule of Government of India under RCI

programme.

A suggestion was made that an "Expert Committee on Vitamin A" of Epidemiologists, Statisticians, Nutritionists, Pediatricians, Ophthalmologists and Obstetricians may be constituted to critically review and re-analyse the complete data available from published studies/trials conducted in India and abroad on the issues raised in this consultation. This would help in giving future direction/strategy to be adopted for implementation of National Programme for Prophylaxis against Blindness in Children Caused Due to Vitamin A Deficiency (Annexure I).

4. Issue: Linking of Synthetic Vitamin A Administration with Pulse Polio Immunization

4.1 Conclusions of the Discussions on Scientific Presentations

4.1.1 Linking of Vitamin A with Pulse Polio Immunization (PPI) provided different experiences in the states of Orissa and Uttar Pradesh (UP). In Orissa where the operation was backed by the support of UNICEF and WHO, and the staff gained the experience of administering Vitamin A through an earlier round of campaign approach, the coverage rates were high. In UP, where the Vitamin A administration was linked to PPI without similar support or prior

experience, the coverage rates were poor.

4.1.2 In Orissa, risk of immediate side effects attributable to Vitamin A administration, such as fever, nausea and vomiting, was similar in children who received Vitamin A with oral polio vaccine and those who did not (about 3%). However, unequivocal evidence does not exist on possible long-term consequences of increased intra cranial pressure (presenting as bulging fontanel).

4.1.3 Linking of Vitamin A administration to PPI should be avoided at this juncture

when the country is on the verge of achieving zero incidence of polio, in view

of the absence of information on the long-term consequences of

Vitamin A administration to young children, inconsistent coverage rates and

the enormity of training requirements. Instead, strengthening the Vitamin

A coverage under the existing National Programme for Prophylaxis Against

Blindness in Children Caused due to Vitamin A Deficiency, was

considered appropriate.

4.1.4 Taking cognizance of the fact that in some states ocular manifestations of Vitamin A deficiency are above the level of public health significance, it was suggested that alternative strategies should be explored for improving Vitamin A coverage instead of linking Vitamin A distribution with PPI.

4.2 Specific Recommendations

4.2.1 Synthetic Vitamin A supplementation should not be linked to PPI.

4.2.2 In areas where Vitamin A deficiency manifestations are high, alternative approaches may be explored for improving Vitamin A coverage instead of linking Vitamin A distribution with PPI.

5. Issue: Therapeutic Administration of Synthetic Vitamin A during Measles, Severe Protein Energy Malnutrition, Xerophthalmia and Diarrhoeal Diseases

5.1 Specific Recommendations

5.1.1 All children with xerophthalmia should be given 2 doses of synthetic Vitamin A as per present schedule of Government of India under RCH Programme.

5.1.2. All children suffering from measles should also be given one dose of Vitamin A, if he/she has not received it during the previous one month.

5.1.3 All cases of severe Protein Energy Malnutrition (based on Weight for Age criteria or clinical nutritional signs) should be given one additional dose of Vitamin A.

5.1.4 No additional dose of Vitamin A is required for children suffering from diarrhoea and respiratory tract infections.

Annexure I

It was suggested that "Expert Committee on Vitamin A" may consist of the following members

1. Dr. Padam Singh, Additional Director General, Indian Council of Medical Research, New Delhi
2. Dr. Arvind Pandey, Director, Institute for Research in Medical Statistics, New Delhi
3. Dr. Abhya Indrayan, Professor and Head, Division of Biostatistics, University College of Medical Sciences, New Delhi
4. Dr. Rajiv Behal, Senior Grade Scientist, Department of Pediatrics, All India Institute of Medical Sciences, New Delhi
5. Dr. D.C.S. Reddy, Professor, Department of Preventive and Social Medicine, Banaras Hindu University, Varanasi
6. Dr. H.P.S. Sachdev, Professor, Department of Pediatrics, Maulana Azad Medical College, New Delhi
7. Dr. K. Vijayaraghavan, Director Grade Scientist-I, National Institute of Nutrition, Hyderabad.

APPENDIX I

National Consultation on Benefits and Safety of Administration of Vitamin A to Pre-school Children and Pregnant and Lactating Women held at New Delhi on 29th and 30th September 2000.

LIST OF PARTICIPANTS

1. Dr. B.N Tandon
Director,
PSRI, Press Enclave Marg
Shekh Sarai-II,
New Delhi - 110 017.
2. Dr. Shanti Ghosh,
Consultant MCH,
5, Aurbindo Marg,
New Delhi.
3. Prof. H.P.S. Sachdev
Department of Pediatrics

Maulana Azad Medical College
New Delhi 110002

4. Dr. K. N. Aggarwal
D-115, Sector-36,
NOIDA-201301,
Gautam Budha Nagar,
Uttar Pradesh
5. Dr. Deoki Nandan
Head,
Department of PSM,
S.N. Medical College,
Agra, Uttar Pradesh.
6. Dr. Sanjiv Bhasin
Reader,
Department of PSM,
Delhi Public School Hostel,
Sector-30, NOIDA-201 301.
Gautam Budha Nagar, UP.
7. Dr. T. D. Sharma,
Principal,
Health & Family Welfare Training Centre
Kangra, District Kangra,
Himachal Pradesh.
8. Dr. Rajesh Kumar,
Additional Professor & Head,
Department of Community Medicine,
Post-Graduate Institute of Medical Educ
and Research (PGIMER), Chandigarh-160 012.
9. Dr. N.K. Arora
Additional Professor,
Department of Pediatrics,
AIIMS, New Delhi.
10. Dr. Panna Choudhary,
Deptt. of Pediatrics,
Maulana Azad Medical College,
New Delhi - 110016.
11. Dr. Sunil Gomber,
Associate Profesor,
Deptt. of Pediatrics,
University College of Medical Sciences
>B Hospital,
Shahdara, Delhi-110 095
12. Dr. Sandip Kumar Ray
Professor & Head
Community Medicine Deptt.,
Calcutta Medical College,
88, College Street
Calcutta - 700 073.
13. Dr. Kumud Khanna
Director,
Institute of Home Economics,
J-Block, South Extension,
Part-I, New Delhi.
14. Dr. Almaz Ali,
Room No.2,
NIFFW Guest House,
NIFFW, New Mehrauli Road,

15. Prof. A. P. Dubey,
Deptt. of Pediatrics,
Maulana Azad Medical College,
New Delhi.
16. Dr. Kalyan Bagchi,
Director,
Nutrition Syndicate,
R-18, Hauz Khas, New Delhi.
17. Dr. Indira Chakravarty
Dean,
All India Institute of Hygiene & Public Health
110, Chittaranjan Avenue
Calcutta - 700 073
18. Dr. Sushma Sharma
Vice President,
Nutrition Society of India,
Department of Foods and Nutrition
Lady Irwin College,
1, Sikandara Road, New Delhi.
19. Dr. Maya Chaudhary
Prof and Head,
Department of Foods and Nutrition
College of Home Science,
Agricultural University,
Udaipur-313 003
20. Dr. Vinodini Reddy,
Nutrition Consultant,
305 Arien Apts.
Panjagutta,
Hyderabad-500 482.
21. Dr. B. N. Saxena,
Emeritus Scientist,
ICMR Headquarters,
New Delhi.
22. Dr. Neeta Bhandari
Senior Grade Scientist
Advanced Centre of Diarrhoeal Diseases
Department of Pediatrics,
AIIMS, New Delhi.
23. Dr. A. Indrayan,
Professor,
Division of Biostatistics
University College of Medical Sciences,
New Delhi-110 095.
24. Dr. Dinesh Paul,
Joint Director,
NIPCCD,
3, Siri Institutional Area,
Khaus Khas, New Delhi.
25. Dr. D. K. Agarwal,
Professor,
Department of Pediatrics,
Institute of Medical Sciences,
BRU, Varanasi, UP.
26. Prof. S. K. Kapoor

Professor,
Department of Centre for Community Medicine
AIIMS, New Delhi.

27. Dr. Arvind Wadhwa
Professor,
Department of Foods and Nutrition
Lady Irwin College,
1, Sikandara Road, New Delhi.
28. Dr. D. C. S. Reddy,
Department of FSM,
Institute of Medical Sciences,
Banaras Hindu University,
Varanasi.
29. Dr. Rajiv Behal,
Senior Grade Scientist
Advanced Centre of Diarrhoeal Diseases
Department of Pediatrics,
AIIMS, New Delhi.
30. Dr. Shinjini Bhatnagar
Senior Grade Scientist
Advanced Centre of Diarrhoeal Diseases
Department of Pediatrics,
AIIMS, New Delhi.
31. Dr. T. Jacob Jhon,
439, Civil Supplies,
Godwon Lane,
Kamalakshi Puram,
Vellore-632 002.
32. Dr. Umesh Kapil
Additional Professor,
Department of Human Nutrition,
All India Institute of Medical Sciences,
New Delhi - 110 029.
33. Dr. Pardeep Khanna
Reader,
Dept. of PSM,
Medical College,
Rohtak.
- Representatives from Indian Council of Medical Research
34. Dr. Padam Singh
Additional Director General,
ICMR Headquarters
New Delhi,
35. Dr. Vijayaraghvan
Director Grade Scientist-I
National Institute of Nutrition,
Indian Council of Medical Research,
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Andhra Pradesh.
36. Dr. Bhaskaram
Director Grade Scientist-I
National Institute of Nutrition,
Indian Council of Medical Research,
Jamai-Osmania PO, Hyderabad-500 007,
Andhra Pradesh.
37. Dr. Arvind Pandey

Director
Institute of Research in Medical Statistics
ICMR Headquarter Campus
Ansari Nagar
New Delhi

38. Dr. T.C. Gupta
Assistant Director General,
Division of REN
Indian Council of Medical Research
Ansari Nagar, New Delhi.
39. Dr. B. S. Dhillon,
Asstt. Director General,
ICMR, Ansari Nagar,
New Delhi.
40. Dr. G.S. Toteja
Assistant Director General,
Division of REN
Indian Council of Medical Research
Ansari Nagar, New Delhi

Representatives from the Government of India and State Governments

41. Mr. Gautam Basu
Joint Secretary (RCE)
Ministry of Health and Family Welfare
Nirman Bhawan
New Delhi
42. Dr. V.B. Gupta
Deputy Commissioner
Ministry of Health and Family Welfare
Nirman Bhawan, New Delhi
43. Dr. B. K. Tiwari
R.No.355
Adviser Nutrition,
DGBS, Nirman Bhawan,
New Delhi.
44. Dr. Lalrintluangai,
Deputy Commissioner (RSS),
Ministry of Health & Family Welfare,
Nirman Bhawan, New Delhi.
45. Ms. Shashi Prabha Gupta
Technical Adviser,
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Shastri Bhawan,
New Delhi.
46. Dr. Sudhansh Malhotra,
Assistant Commissioner,
Room No. 405, D Wing,
Ministry of Health and Family Welfare,
Nirman Bhawan, New Delhi.
47. Dr. V. Behal.
Assistant Commissioner,
Ministry of Health & Family Welfare,
Nirman Bhawan, New Delhi.
48. Mr. I. M. Sondhi,
Deputy Secretary,

49. Dr. Abdullah Dustagheer
Project Officer, -Nutrition
Child Development and Nutrition Section
73, Lodi Estate,
UNICEF, New Delhi.

50. Dr. Ashi Kathuria
USAID,
American Embassy
Shantipath
Chanakyapuri
New Delhi -21.

51. Dr. Teresa Beemans
Director, MI South Asia,
Mocronutrient Initiative,
208 Jor Bagh,
Lodhi Road, New Delhi-110 003.

52. Dr. Sultana Khanum
Regional Adviser Nutrition,
WBO, SEARO, Inderprastha Estate,
New Delhi.

53. Dr. Shiela Vir,
Project Officer, UNICEF,
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Lal Bahadur Shastri Marg,
Lucknow-226 001.

54. Dr. T. Walia
Vice Representative,
WBO India Office,
Nirman Bhavan,
New Delhi.

55. Dr. Victor Barbiero
USAID,
US Embassy
Chanakyapuri,
New Delhi.

56. Dr. Saraswati Bulusu
National Project Officer,
Mocronutrient Initiative,
208 Jor Bagh,
Lodhi Road, New Delhi-110 003.

>From: Community health cell <sochara@vsnl.com>
>To: kapilumesh@hotmail.com
>Subject: Vit. A
>Date: Wed, 21 Nov 2001 17:00:49 +0530
>
>Dear Dr. Kapil,
>
>Please send us the Government of India guidelines for Vit. A
>administration circulated in September 2000 and any update. We would
>also be interested in the ICMR 18 districts study of Vit. A deficiency.
>Do you have any recent data from Karnataka?

9 of 10
Re: Vit. A

11/22/01 9:50

>
>Best wishes & Thanks,
>
>Thelma Narayan

Subject: Fwd: AHRC' blames State Govt & UNICEF: VITamin A update

Date: Tue, 22 Jan 2002 04:12:30 +0000

From: "umesh kapil" <kapilumesh@hotmail.com>

To: kapilumesh@hotmail.com

>From: "umesh kapil" <kapilumesh@hotmail.com>

>To: kapilumesh@hotmail.com

>Subject: Fwd: AHRC blames State Govt & UNICEF: VITamin A update

>Date: Tue, 22 Jan 2002 04:09:48 +0000

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>
>>From: "umesh kapil" <kapilumesh@hotmail.com>
>>To: arnikapil@yahoo.com
>>Subject: Fwd: AHRC blames State Govt & UNICEF: VITamin A update
>>Date: Tue, 22 Jan 2002 04:05:54 +0000

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>>
>>
>>>From: "umesh kapil" <kapilumesh@hotmail.com>
>>>To: kapilumesh@hotmail.com
>>>Subject: Fwd: AHRC blames State Govt & UNICEF: VITamin A update
>>>Date: tue, 22 Jan 2002 04:03:09 +0000

>>>
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>>>
>>>>From: "umesh kapil" <kapilumesh@hotmail.com>
>>>>To: kapilumesh@hotmail.com
>>>>Subject: Fwd: AHRC blames State Govt & UNICEF: VITamin A update
>>>>Date: Tue, 22 Jan 2002 04:00:04 +0000

>>>>
>>>>
>>>>>From: "umesh kapil" <kapilumesh@hotmail.com>
>>>>>To: arnanda@hotmail.com
>>>>>Subject: AHRC blames State Govt & UNICEF: VITamin A update
>>>>>Date: Mon, 21 Jan 2002 16:16:23 +0000

>>>>>
>>>>>>ASSAM TRIBUNE
>>>>>>Guwahati, Friday, January 18, 2002

>>>>>>>Vitamin-A deaths;AHRC blames State Govt & UNICEF
>>>>>>>By A Staff Reporter
>>>>>>>GUWAHATI, Jan 17- The Assam Human Rights Commission (AHRC) held
>>>>>>>responsible both the State Government and the UNICEF for the death of
>>>>>>>23 children after being administered the Vitamin-A solution and asked
>>>>>>>the State Government to immediately pay compensation of Rs 5000 to the
>>>>>>>next of kin of the children. The report of the Commission which was
>>>>>>>submitted today after a detailed investigation, also recommended
>>>>>>>initiating a thorough inquiry by the CBI.
>>>>>>>Addressing a press conference here today the AHRC chairperson, Justice

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राष्ट्रीय जन सहयोग एवं बाल विकास संस्थान
National Institute of Public Cooperation and Child Development



एस. के. मुद्दू
निदेशक

S.K. Muttoo
Director



31 OCT 2001

Dr. Dinesh Paul
M.B.B.S., M.D., M.A.M.S.
Joint Director

NO.NI/CD/II/1145/NT-2001

**Subject : Orientation Training Course on Best Practices in Community Nutrition
For Functionaries of Mother NGOs working for Maternal and Child
Nutrition.**

(19-23 November, 2001)

Dear Sir/ Madam,

National Institute of Public Cooperation and Child Development announces a course on on Best Practices in Community Nutrition for Functionaries of Mother NGOs Working for Maternal and Child Nutrition at its premises in New Delhi from 19-23 November 2001. The main objectives of the course are to orient the functionaries of voluntary organizations to develop better understanding and insight into the fundamental concepts in nutrition of children and women; to sensitise the participants to the best practices related to nutrition prevalent in the community; and to equip them with the necessary skills for improving the nutritional status of women and children by adopting good practices. The Course has been designed for personnel for Mother NGOs working for maternal and child nutrition.

We shall be grateful if you kindly nominate one or two officers from your esteemed organisation engaged in implementation/planning of programmes of maternal health and nutrition for participation in the above course. The medium of instruction for the course will be English. The announcement giving the detailed information about objectives, participants, contents and organisational/administrative aspects of the course and a nomination form is enclosed herewith.

Nominations are expected to reach the Institute by 15th November 2001.

Looking forward to your cooperation and early reply.

Yours sincerely,

(Dinesh Paul)

General Secretary
Community Health Cell
367, Srinivassa Nilaya
Jakkasandra I, Main I Block Koramangla
Bangalore - 560 034
Karnataka

व. अ. न. / स. क.

NATIONAL INSTITUTE OF PUBLIC COOPERATION AND CHILD DEVELOPMENT
5, Siri Institutional Area, Hauz Khas, New Delhi – 110016

Phone: 6963002, 6963204, 6963378

Gram: NIPCHILD

E-mail: pauldinesh@vsnl.com

Nomination Form

Name of the participant :

Age :

Educational/Professional Qualification :

Designation & Present work Performed in the Organisation

Experience of Work :

Complete Postal Address :

Name of Sponsoring Organisation :

Fax/Tel. No. /E- mail :

No. of branches/field units :

Brief description of activities of the organisations :

Problems/Issues the participant would like :
to discuss during the Course

Signature

For Sponsoring Organisation

I sponsor the application of Shri _____

to participate in the _____

_____ from _____ to _____ at NIPCCD

Bank draft no _____ dated _____ for Rs _____ in favour of
Director, NIPCCD, New Delhi is enclosed

Signature of Executive Officer

Programme Announcement

**Orientation Course on Best Practices
in Community Nutrition
for
Functionaries of Mother NGOs Working
for
Maternal and Child Nutrition**

(19-23 November,2001)



**National Institute of Public Cooperation and Child
Development
5, Siri Institutional Area, New Delhi-110016**

Introduction

Nutritional Status of population particularly children, is a crucial indicator in determining the quality of life of people and is linked with their health status. India has achieved marvelous increase in food production, yet her nutrition problems continue to be formidable. Malnutrition is still one of the critical issues deterring national development. Nearly two-third of India's population is on a nutritionally deficient diet. Nutritional surveys conducted and repeated over a number of years have indicated that a majority of population of every age group, including both the sexes, suffers from malnutrition bordering on both calorie and protein starvation and lack of protective foods rich in minerals and vitamins.

Malnutrition affects people in general but its effects are more pronounced among the vulnerable groups - women and children in rural areas. Overall 52 percent of women have some degree of anaemia-35 percent are mildly

anaemic, 15 percent moderately and 2 percent are severely anaemic. The prevalence of anaemia is slightly higher for breastfeeding women than for other groups. Malnutrition has an adverse influence on morbidity, mortality and life expectancy. It stunts physical growth and development of children and leads to generalized functional impairment, disability, diminished productivity and inability to cope with environmental hazards including resistance to infection. Based on International standards 47 percent of children age three years in India are underweight; 46 percent are stunted and 16 percent are wasted. The determinants of malnutrition at different levels are many. At the macro level general inadequacy of food, population growth, poverty etc. are operative where as at individual level food, nutrient intake and its utilization depends on factors like age, physiological and pathological status of the person. Overlapping the micro and macro factors , there are socio economic and cultural factors like purchasing capacity of the family, family size,

food habits and beliefs, health aspects and environment, which directly influence the diet of people.

Malnutrition is not exclusively due to non-availability of nutritious food but failure to use the available resources in a meaningful manner is another cause. Lack of information/ knowledge regarding the value of foods in relation to the needs of the individual, ignorance and superstitions play a great role in the rejection of locally available cheap nutritious food. A majority of people, no matter what class, has status symbols, which force them to spend their income for purposes other than that of securing food. Even when more money is spent on the food, it is spent on the wrong type of foods. Solving the problem of malnutrition, therefore involves not only having the food to eat but also the proper selection, preparation and consumption of food.

Infants and pre-school children constitute fifteen percent of the total population of India. This group is most susceptible to malnutrition, morbidity and mortality. Apart

from other causes, it is said that faulty feeding practices and early weaning especially in urban areas are some of the factors associated with high infant and child mortality in India. Although breastfeeding is nearly universal in India, very few children are put to breast immediately after birth—only 16 percent in first hour and 37 percent on the first day. It is well known that breastfeeding especially colostrum feeding in particular is a life saving measure as it provides protection to infants against infection. Infancy, particularly the first six months is the most crucial period in child's extero-gestate life. The practice in some cultures of discarding colostrum and giving sugar water or honey should be discouraged as it is harmful for the child. Similarly, early weaning of the child from breast milk can be very harmful for the psychological and nutritional well being of child. NFHS surveys reported that the custom of squeezing the first milk from the breast before breastfeeding a child is widely practiced in India. Nearly two third of women (63 percent) squeezed the first milk from the breast before they began breastfeeding. It is more common in rural areas and for children whose mothers are illiterate,

Scheduled tribe children, children whose mothers work on the farm or in the family business. In 20 of 25 states the mothers mostly discarded first milk. The only exceptions are Tamil Nadu, Manipur, Bihar, Goa & Arunachal Pradesh.

Recently conducted NFHS surveys also show that only 55 percent children under four months of age are exclusively breastfed. At age 6-9 months, all children should be receiving solid or mushy food in addition to breastmilk to provide sufficient nutrients for optimal growth. However, only 34 percent of children aged 6-9 months receive the recommended combination of breast milk & solid or mushy food. These figures are (15-18 percent) lower than national average in six states including Bihar, Uttar Pradesh, & Rajasthan.

For health of the young child & the pregnant women, provision of adequate food during pregnancy and lactation, new born care, promotion and support of breastfeeding, complementary feeding, growth monitoring with appropriate follow up action and nutrition surveillance and disease

management etc. are some of the most essential needs. Nutrition intervention programmes have been taken up and are being implemented by central and State Governments and voluntary organizations with a view to ameliorating the nutritional status and health of the vulnerable section of population. Deliberate and sustained nutrition education has been recognized as a potent weapon for improving the nutritional status of people as it is not a mere transfer of knowledge but to motivate and bring about behavioral changes among the community members in the choice of foods.

Scientific studies in the field of nutrition and health have generated substantial information on many aspects of child growth, survival and development. However, one of the major constraints experienced by the voluntary organisations is with regard to lack of awareness on simple but crucial issues related to best practices to be adopted by community for proper nutrition & health care of women and children. It is therefore necessary to equip voluntary agencies to incorporate new approaches in the area of

nutrition and health for managing their projects effectively and disseminate scientific and correct knowledge in the area of community nutrition and health.

In order to enhance the capabilities of functionaries of voluntary organizations, the Institute proposes to organize an Orientation Course on Best Practices in Community Nutrition for Functionaries of Mother NGOs working for Maternal and Child Nutrition from 19-23 November 2001.

Objectives

The main objectives of the course would be:

- (i) to orient the functionaries of voluntary organizations to develop better understanding and insight into the fundamental concepts in nutrition of children and women;
- (ii) to sensitise the participants to the best practices related to nutrition prevalent in the community; and;

- (iii) to equip them with the necessary skills for improving the nutritional status of women and children by adopting good practices.

Participants

About 20 participants comprising officials and middle level functionaries of Mother NGOs working in the area of maternal & child nutrition from all over India entrusted with the training field NGOs will participate in the course .

Content

The content of the course would broadly cover health and nutrition status of women and children: a review of traditions and practices in infant feeding including colostrum feeding; exclusive breastfeeding and complementary feeding; nutrition during pregnancy and lactation; supplementary feeding programmes for women and children their utilization; common nutritional deficiency

diseases and prevention and management at household level; prevalent myths and misconceptions; gender equity; innovations and demonstrations for behaviors change through community based monitoring; ways and means to replicate best practices and advocate for change and demonstration of best practices.

Approach and Method of Training

Participatory methodology would be adopted during training to build on experience, potentials and inherent talent; provide sequential flow of learning; relate to real life situation; and bring about flexibility in the learning process. The various methods proposed to be used in the training include lecture-cum-group discussions, case presentations, demonstrations, mock sessions, simulation exercises, practicum, group work and field visits.

The medium of communication in the course will be English

Training Faculty

Experienced resource persons from NIPCCD as well as external agencies will conduct the technical sessions. The external resource faculty will be drawn from government, non-governmental and international organizations dealing with maternal and child health. The participants themselves are a valuable resource whose active participation would determine the success of the course.

Review Sessions

Review sessions would be held throughout the training through an in-built process. The basic objective of review sessions at the activity and learning level would be to assess the pace of learning and call for suitable modification in the content and methodology; to assess gain in knowledge, skill and change in attitude recall, retention and recapitulation power; and at the organizational level of utilization material resources, manpower and monetary investments.

The review sessions will be done every day through discussion of day's report prepared by Day Officer nominated by the group. Other methods for review will be through quiz, presentations, mock sessions, etc.

Assessment and Evaluation

Pre and Post Testing Technique

A questionnaire specially designed to assess the knowledge base as well as training needs at the entry and gain in knowledge and fulfillment of educational objectives at the end of the training will be used.

End Course Evaluation

The participants would evaluate the course on parameters such as course content, duration, skills of trainers and facilitators, training methods, training material, logistics, etc. on a questionnaire designed for the purpose.

The information elicited would be a very useful tool for planning and conducting future courses.

Resource Material

Resource material comprising handouts, training module, case studies and other material to supplement classroom teaching would be made available progressively to the participants during the course.

Venue and Duration

The duration of the course will be of five days. It will be conducted at the premises of National Institute of Public Cooperation & Child Development (NIPCCD), New Delhi from **19-23 November 2001**.

Course Fee

The course fee would be Rs.3700/- for residential participants and Rs.2500/- for non-residential, The fee covers all expenses excluding cost of travel to and from the Institute.

The fee is payable through demand draft drawn in favour of **Director, National Institute of Public Cooperation & Child Development, New Delhi.**

The demand draft should reach the Institute alongwith the nomination form atleast two weeks before the commencement of the programme.

Award of Certificate

The participants will be awarded a certificate of participation on conclusion of the course.

General

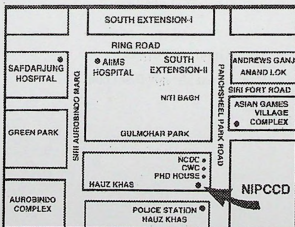
The following general information may please be noted:

- i) The enclosed nomination form of the participant alongwith the course fee should reach the Institute duly filled in for formalizing nominations latest by 5th November 2001.
- ii) The medium of communication in the course would be English, voluntary organizations may ensure that their nominees can comprehend English.
- iii) The minimum educational qualification for nominees is graduation.
- iv) The Institute will have no responsibility whatsoever towards board and lodging in respect of family members/relatives/friends of the participants, if any.
- v) Trainees will bear their own traveling cost.

Location

The Institute is located at 5, Siri Institutional Area, Hauz Khas, New Delhi. The campus of the Institute is opposite Hauz Khas Police Station and close to the Asian Games Village. The Institute is situated an approximate distance of 14 kms from New Delhi Station, 18 kms from Delhi Railway Station, 10 kms from Nizamuddin Railway Station and 19 kms. From Inter-State Bus Terminus, Kashmere Gate.

APPROACH MAP



Nomination in the enclosed form should be addressed to :

Dr. Dinesh Paul

Dr Neelam Bhatia

Joint Director

Course Director

National Institute of Public Cooperation and
Child Development

5, Siri Institutional Area, Hauz Khas,

New Delhi-110016

Telephone 91-11-6963383, 6963204,

Fax:91-11-6851349,6865187

Gram : NIPCHILD

E-mail : pauldinesh@vsnl.com

**Evaluation of National Nutritional Anaemia Prophylaxis and Control Programme
in a rural area of Haryana.**

Short title: Anaemia control programme evaluation

Dr. Arun Kumar Aggarwal, Assistant Professor

Prof Rajesh Kumar, Professor and Head

Community Medicine Department

Postgraduate Institute of Medical Education and Research

Chandigarh – 160 012

India

Address for correspondence:

Dr. Arun Kumar Aggarwal

Assistant professor

Community Medicine

Postgraduate Institute of Medical

Education and Research

Chandigarh – 160 012

India

Email Aggak63@glide.net.in

Abstract

Background: Anaemia is a public health problem in India. To formulate area specific strategies, periodic assessment of the magnitude of anaemia and related factors in the community should be done.

Methods: Knowledge of 155 men and 223 women about anaemia was assessed. Haemoglobin estimation of 206 women was done. Dietary intake for iron rich foods of 113 antenatal mothers by 24 hour recall was assessed in a rural area of Naraingarh block in district Ambala, Haryana.

Results: Knowledge about inadequate food (85%) as cause of anaemia, and green leafy vegetables(74%) to prevent it was high. Misconceptions that food like ghee can correct anaemia exist. Knowledge of men about the magnitude of anaemia problem, initial symptoms of anaemia and the services available to combat it was poor. Overall, 92.2% women had anaemia of some degree. Mild anaemia (Hb 10.0 to 10.9 gms/dl) was present in 28 (13.6%), moderate anaemia (Hb 7.0 to 9.9 gms/dl) in 157 (76.2%) and severe anaemia (Hb < 7 gms/dl) in 5(2.4%) women. Major food items consumed were wheat chapatis followed by rice and milk.

Conclusions: High prevalence of anaemia among women was observed. There were gaps in knowledge and actual dietary intake of iron rich foods. Lack of knowledge about locally available cheaper iron rich foods and gender gaps in knowledge needs correction. Operational studies should be undertaken to improve compliance for better dietary intake of iron rich foods and iron and folic acid supplementation.

Introduction

Anaemia is one of the important public health problem all over the world, but much more so in developing countries. Recent global estimates¹ suggest that over two billion people worldwide are iron deficient with a global prevalence estimated at about 40 percent. The prevalence was 51 percent for pregnant women, 48 percent for infants and one to two year old children, 35 percent for non-pregnant women and 25 percent for pre-school children. Prevalence in the sub-groups tend to be three or four times higher in developing than developed countries.

Iron deficiency anaemia is more common in women because of regular loss of iron during menstruation without adequate dietary compensation. Child bearing further raise their need for iron. Maternal anaemia is associated with poor maternal outcomes like pre-term delivery, low birth weight, and maternal complications. Anaemia is one of the commonest causes of maternal mortality, accounting for approximately 19% maternal deaths. The problem is worst in India, where about 88 percent of pregnant women are anaemic. Almost 60% of women are anaemic in other parts of Asia, but the proportion does not exceed 40% in China, Africa, or Latin America. Anemia affects 15% of pregnant women in the established market economies². National family health survey 2000 revealed that 52% of ever married women were anaemic in India³. Anaemia not only contribute to high mortality and morbidity but also influence workers' productivity and activity pattern and thus has strong economic implications for any nation⁴.

The breast milk of anaemic mothers is also iron deficient. Thus these infants grow and develop in the environment of iron deficiency. It has been shown that iron-deficient anemic infants are not as successful in tests of mental and motor development as their iron-sufficient age-matched counterparts. A recent study has confirmed that iron intervention can reverse developmental delays, while placebo-treated anemic infants showed no such improvement⁵.

In India the commonest variety of anaemia is considered to be nutritional anaemia- due to deficiency of iron. Iron and Folic Acid (IFA) tablets are being supplied to pregnant women under National Anaemia Prophylaxis and Control Programme (NAPCP), which is in vogue since the fourth five year plan period. Under this programme pregnant women are given 100 mg of iron and folic acid tablets for 100 days during pregnancy as prophylaxis and twice the above dose to women showing symptoms and signs of anaemia. NAPCP is now integral part of Reproductive and Child Health (RCH) programme. The effective coverage of this programme has remained about 30 percent of the total eligible target group⁶ and no perceptible change in incidence of low birth weight, which is an important indicator of maternal nutrition, has occurred in the last three decades⁷.

Periodic assessment of the magnitude of anemia in the community and understanding the operational problems in the anaemia control programme can facilitate in taking area specific corrective actions. The present study was thus carried out with the objectives to assess the knowledge of men and women about anaemia, to assess dietary intake of iron

rich food and tab IFA during pregnancy and lactation and to assess the prevalence of anaemia among married women in reproductive age.

Methodology

Study area: Four villages around Naraingarh town in district Ambala, Haryana were selected purposively so that these are conveniently located and easy to cover by the field worker.

Study period: The study was conducted in 1999-2000.

Study tools: 1) knowledge assessment form to record the knowledge of men and women about anaemia, its causes and consequences, signs and symptoms, prevention and management and awareness of national programme to combat this problem, 2) form for assessment of dietary intake of iron and medicinal supplements by pregnant mothers in last 24 hours. Semi-structured interview schedules were used for knowledge and diet assessment.

A trained field worker interviewed men and women and did haemoglobin assessment in the 4 villages where home visits were made actively and in the surrounding villages where periodic reproductive and child health camps were organised by our team in the anganwaris of those villages. Knowledge about intake of iron during pregnancy and the government services available for prevention and control of anaemia was assessed among 155 men and 223 women. History of dietary intake of iron rich food, and consumption of IFA tablets or any other iron preparations was taken from 113 antenatal mothers by using a semi-structured interview schedule. Haemoglobin estimation to detect anaemia was done among 206 women by Sahli's method from the capillary blood.

Diet assessment

Dietary history of intake of iron rich foods was taken from 113 pregnant women in the rural areas using a semi-structured interview schedule. Women were asked whether they had consumed any of the listed foods in last 24 hours at breakfast, lunch or dinner.

Proportion of women having consumed the listed food-items atleast once during last 24 hours was assessed.

Food items were categorised into five groups. Group one consisted of cereals like wheat, rice and bajra, group 2 had pulses like blackgram, redgram, bengalgram, soyabean,; group 3 had green leafy vegetables, green vegetables, fresh fruits and dry fruits, group 4 had meat, liver and fish and group 5 had milk. Scoring system was developed for further analysis. Score of one was given if a particular food was taken one time during a day, a score of 2 for consumption twice a day and score of 3 for consumption three times during the day. By considering appropriate mix of diet it was calculated that a balanced diet should have minimum score of 12(cereals 3, grams/meat 2, fruits 1, vegetables 3, milk and jaggery 3). Mean and median score for intake of each food-group and for total food intake was calculated. Total food score was grouped into four categories; group one with zero score, group 2 with score of 1-5, group 3 with score of 6-10 and group 4 with score of 11 and more.

Ethical Justification

The project was approved by the ethical research committee of the institute. The project involved assessment of knowledge, and blood testing for haemoglobin estimation.

Consent of the women was taken before taking blood sample. Blood was withdrawn by following aseptic techniques through finger pricks. Confidentiality of individual assessments was maintained. Subjects were free to leave the study at any time. Consent of village leaders was taken before initiating the study.

Results

A total of 378 subjects were administered knowledge assessment questionnaire; 155 (41%) were men and 223 (59%) were women. Majority did not understand the question that what is anaemia? Therefore, they were told in local dialect that "Khoon ki kami"(deficiency of blood) is called anaemia. This local dialect was used in place of the word 'anaemia' in subsequent questioning. Inadequate food (85%), excessive blood loss (19%), illness (42%), worm infestation (4%) and child bearing (10%) were the major causes of anaemia reported by respondents. Two respondents told that anaemia can occur due to bad hygiene. Knowledge about inadequate food intake and worm infestation as causes of anaemia, was not significantly different sex-wise. However, more of women compared to men knew that excessive blood loss and child bearing can cause anaemia ($p < 0.01$). Some subjects responded that tubectomy (3), smoking (2), and mental tension (10) can also cause anaemia (table 1).

Seventy-four percent of subjects knew that green leafy vegetables should be taken to prevent anaemia. Other foods known to them were: pulses (25%), poultry (22%), meat (21%), jaggery (12%), nuts (11%), fish and cereals (2% each) and legumes (1%). The sex-wise differences in knowledge were not significant. Other foods that can prevent anaemia as told by respondents were: milk and ghee (37), fruits (27), milk and fruits (21), ghee and fruits (13) and good diet and medicine (11) (table 1).

Tiredness as a symptom to suspect that a person is suffering from anaemia was known to 67% respondents. This knowledge was significantly more among women (72%) compared to men (59%) ($p < 0.01$). Twenty-five percent reported breathlessness and 60% knew that paleness over face / nail / eyes can occur in anaemia. This knowledge was more in men (78%) compared to women (47%) ($p < 0.01$). Fifty-three percent respondents knew that there is a government programme to control anaemia. Significantly more women (65%) knew about this compared to men (34%) ($p < 0.01$). However, there were no significant sex differences in knowledge that some tablets are available for control of anaemia, as told by 51% respondents. More women (40%) than men (29%) knew that these tablets can be obtained from health centres ($p = 0.02$). The knowledge that pregnant women can obtain these tablets from health centres was also high among women (80%) compared to men (58%) ($p < 0.01$). Other beneficiaries who can get these tablets from health centre, as known to respondents were lactating mothers (22%), family planning clients (27%) and children (26%) (table 2).

Sixty-four percent subjects knew that women can suffer most from anaemia out of men and women. Significantly more women (76%) were of this opinion compared to men (46%) ($p < 0.01$). Nineteen percent responded that there are equal chances of getting anaemia among both men and women, whereas, 5% considered that men suffer most from anaemia. Significantly more males ($p < 0.01$) were of the above opinions (Table 3). Fifty-six percent respondents knew that if anaemia of a pregnant mother is not corrected, she may die during delivery. Significantly more men (72%) knew about this compared to women (45%) ($p < 0.01$). Fifty-seven percent subjects knew that she may deliver a low birth weight baby. There was no significant gender difference in this aspect of knowledge. Twenty-five percent respondents, and significantly more women (40%) compared to 3% men ($p < 0.01$), thought that consumption of iron tablets during pregnancy may lead to difficult delivery (table 3).

Haemoglobin estimation was done among 206 women. Overall, 190 (92.2%) had haemoglobin level less than 11 gm/dl. Mild anaemia (Hb 10.0 to 10.9 gms/dl) was present in 28 (13.6%), moderate anaemia (Hb 7.0 to 9.9 gms/dl) in 157 (76.2%) and severe anaemia (Hb < 7 gms/dl) in 5(2.4%) women. Mean, median and mode haemoglobin was 8.84 gms/dl (SD 1.18), 8.5 gms/dl and 8 gms/dl respectively (table 4).

All women had taken atleast one iron rich food in last 24 hours. However, 100% had taken cereals, 72% consumed pulses, 68% took vegetables and fruits, 1% took meat and 63% had consumed milk atleast once during last 24 hours. It was observed that mean score for intake of iron rich food was 6.9 (SD 2.3) and median score was 7. Thus median

score was 58.3% of the total food score 12 of the balanced diet. All women consumed one or the other iron rich food. Twenty six percent had food score of 1-5, 69% had food score of 6-10 and 5% had food score of 11 and above. Maximum consumption was of food group one with mean score of 3.3 (SD 0.7), followed by foodgroup 3 (mean 1.3, SD 1.2) and food group 2 (mean 1.1, SD 1.0). Major food items consumed were chapatis (median 3), Rice (median 1) and milk (median 1). In last 24 hours, everyone had consumed chapatis, 65.5% had taken rice, 68.1% had taken green leafy vegetables or green vegetables or fruits or jaggery, 62.8% had consumed milk and 0.9% had taken meat or liver or fish atleast one time (table 5).

Discussion

The prevalence of anaemia among women is high in India. This can be due to less intake of dietary iron, presence of inhibitors of iron absorption in the diet, and lack of iron supplementation during specific physiological periods of physical growth and high nutritional requirements. Although, relative contributions of these factors may vary in different communities, but in poor populations of developing countries all the listed factors are important contributors to anaemia. Lack of correct knowledge about the diet and importance of iron supplementation during pregnancy, lactation and childhood may be the underlying causes of low iron intake. Economic inaccessibility could be another reason for this.

The present study was carried out to assess the magnitude of anaemia among married women, and to find the knowledge of subjects about causes, consequences and prevention of anaemia. Further exploratory analysis was done to find gender gaps in the knowledge

and practices about dietary intake of iron rich foods. Assessment of knowledge was done for both men and women and haemoglobin tests and dietary intake was assessed for pregnant women during home visits in four villages initially, which was later extended to camp based interviews in the villages around Naraingarh. As knowledge assessment form could not be filled for all pregnant women, linkage of knowledge with practices could not be established on one to one basis. Thus, results presented in this study provide community based evidence of gaps in knowledge and practices and thus need to be interpreted cautiously.

In our study the prevalence of anaemia among women was very high. Ninety-two percent women had anaemia of some degree. Mild anaemia was present in 13.6%, moderate in 76.2% and severe anemia was present in 2.4%. WHO classification was used to classify anaemia. However, due to lack of information about the pregnancy status in some, the cut-off point for classification of mild anaemia was taken as < 11 gms/dl. Thus, prevalence of anaemia will be even higher than this, considering the higher cut-off point of 12 gms/dl for classification of mild anaemia for non-pregnant women, as per WHO definition. Our findings are comparable to the other experiences in the country. In a hospital based ⁸ study amongst 829 women of IIInd and IIIrd trimester at Rural Health Training Centre, Najafgarh, New Delhi, prevalence of anaemia was found to be 78.8%. In a study in a hill sub-division 2249 delivery cases were observed over a period of 4 years. All the cases were anaemic. Severe anaemia was noted in 3% cases, moderate in 21% and mild in 76% cases ⁹. In a study on 93 married adolescent girls of scheduled caste communities in rural Rajasthan ¹⁰ prevalence of anaemia was found to be 78%. In

tribal blocks of Udaipur district, 94.4% (51/54) of adolescent pregnant girls in second and third trimester, were suffering from moderate to severe anaemia¹¹. As per NFHS-2 survey, 52% women had some degree of anaemia. Thirty-five percent were mildly anaemic, 15% had moderate anaemia and 2% had severe anaemia³.

The prevalence of iron deficiency anaemia (IDA) in a population survey in Zimbabwe was 33% among pregnant women, 29.6% among lactating women and 16.5% among adult males. Serum ferritin levels were low in 9.1% of the population. More of the pregnant women (14.8%) had iron depletion, compared to adult males (2.2%). It was observed that individuals in regions with food insecurity were much more affected by iron depletion and IDA than their counterparts in other regions¹².

Knowledge that less intake of iron rich foods can cause anaemia was found to be satisfactory in our study. However, their understanding about other possible causes of anaemia like excessive blood loss, child bearing, worm infestation and other illnesses was poor. Knowledge of men about female related causes of anaemia like excessive blood loss and child bearing was significantly less. This gender gap in the knowledge may have important bearing on the prevalence of anaemia in the country. In Indian rural community set-up the woman in child bearing age usually does not decide about the number and timing of children. Decision of in-laws and husband prevail to produce children at short intervals. It further worsen the status of anaemia in women due to inadequate iron supplementation and dietary compensation. Status of women empowerment was assessed in NFHS-2 survey by asking whether the women needed any

permission to meet their relatives or friends. The data revealed that only 24.4% women didn't need any permission to visit any friends or relatives. The data also revealed that 45% of the births in past 3 years were of the birth order of 3 or more and 46.9% had desire for son for the next child³. This indicates that women in child bearing age in India do not decide independently about their choices and son syndrome puts them on the morbid trap of repeated fertility.

Three-fourth of the total study subjects knew that green leafy vegetables (GLV) should be taken to prevent anaemia. Knowledge about other locally available sources of iron like pulses, jaggery, poultry, meat, fish, cereals and legumes was poor. Diet assessment survey among 113 pregnant women revealed that all of them had had chapatis in last 24 hours. However, consumption of other iron rich foods like pulses, GLVs, jaggery and meat etc. was poor. Seventy-two percent had consumed pulses, 68% had taken vegetables or green leafy vegetables, 0.9% had consumed meat etc atleast once during last 24 hours. Median score for food intake was 7, which was 58% of the total score of balanced diet, indicating that almost half of the women had consumed about 50% of the requisite iron.

Other observations in Haryana support our findings. In a study conducted in 3 districts of Haryana¹³ mean daily intake of rural lactating women during summer season was assessed. Percent recommended dietary consumption (RDA) was calculated using ICMR norms. It was observed that 76-97% women in the three districts had consumed cereals and millets as per RDA, pulse consumption was 26% in Hisar, 29% in Bhiwani and 53% in Kurukshetra, consumption of GLVs was conspicuously zero in all the three districts.

Consumption of roots and tubers was 57-64%, other vegetables 46-51%, milk and milk products 156-194%, fats and oils 90-121% and sugar and jaggery consumption was 62-88% of RDA. Overall nutritional intake of iron was 27% of RDA in Hisar, 32% in Kurukshetra and 51% in Bhiwani. Mean percent intake of iron in the three districts was 36.7%. Consumption of ascorbic acid was below 5%. As per NFHS-2 data, 37.5% of ever married women consumed milk or curd, 46.9% consumed pulses or beans, 41.8% took green leafy vegetables, 65.1% had other vegetables, 8.1% took fruits, 2.8 consumed eggs and 5.8% had chicken, meat or fish daily. Consumption of these food items once a week was near 100% in Haryana³. Study in rural Rajasthan also revealed that diets were deficient by 39-55% for iron intake¹⁰. In Najafgarh study, 85% of pregnant women were consuming less than 50% of the iron compared to their RDA⁸.

However, a study in Parbhana district¹⁴ showed that despite optimal intake of dietary iron, prevalence of moderate anaemia among lactating women was very high. Mean haemoglobin level in urban area was 9.21 and in rural area was 8.87 gms /dl. Moderate anaemia with haemoglobin 7-<10 gms /dl was present in 94% urban and 97% rural lactating women. The mean dietary intake of iron was 34.6(SD 7.7) in urban and 35.7 (SD 8.4) in rural area against RDA of 30mg. The mean intake for cereals was 73% of RDA (300/410), pulses 87% (35/40), GLVs 75% (75/100), other vegetables 75% (30/40), roots and tubers 62% (31/50), milk and milk products 120% (120/100), fats and oils 100% (20/20), and sugar and jaggery 90% (18/20) of the RDA in the rural areas. This could be because of the reason that anaemia in lactating period is the cumulative effect of

nutritional status in childhood, adolescence and pregnancy and thus cannot be corrected immediately by dietary intake, which is just optimal for a non anaemic lactating woman.

Various studies in India show that iron deficiency and anaemia exist in adolescence and pregnancy. A study conducted in 150 young women studying in Panjab Agriculture University Ludhiana ¹⁵ showed that iron consumption during summer and winter was 13.4(SD 0.3) and 15.6 (SD 0.3) mg/day and was only 48% of the RDA of ICMR. The mean haemoglobin level was 11.3(SD 0.11). On the basis of haemoglobin, 62% subjects had anaemia (HB <12 gm/dl). None of them had Hb < 7gm/dl and only 2% had clinical signs of anaemia in the form of pale conjunctiva indicating high incidence of subclinical iron deficiency in this age group.

Indian rural diet is thus generally cereal based and lacks other iron rich foods. Pulses and meat are costlier items and everyone cannot afford these. However, significant gap exists even for other cheaper locally available foods like GLVs and jaggery. Despite high level of knowledge about GLVs, intake was very poor. Both knowledge and intake were deficient for jaggery.

Adequate iron supplementation during pregnancy and lactation can still lessen the prevalence of anaemia. However, consumption of iron tablets by pregnant women is usually low and compliance rate for intake of iron tablets is usually poor. In our study only 24% of women had taken 90 or more tablets. Whereas, as per the national nutritional anaemia prophylaxis and control programme pregnant women should take atleast 100

tablets during pregnancy and double the dose is recommended for anaemic women. In our survey, 92.2% of the women were anaemic with haemoglobin below 11 gm/dl. Thus coverage of iron supplementation was poor in this area. Similar observations have been made under NFHS-2 survey³. Only 57.6% mothers had received any tab IFA during pregnancy and 54.2% had received sufficient supply of tab IFA or syrup in the two most recent births. In another study¹⁶ in rural area of Haryana 33.1% mothers reported having pallor during their pregnancy, and only 14% had received prophylactic iron and folic acid tablets for more than 90 days. A study in Andhra Pradesh among 8000 respondents including 487 pregnant women found that 19% pregnant women had received folifer tablets and 1% children were receiving these tablets. Health functionaries were not aware of all the beneficiaries under the programme¹⁷.

Although, there can be several causes of fatigue. Depressed patients feel fatigued on arising to face the day. Patients recovering from infectious mononucleosis or viral hepatitis feel strong in the morning but tire later in the day. Patients who have chronic fatigue syndrome are tired all day long. However, fatigue of anaemia has its own face. Patients with mild or moderate anaemia generally feel normal at rest and note fatigue only with exertion¹⁸. In our study, knowledge about tiredness as a symptom of anaemia was assessed. Significantly more women knew that tiredness is a symptom of anaemia, whereas, more men could tell that breathlessness and paleness over face/nails/eyes can occur in anaemia. Overall knowledge about breathlessness as a symptom of anaemia was low. The knowledge that women suffer more from anaemia than men was also higher among women. However, knowledge about complications of anaemia like if anaemia of

pregnant women is not corrected she may die during delivery was more among men. The data thus indicates that men are more knowledgeable about severe illness (breathlessness and maternal death due to anaemia). However, they underestimate the magnitude of the problem as they do not think that women suffer more from anaemia. Knowledge of women was found to be more for subtle signs of anaemia and iron deficiency like tiredness. They also knew that women suffer more from anaemia.

Summarising, prevalence of anaemia in pregnant women in this area is very high. Knowledge about green leafy vegetables for prevention of anaemia is high but its consumption is negligible. Knowledge about other appropriate locally available low cost foods like jaggery, and other relatively high cost foods like pulses and meat etc. is low. Iron supplementation during pregnancy despite knowledge of availability of iron tablets from health centres is poor. Knowledge of iron supplementation for lactating women, family planning clients and children was poor. Knowledge of men about magnitude of anaemia problem and the signs and symptoms with which they generally suffer was poor. Thus future research and health programmes should aim to eliminate the gender gap in knowledge, promote male responsibility and bridge the gap between knowledge of appropriate food consumption and its actual intake.

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Table 1
Knowledge about causes of anaemia and iron rich food

Knowledge parametres	Men (n=155)		Women (n= 223)		Total (n= 378)		p
	no.	%	no.	%	no.	%	
What are causes of anaemia?							
Inadequate food	133	85.8	190	85.2	323	85.4	0.86
Excessive blood loss	16	10.3	57	25.6	73	19.3	<0.01
Due to other illness	87	56.1	75	33.6	162	42.8	<0.01
Worm infestation	5	3.2	10	4.5	15	4.0	0.53
Child bearing	0	0	40	17.9	40	10.6	<0.01
What foods should be taken to prevent anaemia?							
Green leafy vegetables	123	79.4	158	70.9	281	74.3	0.06
Pulses	28	18.1	67	30.0	95	25.1	<0.01
Jaggery	9	5.8	40	17.9	49	12.9	<0.01
Cereals	2	1.3	7	3.1	9	2.4	0.41
Legumes	2	1.3	2	0.9	4	1.8	0.88
Nuts	6	3.9	36	16.1	42	11.1	<0.01
Liver	9	5.8	21	9.4	30	7.9	0.20
Meat	46	29.7	35	15.7	81	21.4	<0.01
Poultry	51	32.9	33	14.8	84	22.2	<0.01
Fish	7	4.5	3	1.3	10	2.6	0.11

Table 2
Knowledge about signs/symptoms and national programme guidelines for control of anaemia

Knowledge parametres	Men (n= 155)		Women (n=223)		Total (n= 378)		p
	no.	%	no.	%	no.	%	
How can you suspect that a person is suffering from anaemia?							
Tiredness	92	59.4	161	72.2	253	66.9	<0.01
Breathlessness	38	24.5	57	25.6	95	25.1	0.81
Paleness over face/nails/eyes	122	78.7	106	47.5	228	60.3	<0.01
Knowledge about provisions under national programme for control of anaemia							
Govt. programme available	53	34.2	147	65.9	200	52.9	<0.01
Tablets available	76	49.0	120	53.8	196	51.8	0.36
Tab. available in health centres	45	29.0	90	40.4	135	35.7	0.02
Who can obtain these tablets from health centres?							
Pregnant mothers	90	58.1	180	80.7	270	71.4	<0.01
Lactating mothers	27	17.4	58	26.0	85	22.4	0.04
Family planning clients	44	28.4	61	27.4	105	27.7	0.82
Children	45	29.0	54	24.2	99	26.1	0.29
Who suffer most from anaemia?							
Man	19	12.3	2	0.9	21	5.5	<0.01
Woman	72	46.5	171	76.7	243	64.2	<0.01
Equal chance in man or woman	47	30.3	28	12.6	75	19.8	<0.01

Table 3
Knowledge about complications of anaemia

Knowledge parametres	Men (n= 155)		Women (n=223)		Total (n= 378)		p
	no.	%	no.	%	no.	%	
What can happen if anaemia of a pregnant mother is not corrected?							
She may die during delivery	112	72.3	102	45.7	214	56.6	<0.01
She may deliver a low birth weight baby	82	52.9	135	60.5	217	57.4	0.13
Do you agree that by consuming iron tablets during pregnancy, delivery become more difficult?							
Yes	6	3.9	90	40.4	96	25.3	<0.01
No	14.8	95.5	131	58.7	279	73.8	<0.01

Table 4
Haemoglobin status of women

Haemoglobin group (gms/dl)	Number (n=206)	Percent
<7	5	2.4
7- <10	157	76.2
10- <11	28	13.6
11 and above	16	7.8

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Store the weaning food in rooms free from insects and rats. The rooms where the material is stored maybe swept clean. If possible also give a spray of 2% malathion on the walls after emptying the room at intervals of 2 months. The doors and shutters shall be made tight fitting and without any crevices and holes to prevent entry of rats. Store weaning food away from other insects, infected materials and non-food items.

In the absence of suitable storage rooms, commercially available metallic storage bin of required capacity may be used which will afford protection against moisture, insects and rats.

Do not open the packets till the time of actual use. If the left over material is to be preserved for a short time use a clean tin container with tight fittings lid for storage. Do not use food from opened or damaged packets which have been exposed to unclean environment.

Manufacturing units:

This food is manufactured at our factories located at Mysore, Belgaum, Chitradurga, Raichur and Doddaballapur. Each unit produces 12-15 metric tones of Weaning Food every day.

Diversification of new projects :

Due to success and large scale acceptability of Energy Food, the Company is now engaged in modernisation of Energy food plants as well as diversifying to take up new production lines for producing low cost high nutritive. Ready to eat foods like extruded snacks and malted Weaning Food for the most vulnerable segments of society, like pregnant mothers and children covered under ICDS/SNP Programme of Government. Due to introduction of Centrally Sponsored Mid-Day Meal Scheme and Reformulated Akshya Ahara Programme, the division is planning Modernisation, Diversification and Expansion Programme to increase production capacity for supply of Nutritious Food to improve nutritional status and school attendance of Primary School Children.

Soya Fortified Wheat Soji/Atta/Dhalia :

CFTRI Formula of Paustik Atta is followed for production and supply of Soya Fortified Wheat Atta/Rava/Dhalia

The wheat Soji/Dhalia/Atta is produced in the most sophisticated Maize Milling Plant using latest technique of dry Milling Plant at Bangalore is further sent to Energy Food units for fortification with minerals and is finally packed properly for dispatching to AEOs/CDPOs. This product is fortified with Edible Grade Toasted De-fatted Soya Flour. It is further fortified

with required Vitamins and Minerals. The standard specification for Paustik Atta/Soya Fortified Wheat Rave/Dhalia is as follows :

Sl. No.	Characteristics	Requirements
1.	Moisture,% by Marx Max	13.00
2.	Total Protein (nx6.25) (on dry basis) by mass. Min.	10-12.50
3.	Crude Fiber (on dry basis)% by mass. max.	2.50
4.	Calcium, mg/100g. Min.	120.00
5.	Iron, mg/100g. Min.	5.00
6.	Thiamine (as hydrochloride)100g. Min.	0.25
7.	Riboflavin, mg/100g. Min.	0.50
8.	Niacin, mg/100g. Min. Also added iodine + Iron enriched salt	2.50

Semi-processed composite Energy Food Mix, which is specially prepared in most modern plant of Karnataka State Agro Corn Products Limited, Fortified with Macro & Micro Nutrient for Nutrition Intervention Programme of Government. This product is therefore, more nutritious and reliable than ordinary Atta/Rava/Dhalia available in the Market. This can be utilised to prepare tasty food preparation akin to local taste by adding available required spice, oil, seasoning and vegetables for savory preparation and Jagger/Sugar for sweet preparation.

NEW PROJECT

The Company has conceived a new project for production of Instant Upma Mix/ Kesari Bath Mix under technical consultancy services of Central Food Technological Research Institute, Mysore. These are the traditional food items and are developed as Instant Food Mixes for convenience to House wives and easy preparation at site in Nutrition Programme. Instant Upma Mix / Kesari Bath Mix are being commercially marketed under popular brand name of "SARAL". Most automatic and continuous plant designed by Central Food Technological Research Institute, Mysore, is established at Bangalore Complex of the Company. The Instant Upma Mix / Kesari Bath mix is prepared under most hygienic and sanitary

AGRO FEEDS DIVISION

Nearly 30 percent of the Maize Products produced in the Maize Milling Plant are for use in Livestock Feeds. In order to make efficient use of these maize products, viz. Poultry Grits, Animal Meal, Maize Germ, De-oiled Cake and Maize Bran, the company took up manufacturing of Livestock Feeds in the year 1976. The Feeds manufactured by this company are sold under the brand name "AGROFEEDS".

- Agro feeds are available in a wide range for Cattle, Poultry, Laboratory Animals and Fish.
- Agro feeds are made of carefully selected, high quality ingredients milled and mixed judiciously.
- Agro feed are well balanced, highly nutritious complex mixtures fortified with all known essential micro nutrients and vitamins at recommended levels.
- Agro feeds help boost production of Milk, Meat and Eggs to maximum genetic potential.
- Agro Feeds are manufactured under expert guidance and supervision. Both raw materials and finished products pass rapid quality controls.
- Feeds make up about 60% of the cost of production. Feed cost can be reduced by increased production per unit. Well balanced quality feeds should be used in animal farming to make reasonable profit. Feeding good feed to poor stock or feeding good stock poorly is bound to be unprofitable. This is because heredity sets the upper limit of the capacity of the livestock to grow, convert feed into milk, meat and eggs. Feed can do its best only when all other factors are favorable.

(A) Poultry Feeds

1. **Chick Mash** : Feed for chicks from day old to 8 weeks. This contains necessary vitamins & supplements required for birds of that age.
2. **Grower Mash** : Feed for Growers between the age 8 to 20 weeks.
3. **Layer Mash** : Feed required for laying hens from the onset of lay upto the end of lay 20 weeks to 72 to 80 weeks.
4. **Breeder Mash** : This has to be fed to parent stock.

5. **Broiler Starter** : Feed for Broiler birds from 0-4 weeks.
6. **Broiler Finisher** : Feed for Broiler birds from 5-8 weeks.
7. **Special Layer Mash** : Feed to birds to increase production during laying slumps due to sudden weather changes or disease.

(B) Cattle Feed:

Agro Bye Pass Protein (Pellets) : Concentrated feed for high yielding cows.

Agro High Fat Ration : Cattle Feed for high milk yielders ranging from 151ts. and above.

Agro Special Milk Ration : For all types of cattle, especially cows producing 10 to 15 liters of milk per day. Very economically priced. **Agro Milk Ration** : Feeds for animals producing 10 Liters and below, dry animals, etc.

Agro Calf Meal : Special feed for calves and young ones.

(C) Special Agro Feeds :

1. **Maharaja Broiler Starter/Finisher** : This feed is highly nutritious and recommended for Broilers for improved feed conversion in less number of days.
2. **Chick Concentrate** : Feed which comprises of Macro Nutrients and Micro Nutrients like vitamins and minerals. Cereal grains and byproducts are to be mixed before feeding to chicks.
3. **Layer Concentrate** : To be fed to layers after mixing required macro nutrients. Contains adequate level of vitamins.

(D) Agro Laboratory Animal Feeds :

1. **Agro Rabbit Feed** : To be fed to all types of rabbits from the 2nd week upto slaughter. Contains all nutrients required for a healthy rabbit.
2. **Agro Rat/Mice Feed** : To be fed to rat and mice and contains all nutrients required for healthy growth and breeding.
3. **Agro Guinea Pig Feed** : This feed is to be fed to guinea Pigs and contains all nutrients especially Vitamin C.

India

SOUTH ASIA BRIEF

The World Bank Group and Nutrition in India

The World Bank Group has supported nutrition efforts in India through two Tamil Nadu Integrated Nutrition projects. In conjunction with these projects, the Bank Group has helped India better target nutrition programs, improve family nutrition and health practices, and improve maternal and child health services.

Through two Integrated Child Development Services (ICDS) projects, the Bank Group has helped the government's ICDS program address malnutrition, health, and pre-school education among India's poorest children and pregnant and nursing women. And, the Bank Group has worked closely with UNICEF to help address specific micronutrient deficiencies through the recently completed Child Survival and Safe Motherhood Project. Today, India accounts for the largest volume of Bank Group lending devoted specifically to nutrition programs.

Despite India's substantial progress in raising the nutritional status of its people, the challenge of malnutrition will be with India for many years to come. Malnutrition consists of deficiencies in both proteins and micronutrients; in India, it is highest among scheduled castes and scheduled tribes.

According to India's National Family Health Survey (1992-93), the proportion of children under 4 years old with moderate and severe malnutrition was close to 60 percent in a number of states, including Bihar, Uttar Pradesh, Madhya Pradesh, and West

Bengal. In 1992-93, it was estimated that slightly more than half of children under 4 years old are undernourished according to weight and height for age. The consequence of such malnutrition is lowered potential for physical and mental development and greater susceptibility to disease.

The Bank's main objective in assisting the Government of India in nutrition is to help the central and selected state governments adopt policies, strategies, and cost-effective programs to deal with the nutrition problems of pre-school children (particularly those under 3 years old) and pregnant and nursing women.

In the future, the principal challenge will continue to be developing and putting in place an effective, efficient, and sustainable approach to reducing malnutrition and fostering early childhood development.

COMPLETED WORLD BANK-ASSISTED NUTRITION OPERATIONS

An IDA credit of US\$32 million for the first Tamil Nadu Integrated Nutrition Project (TINP) was approved in 1980 and the project was successfully completed in 1989. Its overall goal was to improve the nutritional and health status of pre-school children, primarily those 6-36 months old, and pregnant and nursing women. The project provided a package of services: nutrition education, primary health care, supplementary on-site feeding of children who were severely malnourished or whose growth was faltering, education for diarrhea management, administration of vitamin A, periodic deworming,

and supplementary feeding of a limited number of women.

This project marked the first large-scale use of growth monitoring in India, through monthly weighing of all children 6-36 months old, to target delivery of these nutrition and health services to needy children, and to educate mothers.

Under this project, some 9,000 community nutrition centers and 2,000 new health sub-centers in 173 of Tamil Nadu's 373 rural blocks were established. Local participation in the project and project coverage were high, and an effective program of mass and interpersonal communications, particularly at the village level, was established.

The project cut severe malnutrition in half and prevented many at-risk children from becoming malnourished. The key to TINP's success was the great care taken in planning and executing process elements, including careful selection and training of community nutrition workers, heavy emphasis on intensive and supportive supervision, and efforts to gain community support. TINP today provides perhaps the largest longitudinal data base on child growth and health in the developing world, and lessons learned from this project were incorporated into the design of TINP II.

ONGOING WORLD BANK-ASSISTED NUTRITION OPERATIONS

The Tamil Nadu Nutrition II (TINP II) Project extends the successful Tamil Nadu pioneer project from the original 9,000

villages to most of the state's 20,000 villages. An IDA credit of US\$95.8 million was approved in 1990 in support of this project; the credit amount has since been revised to US\$67.5 million.

The project aims to:

- ◆ increase the range, coverage, and quality of nutrition and health services;
- ◆ improve child feeding and care practices;
- ◆ promote community involvement, including support for formation of women's groups and community education; and
- ◆ upgrade project management and evaluation.

More than 5 million children under 6 years old and 2 million pregnant and nursing women benefit directly from the project's services.

The Integrated Child Development Services (ICDS) Project, approved in 1991, is financed with an IDA credit of US\$74.3 million—revised from US\$96 million. The project supports India's ongoing ICDS Program and focuses on improving the nutrition, health, and pre-school education status of tribal, drought-prone, and otherwise disadvantaged people in Andhra Pradesh and Orissa.

About 5 million pre-school children and about 3 million pregnant and nursing women directly benefit from the project's nutrition and health services. The project has succeeded in increasing the emphasis on reaching pregnant women and children under 3 years old, especially in Andhra Pradesh.

An IDA credit of US\$194 million for the ICDS II Project was approved in 1993. This project

supports India's ongoing ICDS Program in the states of Bihar and Madhya Pradesh. The project seeks to meet the needs of India's poorest people, many of whom are tribal, by improving the nutrition, health, and pre-school education status of children under 6 years old (with special emphasis on children 0-3 years old), and the nutrition and health status of pregnant and nursing women.



Rebecca Robboy

FUTURE OPERATIONS

A new project, *Woman and Child Development*, is now being prepared which aims to help the Indian government develop a more effective, efficient, and sustainable approach to reducing malnutrition and fostering early childhood development. The project seeks to:

- ◆ improve the health, nutrition, and psychosocial status of children 0-6 years old, with particular emphasis on preventing malnutrition in those under 3 years old; and
- ◆ improve the health and nutrition of women, particularly pregnant and nursing mothers.

In addition, the project seeks to improve child care practices and

would include efforts to enhance women's development and their ability to address issues of malnutrition at the household level. Finally, the project would strengthen the capacity at central, state, and block levels to provide high-quality support and training to functionaries of India's ICDS program. It is expected that five states will participate in the project. The project approach would vary substantially among states, depending on their needs, the status of their existing programs, and their preferences.

RESEARCH AND ANALYSIS

Several analytical studies provide the basis for the Bank Group's involvement in nutrition in India. Among the most important is *Improving Nutrition in India* (1990), which identifies the priority target populations and geographical areas for nutrition interventions, analyzes effectiveness of various responses to the nutrition problem, and discusses outstanding nutritional issues. The study concludes that:

- ◆ There are wide variations in malnutrition across regions, age, and social groups, and by gender;
- ◆ Direct nutrition expenditures have been modest and not always sensitive to variations in malnutrition; and
- ◆ There is scope to improve the productivity of expenditures by strengthening and reorienting existing programs and by reducing mismatches between expenditures and distribution of need.

Overall, the study argues for the need to strike a proper balance among needs, potential demand, and available resources.

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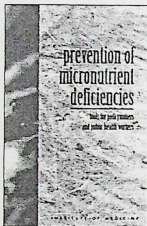
In New Delhi: Geetanjali Chopra: (91-11) 461-7241

e-mail: Gchopra@worldbank.org

PUBLICATIONS

**Prevention of Micronutrient Deficiencies:
Tools for Policymakers
and Public Health Workers (1998)**
edited by Christopher P. Howsen, Eileen T. Kennedy
and Abraham Horwitz, Committee on Micronutrient
Deficiencies, Institute of Medicine

Review by Frances Davidson, USAID



Background

Together with many colleagues, USAID has a long-standing interest in identifying and sharing analyses of programmes it helps implement so as to extend their impact and encourage others to benefit from these experiences - successes and failures. To a certain extent this commitment comes out of the recognition that meaningful evaluations of nutrition programmes and their

true impact remains a considerable void in our communal development experience. Answers to the question 'what does it really take to develop, implement and sustain a successful nutrition intervention' remain elusive.

In 1989, the International Nutrition Planners Forum published, 'Crucial Elements of Successful Community Nutrition Programs'. In this document an attempt was made to develop an analytic framework to identify the crucial issues identified as responsible for the success of a few selected programmes. It was thought this might be a practical way of promoting better nutrition and avoiding failures. The 1989 publication synthesised the experience of USAID's efforts to identify the elements that had been crucial in achieving nutrition programme success. It found that success required broad participation in the planning and implementation by those who are expected to benefit from the programmes and those who are to provide the services. It further documented a developing theme at that time of 'partnerships' between service providers and targeted groups, between government and the private sector, between entrepreneurial groups and volunteer groups, and other partnerships necessary to establish and, more importantly, sustain successful programmes. Since then other agencies, notably the World Bank, the Micronutrient Initiative, and IVACG have made valuable contributions to this discussion.

In attempting to make a further contribution to the state-of-the-art in analysing programme performance, USAID asked the National Academy of Sciences (NAS) to call together an expert group of individuals to do a systematic examination of the reasons for the success of programmes and at the same time, identify the constraints that limited successes. The group included scientists and programme implementers. Their charge was to review past approaches that had or had not resulted in success and to identify the elements of success or failure. The NAS focused on micronutrient malnutrition because it is a topic that has seized a great deal of attention from many donors and country governments. This is due in large part to the elimination of micronutrient malnutrition being seen as something 'doable' and because we hoped that from this beginning, the way in which to ensure progress in the larger issues of malnutrition might be encouraged.

The case studies represent only a fraction of the many successful nutrition programs that have been implemented in developing countries. They were selected as reflecting broad geographical diversity and as illustrative of a variety of community and technical approaches.

Organisation of the Report

The Report is organised into two volumes. The first volume is the *Summary and Key Elements*. The second includes the contents of the first, along with the three commissioned background papers on vitamin A (by Barbara Underwood), iron (by Fernando Viteri) and iodine deficiency (by John Stanbury). The NAS report does not offer recommendations on how to alleviate specific micronutrient deficiencies - these recommendations are already available through the publications of diverse organisations, including USAID, WHO, UNICEF and others. Rather, this report provides a conceptual framework based on past experience that will allow funders to tailor programmes to existing regional/country capabilities and to incorporate within these programmes the capacity to address multiple strategies (e.g., supplementation/fortification/other food based approaches/public health measures and multiple micronutrient deficiencies).

Several global conferences have focused attention on micronutrient malnutrition and raised awareness of the problem and the tremendous toll they take in human and country development. Solutions to these micronutrient deficiencies were said to be technologically possible, and substantial financial resources have been committed to solving the problem by many governments and donors. Less attention has been devoted to understanding the key elements needed to implement and sustain a micronutrient intervention on a fully operational scale - regional or national - as opposed to a pilot project scale, at either the national or community level. In fact this has been cited as a

problem not only of micronutrient interventions but nutrition programmes in general.

This report focuses on lessons learned from past interventions to address iron, vitamin A and iodine malnutrition - the committee limited its evaluation to these three micronutrients because it felt there was adequate experience for each. However, they believe that the lessons learned for improving future intervention strategies would also be applicable to prevention and control of malnutrition deficiencies by deficiencies of other nutrients. And as the literature and experience accumulate, it will be appropriate to explore similar these regarding other micronutrients such as zinc, folate and vitamin B12.

Early on in the process, it was recognised by the Expert Committee that there would be an array of potential alternative strategies to deal with micronutrient malnutrition, and that it was unlikely that any one intervention by itself would solve all the micronutrient deficiencies in a given region, country or population group. Thus, the mix of scientists and project implementers invited to the workshop were designed to help ensure identification of the optimal combination of interventions most likely to be successful in a selected context. The range of participants also allowed for complementarities in treating micronutrient deficiencies to be identified.

An important feature of this report is the Committee's attempt to provide a framework for planning intervention programmes that integrate the three micronutrients and provide matrices for assigning priorities to interventions in different contexts. The Committee offers these matrices as guidelines only, recognising that there may be circumstances in which unique opportunities or barriers - in both human and material resources - exist that may lead countries to deviate from the priorities in the matrix. It is hoped that the matrices offer a useful starting point for planners and donor agencies.

A special note of thanks is due to the members of the Expert Committee and the Report Editors who so generously gave of their time and talents to this endeavour.

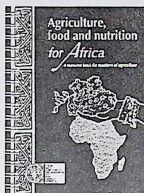
Published by the National Academy Press. 224pp (including 51pp for the *Summary and Key Elements*). US \$30. Special discount price of US \$24 if ordered through the web (<http://www.nap.edu/bookstore>). Discounts are also available for orders of multiple copies. Both volumes of the report are available from the National Academy of Sciences Press, 2101 Constitution Avenue, N.W., Lockbox 285, Washington, D.C. 20055, USA. Tel: 1 202 334 3313 Fax: 1 202 334 2451.

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WHO Nutrition Publications - 1998 Catalogue

The 1998 catalogue listing WHO nutrition publications and documents is now available from WHO Distribution and Sales, CH-1211 Geneva 27, Switzerland. Tel: 41 22 791 2476 Fax: 41 22 731 4857 Email: publications@who.ch

Agriculture, Food and Nutrition for Africa A Resource Book for Teachers of Agriculture (FAO, 1997)



The need for a comprehensive source of training materials about African food systems has long been recognised. To address this need, FAO has published 'Agriculture, Food and Nutrition for Africa', which is designed as a source of teaching material for teachers of agriculture in Sub-Saharan Africa who wish to introduce a food and nutrition component into their

training programmes. Resource material, presented in boxes, tables and figures, has been selected from a range of mainly English-speaking African countries and ecological regions. The material is elaborated in nine chapters covering such topics as the food chain and links among agriculture, nutrition and food security, food supply systems in Africa, food and dietary diversification, food storage and processing, nutrients and diets, malnutrition and micronutrient deficiencies, and nutrition education.

With selection and adaptation of the material to meet specific needs, this resource book may be used for diploma and bachelor's degree-level courses in fields such as general agriculture, agricultural extension and agricultural education; for in-service training courses, workshops and seminars for agricultural extension agents, rural development workers, administrators of agriculture and of rural development programmes, and government policy-makers in food, nutrition and agriculture; and for in-service education of secondary school, college and university teachers of agriculture.

Published by FAO. 412pp. US \$40 (discounts available for developing countries and bulk orders). Copies are available from the Sales and Marketing Group, Food and Agriculture Organization, Viale delle Terme de Caracalla, 00100 Rome, Italy. Tel: 39 6 5705 5727 Fax: 39 6 5705 3152 Email: Publications-sales@fao.org Web: <http://www.fao.org/CATALOG/interact/order-e.html> For more information about this, and other FAO nutrition publications, please email Nutrition@fao.org

Breaking the Rules, Stretching the Rules (1998) A worldwide report on violations of the WHO/UNICEF International Code of Marketing of Breastmilk Substitutes

Breaking the Rules, Stretching the Rules 1998 reports on violations of the WHO/UNICEF International Code of Marketing of Breastmilk Substitutes¹ and relevant WHA Resolutions revealed during a 31-country survey carried out between January



and September 1997. Even though the marketing practices of the main producers of infant formula and other breastmilk substitutes claim to abide by the WHO/UNICEF International Code of Marketing of Breastmilk Substitutes, the report provides evidence that the producers continue to undermine breastfeeding and infant health.

The major conclusion of the report is that the industry continues to focus on the health care system, building up mailing lists of new mothers. Most companies have stopped advertising infant formula directly to the public. Nearly half of the 56-page illustrated report is devoted to examples of continued violations of the International Code in hospitals and clinics. It also gives numerous examples of companies breaking the rules of the Code and WHA resolutions, by donating samples and supplies, posters, calendars, promotional booklets and gifts to health professionals and to mothers.

The subtitle 'Stretching the Rules' refers to the final section of the report, which describes how new products and practices have been introduced to a number of countries. One such product, marketed by at least 10 major companies, is a 'formula for mothers', which, says the report, allows companies to ride on the breastfeeding wave, sell a new product, and by promoting it widely, remind mothers, doctors and midwives of their company name.

IBFAN. 56pp. US\$6 to non-profit groups; US\$15 to profit groups, inclusive of airmail postage. Copies of the report are available from IBFAN, Penang. IBFAN, P.O.Box 19, 10700 Penang, Malaysia. Tel: 60 4 6569799 Fax: 60 4 6577291 Email: ibfanpg@tm.net.my The report is also available in French and Spanish.

Sources: IBFAN press release 'Baby Food Marketing: More Infants at Risk' 14 March 1998, the report 'Breaking the Rules, Stretching the Rules, 1998'.

The Code Handbook (1997) by Ellen J. Sokol

The Code Handbook provides a guide to implementing the International Code of Marketing of Breastmilk Substitutes¹. Each article of the Code is carefully analysed and examples are given of how different countries have avoided particular weaknesses and loopholes. It provides a mix of examples of marketing

techniques and their effects, and clear suggestions for drafting protective provisions. The book also presents a complete collection of related documents under one cover: the full International Code, all subsequent relevant WHA resolutions, the Innocenti Declaration and full text of a dozen baby food marketing laws from all over the world. The comprehensive coverage of the history of the Code, the history of baby milk marketing and of the purpose and achievements of the Code, makes this book valuable reading, not only for lawyers but for everyone who wants to study the legal aspects of the breastfeeding campaign.

361pp. US\$130 for profit organisations; US\$50 for non-profit organisations (incl. of surface mail delivery). Published by the International Code Documentation Centre, International Baby Food Action Network, Penang, Malaysia. Available from IBFAN, Penang: IBFAN, P.O.Box 19, 10700 Penang, Malaysia. Tel: 60 4 6569799 Fax: 60 4 6577291 Email: ibfanpg@tm.net.my

Source: 'forward to the Code Handbook' by Ellen J. Sokol, 1997.

The International Code of Marketing of Breast-milk Substitutes (1998)

A summary of action taken by WHO Member States and other interested parties, 1994-1998

Since the adoption of the International Code of Marketing of Breast-milk Substitutes in 1981, and consistent with its Article 11.7, the Director-General of WHO has reported every two years on the status of the Code's implementation. Thus far 158 of WHO's 191 Member States - 83% in all - have reported to WHO on action taken in this connection. Primary emphasis has been on relevant action taken by Member States, but information has also been included on WHO's technical support to governments and action by NGOs, professional groups, and consumer organisations, which are called upon to collaborate with governments in monitoring the Code's application (Article 11.4).

This document provides a detailed summary of available information on action taken by 63 WHO Member States, technical support provided by WHO, and the activities of a number of NGOs, especially affiliates of the International Baby Food Action Network (IBFAN). It complements information provided in recent reports by the Director-General on infant and young child nutrition presented to the WHO Executive Board at its sessions in January 1996 and January 1998, and the Forty-ninth and Fifty-first World Health Assemblies in May 1996 and May 1998, respectively.

¹ The WHO/UNICEF International Code of Marketing of Breastmilk Substitutes was adopted in May 1981 by the World Health Assembly. It presents a code, developed jointly by WHO and UNICEF, for the marketing of breastmilk substitutes. The code applies to the marketing of breastmilk substitutes, including infant formula, and other milk products, foods, and beverages, including bottle-fed complementary foods, when marketed or otherwise represented to be suitable for use as a partial or total replacement of breastmilk. The code deals in successive articles with information and education needs concerning the feeding of infants, advertising or other forms of promotion to the general public, and standards for product labelling and quality. 35pp. CHF3 (US \$2.70); CHF2.10 in developing countries. Available from WHO, Distribution and Sales, CH-1211 Geneva 27, Switzerland. Tel: 41 22 791 2476 Fax: 41 22 791 4857 Email: publications@who.ch Web: <http://www.who.ch/ppl/dsa/index.html> The Code is also available in full text on the IBFAN website at <http://www.gn.apc.org/ibfan/fullcode.html> (Source: WHO publications website <http://www.who.ch/ppl/dsa/index.html>)

The report concludes that since 1981, Member States have gained considerable practical experience, and have provided a wealth of information on the implementation and monitoring of the Code. Action taken during the period 1994-8 provides convincing evidence that many governments are taking seriously their commitment to safeguarding the health and nutritional status of infants and young children.

WHO/NUT/98.11 31pp. Available in English and French from: Programme of Nutrition, WHO, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland. Tel: 41 22 791 3325 Fax: 41 22 791 4156 Email: akrej@who.ch

**Community Nutritional Problems
among Latino Children
in Hartford, Connecticut (1997)**
by *Rafael Perez-Escamilla,
David A. Himmelgreen and Ann Ferris*



Hartford, Connecticut, is an impoverished American city where around 45% of children live in poverty and residents are continually confronted with an array of health and social problems, including poor nutrition. This report presents the results of a needs assessment of the food and nutrition situation of the Latino community living in inner city Hartford, and identifies a

great need for the development of culturally appropriate nutrition education interventions to improve the nutritional habits of Latino families. Results show that special attention needs to be paid to:

- ◊ low levels of breastfeeding (over half the women did not breastfeed their children);
- ◊ poor dietary quality, in particular the very low intake of fresh fruits and vegetables and the frequent intake of high fat foods;
- ◊ physical inactivity;
- ◊ high obesity rate (one in five children were obese);
- ◊ excess stunting (11% of children had stunted growth);
- ◊ iron deficiency anaemia (almost one quarter of children had anaemia);
- ◊ lead poisoning (one in five children had been diagnosed with lead poisoning at some point).

In light of these findings, the report makes a number of recommendations including the continuation of food assistance programmes, monitoring the impact of welfare reform on household food security, development of culturally sensitive campaigns that promote breastfeeding, and promotion of healthier, more nutritious diets and higher levels of physical activity.

The report has ten chapters covering the following areas: project design, description of the environment and project participants,

food assistance and purchase, food insecurity and hunger, infant feeding, dietary intake patterns, child anthropometry, child and child caretaker health, biochemical assessment and conclusions and recommendations. A summary is given at the end of each chapter, and tables, graphs and photographs are used frequently, making the report interesting and easy to read.

Connecticut Family Nutrition Program Technical Report #1, Storrs and Hartford, CT. 52pp. Readers from industrialized countries can request copies of this report by mailing a US\$10 cheque/ money order issued to 'UConn' to Rafael Perez-Escamilla, Assistant Professor and Extension Nutrition Specialist, Department of Nutritional Sciences University of Connecticut, 3624 Horsebarn Rd Ext, Storrs, CT 06269-4017 Tel: 1 866 486 5073 Fax: 1 860 486 3674 Email rperez@canr1.cag.uconn.edu There is no charge for readers from developing countries.

**WHO Global Database on
Child Growth and Malnutrition (1997)**
compiled by *Mercedes de Onis and Monika Blössner*



This book presents the vast amount of data contained in the WHO Global Database on Child Growth and Malnutrition. The data, which indicate the growth and nutritional status of children under five, have been collected by WHO since 1986 as part of its efforts to monitor global progress in combating childhood malnutrition and to identify those groups in need of priority interventions.

This detailed account of data on child growth and malnutrition – as measured by underweight, stunting, wasting and overweight – is divided into two parts. Part one explains the importance of global nutritional surveillance and describes the origins and development of the database. Against this background, subsequent chapters summarise global, regional, and national situations and trends for key indicators of child growth and nutritional status. Numerous tables and selected maps are used to indicate the country-specific prevalence and geographical distribution of underweight, stunting, wasting, and overweight for boys, girls and the two sexes combined in developing and developed countries. Countries are classified according to very high, high, medium and low prevalence for each indicator and to global and regional trends are estimated over time. While noting important achievements in overcoming malnutrition among under-fives, the analysis concludes that global progress is entirely inadequate to reach the goal, set for the year 2000, of a 50% reduction in 1990 prevalence levels of moderate and severe malnutrition. Part one concludes with chapters describing the methods used in data collection and their standardised presentation, and offering guidance in the interpretation of the statistical tables.

pellier, France, from 28-30 November 1995. This report summarises the discussions, conclusions and recommendations of the consultation.

The consultation reviewed a state-of-the-art paper on complementary feeding prepared for the consultation by the Program in International Nutrition of the University of California at Davis (USA). On this basis, the group agreed that new, more precise recommendations regarding the introduction and duration for feeding complementary foods are needed.

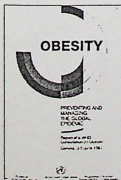
A number of issues were discussed at the consultation including:

- ◇ the energy needed from complementary foods, the basis for estimating needs, and major factors affecting energy intake from complementary foods, in particular energy density and feeding frequency;
- ◇ protein and micronutrient requirements from complementary foods, and how complementary foods can provide adequate nutrient density;
- ◇ issues of food processing and safety;
- ◇ programmatic interventions to improve complementary feeding.

The main conclusion and recommendation arising from these discussions was that further research and discussions are needed. For example, it was recommended that further research be carried out on the bioavailability of micronutrients from complementary foods, and the effects of food processing procedures on bioavailability of nutrients.

This report (WHO/NUT/96.9) is available from the Programme of Nutrition, Family and Reproductive Health, WHO, Geneva. The state-of-the-art review, 'Complementary Feeding of Young Children in Developing Countries: a review of current scientific knowledge' will be published in August (WHO/NUT/98.1) For further information, please contact Randa Saadeh, WHO/NUT, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland. Tel: 41 22 791 3315 Fax: 41 22 791 4156 Email: saadehr@who.ch

**Obesity: preventing and managing
the global epidemic (1998)
Report of a WHO Consultation on Obesity
Geneva 2-5 June 1997**



SCN News No.14 (p47) reported on the draft version and recommendations of this report shortly after the WHO Consultation on Obesity in 1997. The interim version of the report is now available for limited distribution only, but will be widely available (in final version) at the end of 1998 as part of the WHO Technical Report Series (TRS). French and Spanish versions will follow in 1999.

The document reviews global prevalence and trends of obesity among children and adults, factors contributing to the problem of

obesity, and associated consequences of obesity, such as chronic noncommunicable diseases. It also examines the health and economic consequences of obesity and their impact on development, and makes recommendations for developing comprehensive public health strategies for prevention and management of obesity.

WHO/NUT/NC/DI/98.1 296pp. For further information please contact Chizuru Nishida, Nutrition Programme, WHO, 20 Avenue Appia, CH-1211, Geneva 27, Switzerland. Tel: 41 22 791 3317 Fax: 41 22 791 0746 Email: nishidac@who.ch

**Guidelines for the Use of Iron Supplements
to Prevent and Treat
Iron Deficiency Anemia (1998)
by Rebecca Stoltzfus and Michele Dreyfuss**

Published by the International Nutritional Anemia Consultative Group (INACG), the purpose of these guidelines is to provide practical, scientifically sound guidance to those responsible for planning and implementing anaemia control programmes.

While the main focus of these guidelines is on iron supplementation programmes and parasite control for pregnant women and children 6-24 months of age, they also acknowledge the beneficial role that food fortification and dietary diversification can have in controlling anaemia. Guidelines for the treatment or referral of people with severe anaemia in primary care settings, and a summary of key steps necessary to develop an iron supplementation programme are also given.

A selected bibliography lists books and documents that provide more in-depth information on topics related to iron deficiency anaemia. Appendices list contact details for international agencies that provide support or technical assistance for the control of iron deficiency anaemia. Some sources for supplements and other supplies needed to establish programmes are also listed.

These guidelines are available free of charge from the INACG website at <http://ils.i.org/inacg.html> Or contact the INACG Secretariat at ILSI Human Nutrition Institute, 1126 Sixteenth Street, NW, Washington, DC 20036-4810, USA. Tel: 1 202 659 9024 Fax: 1 202 659 3617 Email: OMNI@dc.ils.i.org

**Food Quality and Safety Systems: a training
manual on food hygiene and the hazard
analysis and critical control point
(HACCP) system (FAO, 1998)**

FAO is the one of the specialised UN agencies dealing with aspects of food quality and safety throughout each of the stages of food production, storage, transportation, processing, and marketing. As part of FAO's ongoing work to build the capacity of food control personnel, a training manual was recently published which is intended for trainers in food quality and safety assurance at the government and industry levels.

This book is a direct result of an Expert Consultation on Hazard Analysis and Critical Control Point (HACCP) Principles in Food Control, which was held in 1994. Shortly after this meeting, an Ad Hoc Working Group developed a core curriculum as a 'train-the-trainer' programme. The core curriculum recognises the importance of basic quality and safety controls which are included in the *Codex General Principles of Food Hygiene and Good Manufacturing Practices* as embodied in the *Codex Codes of Practice* as a basis for the effective implementation of the HACCP system. The training programme has been tested in Thailand, Brazil, Vietnam and Slovakia.

The manual is structured to ensure that essential information is provided in a standardised, logical and systematic manner while adhering to effective teaching and learning strategies. It is composed of three sections: section one pertains to *Principles and Methods of Training*, section two to *Recommended International Code of Practice - General Principles of Food Hygiene*, and section three to the *Hazard Analysis and Critical Control Point (HACCP) System*. Each section is divided into specific training modules. This format allows the instructor to select sections and modules according to the levels of knowledge, experience and specific responsibilities of the students.

FAO has prepared this manual in an effort to harmonise the approach to training in the HACCP system based on the text and guidelines of the Codex Alimentarius Commission. It is clear that HACCP systems can only be effective when they are a part of a broader food quality and safety programme based on the *General Principles of Food Hygiene and Good Manufacturing Practices*. Consequently, these aspects of quality and safety controls are incorporated in the training materials.

Published by FAO. 232pp. US\$30. Copies are available from the Sales and Marketing Group, FAO, Viale delle Terme de Caracalla, 00100 Rome, Italy. Tel: 39 6 5705 5727 Fax: 39 6 5705 3152 Email: publications-sales@fao.org For more information about this, and other FAO nutrition publications, please email nutrition@fao.org

Editor's note: WHO, jointly with the Industry Council for Development (ICD) has prepared a training manual on HACCP: Principals and Practice. A description of this manual will be provided in the next issue of SCN News (No. 17, December 1998).

Poverty Alleviation and Nutrition Program Manuals (1997)

Save the Children US-Viet Nam Field Office

Since the implementation of the Poverty Alleviation and Nutrition Programme (PANP), over 90% of moderate and severely malnourished children participating in the PANP have responded to nutrition rehabilitation services.

The PANP has four components:

- ◊ a growth monitoring promotion programme, which encourages the weighing of children under 3 years old to determine their nutritional status;

- ◊ a nutrition education programme, which teaches basic nutrition messages and preparation of a nutritious, calorie-dense meal;
- ◊ a nutrition revolving loan programme, which provides supplementary food through in-kind loans; and
- ◊ an endowment and income generating programme, which gives grants to communities so they can generate income through projects.

Interest from other countries to replicate this successful and sustainable programme outside Viet Nam, has resulted in the production of these 10 training manuals, which describe the training of trainers for the PANP.

Available in English (US \$50) and Vietnamese (300,000 VND). For orders and information regarding these manuals, please contact Nguyen Thi Tuyet Mai. Tel: 84 48 46 1801 Fax: 84 48 46 1807 Email: scusvnfo@netnam.org.vn

New Journal in Public Health Nutrition

This new journal, launched in March 1998 by the Nutrition Society and the Centre for Agriculture and Biosciences (CAB) International on behalf of the Nutrition Society, offers a population-based approach to the practical application of research findings in the field of public health nutrition, and includes high quality reviews of key topics. The international editorial team include Barrie Margetts (editor-in-chief), from the Institute of Human Nutrition at Southampton General Hospital, UK; Lenore Kohlmeier, from the department of nutrition and epidemiology at the University of North Carolina, USA; Frans Kok, from the Wageningen Agricultural University, the Netherlands; and Michael Nelson, from the University of London, UK. A further 13 associate editors are drawn from institutes and universities worldwide. Topics covered in this new journal include:

- ◊ nutritional epidemiology - studies relating nutrition to health or disease risk;
- ◊ nutrition related health promotion;
- ◊ evaluation of effectiveness of intervention studies aimed at improving health;
- ◊ role of nutrition in high risk and vulnerable groups;
- ◊ development of research methods, validation of measures, calibration;
- ◊ population-based research related to primary prevention of illness.

Public Health Nutrition will be issued four times per year. The inaugural issue was published in March 1998. For more information, or to submit papers or suggest topics of interest for future supplements and special issues, please contact the Editor-in-Chief, Dr Barrie Margetts, Institute of Human Nutrition, Southampton General Hospital, Southampton, UK. Tel: 44 1703 796 530 Fax: 44 1703 796 529 Email: bmm@soton.ac.uk Information about subscription is available from CAB, Wallingford, Oxon, OX10 8DE, UK. Tel: 44 1491 832111 Fax: 44 1491 826090 Email: marketing@cabi.org or visit the website at <http://cabi.org/catalog/journals/>

Public Health Practice

More nutrients, fewer parasites, better learning

Tara Gopaldas

By 1997 it is intended that all of India's 160 million primary-school children will be given a free daily midday meal. Since 1994 almost 3 million such children in Gujarat, already benefiting from this initiative, have been receiving, in addition, supplements of iron, iodine and vitamin A, and deworming treatment with albendazole. As a consequence there have been significant, highly cost-effective and sustainable improvements in growth rates and haemoglobin levels, and decreases in the prevalence of ocular signs of vitamin A deficiency and in intestinal parasitic infections.

Children cannot benefit fully from primary education unless they are in a satisfactory state of health. It is particularly important that they should be well nourished and free of diseases associated with deficiencies of iron, iodine and vitamin A. Since August 1995, 40 million primary-school children in India have been receiving a free midday meal, and it is intended that by 1997 all of the country's 160 million children in this category will be doing so. In the State of Gujarat, nearly 3 million primary-school children, already receiving a free midday meal, have also been given iron tablets, vitamin A capsules and iodized salt, in addition to deworming tablets containing albendazole. An evaluation of this initiative has been made by Tara Consultancy Services, a non-governmental organization which works with Partnership for Child Development, of Oxford University, UK.

Professor Gopaldas is Director of Tara Consultancy Services and a member of WHO's Advisory Committee on Nutrition. Her address is Tara Consultancy Services, 124/B Warthur Road, Nagavrapalaya, Bangalore 560093, India.

Setting up and running the project

Focus group interviews were conducted with government officials, teaching staff, parents and schoolchildren before treatment started, in order to assess opinion on the proposed courses of action.

- Midday meal programme officials said that most children suffered from worm infestation and nutritional deficiencies.
- Many children said that they passed worms, felt tired and could not always see properly.
- Parents were generally unaware of these problems.
- All interviewees responded positively to the intended programme. The teaching staff and parents said that they would help to carry out treatment.

The midday meal programme commissioners procured adequate supplies of albendazole tablets (400 mg) and iron tablets (60 mg) and vitamin A capsules (200 000 IU) for almost 3 million primary-school children. Iodized salt was used routinely in cooked meals.

Pharmaceutical firms transported the products to the districts or *talukas* where the health officers cooperated in storing them. The officials and organizers of the midday meals programme collected their quotas and dosed the children for whom they were responsible as prescribed by an expert technical committee. Procurement, delivery and receipt of the products were all conducted in a highly efficient manner.

Highly cost-effective and efficient training pyramids were established, with the chief district health officers at the top and the helpers and cooks at the base. The shelf-life of the products exceeded two years, provided they were kept in a dry place and, in the case of vitamin A, away from the light. In the focus group interviews, all providers and receivers exhibited enthusiastic acceptance of the programme.

Findings and outcome

Nearly 75% of schoolchildren in a slum area carried infections of *Entamoeba histolytica* and/or roundworms, most of them severe to moderate. Infected children in the age range of 6-15 years were 2 kg lighter and 3 cm shorter on average than non-infected children. The mean haemoglobin levels in infected and non-infected children were 10.4 g/dl and 11.6 g/dl respectively. Children aged 11-15 years showed a more severe depression of haemoglobin than did younger children.

Observations were made on 3000 children in three districts shortly before and a year after two rounds of dosing. It was found that older children benefited more than younger ones. The improvements detected were as follows among children aged 6-15 years.

- On average, dosed children were 1.1 kg heavier and 1.1 cm taller than undosed children.
- After one year the mean haemoglobin level was 12.4 g/dl, whereas before treatment it had been only 10.6 g/dl.

- The prevalence of intestinal parasitic infection fell from 71% to 39%.
- The prevalence of night blindness and ocular signs of vitamin A deficiency fell from 67% to 34%.
- Many dosed children said that they felt more active than previously and that their eyesight in poor light had improved.
- Children who had been infected with worms felt greatly relieved to be rid of them.

Many studies throughout the world have shown that, in general, people on low incomes suffer more from iron and vitamin A deficiencies than from inadequate calorie or protein intake, and tend to be comparatively heavily infected with intestinal parasites that greatly inhibit growth and depress levels of iron and vitamin A. Wherever iodine deficiency disorders are endemic it is essential that all people use iodized salt. Even moderate iodine deficiency can have an adverse influence on the learning process.

Deworming, and supplementation with iron and vitamin A, should be organized as parts of a single strategy. Deworming helps to maintain haemoglobin levels for three to four months. Adequate dietary iron is needed for cognition and physical activity, while vitamin A, as well as being vital to the eyes, combats common morbidities, especially upper respiratory tract infections. Reducing these complaints also reduces absenteeism among schoolchildren.

Though the programme may seem ambitious, its financial requirements are very modest. The annual cost per child of albendazole, iron, vitamin A and iodized salt is approximately US\$ 0.50; that of midday meals is about \$ 20. Preferably, of course, both the treatments and the midday meals should be given. ■

TIPS FOR BETTER COOKING OF LEAFY VEGETABLES

COOK LEAFY VEGETABLES CAREFULLY TO CONSERVE MAXIMUM NUTRIENTS

- Wash leafy vegetables thoroughly before chopping, particularly when used as salad.
- Use minimum amount of water for cooking.
- Do not throw away the water in which the leafy vegetables have been cooked. Use it in dals, soups or for dough, if left.
- Cook leafy vegetables for a short-time.
- Cook them in a covered vessel.
- Avoid deep frying of leafy vegetables.



USE LEAFY VEGETABLES THROUGHOUT THE YEAR BY DEHYDRATING THEM

Leafy vegetables when available in plenty at low-cost can be purchased in bulk. These should be cleaned, washed and spread on a clean sheet for drying. When completely dried, powder them coarsely by rubbing with hands and store in air-tight containers. Use when fresh supply is not available

EAT ATLEAST ONE PREPARATION OF LEAFY VEGETABLES EVERYDAY

NUTRITIVE VALUE OF SOME GREEN LEAFY VEGETABLES (PER 100g. OF EDIBLE PORTION)

Sl. No.	Name	Iron mg	Calcium mg	Vitamin A (as Carotene µg)	Vitamin C mg
1.	Amaranth tender	3.49	397	5,520	99
2.	Bathua leaves	4.2	150	1,740	35
3.	Beet greens	15.2	380	5,862	70
4.	Bengal gram leaves	23.8	340	978	61
5.	Cabbage	0.8	39	120	124
6.	Carrot leaves	8.8	340	5,700	79
7.	Cauliflower greens	40.0	626	—	—
8.	Celery leaves	6.3	230	3,990	62
9.	Colocasia leaves	10.0	227	10,278	12
10.	Coriander leaves	1.42	184	6,918	135
11.	Curry leaves	0.93	830	7,560	4
12.	Drumstick leaves	0.85	440	6,780	220
13.	Fenugreek leaves	1.93	395	2,340	52
14.	Katha Sag	—	253	—	—
15.	Knol-Khol greens	13.3	740	4,146	157
16.	Lettuce	2.4	50	990	10
17.	Mint	15.6	200	1,620	27
18.	Mustard leaves	16.3	155	2,622	33
19.	Radish leaves	18.0	310	5,295	91
20.	Rape leaves	12.5	370	1,380	65
21.	Spinach	1.14	73	5,580	28
22.	Turnip greens	28.4	710	9,396	180

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English 61,000

March 1990

CONSUME GREEN LEAFY VEGETABLES DAILY



AND IMPROVE YOUR VITALITY

FOOD AND NUTRITION BOARD
DEPARTMENT OF FOOD
MINISTRY OF FOOD AND CIVIL SUPPLIES
GOVERNMENT OF INDIA
KRISHI BHAVAN
NEW DELHI

GOOD EYES NEED VITAMIN A
VITAMIN A PREVENTS BLINDNESS
GOOD BLOOD NEEDS IRON
IRON PREVENTS ANAEMIA
GREENS ARE FULL OF VITAMIN A AND IRON

GREEN LEAFY VEGETABLES ARE HIGHLY NUTRITIOUS

Green leafy vegetables are a store-house of important minerals and vitamins and are, therefore, classified as, protective foods. These are rich sources of Iron, Calcium, Vitamin A (as Carotene), Vitamin C and Vitamins of B-Complex Group particularly Riboflavin and Folic Acid. These leafy vegetables also provide some proteins though in small quantities. The green leafy vegetables when mixed with cereal-pulse combination enhances the quality of protein of the diet. Leafy vegetables help in building strong bones, healthy teeth and gums.

GREEN LEAFY VEGETABLES ARE GOOD FOR EYES

Vitamin A is a nutrient which is specially important for the health of the eyes in small children. In the absence of adequate amounts of Vitamin A in the body, the eye balls lose their usual moist white appearance and become dry and wrinkled. There is inability to see in dim light (Night blindness). This is the early stage of Vitamin A deficiency and if not treated in time, the eyes may become absolutely red and the cornea (black portion of the eye) may finally burst leading to permanent blindness.

Though Vitamin A as such is present only in foods of animal origin like butter, ghee, whole milk, curd, egg yolk and liver. Nature has provided a safeguard by giving us green leafy vegetables which contain a substance known as

"Carotene". This Carotene when consumed gets converted into Vitamin A in our body and helps protect our eyes.

Green leafy vegetables by virtue of having large amounts of Carotene in them not only protect our eyes but also promote physical growth in children and help in building up resistance to diseases.

GREEN LEAFY VEGETABLES ARE GOOD FOR BLOOD

Our body needs nutrients like Iron, Folic Acid, Vitamin B12, Protein and Vitamin C to make our blood healthy. If we do not get enough of these nutrients in our food, specially Iron, we may suffer from Anaemia, a condition in which the red pigment of the blood known as haemoglobin gets reduced. Anaemia can affect any age-group but is more widely prevalent among women of child bearing age and children. Anaemia reduces the working capacity of the person and may also lead to pre-mature deliveries, low-birth weight babies, maternal deaths and many other abnormalities. Early tiredness, loss of appetite, breathlessness on slight exertion, giddiness, palor of skin particularly inside the lower eyelids, fce, tongue, lips and nailbeds are some of the common signs of anaemia.

Green leafy vegetables are rich sources of Iron and consumption of about 50 gms. of such vegetables in the daily diet can take care of body's iron requirements considerably. Vitamin C present in green leafy vegetables helps to absorb iron more efficiently.

DO YOU KNOW THAT THE CONTENT OF VITAMIN A (AS CAROTENE) AND IRON IN GREEN LEAFY VEGETABLES IS MUCH MORE THAN THOSE IN MANY OF THE COSTLY FRUITS AND VEGETABLES!

GREEN LEAFY VEGETABLES ARE A GOOD SOURCE OF DIETARY FIBRE

The fibre content (roughage) of the diet has many health generating properties. The roughage supplied by leafy vegetables is also useful for good digestion.

GREEN LEAFY VEGETABLES ARE CHEAP

The green leafy vegetables which are essential for growth and maintenance of normal health are in-expensive source of many nutrients. They can be easily grown in the kitchen gardens.

INCORPORATE LEAFY VEGETABLES IN YOUR DAILY DIET

Spinach, Amarnath, Fenugreek Leaves, Drumstick Leaves, Radish Leaves etc. are generally consumed all over the country. Usefulness of these leafy vegetables are to be realised and these should be included as an essential component of our daily diet. Besides the traditional dishes which are prepared using green leafy vegetables, the following preparations can also contain green leafy vegetables and can be used in our daily diet :-

- Mixing cut leafy vegetable with cereal flour for making chapatis, missi roti, paranthas etc.,
- cooking leafy vegetable with a little amount of water for a short-while and making the dough for puris with this,
- adding leafy vegetable to preparations like khicheri and uppuma,
- preparing dal with leafy vegetable.
- preparing leafy vegetable with bengalgram flour,
- preparing mixed vegetables including leafy vegetables,
- preparing bhujias from leafy tops of carrot, radish, turnip, beetroot, etc. and other leafy vegetables,
- preparing raitas with leafy vegetables,
- preparing chutneys with leafy vegetables and incorporating coconut or groundnut.



Subject:

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IX ASIAN CONGRESS OF NUTRITION

FEBRUARY 23rd - 27th, 2003, NEW DELHI, INDIA

Secretariat:- Nutrition Foundation Of India
C-13, Qutab Institutional Area, New Delhi-110016, India.
Tel:-91-11-6962615; Telfax:- 91-11-6857814

website: www.acn2003india.net

Dear Colleague,

As you may be aware that the IX Asian Congress of Nutrition is to be held in New Delhi, India between February 23-27, 2003. The Second Announcement of the Congress containing the details of Scientific Programme, Registration, Accommodation and Abstract submission can be downloaded from the website:-

www.acn2003india.net

With warm regards

C. Gopalan

President

Chat with friends online, try MSN Messenger: <http://messenger.msn.com>

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FOOD CORPORATION OF INDIA

WASTE SIDE STORY

Incorporated: 1965; Headquarters: Delhi; Business: Procurement, storage and distribution of foodgrain; Number of workers: 2,00,000; Annual wage bill: Rs 875 crore

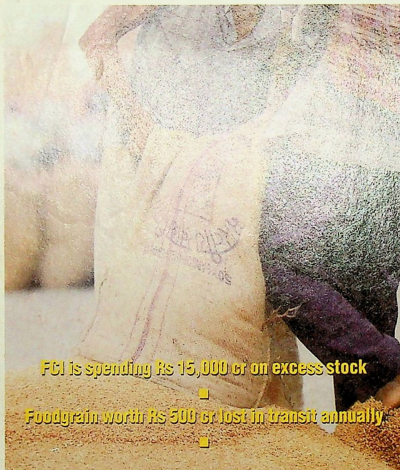
By Malini GOYAL

LOSS. INEFFICIENCY. CORRUPTION, waste, damage... Hunt for synonyms of ineptitude. Of all the words you find, add one more to the list: FCI, or the Food Corporation of India. Manned by a work force of almost two lakh (including contract labourers) and with 111 AS officers at the top, the FCI is not just a temple of doom. It is an institution of inefficiency.

If that sounds harsh, check the facts. FCI godowns are overflowing with 45.5 million tonnes of foodgrains (wheat and rice) right now. That's 35 per cent of the total rice and wheat India produced last year and almost three times the buffer stock the government is supposed to maintain. A rough estimate of the cost of holding the excess grain is Rs 15,000 crore. At least one million tonnes are believed to be rotten and about two lakh tonnes are classified as damaged. So frustrated was the Parliamentary Committee probing into FCI's functioning that it recently suggested dumping some foodgrain into the sea as a way out.

Waste has become a way of life at the FCI. Foodgrain worth Rs 500 crore is lost in transit every year. That's nothing compared to the Rs 875 crore that goes into paying salaries. FCI workers are among the highest paid in the country, earning an average of Rs 20,000 a month. But FCI Managing Director J.S. Gill laughs away the worries. In a short, five-minute interview he told INDIA TODAY that "besides the wage bill, the other costs are not at all alarming". Well, how does one put this diplomatically: Gill is either ignorant or is being a "good" bureaucrat.

Some more numbers to prove FCI's inefficiencies. In 1998-99 it spent Rs 808 on every quintal of wheat and Rs 980 on every quintal of rice it procured. But it sold that wheat for Rs 396 a quintal and the rice for Rs 611 a quintal, implying that for every 100 kg of wheat and rice it bought

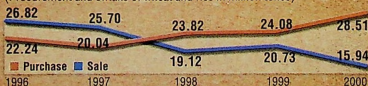


FCI is spending Rs 15,000 cr on excess stock

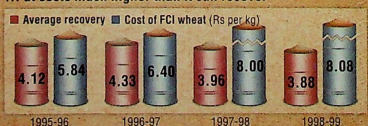
Foodgrain worth Rs 500 cr lost in transit annually

FCI is buying much more than it can sell ...

(Procurement and offtake of wheat and rice in million tonnes)



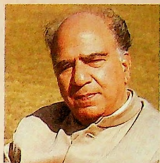
... at costs much higher than it can recover



Graphic by YOGESH CHAUDHARY and photograph by DILIP BANERJEE

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FOOD MINISTER SHANTA KUMAR ■ "FCI's role must shrink"



PRAMOD PUSHKARIA

UNION FOOD AND CIVIL SUPPLIES Minister Shanta Kumar spoke to Special Correspondent MALINI GOPAL on the FCI's role.

On the relevance of FCI: We will need the FCI for food security and to ensure that farmers are not exploited. But the Government's role has to be restricted. We need a balanced approach so that farmers are not discouraged.

On Government interference in FCI: Government should regulate and not get into business. We have seen the problems

that government involvement in business has created in PDSs. Now the Government is trying to correct past wrongs.

On winding up FCI: It has some flaws but its existence is still very important. But it needs to be restructured and we have set up a committee to look into that. Downsizing of staff is envisaged.

On the future of FCI: Our food strategy was drawn up in the age of scarcity. That strategy is now irrelevant.

Full text of interview at www.india-today.com

and sold, FCI was losing Rs 412 and Rs 369. Multiply that with the 45.5 million tonnes of wheat and rice stocked in FCI godowns and the enormity of the loss hits you. "FCI's cost of buying and procurement is twice as high compared to private traders," says Kirit Parikh, director, Indira Gandhi Institute for Development Research.

THAT'S exactly what the FCI was not meant to do when it was set up in 1964. Born in the era of food scarcity the corporation's basic charter was to ensure farmers get a remunerative price for their produce, help stabilise food prices in the country and feed the Public Distribution System (PDS) which was set up concurrently. It was supposed to be a last resort buyer, offering farmers a minimum support price to save them from exploitation by traders. But over the years two fundamental changes have made a mockery of such noble intentions.

Firstly, political interference has forced FCI to purchase foodgrain at a price higher than the market rate and in much bigger quantities than are needed as buffer stocks. "Minimum support price has become the maximum support price and FCI has become buyer of the first—not last—resort," says Ashok Gulati, professor at the Institute of Economic Growth. With the country transitioning to an era of food surplus, the market prices of wheat and rice often fell below the PDS prices. That cut down the sales through the PDS—saddling the FCI with swelling stocks. Notwithstanding the glut, from Punjab alone, the FCI was forced to purchase 11 million tonnes of rice this year, much of it sub-tanned. This is estimated to cost FCI up to Rs 9,000 crore.

Ironically, small farmers are not the ones reaping the benefits of such largesse. It is the middlemen—known as commission agents—who take away the thickest slice of the pie. The agents

buy foodgrain from farmers at low prices and then connive with officials to sell it to the FCI at the official price. This year in Punjab, while the farmers sold paddy at Rs 250-475 a quintal, commission agents made a killing by selling it to FCI at Rs 510-540 a quintal. FCI's army of officials also make a fortune in the process. So rampant is the corruption in the FCI that a former chairman terms it the Food Corruption of India.

But then the FCI has never been allowed to be a "corporation", and has been functioning more as a government department. "The FCI has no control over the price, quantity and quality of what it buys," points out former managing director Sarita Das. Those are basic business decisions for any commercial enterprise. On its part, the Government virtually writes off FCI's losses under the guise of food subsidy.

The confusion over the FCI's relevance has forced the government to contemplate its closure twice in the past—once during the Janata Party rule in 1979 and again in the early 1990s. However tempting it may sound, an outright closure of FCI is not the solution—at least not right now. The first step should be to shrink the FCI by restricting its role only to management of buffer stocks. States, which actually run the PDS shops, can be asked to store and maintain foodgrain stocks. Concurrently, the Government must allow greater access to private traders by removing restrictions on private storage of food-



"Minimum support price has become the maximum support price."

ASHOK GULATI, professor, IEG



"The procurement cost of FCI is double compared to that of private traders."

KIRIT PARIKH, Director, IGIDR

grain and allowing their free movement across the country. Says Hard-ee Singh, president, Cargill India: "A consistent government policy is important for the entry of MNCs."

Once states are given responsibility of holding their own stocks, political pressures to purchase just any amount of foodgrain of any quality will lessen. The Central government on its part must not artificially hike the purchase price for foodgrain. This will ensure that the FCI does not have to buy foodgrain at prices higher than the open market. The best way to achieve this is to follow the purchase price recommended every year by the Agriculture Cost and Price Commission (ACPC).

FCI's buying and storing should be done with modern technology. Countries like Israel have storage facilities where foodgrain can be kept for up to 100 years without any quality loss. Says Arvind Singhal, managing director of KSA Technopak: "Mechanised handling of grains should be introduced without delay." To his credit, Union Food and Civil Supplies Minister Shanta Kumar does admit that the FCI cannot continue in its present form. Says he: "In the changed circumstances, the FCI's role needs to be looked into." (see interview). He has set up a committee headed by AICRE Chairman Abhijit Sen to examine the FCI's role. Its report is expected in three months. Now, only if the Government is able to digest the food for thought it will get. ■

4th Report on
The World Nutrition Situation

January 2000

Nutrition
Throughout
the Life Cycle

United Nations
Administrative Committee on Coordination
Sub-Committee on Nutrition (ACC/SCN)

in collaboration with
International Food Policy Research Institute (IFPRI)

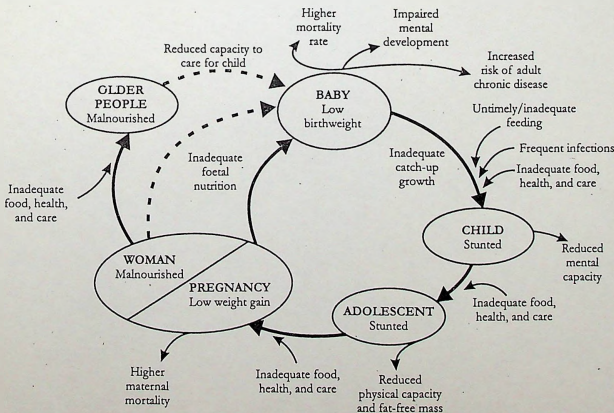
1 NUTRITION THROUGHOUT THE LIFE CYCLE

Nutrition challenges continue throughout the life cycle, as depicted in Figure 1.1. Poor nutrition often starts *in utero* and extends, particularly for girls and women, well into adolescent and adult life. It also spans generations. Undernutrition that occurs during childhood, adolescence, and pregnancy has an additive negative impact on the birthweight of infants. Low-birthweight (LBW) infants who have suffered intrauterine growth retardation (IUGR) as foetuses are born undernourished and are at a far higher risk of dying in

the neonatal period or later infancy. If they survive, they are unlikely to significantly catch up on this lost growth later and are more likely to experience a variety of developmental deficits. A low-birthweight infant is thus more likely to be underweight or stunted in early life.

The consequences of being born undernourished extend into adulthood. Epidemiological evidence from both developing and industrialized countries now suggests a link between foetal undernutrition and increased risk of various adult chronic diseases—the “foetal origins of disease hypothesis.”¹¹

FIGURE 1.1 : Nutrition throughout the life cycle



Source: Prepared by Nina Seres for the ACC/SCN-appointed Commission on the Nutrition Challenges of the 21st Century.

4 NUTRITION AND HUMAN DEVELOPMENT

Few people—whether or not they are nutrition professionals—would dispute the fact that malnutrition constrains people's ability to fulfill their potential. Hungry and undernourished people have less energy to undertake work, are less able to attend school, and once in school are less able to concentrate and learn. Diet-related chronic diseases take highly experienced individuals out of the work force and take resources away from primary health services. That improved nutritional status will lead to an improved ability to secure rewarding and sustainable livelihoods is a common sense proposition.

How important is malnutrition to economic growth? Researchers have derived conservative estimates of the forgone gross domestic product (GDP) as a result of iron deficiency alone in childhood and iron, iodine, and protein-energy malnutrition in adults.¹ For Pakistan the annual losses are over 5% of GDP. For Bangladesh, the cost of iron deficiency in children alone is nearly 2% of GDP. Nutrition and food security also promote economic growth by reducing the potential for conflict.² Chapter 5 shows that the resources required for relief activities are large and growing. Understandably these activities retain the first call on resources—resources that could otherwise be allocated to longer-term development activities. The designers and implementers of relief programmes are very aware of the importance of building development into relief activities. In general, the need for future relief flows can be reduced by improving nutrition today. Reduced relief flows will increase the availability of funds for longer-term development. Improvements in nutrition can thus serve as a crucial spur to overall economic growth.

If the contributions of nutrition to economic development are underrated, so too are the reverse contributions—both positive and negative. Economic and demographic events such as globalization, HIV/AIDS, and urbanization have large and far-reaching impacts

on human development—such as the capability to be well nourished and healthy, to undertake healthy reproduction, and to be educated and knowledgeable—and they must be taken into account in developing nutrition strategies.

The emergence of human development as a guiding principle for overall development reflects a growing dissatisfaction with an exclusive reliance on economic growth as a means to development. The focus on human capabilities has opened the door for more normative arguments, including a human rights-based approach to development. In his launch of the United Nations reform, Secretary General Kofi Annan stated that all major UN activities should be undertaken through a human rights perspective. Many UN agencies, particularly the UNDP, UNFPA, UNHCR, and UNICEF, began operationalizing a "human rights approach" to development. The debate about whether or not the UN should base its work on human rights was over. The challenge now is how to develop human rights-based strategies.

This chapter discusses these themes in more detail. First, it describes some recent developments that highlight the contributions of improved nutrition to the overall development process. Recent studies, for example, confirm the strong relationship between infant nutrition, cognition, and school enrollment—linkages exploited by the early childhood initiatives of the past five years. The chapter then considers some of the policy implications of new research on the links between foetal undernutrition and diet-related chronic diseases in adults. This section of the chapter closes with a discussion of the resurgence of interest in participatory development approaches and the contributions that community-based nutrition initiatives might make to overall development.

Second, the chapter describes some major socioeconomic and demographic events together with their implications for nutrition policy and programming. The chapter considers the implications of the freer movement of financial resources, food, and

information (three aspects of globalization) for food and nutrition policy. The chapter then discusses the implications of rapid urbanization and of HIV/AIDS for food and nutrition policy. Finally, the chapter describes the emergence of the human rights perspective. The ascent of the human rights agenda in an era of globalization is more than a coincidence. Human rights principles will play a crucial role in the type of globalization that emerges over the next ten years.

4.1 The Relevance of Nutrition for Development

Three emerging bodies of work highlight the nature of the link between nutrition and human development: (1) nutrition, cognition, and school enrollment, (2) foetal nutrition and adult chronic disease, and (3) the importance of community-based approaches to development and the leadership of the nutrition community in this regard.

Nutrition, Cognition, and School Enrollment

Recent studies from the nutrition and economics literatures reaffirm the importance of nutrition for the cognitive achievement and school enrollment of children. In addition, study after study demonstrates that women's educational attainment is a key factor in preventing infant undernutrition³ and that overall educational attainment is the key factor in escaping poverty.⁴

Recent nutrition studies confirm the strength of these relationships. Strong associations are found between the stunting of Filipino children under age 2 and their cognitive ability test scores between ages 8 and 11.⁵ There is a strong link between sub-optimal neonatal nutrition and cognitive function, particularly in males.⁶ In Jamaica stunting was strongly associated with developmental levels in 1- and 2-year-olds.⁷ Nutritional supplementation and stimulation of stunted children between 9 and 24 months of age have independent and additive effects on the development of the children at the age of 7–8 years.⁸

The economics literature offers compelling evidence of the importance of nutrition for development. At the mean of a nationally representative sample from Ghana, a 10% increase in stunting causes a 3.5% increase in age of first enrollment at

school.⁹ For Pakistan, an improvement of 0.25 in Z-score height-for-age will lead, on average, to an increase in subsequent school enrollment rates of 2% for boys and 10% for girls. This increases to 5% and 16%, respectively, when diarrhoea rates are reduced by half.¹⁰ Another recent study yields smaller impacts on child schooling performance, but the link is still statistically significant.¹¹

Given that these findings come from both experimental design and observational data and from both the nutrition and economics literatures, and that stringent statistical and econometric techniques have been used to generate them, they present a convincing and scientific basis for early childhood interventions.

Policy Implications of the Link between Foetal Undernutrition and Adult Chronic Disease

Evidence on the links between foetal undernutrition and chronic disease in adulthood has been discussed in Chapter 1. The implications of these links for formulating development policies are only now being thought through. Three points are noteworthy. First, an investment in avoiding foetal undernutrition becomes an even better investment because it not only improves maternal and infant nutrition but also slows down or prevents the onset of chronic diseases in later life. Of course, preventing these effects is intrinsically valuable, as emphasized by the human rights approach. In addition, prevention will have a significant impact on economic productivity—an impact that has not been captured in conventional estimates of the economic returns to improved nutrition.

Second, increasing health expenditures—whether private or public—to modify behaviour and prevent undernutrition throughout the life cycle may well diminish or at least postpone health expenditures to later in life. This postponement will better allow ageing populations to lead productive adult lives, thus enabling them to better insure themselves—formally or informally—against health shocks. Third, if the allocation of public health resources is to be guided by the global burden of disease metrics such as disability-adjusted life years lost (DALYs), then the new findings will lead to an enormous increase in the rationale for investing in adolescent, maternal, foetal, and infant nutrition, simply because foetal undernutrition is a leading cause of such major components of the global burden of disease as cardiovascular disease, hypertension, and obesity.

Decentralization and the Empowerment of Communities

Many institutions throughout the world are rapidly decentralizing the allocation of public resources—whether health and nutrition or otherwise. In principle, moving authority and accountability closer to the intended beneficiaries of an initiative—poor communities, for example—is likely to strengthen the incentives to use public funds more effectively and to facilitate the generation of complementary private funds. In practice, however, mechanisms to ensure sufficient local capacity and accountability have to be present as well. Communities also have embedded power structures, and in the absence of transparency and accountability mechanisms, local groups can misallocate funds. Moreover, if local communities are to compete for central funds, the better-equipped, more-cohesive, and less-excluded communities will capture them. Communities that are unable to organize proposals or are less likely to be noticed by central authorities will lose out.

The nutrition community has taken leadership in this area. Community-based nutrition programming has long been considered a vital component of the fight against malnutrition.¹² Can these community-based efforts serve as a way of empowering communities to participate in other development activities? The body of quantitative empirical research on how community participation affects the performance of development projects is small but growing. The two studies that use data from a large number of projects and have paid most attention to the economics issues find that community participation leads to improved project performance.^{13,14} Further, community-based lending schemes have higher repayment rates if their membership has higher indicators of social cohesion.¹⁵ In addition, there is a rapidly growing body of work linking membership in social and economic groups to accelerated upward income mobility.¹⁶

Ideally, data on a large number of nutrition projects will become available so that similar analyses can be undertaken. Can nutrition programs empower communities beyond their immediate concerns? And can community-based nutrition initiatives foster an increasing adherence to human rights by a wide range of actors? These questions remain to be answered, but the signs are promising. Several community nutrition projects have served to stimulate other decentralized development activities. In Sri Lanka, for example, the nutrition component of a World Bank-supported poverty

alleviation project used participatory approaches to enhance nutrition awareness and improve feeding practices. The project used nutrition as an entry point to poverty alleviation, by combining it with community infrastructure development, savings, credit, and micro-enterprise development in a phased manner. In a setting characterized by top-down development planning, the project demonstrated that community ownership could accelerate positive change.¹⁷

4.2 The Implications of Some Global Phenomena for Nutrition

The globalization of financial markets in the absence of appropriate oversight and governance has led to financial crisis, which in East Asia has turned into a human resource crisis. We highlight these relationships and their implications for public policy with a case study of Indonesia—the country that has been hardest hit by the Asian crisis in terms of investments in children. Increasing trade liberalization is generally thought to spur overall economic growth. But the increasing openness of developing-country markets to food combined with the failure of developed countries to reciprocate may well produce a situation that denies developing countries access to high-income markets for their exports. In addition, different standards of food safety between importers and exporters may lead to concerns about the safety of imported food. As food safety concerns heighten, the use of food safety as a trade barrier against exports from developing countries may become a more pressing concern. We also consider the implications of the decreasing costs of information flows, including how the new information and communication technologies can be best used to help accelerate reductions in malnutrition. The freer flow of capital and people across national boundaries has been mirrored by an increasing migration from rural to urban areas, and the implications of this increased rate of migration are discussed in this section of the chapter as well.

Globalization of Financial Resources and the East Asian Crisis: Implications for Nutrition

The East Asian financial crisis, which began in July 1997, is a reminder of how unreliable the past can be as a guide to future events. In one year (1997–98), per



COMMUNITY HEALTH CELL

326, V Main, 1 Block

Issue 19th August 1991

NUTRITION CHECK BY QUAC STICK

In *Fiona Plus* issue 4 we published a weight-for-length chart for infants and small children up to 100 cm in height. This is reproduced in this issue for continuity in checking nutrition.

Weight-for-Length Chart

Length	Minimum Weight	Length	Minimum Weight
55 cm	3.5 kg	78 cm	9.0 kg
56	3.7	79	9.2
57	3.9	80	9.4
58	4.1	81	9.6
59	4.4	82	9.8
60	4.6	83	9.9
61	4.9	84	10.1
62	5.2	85	10.2
63	5.4	86	10.4
64	5.6	87	10.6
65	6.0	88	10.8
66	6.2	89	11.0
67	6.4	90	11.2
68	6.7	91	11.4
69	7.0	92	11.6
70	7.2	93	11.8
71	7.5	94	12.0
72	7.8	95	12.2
73	8.0	96	12.5
74	8.2	97	12.8
75	8.4	98	13.0
76	8.6	99	13.2
77	8.8	100	13.5

STANDING ORDERS FOR PRIMARY HEALTH CARE

Signs & Symptoms	Medicines	Baby below 1 year	Small child 1-3 years	Older Child 4-13 Years	Adult	Suggestions
Abdominal pain without vomiting	Belladonna tab	Carry baby in upright position	1/4 tab 3 x /day x 2 days	1/2 tab 3 x /day x 2 days	1/2 tab 4 x /day x 2 days	Hot Water Bottle to abdomin. Send to dr. after 2 days
	Antacid tab		1/4 tab 3 x /day x 2 days	1/2 tab 3 x /day x 2 days	1/2 tab 4 x /day x 2 days	
Abscess of skin	Warm salt water	Compress 4 x /day	same	Same	Same	Open up with sterile needle
Anaemia and weakness	Iron with folic acid tab	1/4 tab 2 x /day x 30 days	1/2 tab 2 x /day x 30 days	1/2 tab 2 x /day x 30 days	1 tab 3 x /day x 30 days	Nourishing food. Look for bleeding.
Asthma, short of breath	Aminophyllin tab	1/4 tab 3 x /day x 2 days	1/2 tab 3 x /day x 2 days	1/2 tab 3 x /day x 2 days	1 tab 4 x /day x 2 days	Send to doctor after 2 days.
Bleeding after delivery	Ergotamine				1 tab 3 x /day x 2 days	Send to doctor if serious.
Burns	Gentian violet 1%	Apply to possible infected areas.	Same	Same	Same	Send to doctor if serious.
Constipation	Ispaghule (Ispaggol)	1/2 tsp 1 x /day	1/2 tab 2 x /day	1/2 tsp 3 x /day	1 tsp 3 x /day	Drink plenty of water.
Cough only	Cough sedative tab	1/4 tab (crushed) 4 x /day	1/2 tab (crushed) 4 x /day	1 tab (sucked) 3 x /day	1 tab (sucked) 4 x /day	Send for Xray after 15 days.
Cough and sputum	Trimethoprim tab	1/4 tab 2 x /day x 5 days	1/2 tab 2 x /day x 5 days	1 tab 2 x /day x 5 days	2 tab 2 x /day x 5 days	Send for Xray if blood in sputum.
Cracked heels	Vaseline				Rub with soft stone	Apply after soaking in soapy water.
Cracked lips	B complex tab	1/2 tab daily	1/2 tab 2 x /day	1 tab 2 x /day	1 tab 3 x /day	Nourishing food best.
Cracks between toes	Fungicidal ointment	Keep feet clean	Apply daily	Same	Same	Apply after soaking in soapy water.
Diarhoea, mild	Furazolidone	1/4 tab (crushed) 3 x /day x 2 days	1/2 tab (crushed) 3 x /day x 2 days	1 tab (crushed) 3 x /day x 2 days	1 tab 4 x /day x 2 days	Report to doctor if stools bloody
Diarhoea, severe	Rehydration (ORS) fluid	Give frequently after each motion.	Give often to stop thirst	Give 1 cup after each motion	May need 3-4 litres/day	Give until diarrhoea stops.
Ear infection	Tetracycline eye/ear ointment	2 drops into infected ear	Same	Same	Same	Warm ointment before putting in, then lie on other side 20 minutes.
Eye infection	Tetracycline eye/ear ointment	1 drop in infected eye 1 drop in each eye at birth	Same	Same	Same	Warm ointment before putting in.
Fever only	Paracetamol	1/4 tab (crushed) 2 x /day x 2 days	1/2 tab (crushed) 2 x /day x 2 days	1 tab 3 x /day x 2 days	2 tab 3 x /day x 2 days	Send to doctor if drowsy
Fever and chills	Chloroquine tab	1/2 tab (crushed) daily x 3 days	1 tab daily x 3 days	1 tab daily x 3 days	3 tab daily x 5 days	Take malarial blood slide first.
Headache	Paracetamol	1/4 tab (crushed) 2 x /day x 2 days	1/2 tab (crushed) 2 x /day x 2 days	1 tab 3 x /day x 2 days	Aspirin 2 tab 3 x /day	Take aspirin with food.
Haemorrhoids (piles)	Haemorrhoid ointment	Apply as needed after motion	Same	Same	Same	Replace haemorrhoids first. Sit 15 minutes in hot water.
Night blindness	Vitamin A tab		1 tab daily x 8 days	1 tab daily x 8 days	2 tab daily x 8 days	Repeat after 1 month if necessary.
Pain in body	Paracetamol		1/2 tab (crushed) 2 x /day x 2 days	1 tab 3 x /day x 2 days	Aspirin 2 tab 3 x /day	Take aspirin with food.
Pain in joints	Aspirin		1/4 tab 3 x /day x 2 days	1/2 tab 3 x /day x 2 days	2 tab 3 x /day x 2 days	Menthol balm on joints useful. Hot water compresses 2 x /day.
Poisoning	Charcoal and milk	Give as much as possible	Same	Same	Same	Send to doctor immediately.
Pregnancy	Iron/folic acid tab				1 tab 3 x /day x 30 days	Tetanus toxoid injections. Repeat medicines monthly
	Calcium tab				1 tab 2 x /day x 30 days	
Round worms	Piperazine tab	2 tab (crushed) at one time	1 tab 2 x /day x 3 days	2 tab /day x 3 days	2 tab 2 x /day x 4 days	Drink plenty of water.
Scabies	Benzyl Benzoate	Apply 1 x daily x 3 days	Same	Same	Same	Wash first with soap and water.
Skin, infected	Gentian violet 1%	Apply to infected area	Same	Same	Same	Wash first with soap and water.
Skin, itching	Chlorpheniramine	1/4 tab 2 x /day x 2 days	1/2 tab 2 x /day x 2 days	1/2 tab 3 x /day x 2 days	1 tab 3 x /day x 2 days	Send to doctor if severe.
Skin, rash, dry	Sulphur ointment 10%	Apply 2 x /day to rash	Same	Same	Same	Cover with bandage.
Skin, rash, wet	Calamine lotion	Apply 2 x /day	Same	Same	Same	Leave skin uncovered to dry.
Toothache	Aspirin	1/4 tab as needed	1/4 tab 3 x /day x 2 days	1/2 tab 3 x /day x 2 days	2 tab 3 x /day x 2 days	Consult dentist. Brush teeth after each meal.
	Oil of cloves	Apply to tooth 3 x /day	Same	Same	Same	
Urinary burning	Trimethoprim tab	1/4 tab 2 x /day x 5 days	1/2 tab 2 x /day x 5 days	1 tab 2 x /day x 5 days	2 tab 2 x /day x 5 days	Take plenty of water.
Vomiting	Avomine	1/8 tab only as needed	1/4 tab only as needed	1/2 tab as needed	1 tab as needed	Send to doctor if pain in abdomen.
Wounds, fresh, deep	Soap and water	Wash thoroughly. Control bleeding.	Pressure dressing. Treat shock.	Treat shock. Give T.T. and send for stitching.		

The QUAC (Quaker Arm Circumference) stick as described in the *Current Medicine Scan* of the Christian Medical and Dental Society (May 1990) is a very useful way to determine whether an older child is malnourished or not. It measures whether the arm circumference of a child is as great as it should be for a child of a particular height.

The QUAC stick is made from a flat piece of wood 1 cm thick 4cm wide and 140 cm long, painted white and marked at the appropriate places with a black ball-point pen. A coat of clear varnish protects the markings.

The arm circumference tape is made of paper. A pattern of 10 tapes with centimeter markings is drawn on a sheet of standard type writer paper. The pattern is photo copied and cut into strips 2 cm wide and 28 cm long. These paper tapes will be as accurate as the pattern. They provide a check from being drawn too tight during the measuring procedure because they tear easily. Replacement cost is practically nothing. It is efficient to measure children ranging from 5-10 years of age and children taller than 133cm are not included 200 children can be checked in each hour.

An assistant measures the arm circumference at the mid-point of the left upper arm of each child. Another assistant writes this measurement on a small piece of paper and gives the paper to the child. The child then goes to the QUAC stick some distance away and hands its paper to a 3rd

assistant there.

See Table:-

Table - Markings for QUAC Stick

Heights (cm)	Arm Circumferences (cm)
133	16.5
129	16.0
125	15.5
121	15.0
118.5	14.75
116	14.5
113.5	14.25
110	14.0
106.5	13.75
103	13.5
97.5	13.25
90	13.0

A.4 Assistant stands the child agains. The QUAC stick and calls out the marking at his height. This figures is written on the paper slip underneath the arm circumference figure. After the measuring session the two figures on each slip are compared. If the first figures (the child's arm circumference) is less than the second figure the child is counted as "malnourished".

The percentage of malnourished children can thus be recorded and compared from time to time.

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Please let us know the name and address of any individual or institution for our mailing list, whom you feel could be assisted by the receipt of this free bulletin in our efforts to create awareness of primary health care in community health.

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NUTRITION

Groundnut cake powder and dried green
plantain powder/porridge

Plantain flour (raw	50 g.
Groundnut cake flour (roasted)	25 g.
Bengal gram	25 g.
Palm Jaggery	25 g.

Method: The two flours are mixed in hot water and a semi-solid batter is prepared. Jaggery is prepared in the form of a syrup. The semi-solid batter is added to the boiling syrup and kept stirred. It is boiled for 10-15 minutes in an open vessel over low fire. It is served to the infants before it gets cold.

Preparation of Plantain powder

Raw plantains are peeled and sliced and are well washed and sun dried. The dried plantain chips are powdered in a grinder. The powder can be kept for weeks, if kept dry. Plantain is largely available and also contribute to acceptability and palatability in recipes. The protein value is increased by the added groundnut cake powder and Bengal gram flour.

CHOLAM PORRIDGE

Cholam flour (roasted)	50 g.
Green gram dhal flour (roasted)	15 g.
Sesame cake flour	25 g.
Jaggery	20 g.

Method: Jaggery solution is prepared and boiled. The roasted flours are mixed and a batter is made with hot water. The hot batter is poured in small quantities at a time into the boiling jaggery solution, stirring to a uniform mixture. The mixture is boiled for 10 to 15 minutes. It is removed from the fire and served warm to the child as one feed.

CAMBU PORRIDGE

Cambu flour (roasted)	50 g.
Green gram dhal flour	25 g.
Groundnut cake flour	22 g.
Jaggery	20 g.

Method: Same as for other porridges

RAGI PORRIDGE

Ragi flour (roasted)	50 g.
Pengel gram dhal flour (roasted)	15 g.
Groundnut cake powder (roasted)	25 g.
Jaggery	20 g.

Method: Same as for other porridges

THENAI PORRIDGE

Thenai flour (roasted)	50 g.
Mochai Dhal flour (roasted)	15 g.
Groundnut cake flour (roasted)	25 g.
Jaggery	20 g.

Method: Same as for other porridges

Source: Swasth hind - July 1930

ಭಾರತ ಸರ್ಕಾರ ಆಹಾರ ಮತ್ತು ಪೋಷಣ ಮಂಡಳಿ ಬೆಂಗಳೂರು

1. ಪೌಷ್ಟಿಕಾಂಶ ಕೊರತೆಯ ಅಂಧಕ್ಕೆ ತಡೆಯಲು "ಎ" ಅಅನ್ಯಾಂಗಯುಕ್ತ ಹಸಿರು ಸೊಪ್ಪು, ಕ್ಯಾರಿಟ್, ಪರಂಗಿಹಣ್ಣು ಹಾಗೂ ಹಸಿರು ತರಕಾರಿಗಳನ್ನು ಹೆಚ್ಚು ಹೆಚ್ಚು ಉಪಯೋಗಿಸಿ,
2. ಆರೋಗ್ಯಯುಕ್ತ ಕಣ್ಣು, ಶಕ್ತಿಯುತ ಎಲುಬು ಮತ್ತು ರಕ್ತ ತುಂಬಲು ಹಸಿರು ತರಕಾರಿಗಳನ್ನು ಬಳಸಿ.
3. ರಕ್ತ ಹೀನತೆಯನ್ನು ತಡೆಗಟ್ಟಲು ಹೆಚ್ಚು ಹೆಚ್ಚು ತರಕಾರಿಗಳನ್ನು ಬಳಸಿ, ರಕ್ತ ಹೀನತೆಯ ಲಕ್ಷಣಗಳು ಕಾಂತಿ ಹೀನ ಕಣ್ಣುಗಳು, ತುಟಿಗಳು, ಉಗುರು ನಾಲಿಗೆ ಹಾಗೂ ನಿಶ್ಚಕ್ರತೆ.
4. ಮೊಳಕೆ ಕಟ್ಟಿದ ಕಾಳುಗಳು ಹೆಚ್ಚು ಪೌಷ್ಟಿಕ, ಸುಲಭವಾಗಿ ಜೀರ್ಣವಾಗುವ ರುಚಿಕರ ಆಹಾರ.
5. ಹೆಚ್ಚು ಪೌಷ್ಟಿಕಾಂಶ ಪಡೆಯಲು ದುಬಾರಿ ಹಣ್ಣು ಬೇಕಿಲ್ಲ. ಎಲ್ಲಾ ಆಹಾರಕ್ಕೂ (ಹಣ್ಣುಗಳಿಗೂ) ಅದರದೇ ಆದ ಮೌಲ್ಯವಿದೆ. ಆಯಾ ಋತುಗಳಲ್ಲಿ ದೊರೆಯುವ ಹಣ್ಣುಗಳನ್ನು ಬಳಸಿ.
6. ತಾಯಿಯ ಮನುಷ್ಯ ಸರಿಸಮವಿಲ್ಲ. ಆಕೆಯ ಹಾಲಿಗೆ ಸಾಟಿಯಿಲ್ಲ. ಸಾಧ್ಯವಾದಷ್ಟು ಎದೆಯ ಹಾಲನ್ನೇ ಉಣಿಸಿ
7. ಮಗುವಿಗೆ ಆರು ತಿಂಗಳ ನಂತರ ಎದೆಯ ಹಾಲಿನೊಂದಿಗೆ ಪೂರಕ ಆಹಾರ ನೀಡಿ.
8. ಬಳಸುವ ಎಲ್ಲಾ ತರಕಾರಿಗಳ ಸಿಪ್ಪೆಯನ್ನು ಸುಲಿಯದಿರಿ. ಅನಿವಾರ್ಯವಿದ್ದಲ್ಲಿ ಸಿಪ್ಪೆ ಸುಲಿದು ಬಳಸಿ.
9. ತರಕಾರಿಗಳನ್ನು ಹೆಚ್ಚುವ ಮೊದಲೆ ಚೆನ್ನಾಗಿ ತೊಳೆಯಿರಿ, ದಪ್ಪ ದಪ್ಪ ಹೋಳುಗಳಾಗಿ ಹೆಚ್ಚಿರಿ.
10. ತರಕಾರಿಗಳನ್ನು ಮುಚ್ಚಿದ ಪಾತ್ರೆಗಳಲ್ಲಿ ಕನಿಷ್ಠ ನೀರಿನಲ್ಲಿ ಬೇಯಿಸಿ.
11. ಬೆಳೆ ಹಾಗೂ ತರಕಾರಿಗಳನ್ನು ಬೇಯಿಸಲು ಅಡಿಗೇ ಸೋಡೆ ಬಳಸಬೇಡಿ
12. ತೌಡು ತೆಗೆಯದ ಗೋಧಿ ಓಟ್ಟು ಹೆಚ್ಚು ಪೌಷ್ಟಿಕ ಆದ್ದರಿಂದ ತೌಡನ್ನು ಬೇರೆ ಮಾಡಿರಿ.
13. ಕುಸುಬುಲಕ್ಕಿ ಹೆಚ್ಚು ಪೌಷ್ಟಿಕಾಂಶಯುಕ್ತ ಮತ್ತು ರುಚಿಕರ.
14. ಮಗು, ಗರ್ಭಿಣಿ ಮತ್ತು ಹಾಲುಣಿಸುವ ತಾಯಂದಿರಿಗೆ ಆಹಾರ ಅಗತ್ಯ. ಅದು ನಿಮಗೆ ತಿಳಿದಿರಲಿ.
15. ಆಹಾರ ಪದಾರ್ಥಗಳನ್ನು ಬಳಸುವಾಗ ಕೈಗಳ ಸ್ವಚ್ಛತೆಯ ಕಡೆ ಗಮನವಿರಲಿ.
16. ಪಾತ್ರೆಗಳನ್ನು ತೊಳೆದು ಬಿಸಿಲಿನಲ್ಲಿ ಚೆನ್ನಾಗಿ ಒಣಗಿಸಿ. ಸೂಕ್ಷ್ಮಾಣು ಜೀವಿಗಳನ್ನು ದೂರವಿಡಿ.
17. ಕುಡಿಯುವ ನೀರು ಶುದ್ಧವಾಗಿರಲಿ. ಕಾಯಿಸಿ ಆರಿಸಿದ ಅಥವಾ ಸ್ವಚ್ಛಕದಿಂದ ಶುದ್ಧೀಕರಿಸಿದ ನೀರನ್ನು ಕುಡಿಯಿರಿ.
18. ಚಿಲ್ಲೆದ ಕಸಕಡ್ಡಿ ಹಾಗೂ ನಿಂತ ನೀರು ಸೊಳ್ಳೆ, ನೋಣಗಳ ಉಗಮಸ್ಥಾನ. ಇವು ಆರೋಗ್ಯಕ್ಕೆ ಹಾನಿಕರ.
19. ನಿಮ್ಮ ಬಾವಿ ಮತ್ತು ಅದರ ಪರಿಸರ ಶುಚಿಯಾಗಿರಲಿ.
20. ಮಗುವಿಗೆ ರೋಗ ಪ್ರತಿರೋಧಕ ಚುಟ್ಟು ಮದ್ದನ್ನು ತಪ್ಪದೇ ಕೊಡಿಸಿ.
21. ಅತಿಸಾರ / ಬೇಧಿಯನ್ನು ಉಪ್ಪು ಮತ್ತು ಸಕ್ಕರೆ ಬೆರೆಸಿದ ನೀರಿನಿಂದ ತಡೆಗಟ್ಟಿರಿ.
22. ಅಗತ್ಯವಿದ್ದಷ್ಟು ಮಾತ್ರ ತೆಗೆದುಕೊಳ್ಳಿ. ಆಹಾರವನ್ನು ಪೋಲು ಮಾಡದಿರಿ.
23. ನಾಳಿನ ಅವಶ್ಯಕತೆಗೆ ಬೆಳೆಸಿದ ಪ್ರತಿ ಕಾಳನ್ನು ಉಳಿಸಿ
24. ಆಯಾ ಕಾಲದಲ್ಲಿ (ಋತುವಿನಲ್ಲಿ) ದೊರಕುವ ಹಣ್ಣುಗಳನ್ನು ಸಂರಕ್ಷಿಸಿ.
25. ಆಹಾರದ ಜಾಹೀರಾತುಗಳಿಗೆ ಮಾರುಹೋಗದಿರಿ.
26. ಅಯೋಡಿನ್ ಯುಕ್ತ ಉಪ್ಪನ್ನೇ ಬಳಸಿ, ಗಳಗಂಡ ರೋಗದಿಂದ ರಕ್ಷಿಸಿ

ಪೌಷ್ಟಿಕಾಂಶಗಳ ಬಗ್ಗೆ ಪದ್ಯಗಳು

1. ಗೋಧಿ ಹಸರು, ಬೆಲ್ಲವ ಬೆರೆಸಿ
ಗವು ಗವು ಗುಟ್ಟುವ ತರದಲ್ಲಿ ಕರಿಮ
ನುಣ್ಣಿಗೆ ಸಣ್ಣಗೆ ಎಲ್ಲವ ಅರಮ
ಬಾಳೆಯ ಹಣ್ಣನ್ನು ತೆಳ್ಳಗೆ ಬೆರೆಸಿ,
ತಿನಿಸಲು ಮಗುವಿಗೆ ಮಿಷಿಯಾಗುವುದು,
ಸುಂದರ ಮೈ ಕೈ ತುಂಬುತ ಬೆಳೆಯುದು.
ಅರವತ್ತಿಪ್ರತಿಕ್ಷಣತ್ರರೊಲು

2. "ಮುನ್ನಿ ಮುನ್ನಿ"
ವಿನಮಯ್ಯು ?
"ಮಾವಿನ ಹಣ್ಣನ್ನು ತಿನ್ನುತ್ತಿರುವೆಯು?"
"ತಿನ್ನತ್ತಿರುವೆನು ಹೌದಮಯ್ಯು."
ಸಂದರ ಚಂದದ ಹೊಳಪಿನ ಕಣ್ಣಿಗೆ
ತುಂಬಾ ಒಳ್ಳೆಯದಂತಮ್ಮಯ್ಯು

3. ಹಣ್ಣುಗಳೆಲ್ಲವು ಬಲು ಸವಿಯಣ್ಣು
ದೊಡ್ಡವು ಸಣ್ಣವು ಕೇಳಣ್ಣು
ವಿಧವಿಧ ಬಣ್ಣದ ಹಣ್ಣುಗಳಲ್ಲಿ
ಅಗ್ಗದ ಬೆಲೆಗಳವು ಸಿಗುವುದಲ್ಲ ?
ದೇವದ ದೊಡ್ಡದ ಕೇಳಣ್ಣು
ಎಲ್ಲರಿಗಾಗಿಯೇ ಮಾಡಿದ ಹಣ್ಣು !

4. ಮರವ ಹತ್ತಿ ಕುಳಿತ ರಂಗ
ಅವನ ಜೊತೆಯಲ್ಲಿದ್ದ ಗಿರಿಗೆ
ಚೇಪೆ ಹಣ್ಣು ಸಿಗಲು ಬಿಟ್ಟು
ತುಂಬುತ್ತಿತ್ತು ಕೆಳಗೆ ಬುಟ್ಟಿ
ಅವರಿಗಲ್ಲ, ವನವಿಹಾರ
ತಿಂದುತೇಗಿ ಹೊಟ್ಟೆಪ್ಪಣ !
ದ್ರಾಕ್ಷಿ ಗೊಂಚಲುಗಳ ಎತ್ತಿ,
ಮರ ಪರಂಗಿ ಗಿಡವ ಹತ್ತಿ,
ಬರಿದ ದಾಳಿಬೆ ಹಣ್ಣು
ಅದರ ಮೇಲೆ ಅವರ ಕಣ್ಣು
ಎಲ್ಲಾ ಹಣ್ಣು ಸಿಗಲು ಬಿಟ್ಟು
ಕುಳಿದರಲ್ಲ, ಕೈತಟ್ಟು !

5. ಅಮ್ಮ, ಅಮ್ಮ, ನೆಲ್ಲಿಕಾಯಿ
ಚಪ್ಪೆರಿಸುತ್ತಿದೆ ನನ್ನಯ ಬಾಯಿ ;
ಮಿಷಿಯನು ಕೊಂಡುಹೆ
ನನಗದು ಚೋದ್ದ
ಒಳ್ಳೆಯದಲ್ಲವ ಸುಲಭದಿ ಕೊಟ್ಟು

ಪ್ರಿಯ ತುಂಬುವೇ
ನಿನಗದು ಸಾಧ್ಯ
ಹಲ್ಲು, ಮೂಳೆಗಳ ಗಟ್ಟಿಯ ಮಾಡಿ
ವಸಡಿನ ನಾಲಿಗೆ ವಜ್ರವ ನೀಡಿ
ರೋಗ ರುಜಿನಗಳ ದೂರಕೆ ದೂಡಿ
ಒಳ್ಳೆಯ ಪಾಡ್ಯ

6. ಸೋನಿ, ಮೋನಿ ತೋಟವ ಮುತ್ತಿ
ಹಣ್ಣಿನ ಮರಗಳ ದಿಣ್ಣೆಯ ಹತ್ತಿ
ಕಿತ್ತರು, ತುಂಬು ಹಣ್ಣಿನ ಬುಟ್ಟಿ,
ಮೆಲ್ಲಗೆ ಇಳಿದರು ಬೆನ್ನಿಗೆ ಕಟ್ಟಿ,
ಚೇಪೆಯ ಹಣ್ಣುಮ, ಸೋನಿಗೆ ಇರಲಿ
ಪರಂಗಿ ಹಣ್ಣುಮ, ಮೋನಿಗೆ ಇರಲಿ
ಸಪೋಟ, ಬಾಳೆಯ ಮಾವಿನ ಹಣ್ಣು,
ಬೇಕೆಂದರೆ ಎಲ್ಲರಿಗಿರಲಿ.

7. ಹುರುಳಿಯು, ಗಜ್ಜರೆ, ಮಾವಿನಕಾಯಿ
ಕೋಸು ಮೂಲಂಗಿ, ಚಪ್ಪರ ಬದನ
ಬಟಾಣಿ ಅಲೂ, ಈರುಳ್ಳಿಗಳ ತಿನ್ನುತಲಿದ್ದರೆ
ಆಗುವ ಮೆಲ್ಲ, ಕಾಯಿಲೆ

ಗಿಯಲೆ ಓಡುವವಲ್ಲ,
ನಿನ್ನಯ ತೋಟದ ಗಿಡ - ಮರವಲ್ಲ
ಹಣ್ಣೆ ಭಾರದಿ ಬಾಗಿಹವಲ್ಲ,
ಒಳ್ಳೆಯದಿಲ್ಲವು ತುಂಬಿಹುದೆಲ್ಲ ;
ಸ್ವಚ್ಛಿಯ ಕೊಡುಗೆಯು ತುಳುಕುವುದೆಲ್ಲ.

8. ಮೊಳೆಯುವ ಸಸಿ ಮಾ ಬೆಳೆವನು ತುಂಬ,
ನನ್ನಯ ಎಲೆಗಳನ್ನು ಪ್ರೀತಿಸು ನಂಬ,
ಹಾಯಾಗಿನ ನೀ ಹೊಟ್ಟಿಯ ತುಂಬ,
ಕುಸುಮದ ಚೇನಿಗೆ ಹಾರುವ ದುಂಬಿ
ಹಸುರಿನ ಸೊಪ್ಪಿನ ಹಲ್ಲುವ ಮಾಡು
ತಿಂಡಿ ತಿನಿಸುಗಳ ರುಚಿಯನು ನೋಡು
ಅಲ್ಲಿಂದಿಲ್ಲಿಗೆ ಕುಣಿದಾಡು.

ಬಡವ ಬಲ್ಲಿದರು ಎಲ್ಲರು ಒಂದೇ
ಹಣ್ಣಿನ ರಾಶಿಯ ನೀಡುವನು ಮುಂದೆ,
ಹುಡುಗರು - ಮುದುಕರಿಗಲ್ಲರಿಗಿಷ್ಟ
ಕೊಡುವವ ನಾನಿರೆ, ನಿಮಗೇನಾ ಕಷ್ಟ
ನನ್ನಯ ಎಲೆ ಹೊಗಳ ತರಸರಿದು
ನನ್ನಯ ಕಾಂಡವ ಮುರಿ ಮುರಿ
ಬೇಯುವಬೆಳೆಗೆ ಕಾಯಿಯ ತುಂಬ
ಮೇಲೋಗದವನು ಅದರಲಿ ಸುರಿದು
ರುಚಿ ರುಚಿ ಪಲ್ಲವು ನೀ ಮಾಡು.
ತಿನ್ನುತ ನನ್ನನು ಕೊಂಡಾಡು
ನನ್ನಯ ತೋಟವ ಬೆಳೆವರಿಗಲ್ಲ,
ಸಂತಸದಿಂದಿರಲಿ ಕೊಡುವನು ಎಲ್ಲ.

9. ತುಂಬಿದ ತೋಟಕ
ಎಲ್ಲರೂ ಓಡಿ
ಹಳ್ಳಕೊಳ್ಳಗಳ
ಸಲ ಸುತಾಡಿ
ಮಕ್ಕಳು ಎಲ್ಲರು ತಿನ್ನುತ ಆಡಿ
ದಿನವೆಲ್ಲವ
ಕಳೆವರು ಕೂಡಿ

10. "ಜಟ್ಟಿ ಜಟ್ಟಿ ಓ ಜಗಜಟ್ಟಿ,
ಹೋಗಿದ್ದೆಲ್ಲಗೆ"? ನೀ ಬಲು ಗಟ್ಟಿ !
"ಮಾವಿನ ತೋಟಕ ನಾ ಹೋಗಿದ್ದೆ
ಸವಿ ಸವಿ ಹಣ್ಣನು ನಾ ಕಿತ್ತಿದ್ದೆ"
"ಜಟ್ಟಿ ಜಟ್ಟಿ ನೀಬಲು ಗಟ್ಟಿ
ಅಲ್ಲಿಗೆ ಹೋಗಿ ಮಾಡಿದ್ದೇನು"
"ಹಣ್ಣಿನ ರಸವನು ನುಣ್ಣಿಗೆ ಹೀರಿ,
ಪುಸಿಗೆ ಓಡಿದ ನೆಗೆಯುತ ಹಾರಿ"

"ಜಟ್ಟಿ ಜಟ್ಟಿ ನೀಬಲು ಗಟ್ಟಿ
ಪರಿಸೆಗೆ ಹೋಗಿ ಮಾಡಿದ್ದೇನು"?
ಅಲ್ಲಿ ಒಳಿತನು ಎಲ್ಲವ ತಿಳಿದ
ಮೌನ ಬೆಳೆಸುವ ಮಾರ್ಗವ ತಿಳಿದ
ಸುಖ ಸಂಪತ್ತನ್ನು ಅಲ್ಲಿಯ ಪಡೆದ.

11. ಕಮಲನ ಕೈಯಲಿ ಸೀತಾಫಲವು.
ಅವಳಿಗೆ ಅದರಲಿ ತುಂಬಿದ ಒಲವು
ಹಣ್ಣಿನ ಹಸುರಿನ ಸಿಪ್ಪೆಯ ಒಳಗೆ
ಮಂಜಿನ ಬಣ್ಣದ ಮೆತ್ತನೆ ತಿರುಳು
ಕಪ್ಪಿನ ಬೀಜವು ಬಿಮಿಟುತ ಕೆಳಗೆ
ತಿಂದರ ತಣ್ಣಗೆ ತೇವವುದು ಕರುಳು

12. ಸೇವಿನ ಫಲಿಸಿದ ಶುಭ ಹೊಸ ವರ್ಷ
ವಸಂತ ಋತುವುದು ದ್ರಾಕ್ಷಿಗೆ ಹರ್ಷ
ಬೇಸಿಗೆ ದಿನದಲಿ ಮಾವಿನಹಣ್ಣು
ಉಟ್ಟಿನಕಾಯಿ ಸವಿಯುತ ಉಣ್ಣು
ಬಾಯಾರಿಕೆಯಾಗಿರೆ ನಿಂಬೆಯ ಹಣ್ಣು
ಕೆಲಂಗಡಿ ಮೇಣ್ ಕಿತ್ತಳೆ ಹಣ್ಣು
ವರ್ಷದ ಉದ್ದಕ್ಕೂ ಬಾಳ - ಪರಂಗಿ
ತಿಂದರ ಮೈಗದು ಕಾಂಟಿಯ ಅಂಗಿ
ಹಣ್ಣಿನ ರಸದಿಂದಲೇ ಆರೋಗ್ಯ
ಎಲ್ಲವು ನಮ್ಮಯ ತೋಟದ ಭಾಗ್ಯ.

ಆಯೋಡಿನ್ ಅಂಶದ ಕೊರತೆಯನ್ನು ತಡೆಗಟ್ಟಬಹುದು



ಆಯೋಡಿನ್ ಯುಕ್ತ ಉಪ್ಪನ್ನೇ ಬಳಸಿ.

ಆಯೋಡಿನ್ ಕೊರತೆಯಿಂದುಂಟಾಗುವ

★ ನಿಸರ್ಗದಲ್ಲಿ ಅಯೋಡಿನ್ ಕಡಿಮೆಯಾದಲ್ಲಿ ಮನುಷ್ಯರಿಗೆ ಮತ್ತು ಪ್ರಾಣಿಗಳಿಗೆ ತೀವ್ರ ರೀತಿಯ ದುಷ್ಪರಿಣಾಮಗಳುಂಟಾಗುತ್ತವೆ.

★ ಅಯೋಡಿನ್ ಅಂಶದ ಸೇವನೆ ಅಸಮರ್ಪಕವಾದಲ್ಲಿ ಹಲವಾರು ನ್ಯೂನತೆಗಳುಂಟಾಗುತ್ತವೆ. ಅವುಗಳನ್ನು ಒಟ್ಟಾರೆ ಅಯೋಡಿನ್ ಕೊರತೆಯಿಂದುಂಟಾಗುವ ನ್ಯೂನತೆಗಳು ಎನ್ನುತ್ತಾರೆ.

- ಅವುಗಳೆಂದರೆ: ಬುದ್ಧಿ ಮಟ್ಟ ಕಡಿಮೆ ಮತ್ತು ಕಲಿಕೆಯಲ್ಲಿ ಹಿಂದುಳಿಯುವಿಕೆ.
- ಶಕ್ತಿಯ ನಷ್ಟ
- ಸಂತಾನೋತ್ಪತ್ತಿಯ ತೊಂದರೆಗಳು.
- ಉದಾ: ಮೈಯಿಳಿತ ಮತ್ತು ಸತ್ತು ಹುಟ್ಟುವ ಮಕ್ಕಳ ಸಂಖ್ಯೆಯಲ್ಲಿ ಹೆಚ್ಚಳ.
- ದೈಹಿಕ ಹಾಗೂ ಮಾನಸಿಕ ವಿಕಲತೆ.
- ಬುದ್ಧಿ ಮಾಂದ್ಯತೆ.
- ಕಿವುಡು ಹಾಗೂ ಮೂಕತನ.
- ಮೆಳ್ಳಗಣ್ಣು, ಸ್ನಾಯುಗಳ ಮರಗಟ್ಟುವಿಕೆ.
- ಕುಬ್ಜತನ, ನಡಿಗೆಯ ಲೋಪದೋಷಗಳು.
- ಗಳಗಂಡ ರೋಗ: ಕಣ್ಣಿಗೆ ಕಂಡು ಬರುವ ಕೊರತೆಯ ಲಕ್ಷಣ.
- ಪ್ರಾಣಿಗಳಲ್ಲಿ ಡಾಲು, ಮೊಟ್ಟೆ ಮಾಂಸ ಮತ್ತು ಉಣ್ಣೆಯ ಉತ್ಪತ್ತಿಯಲ್ಲಿ ಇಳಿತ.
- ಪ್ರಾಣಿಗಳಲ್ಲಿ ಸಂತಾನೋತ್ಪತ್ತಿ ವಿಫಲ.



ಭಾರತ ದೇಶದಲ್ಲಿ ಯಾವ ರಾಜ್ಯವೂ ಅಯೋಡಿನ್ ಕೊರತೆಯಿಂದುಂಟಾಗುವ ನ್ಯೂನತೆಗಳಿಂದ ಮುಕ್ತವಾಗಿಲ್ಲ. 239 ಜಿಲ್ಲೆಗಳಲ್ಲಿ ಸಮೀಕ್ಷೆ ನಡೆಸಿದ್ದು ಅವುಗಳಲ್ಲಿ (29 ರಾಜ್ಯಗಳು ಮತ್ತು ಕೇಂದ್ರಾಡಳಿತ ಪ್ರದೇಶಗಳು) 197 ಜಿಲ್ಲೆಗಳಲ್ಲಿ ಶೇ. 10 ರಿಂದ 65 ರಷ್ಟು ಗಳಗಂಡ ರೋಗಿಗಳನ್ನು ಹೊಂದಿದೆ ಎಂದು ತಿಳಿದು ಬಂದಿದೆ.

ನ್ಯೂನತೆಗಳ ತೀವ್ರತೆ

- ★ ಗರ್ಭಿಣಿಯರಲ್ಲಿ ಅಯೋಡಿನ್ ಕೊರತೆಯಿದ್ದಲ್ಲಿ ಹುಟ್ಟಲಿರುವ ಮಗುವಿನ ಮೆದುಳಿನ ಮೇಲೆ ಸರಿಪಡಿಸಲಾಗದ ದುಷ್ಪರಿಣಾಮ ಉಂಟಾಗುತ್ತದೆ.
- ★ ವಿಶ್ವದಲ್ಲಿ ತಡೆಗಟ್ಟಬಹುದಾದ ಈ ರೀತಿಯ ಮೆದುಳಿನ ತೊಂದರೆ ಮತ್ತು ಮಾನಸಿಕ ವಿಕಲತಗೆ ಅಯೋಡಿನ್ ಅಂಶದ ಕೊರತೆಯೇ ಏಕೈಕ ಕಾರಣ.
- ಭಾರತದೇಶದಲ್ಲಿ ಪ್ರತಿ ಒಂದು ಗಂಟೆಯಲ್ಲಿ ಹುಟ್ಟುವ ಮಕ್ಕಳಲ್ಲಿ ಅಯೋಡಿನ್ ಕೊರತೆಯಿಂದ ಹತ್ತು ಮಕ್ಕಳು ಸಂಪೂರ್ಣವಾಗಿ ದೈಹಿಕ ಹಾಗೂ ಮಾನಸಿಕ ಬೆಳವಣಿಗೆ ಹೊಂದುವುದಿಲ್ಲ.



- ★ ತಡೆಗಟ್ಟಬಹುದಾದ ಬುದ್ಧಿ ಮಾಂದ್ಯತೆಗೆ ಅಯೋಡಿನ್ ಅಂಶದ ಕೊರತೆ ಒಂದು ಮುಖ್ಯ ಕಾರಣ.
- ★ ಅಯೋಡಿನ್ ಅಂಶದ ಕೊರತೆಯಿಂದ ಶಾಲಾವಯಸ್ಸಿನ ಮಕ್ಕಳ ಸರಾಸರಿ ಜ್ಞಾನ ಮಟ್ಟದಲ್ಲಿ 10 ರಿಂದ 15 ಅಂಶಗಳಷ್ಟು ಕಡಿಮೆಯಾಗುವುದೆಂದು ಇತ್ತೀಚಿನ ಸಂಶೋಧನೆಗಳಿಂದ ತಿಳಿದು ಬಂದಿದೆ.
- ★ ಗಳಗಂಡ ಪೀಡಿತ ಪ್ರದೇಶಗಳಲ್ಲಿರುವ ಶಾಲಾ ವಯಸ್ಸಿನ ಮಕ್ಕಳ ಸಂಖ್ಯೆ 40 ಮಿಲಿಯನ್ ಗಳೆಂದು ಹಾಗೂ ಈ ಮಕ್ಕಳಲ್ಲಿ ಒಟ್ಟು 400 ಮಿಲಿಯನ್ ಗಳಷ್ಟು ಬುದ್ಧಿ ಮಟ್ಟದ ಅಂಶಗಳು ನಷ್ಟಹೊಂದಿವೆ ಎಂದು ಅಂದಾಜು ಮಾಡಲಾಗಿದೆ.
- ಅಯೋಡಿನ್ ಕೊರತೆಯನ್ನು ತಡೆಗಟ್ಟುವುದರಿಂದ ಮಕ್ಕಳ ಕಲಿಕೆಯ ಮಟ್ಟ ಹೆಚ್ಚುವುದಲ್ಲದೆ ಶಾಲೆಯಲ್ಲಿ ಹೆಚ್ಚು ಪ್ರಗತಿ ಹೊಂದುತ್ತಾರೆ.



ಮಾನಸಿಕ ಹಾಗೂ ದೈಹಿಕ
ಆಯೋಗ್ಯ ರಕ್ಷಣೆಗೆ



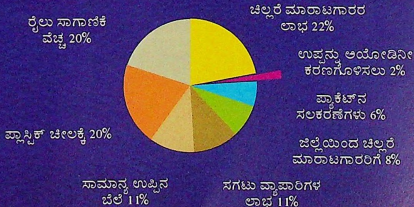
ಆಯೋಜನೆ ಯುಕ್ತ
ಉಪ್ಪಿನ ಬೆಲೆ

ತಡೆಗಟ್ಟುವುದು

- ★ ಆಯೋಜನೆ ಕೊರತೆಯಿಂದಂಟಾಗುವ ನ್ಯೂನತೆಗಳನ್ನು ತಡೆಗಟ್ಟಬಹುದು.
- ★ ಆಯೋಜನೆ ಯುಕ್ತ ಉಪ್ಪನ್ನು ದಿನನಿತ್ಯವೂ ಆಹಾರದಲ್ಲಿ ಉಪಯೋಗಿಸುವುದರಿಂದ ಆಯೋಜನೆ ಕೊರತೆಯಿಂದಂಟಾಗುವ ಹಲವಾರು ನ್ಯೂನತೆಗಳನ್ನು ತಡೆಗಟ್ಟಬಹುದು.
- ★ ಆಯೋಜನೆ ಯುಕ್ತ ಉಪ್ಪಿನ ಸೇವನೆ ಸುರಕ್ಷಿತ.
- ★ ಕಡಿಮೆ ವೆಚ್ಚದಲ್ಲಿ ಉಪ್ಪನ್ನು ಆಯೋಜನೆ ಯುಕ್ತವಾಗಿ ಸಬಹುದಲ್ಲದೆ ಇದನ್ನು ಸೇವಿಸುವುದರಿಂದ ಆಯೋಜನೆ ಕೊರತೆಯಿಂದಂಟಾಗುವ ನ್ಯೂನತೆಗಳನ್ನು ತುಂಬಾ ಪರಿಣಾಮಕಾರಿಯಾಗಿ ತಡೆಗಟ್ಟಬಹುದು.
- ★ ಒಬ್ಬ ವ್ಯಕ್ತಿಗೆ ಒಂದು ವರ್ಷಕ್ಕೆ ಸಾಕಾಗುವಷ್ಟು ಉಪ್ಪನ್ನು ಆಯೋಜನೀಕರಣಗೊಳಿಸಲು ತಗಲುವ ವೆಚ್ಚ ಕೇವಲ 30 ಪೈಸೆ ಮಾತ್ರ.
- ★ ಒಬ್ಬ ವ್ಯಕ್ತಿಗೆ ಜೀವನ ಪರ್ಯಂತ ಒಂದು ಟೀ ಚಮಚಕ್ಕಿಂತ ಕಡಿಮೆ ಆಯೋಜನೆ ಅಂಶದ ಅವಶ್ಯಕತೆ ಇದೆ.

ಆಯೋಜನೆ ಯುಕ್ತ ಉಪ್ಪಿನ ಬೆಲೆ

ವಿವಿಧ ಘಟಕಗಳ ಶೇಕಡವಾರು ಹಂಚಿಕೆ



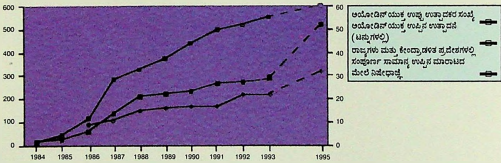
ಆಯೋಜನೆ ಯುಕ್ತ ಉಪ್ಪನ್ನು ಕೇವಲ 12 ತಿಂಗಳು ಕಾಲ ಸಮುದಾಯದಲ್ಲಿ ಸೇವಿಸುವುದರಿಂದ ಆ ಪ್ರದೇಶದಲ್ಲಿ ಆಯೋಜನೆ ಕೊರತೆಯಿಂದ ದೈಹಿಕ ಹಾಗೂ ಮಾನಸಿಕ ವಿಕಲತೆಯಿಂದ ಯಾವುದೇ ಮಗು ಹುಟ್ಟುವುದಿಲ್ಲ. ಮತ್ತು ಕುಂಠಿತ ದೈಹಿಕ ಹಾಗೂ ಮಾನಸಿಕ ಬೆಳವಣಿಗೆಯಿಂದ ನರಳುವ ಮಕ್ಕಳೂ ಇರುವುದಿಲ್ಲ.

ಇಂದು ನಾವೆಲ್ಲರೂ ಕ್ರಿಯಾಶೀಲರಾಗಬೇಕು

ವಿಶ್ವದಾದ್ಯಂತ, ಅಡಿಗೆ ಉಪ್ಪನ್ನು ಅಯೋಡಿನ್ ಯುಕ್ತವನ್ನಾಗಿರುವುದು ಭಾರತ ಸರ್ಕಾರದ ರಾಷ್ಟ್ರೀಯ ಅಯೋಡಿನ್ ಕೊರತೆಯೆಂದುಂಟಾಗುವ ನ್ಯೂನತೆಗಳ ನಿವಾರಣಾ ಕಾರ್ಯಕ್ರಮದ ಮುಖ್ಯ ಗುರಿ. 1992 ರಲ್ಲಿ ಕೊಲಂಬೊದಲ್ಲಿ ಮಕ್ಕಳನ್ನು ಕುರಿತು ನಡೆದ ಸಾರ್ವಕಾಲಿಕ ಸಭೆಯಲ್ಲಿ 1995 ರ ವೇಳೆಗೆ ಎಲ್ಲರೂ ಅಯೋಡಿನ್ ಪೋಷಕಾಂಶ ಅಯೋಡಿನ್ ಯುಕ್ತ ಉಪ್ಪಿನ ಮೂಲಕ ದೊರೆಯುವಂತೆ ಮಾಡುವ ನಿರ್ಧಾರ ಕೈಗೊಳ್ಳಲಾಯಿತು. ಭಾರತದೇಶದ ಮಕ್ಕಳ ರಾಷ್ಟ್ರೀಯ ಕ್ರಿಯಾ ಯೋಜನಾ ಕಾರ್ಯಕ್ರಮದಡಿಯಲ್ಲಿ ಇದನ್ನು ಒಂದು ನಿರ್ದಿಷ್ಟ ಗುರಿಯಾಗಿ ಸೇರಿಸಲಾಗಿದೆ.

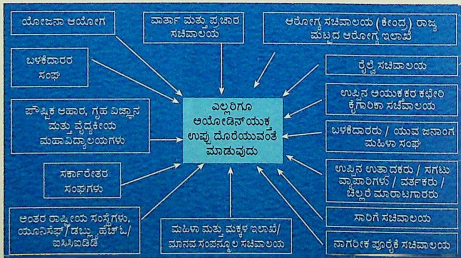
- ★ ಸುಮಾರು ಶೇಕಡ 94ರಷ್ಟು ಅಯೋಡಿನ್ ಯುಕ್ತ ಉಪ್ಪನ್ನು ಖಾಸಗಿ ತಯಾರಕರಿಂದ ಪಡೆಯುವುದು.
- ★ ಅಯೋಡಿನ್ ಯುಕ್ತವಲ್ಲದ ಅಡಿಗೆ ಉಪ್ಪಿನ ಮಾರಾಟದ ಮೇಲೆ ನಿಷೇಧಾಜ್ಞೆ ಇರುವ ಪ್ರದೇಶವು ಶೇಕಡ 60ರಷ್ಟು ಜನಸಂಖ್ಯೆಯನ್ನು ಒಳಗೊಂಡಿದೆ.

ಅಯೋಡಿನ್ ಯುಕ್ತ ಉಪ್ಪಿನ ಬಳಕೆಯ ಪ್ರಗತಿ ಹಾಗೂ ಸದ್ಯದ ಪರಿಸ್ಥಿತಿ



ಅರ್ಧದಶಕದ ಗುರಿ - ವಿಶ್ವದೆಲ್ಲೆಡೆ ಅಯೋಡಿನ್ ಯುಕ್ತ ಅಡಿಗೆ ಉಪ್ಪಿನ ಉತ್ಪಾದನೆ - 52 ಲಕ್ಷ ಟನ್ ಗಳು (52 ಮೆ. ಟನ್)

ಎಲ್ಲರಿಗೂ ಅಯೋಡಿನ್ ಯುಕ್ತ ಉಪ್ಪು ದೊರೆಯುವಂತೆ ಮಾಡುವ ಗುರಿ ತಲುಪಲು ಈ ದಿಶೆಯಲ್ಲಿ ಪ್ರತಿಯೊಬ್ಬರ ಹಾಗೂ ಸಮೂಹದ ಎಲ್ಲ ವರ್ಗದ ಜನರ ಬೇಡಿಕೆ ಹಾಗೂ ನಿರಂತರ ಪ್ರಯತ್ನ ಅತ್ಯಗತ್ಯ.



ವಿಶ್ವದಲ್ಲಿ ಅಯೋಡಿನ್ ಯುಕ್ತ ಉಪ್ಪಿನ ಲಭ್ಯತೆ

- * 1985 ರಲ್ಲಿ ಶೇ. 5 ರಷ್ಟು ಮಾತ್ರ ಮನೆಗಳಲ್ಲಿ ಅಯೋಡಿನ್ ನೀಕರಿಸಿದ ಉಪ್ಪನ್ನು ಉಪಯೋಗಿಸುತ್ತಿದ್ದರು.
- * ಆದರೆ ಈ ದಿನ ಶೇ. 50 ರಷ್ಟು ಮನೆಗಳಲ್ಲಿ ಅಯೋಡಿನ್ ಯುಕ್ತ ಉಪ್ಪನ್ನು ಉಪಯೋಗಿಸುತ್ತಿದ್ದಾರೆ.

ಅಯೋಡಿನ್ ಯುಕ್ತ
ಉಪ್ಪನ್ನು ಮಾತ್ರ
ಬಳಸಿ.

ಉತ್ಪಾದಿಸುವ ಕೊಳ್ಳುವ ಮಾರುವ ಮತ್ತು ಸೇವಿಸುವ ಉಪ್ಪು ಅಯೋಡಿನ್ ಯುಕ್ತ ಉಪ್ಪು ಎಂದು ಖಚಿತಪಡಿಸಲು ಉತ್ಪಾದನಾ ಮಟ್ಟದಲ್ಲಿ 10 ಲಕ್ಷ ಭಾಗ ಉಪ್ಪಿನಲ್ಲಿ 30 ಭಾಗ, ಸೇವಿಸುವ ಹಂತದಲ್ಲಿ 15 ಭಾಗ ಅಯೋಡಿನ್ ಅಂಶ ಇರಬೇಕು.



ಕೊಳ್ಳುವ ಹಾಗೂ ಸೇವಿಸುವ ಉಪ್ಪು ಅಯೋಡಿನ್ ಯುಕ್ತವಾಗಿದೆಯೇ ಎಂಬುದನ್ನು ಪ್ರತಿಯೊಂದು ಮನೆಯವರು ಮಾರಾಟಗಾರರು ಅಯೋಡಿನ್ ಪರಿಶೀಲನೆ ಪಟ್ಟಿಗೆಯಲ್ಲಿ ಒಂದು ರಾಸಾಯನಿಕ ದ್ರಾವಣವಿರುತ್ತದೆ. ಈ ರಾಸಾಯನಿಕ ದ್ರಾವಣದ ಒಂದು ಹನಿಯನ್ನು ಉಪ್ಪಿನ ಮೇಲೆ ಸುರಿದಾಗ ಬಿಳಿ ಬಣ್ಣವು ಕಡು ನೀಲಿ ಬಣ್ಣಕ್ಕೆ ತಿರುಗುತ್ತದೆ. ಇದರಿಂದ ಅಯೋಡಿನ್ ಇದೆ ಎಂಬುದನ್ನು ತಿಳಿಯಬಹುದು.



ಐ. ಡಿ. ಡಿ. ಶಾಖೆ (ಪೌಷ್ಟಿಕ ಆಹಾರ ವಿಭಾಗ) ಆ.ಕು.ಕ. ನಿರ್ದೇಶನಾಲಯ, ಬೆಂಗಳೂರು.
ಕೃಪೆ: ಉಪ್ಪಿನ ಇಲಾಖೆ, ಭಾರತ ಸರ್ಕಾರ ಮತ್ತು ಯೂನಿಸೆಫ್ ನೆರವು.



सत्यमेव जयते

ಭಾರತ ಸರ್ಕಾರ

ಮಾನವ ಸಂಪನ್ಮೂಲ ಅಭಿವೃದ್ಧಿ ಮಂತ್ರಿಶಾಖೆ

ಮಕ್ಕಳಲ್ಲಿ ೧ ಮತ್ತು ೨ನೇಯ ದರ್ಜೆ
ಆಪೌಷ್ಠಿಕತೆ ಸಮಸ್ಯೆಯ ನಿರ್ವಹಣೆಗಾಗಿ
ಮಾರ್ಗದರ್ಶಿ ಸೂತ್ರಗಳು



ಆಹಾರ ಮತ್ತು ಪೋಷಾಹಾರ ಮಂಡಳಿ

ಮಹಿಳಾ ಮತ್ತು ಶಿಶು ಅಭಿವೃದ್ಧಿ ಇಲಾಖೆ
ಶಾಸ್ತ್ರೀ ಭವನ, ನವದೆಹಲಿ

ಎಳೆಯ ಮಕ್ಕಳಲ್ಲಿ ಆಶೋತಿ, ಕೆತೆಯಿಂದ ಬಳಸುವಾಗಲೂ ಕೆಲವು ದುಷ್ಪರಿಣಾಮಗಳ ಸಂಭವಿಸಲಿಕ್ಕಾಗುತ್ತವೆ. ಇದು ತೀವ್ರ ಆಠರೋದ ವಿಷಯವಾಗಿದೆ. ಆಶೋತಿ ಕೆತೆಯಿಂದ ಸರಿಯಾಗಿರುವ ಮಗು ವಿಧಿವಂತನಾಗಿ ಇತರ ಕೊಠಡಿಗಳಿಂದ ಸಹ ಅಂದರೆ, ವಿಶೇಷವಾಗಿ ಸಂಸ್ಥೆ, ಪೋಷಕಾಹಾರಗಳಿಂದ ಅಷ್ಟು, "ಎ" ಹೆಚ್ಚಿದ ಮಕ್ಕಳು ಅಮೋಘೋ ಕೊಠಡಿಯಿಂದ ಬಳಸುತ್ತಿದ್ದರೆ, ಈ ಕೊಠಡಿಗಳು ಅತ್ಯಲ್ಪ ಪ್ರಮಾಣದಲ್ಲಿ ಉಂಟಾದಾಗ ಅದರಿಂದ ಮಗುವು ವಿಕಾಸ, ಬೆಳವಣಿಗೆ ಮತ್ತು ರೋಗ ನಿರೋಧಕ ಶಕ್ತಿಯ ಮೇಲೆ ಪರಿಣಾಮ ಉಂಟಾಗುತ್ತದೆ. ಇದನ್ನು ಮಗುವಿಗೆ ಕಂಡು ಬಂದಿದೆ. ಎಳೆಯ ಮಕ್ಕಳಲ್ಲಿ ಆಶೋತಿ ಕೆತೆಯಿಂದ ಪರಿಣಾಮಗಳು ಈ ಮುಂದಿನವಿವೇಕ.

ದೈಹಿಕ ಬೆಳವಣಿಗೆ ಹಿಂತೆಗೆದುಕೊಳ್ಳುವುದು - ಮಗು ತನ್ನ ಬೆಳವಣಿಗೆಯ ಪ್ರಣಾಳಿ ಸಾಮರ್ಥ್ಯವನ್ನು ಗಳಿಸುವುದಿಲ್ಲ.

ಗ್ರಹಣ ಶಕ್ತಿ ಕುಂದುತೊಂದರೆಯನ್ನು ಮತ್ತು ಕೆಲವು ಕಾಸು ಮತ್ತು ಉಸಿರು.

ವಿಕಾಸಗತಿಯ ಕೊಠಡೆ ಉಂಟಾಗಿ ಮಗು ಅಧಿಕಾರದಲ್ಲಿಯೇ ಶಾಲೆ ಬಿಟ್ಟು ಬಿಡುವಂತಾಗುವುದು ಮತ್ತು.

ರೋಗ ನಿರೋಧಕ ಶಕ್ತಿ ಕುಂದುತೊಂದರೆಯನ್ನು ಮತ್ತು ಅಸ್ಪೃಶ್ಯತೆ ಮತ್ತು ಮರಣ ಸಂಭವ ಹೆಚ್ಚುವುದು.

ಕಡಿಮೆ ತೂಕದ ಗುಣಲಕ್ಷಣಗಳು

ಮಕ್ಕಳಲ್ಲಿ ೦ ಮತ್ತು ೨ನೇಯ ಆಶೋತಿ, ಕೆತೆಯು ಅತ್ಯಲ್ಪ ಪ್ರಮಾಣದ ಹಾಗೂ ಸಾಮ್ಯ ಸ್ವರೂಪದ ಆಶೋತಿ, ಕೆತೆಯಿಂದ ಇದನ್ನು ತೀವ್ರವಾಗಿ ಪರಿಗಣಿಸುವುದಿಲ್ಲ. ಈ ತೆರನಾದ ಆಶೋತಿ, ಕೆತೆಯಿಂದ ಬಳಸುತ್ತಿರುವ ಮಕ್ಕಳು ತೀವ್ರ ಸಹಜವಾಗಿ ಕಂಡು ಬರುವ ಕಾರಣ ಮಾತ್ರವಲ್ಲದೆ ಅದರಲ್ಲಿರುವ ಈ ಕೊಠಡಿಯು ತಂದೆತಾಯಿಗಳ ಆಫೀಸು ಅಂಗನವು ಇದ್ದ ಕೆತೆಗಳ ಗುಣನಕ್ಕೆ ಬರುತ್ತವೆ. ಈ ಮಕ್ಕಳು ಅವರ ವಯಸ್ಸಿಗೆ ಇದರೇಕಾದ ತೂಕಕ್ಕಿಂತ ಕಡಿಮೆ ತೂಕವಾಗುತ್ತಾರೆ ಮತ್ತು ಅವರ ವಯಸ್ಸಿಗೆ ಇದರೇಕಾದ ತೂಕವು ಎತ್ತರವಿರುವಂತೆ ಅಥವಾ ಸರಿಸಾಟಿಯಂತೆ ಕಂಡು ಬರುತ್ತಾರೆ. ಆದರೆ, ಈ ಮಕ್ಕಳು ದೈಹಿಕ ಮತ್ತು ಗ್ರಹಣ ಶಕ್ತಿ ಬೆಳವಣಿಗೆ ಮೇಲೆ ಸಹ ಪ್ರತಿಫಲನ ಮತ್ತು ಸಂಪೂರ್ಣವಾಗಿ ಪರಿಣಾಮ ಉಂಟಾಗುತ್ತದೆ.

೦ ಮತ್ತು ೨ನೇಯ ದರ್ಜೆಯ ಆಶೋತಿ, ಕೆತೆಯಿಂದ ಬಳಸುತ್ತಿರುವ ಮಕ್ಕಳು ಬಗ್ಗೆ ಯುಕ್ತ ಗಮನ ನೀಡದಿದ್ದರೆ ತೀವ್ರ ಆಶೋತಿ ಕೆತೆ ಅಂದರೆ ೩ ಮತ್ತು ೪ನೇಯ ದರ್ಜೆ

ಉಂಟಾಗುತ್ತದೆ (ನು ವೇದೋಪಾಂಗ) ಗಳಿಂದ ಅಂಶ ರೋಗಗಳಿಗೆ ಮತ್ತು ಇತರ ಉಪಾಹಾರ ಹಾಗೂ ಜಲದ ಕುಂದು ಸಂಭವಗಳಿಗೆ ಈಗಾಗಲಾದ ಮತ್ತು ಅದರಿಂದ ಆವರಣ ಸಾಯಲು ಬಿಡುವುದು.

ಮಕ್ಕಳು ಬೆಳವಣಿಗೆ ಬಗ್ಗೆ ಅಂಗನವಾಗಿ ಕಾರ್ಯ ಕೆತೆಗಳು ನಿಗದಿತವಾದಲ್ಲಿ ೦ ಮತ್ತು ೨ನೇಯ ದರ್ಜೆ ಆಶೋತಿ, ಕೆತೆಯಿಂದ ಬಳಸುತ್ತಿರುವ ಮಕ್ಕಳು ಸ್ವಲ್ಪ ಗುರುತಿಸಬಹುದು. ಮತ್ತು ೨ನೇಯ ದರ್ಜೆಯ ಆಶೋತಿ, ಕೆತೆಯಿಂದ ಬಳಸುವ ಮಕ್ಕಳು ಕೊಠಡಿಯ ಪ್ರಕಾರ ಆಹಾರವನ್ನು, ಇವು ವಿಗೋಳವು ಯಾವುದೇ ಅವಕಾಶ ಇಲ್ಲದಿರುವುದರಿಂದ, ಈ ಮಕ್ಕಳಲ್ಲಿ ಕಂಡು ಬರುವ ಆಶೋತಿ, ಕೆತೆಯನ್ನು ನಿರೋಧಿಸಲಾಗುತ್ತದೆ. ಇದರಿಂದ, ಪರಿಶೀಲನೆ ಹೆಚ್ಚಿಸಬೇಕು.

೩ ಮತ್ತು ೨ನೇಯ ದರ್ಜೆಯ ಆಶೋತಿ, ಕೆತೆಯಿಂದ ಬಳಸುತ್ತಿರುವ ಮಕ್ಕಳಿಗಿಂತ ೦ ಮತ್ತು ೨ನೇಯ ದರ್ಜೆ ಆಶೋತಿ, ಕೆತೆಯಿಂದ ಬಳಸುತ್ತಿರುವ ಮಕ್ಕಳು ತೂಕವನ್ನು ಸುಧಾರಣೆ ಮಾಡಿ ಹೆಚ್ಚಿಸುವುದು ಹೆಚ್ಚು ಸುಲಭ. ಆದ್ದರಿಂದ, ಆಶೋತಿ, ಕೆತೆ ಉಂಟಾಗುವುದನ್ನು ತಡೆಯುವುದು ಹಾಗೂ ಆಶೋತಿ, ಕೆತೆಯ ಬಗ್ಗೆ ಪ್ರಾರಂಭಿಕ ಹಂತಗಳಲ್ಲಿ ಚಿಕಿತ್ಸೆ ನೀಡುವುದು ಮುಖ್ಯ.

ಆದ್ದರಿಂದ ೦ ಹಾಗೂ ೨ನೇಯ ಆಶೋತಿ, ಕೆತೆಯಿಂದ ಬಳಸುತ್ತಿರುವ ಮಕ್ಕಳು ತೂಕವನ್ನು ಸುಧಾರಿಸುವುದಕ್ಕೆ ಅವಶ್ಯಕ ಶ್ರಮ ಕೈಗೊಳ್ಳುವ ಸಲುವಾಗಿ ೩೩೩೩, ಮೇಲ್ವಿಚಾರಣೆಯ ಮತ್ತು ಅಂಗನವಾಗಿ ಕಾರ್ಯ ಕೆತೆಗಳಿಗೆ ನೀಡಲು ಈ ಮಾರ್ಗದರ್ಶಿ ಸೂತ್ರಗಳನ್ನು ರಚಿಸಲಾಗಿದೆ. ಆದರೆ ಈ ಮಾರ್ಗದರ್ಶಿ ಸೂತ್ರಗಳು, ೩ ಮತ್ತು ೨ನೇಯ ದರ್ಜೆಯ ಆಶೋತಿ, ಕೆತೆಯಿಂದ ಬಳಸುತ್ತಿರುವ ಮಕ್ಕಳು ಸರಿಯಾದಂತೆ ಕಡಿಮೆ ತೂಕದ ತೂಕದಿಂದ ಬಳಸುತ್ತಿರುವ ಎಲ್ಲ ಮಕ್ಕಳು ಸಮಾನವಾಗಿ ನಿರ್ವಹಣೆಗೆ ಸೇರಬಾರದು.

ಆಫೀಸಿನಲ್ಲಿ ವಿವಿಧ ವ್ಯಾಜಕೇತು ?

೧. ಮಗು ಆಶೋತಿ, ಕೆತೆಯಿಂದ ಬಳಸುತ್ತಿದ್ದರೆ ಮತ್ತು ಅದರ ಬಗ್ಗೆ ಹೆಚ್ಚಿನ ಗಮನ ಕೊಡುವುದು ಅಗತ್ಯವಾಗಿದೆ ಎಂದು ಮನಗಾಣಿಸಿದರೆ, ತಂದೆ ಅಥವಾ ಪೋಷಕರಿಗೆ ತಿಳಿಸಿ.

೨. ಆಶೋತಿ, ಕೆತೆಯ ಪ್ರತಿಫಲನ ಪರಿಣಾಮಗಳ ಬಗ್ಗೆ ತಂದೆ ತಾಯಿ ಹಾಗೂ ಸಮುದಾಯಕ್ಕೆ ವಿವರಿಸಿ ಹೇಳಿ.

೩. ಆಶೋತಿ, ಕೆತೆಯಿಂದ ಬಳಸುತ್ತಿರುವ ಮಗುವನ್ನು ಸಾಮಾನ್ಯ ತೂಕದ ಆರೋಗ್ಯವಂತ ಮಗುವಿನಂತೆ ಹೋಲಿಸಿ ತೋರಿಸುವ ಮೂಲಕ ಹಾಗೂ ಬೆಳವಣಿಗೆ

ಚಾರ್ಟರ್ ನೆರವಿನೊಂದಿಗೆ ೧ ಮತ್ತು ೨ನೇಯ ದರ್ಜೆ ಅಪೌಷ್ಟಿಕತೆಯ ಪರಿಣಾಮವು ತಂದೆ - ತಾಯಿಗಳ ಕಣ್ಣಿಗೆ ಕಾಣುವಂತೆ ಮಾಡಿ.

4. ಶಿಶುಗಳು ತುಂಬಾ ತ್ವರಿತಗತಿಯಲ್ಲಿ ಬೆಳವಣಿಗೆ ಹೊಂದುತ್ತವೆ. ಜನನ ಕಾಲದಲ್ಲಿ ಸಮಾರು ೩ ಕೆ.ಜಿ. ತೂಕವಿದ್ದ ಒಂದು ಮಗುವಿನ ತೂಕ ಆರು ತಿಂಗಳೊಳಗೆ ಇಮ್ಮಡಿಯಾಗುತ್ತದೆ. ಮತ್ತು ಆ ಮಗುವಿಗೆ ಒಂದು ವರ್ಷ ವಯಸ್ಸಾಗುವ ವೇಳೆಗೆ ಅದರ ತೂಕ ಮೂರು ಪಟ್ಟುಗುತ್ತದೆ. ಬದುಕಿನ ಮೊದಲ ಎರಡು ವರ್ಷಗಳ ಅವಧಿಯಲ್ಲಿ ಮೆದುಳಿನ ವಿಕಾಸ ಪೂರ್ಣಗೊಳ್ಳುತ್ತದೆ. ಈ ಹಂತದಲ್ಲಿ ಮಗುವಿನ ತ್ವರಿತ ಬೆಳವಣಿಗೆ ಕುರಿತು ಮತ್ತು ಮಗು ಗರಿಷ್ಠ ಬೆಳವಣಿಗೆ ಹಾಗೂ ವಿಕಾಸ ಹೊಂದಲು ಸಾಕಷ್ಟು ಆಹಾರ ಕೊಡುವುದರ ಅಗತ್ಯತೆ ಬಗ್ಗೆ ವಿವರಿಸಿ ಹೇಳಿ. ಹೆಂಗಯಾದ ಅರ್ಧಗಂಟಿಯೊಳಗೆ ಮಗುವಿಗೆ ತಪ್ಪದ ನಿಗ್ಗದ ಹಾಲನ್ನು ಕೊಡಬೇಕು. ಇದರಲ್ಲಿ ರೋಗ ನಿರೋಧಕ ಶಕ್ತಿ ಹೆಚ್ಚಾಗಿರುವುದಲ್ಲದೆ "ಎ" ಅನ್ಯಾಂಗ ಕೂಡ ಹೆಚ್ಚಾಗಿ ದೊರೆಯುತ್ತದೆ. ಶಿಶುವಿಗೆ ಹುಟ್ಟಿದಾಗಿನಿಂದ ೫ ತಿಂಗಳವರೆಗೆ ಎಂದೆ ಹಾಲನ್ನು ಮಾತ್ರ ಕೊಡಬೇಕೆಂದು ತಾಯಿಯವರಿಗೆ ತಿಳಿಸುವಳೆ ನೀಡುವುದು..

5. ಎರಡು ವರ್ಷಗಳವರೆಗೆ ಮಕ್ಕಳಿಗೆ ಎದೆ ಹಾಲುಣಿಸುವುದರ ಪ್ರಾಮುಖ್ಯತೆ ಬಗ್ಗೆ ಹಾಗೂ ಅದು ತಿಂಗಳ ವಯಸ್ಸಿನಿಂದ ಹಿಡಿದು ಮಗು ಮನೆ ಮಂದಿ ಸೇವಿಸುವ ಆಹಾರವನ್ನು ತೆಗೆದು ಕೊಳ್ಳುವಷ್ಟು ಸಮರ್ಥವಾಗುವವರೆಗೆ ಸಾಕಷ್ಟು ಪೂರಕ ಆಹಾರ ಕೊಡುವುದರ ಸಂಪೂರ್ಣ ಅಗತ್ಯತೆ ಬಗ್ಗೆ ಒತ್ತಿ ಹೇಳಿ. ಹಾಗೆ ಮಾಡದಿದ್ದರೆ ಮಗುವಿನ ಬೆಳವಣಿಗೆ ಮತ್ತು ಆರೋಗ್ಯದ ಮೇಲೆ ಉಂಟಾಗುವ ಪ್ರತಿಕೂಲ ಪರಿಣಾಮಗಳ ಬಗ್ಗೆ ವಿವರಿಸಿ ಹೇಳಿ.

6. ೧ ಮತ್ತು ೨ನೇಯ ದರ್ಜೆಯ ಅಪೌಷ್ಟಿಕತೆಯಿಂದ ಬಳಲುತ್ತಿರುವ ಮಕ್ಕಳು ಅಪೌಷ್ಟಿಕತೆಯ ತೊಂದರೆಯಿಂದ ಮುಕ್ತವಾಗುವುದಕ್ಕೆ ಅವರಿಗೆ ನೇರವು ನೀಡಲು ಅವರಿಗೆ ಹೆಚ್ಚುವರಿ ಆಹಾರ ನೀಡುವುದರ ಜರೂರು ಅಗತ್ಯತೆ ಬಗ್ಗೆ ಒತ್ತಿ ಹೇಳಿ. ಶಿಶುಗಳು ಮನೆ ಎಳೆಯ ಮಕ್ಕಳಿಗೆ ಎದೆಯ ಹಾಲುಣಿಸುವುದರ ಜೊತೆಗೆ ೫ ೬ ಸಲ ಆಹಾರ ಕೊಡುವುದು ಅಗತ್ಯ. ಮಗು ಸಾಮಾನ್ಯ ತೂಕವನ್ನು ಹೊಂದಲು ಹೆಚ್ಚಿನ ಪ್ರಮಾಣದಲ್ಲಿ ಆಹಾರ ಕೊಡುವುದು ಅವಶ್ಯಕ.

7. ಅಪೌಷ್ಟಿಕತೆಯಿಂದ ಬಳಲುತ್ತಿರುವ ಮಗುವಿಗೆ ಯಾವ ಯಾವ ಆಹಾರ ಕೊಡಬೇಕೆಂಬುವುದರ ಬಗ್ಗೆ ತಾಯಿ , ತಂದೆ ಅಥವಾ ಪೋಷಕರಿಗೆ ತಿಳುವಳಿಕೆ ನೀಡಿ.

8. ಯಾವ ಬಗೆಯ ಆಹಾರ ಕೊಡುವ ಬಗ್ಗೆ ತಂದೆ, ತಾಯಿ ಹಾಗೂ ಪಾಲಕರಿಗೆ ತಿಳಿ ಹೇಳುವುದು.

ಲಂಗನಾಡಿಯ ಕಾರ್ಯಕರ್ತರು ಏಕದಳ ಧಾನ್ಯಗಳು, ದ್ವಿದಳ ಧಾನ್ಯಗಳು, ತರಕಾರಿಗಳು ಮುಂತಾದ ಸ್ಥಳೀಯ ಆಹಾರ ಪದಾರ್ಥಗಳನ್ನು ಬಳಸಿಕೊಂಡು ಶಿಶುಗಳಿಗೆ ಕಡಿಮೆ ಖರ್ಚಿನ ಆಹಾರ ಕೊಡುವಂತೆ ತಿಳಿಸಬೇಕು ಮತ್ತು ಶಿಫಾರಸ್ಸು ಮಾಡಬೇಕು. ಅಂತ ಆಹಾರಪದಾರ್ಥಗಳ ವೈಕಿ ಕೆಲವು ಇಂತಿವೆ.

೧. ಅನ್ನ ಮತ್ತು ಬೇಳೆಕುಟ್ಟಿನಲ್ಲಿ ನೆನಸಿದ ರೊಟ್ಟಿ, ಎಣ್ಣೆ ಮತ್ತು ಸಕ್ಕರೆ ಹಾಕಿ ಮಾಡಿದ ಇಡ್ಲಿ, ದೋಸೆ, ಕಿಚಿಡಿ, ರಾಗಿ, ಗೋಧಿ ಅಥವಾ ಅಕ್ಕಿ ಕಿಟ್ಟಿನಿಂದ ಮಾಡಿದ ಸರಿ, ಸ್ವಲ್ಪ ಹಾಲಿನಲ್ಲಿ ಕಲಿಸಿದ ಅನ್ನ ಇವೇ ಮುಂತಾದ ಪರಿವರ್ತಕ ಕುಟುಂಬ ಆಹಾರ ಪದಾರ್ಥಗಳು. ಇಂಥ ಆಹಾರ ಪದಾರ್ಥಗಳನ್ನು ದಿನಕ್ಕೆ ಎರಡು ಸಲ ಕೊಡಬೇಕು.

೨. ಕೊನೆಪಕ್ಕೆ ಒಂದು ತಿಂಗಳವರೆಗೆ ಸಂಗ್ರಹಿಸಿಡಬಹುದಾದ ಶಿಶು ಆಹಾರ ಮಿಶ್ರಣವನ್ನು, ಮನೆಗಳಲ್ಲೇ ದೊರೆಯುವಂತೆ ಆಹಾರ ಧಾನ್ಯಗಳಿಂದ ಸುಲಭವಾಗಿ ತಯಾರಿಸಬಹುದು ಮತ್ತು ಶಿಶುಗಳಿಗೆ ಮೇಲಿಂದ ಮೇಲೆ ಉಣಿಸಬಹುದು. ಈ ಮುಂದಾ ಕೊಡಲಾದ ಮೂಲ ಆಹಾರ ತಯಾರಿಕೆ ವಿಧಾನವನ್ನು ತಂದೆ ತಾಯಿಗಳಿಗೆ ಮತ್ತು ಸಮುದಾಯಕ್ಕೆ ತಿಳಿಸಿಕೊಡಬೇಕು.

-- ಯಾವುದೇ ಆಹಾರ ಧಾನ್ಯಗಳಾದ (ಅಕ್ಕಿ, ಗೋಧಿ, ರಾಗಿ, ಸಜ್ಜೆ, ಚೋಳ) ೩ ಭಾಗ ತೆಗೆದುಕೊಳ್ಳಿ.

- ಯಾವುದೇ ದ್ವಿದಳಧಾನ್ಯವನ್ನು (ಹೆಸರುಬೇಳೆ, ಕಡೆಬೇಳೆ, ತೊಗರಿಬೇಳೆ) ೧ ಭಾಗ ತೆಗೆದುಕೊಳ್ಳಿ, ಮತ್ತು

ಕಡೆಕಾಯಿ ಬೀಜ ಅಥವಾ ಬಿಳಿಎಣ್ಣೆ (ಇದ್ದರೆ) ಅರ್ಧ ಭಾಗ ತೆಗೆದುಕೊಳ್ಳಿ ಇವುಗಳನ್ನು ಬೇರೆಬೇರೆಯಾಗಿ ಹುರಿದುಕೊಳ್ಳಿ.

ಇವುಗಳನ್ನು ಬೀಸಿ, ಮಿಶ್ರಣ ಮಾಡಿ ಗಾಳಿಯಾಡದ ಡಬ್ಬಿಗಳಲ್ಲಿ ಅಥವಾ (ಸೀಪ್) ಗಳಲ್ಲಿ ತುಂಬಿ ಭದ್ರವಾಗಿ ಮುಚ್ಚಿ.

ಇವುಗಳನ್ನು ಕೊನೆಪಕ್ಕೆ ಒಂದು ತಿಂಗಳವರೆಗೆ ಸಂಗ್ರಹಿಸಿಡಬಹುದಾಗಿದೆ. ಮಕ್ಕಳಿಗೆ ತಿನ್ನಿಸುವುದಕ್ಕೆ ಎರಡು ಟೀಬಲ್ ಚಮಚ ಈ ಶಿಶು ಆಹಾರ ಮಿಶ್ರಣವನ್ನು ಕುದಿಸಿದ ಬೀಸಿ ನೀರು ಅಥವಾ ಹಾಲಿನಲ್ಲಿ ಬೆರೆಸಿ ಕೊಡಬೇಕು. ಅದನ್ನು ತಿನ್ನಿಸುವುದಕ್ಕೆ ಮುಂಚೆ ಅದಕ್ಕೆ ಸಕ್ಕರೆ ಅಥವಾ ಬೆಣ್ಣೆ ಮತ್ತು ಎಣ್ಣೆ ತುಪ್ಪ ಹಾಕಿ ಕಲಿಸಬೇಕು. ಶಿಶುಗಳಿಗೆ, ಈ ಶಿಶು ಆಹಾರ ಮಿಶ್ರಣದಿಂದ ತಯಾರಿಸಿದ ಆಹಾರವನ್ನು ದಿನಕ್ಕೆ ೩ - ೪ ಸಲ ಕೊಡಬೇಕು.

ಈ ಸ್ಥಳೀಯ ಆಹಾರ ಪದಾರ್ಥಗಳನ್ನು ಸ್ಥಳೀಯ ಆಹಾರ ಪದ್ಧತಿಗಳು ಮತ್ತು ಮುಖ್ಯ ಕಚ್ಚಾ ಆಹಾರ ವಸ್ತುಗಳಿಗೆ ತಕ್ಕಂತೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬಹುದು. ಮತ್ತು ಇದನ್ನು ವಾರಕ್ಕೆ ಒಂದು ಸಲ ಸಮುದಾಯಕ್ಕೆ ಪ್ರತ್ಯಕ್ಷವಾಗಿ ಮಾಡಿ ತೋರಿಸಬೇಕು. ಮಕ್ಕಳ ತಾಯಂದಿರು, ಅವರ ಶಿಶುಗಳಿಗೆ ಮತ್ತು ಮಕ್ಕಳಿಗೆ ಆಹಾರ ಉಣಿಸಲು ಈ ಶಿಶು ಆಹಾರ ಮಿಶ್ರಣ ತಯಾರಿಸಿಕೊಳ್ಳುವುದಕ್ಕೆ ಅವರಿಗೆ ನೆರವಾಗಬೇಕು. ಈ ಪ್ರಯೋಜನಕಾರಿ ಪರಿಣಾಮಗಳು ತಾಯಂದಿರು ಮತ್ತು ಸಮುದಾಯದ ಮೇಲೆ ಪ್ರಭಾವ ಬೀರುವಂತಿರಬೇಕು.

೨ ರಿಂದ ೬ ವರ್ಷಗಳ ವಯೋಗುಂಜಿನ ಮಕ್ಕಳಿಗೆ ಬೆಲ್ಲದ ಜೊತೆಗೆ ಒಂದು ಮುಷ್ಕಿಯಷ್ಟು ಹುರಿದ ಕಡಲೆಕಾಯಿ ಬೀಜಗಳನ್ನು, ಹುರಿಗಡಲೆ ಮತ್ತು ಪುರಿ, ಮತ್ತು ಬೆಲ್ಲದ ಜೊತೆಗೆ ಕಡಲೆಕಾಯಿ ಕೊಡಬೇಕು. ಅಂಗನವಾಡಿ ಕಾರ್ಯಕರ್ತರು ಈ ಆಹಾರ ತಯಾರಿಕಾ ವಿಧಾನವನ್ನು ಸಮುದಾಯಕ್ಕೆ ಪ್ರತ್ಯಕ್ಷವಾಗಿ ಮಾಡಿ ತೋರಿಸಬೇಕು ಮತ್ತು ಫಲಿತಾಂಶವನ್ನು ಗಮನಿಸುವ ಕಾರ್ಯದಲ್ಲಿ ಸಮುದಾಯ ಪಾಲ್ಗೊಳ್ಳುವಂತೆ ಮಾಡಬೇಕು.

ಅಲ್ಲದೆ ಏಕದಳ ಧಾನ್ಯಗಳು, ದ್ವಿದಳ ಧಾನ್ಯಗಳು ಮತ್ತು ಕಡಲೆಕಾಯಿ ಮಿಶ್ರಣವು ಅವರ ಮಕ್ಕಳಿಗೆ ಕಡಿಮೆ ವೆಚ್ಚದಲ್ಲಿ ಅತ್ಯುತ್ತಮ ರೀತಿಯ ಪೃಷ್ಠಿಯನ್ನು ಪ್ರೋಟೀನನ್ನು ಮತ್ತು ಇತರ ಪೋಷಕಾಂಶಗಳನ್ನು ಒದಗಿಸುತ್ತವೆಂದು ಸಹ ಸಮುದಾಯಕ್ಕೆ ತಿಳಿಸಬೇಕು.

೩. ಮಕ್ಕಳ ಆರೋಗ್ಯಕರ ಬೆಳವಣಿಗೆ ಮತ್ತು ಅಪೌಷ್ಟಿಕತೆ ತೊಂದರೆಯಿಂದ ಮಗು ತೃಪ್ತವಾಗಿ ಚೇತರಿಸಿಕೊಳ್ಳುವುದಕ್ಕೆ ನೆರವಾಗುವಂತಹ ಹಾಲು, ಮೊಸರು, ಲಸ್ಯ, ಮೊಟ್ಟೆ, ಮೀನು ಮತ್ತು ಪರಂಗಿ, ಮಾವು, ಸಪೋಟ, ಬಾಳೆಹಣ್ಣು, ಜಜ್ಜಿ ಅರಂದು ಮೆದುಮಾಡಿದ ಮತ್ತು ಬೇಯಿಸಿದ ಹಸಿರು ಸೊಪ್ಪುತರಕಾರಿಗಳು, ಕ್ಯಾರೆಟ್, ಕುಂಬಳೆಗಳಂತಹ ತರಕಾರಿಗಳು ಮುಂತಾದಂತಹ ರಕ್ಷಿತ ಆಹಾರ ಪದಾರ್ಥಗಳ ಬಗ್ಗೆ ಸಮುದಾಯಕ್ಕೆ ಅಂಗನವಾಡಿ ಕಾರ್ಯಕರ್ತರು ತಿಳಿಸುವಂತೆ ನೀಡಬೇಕು. ಕುಟುಂಬದ ಖರೀದಿ ಸಾಮರ್ಥ್ಯವನ್ನು ಅವಲಂಬಿಸಿ ಈ ಆಹಾರ ಪದಾರ್ಥಗಳನ್ನು ಸಾಧ್ಯವಾದಷ್ಟು ಗರಿಷ್ಠ ಪ್ರಮಾಣದಲ್ಲಿ ಮಕ್ಕಳಿಗೆ ಕೊಡುವಂತೆ ಸಮುದಾಯಕ್ಕೆ ಸಲಹೆ ನೀಡಬೇಕು.

9. ಗಂಡು ಮಗು ಹಾಗೂ ಹೆಣ್ಣು ಮಗುವಿಗೆ ಸಮಾನವಾಗಿ ಆಹಾರ ಉಣಿಸುವುದರ ಅಗತ್ಯತೆ ಬಗ್ಗೆ ಒತ್ತಿ ಹೇಳಬೇಕು. ಹೆಣ್ಣು ಮಗುವಿಗೆ ಉತ್ತಮ ಪೌಷ್ಟಿಕ ಆಹಾರ ಕೊಡುವುದರ ಪ್ರಾಮುಖ್ಯತೆ ಅವಳ ಸ್ವಂತ ಆರೋಗ್ಯವನ್ನು ಕಾಪಾಡುವುದು ಮಾತ್ರವಲ್ಲದೆ ಮುಂದಿನ ಪೀಳಿಗೆಯ ಆರೋಗ್ಯವನ್ನು ಕಾಪಾಡುವುದಾಗಿದೆ ಎಂದು ಅಗತ್ಯವಾಗಿ ವಿವರಿಸಿ ಹೇಳಬೇಕು. ಹೆಣ್ಣು ಮಗುವಿಗೆ ಸಾಕಷ್ಟು ಪ್ರಮಾಣದಲ್ಲಿ ಹಾಗೂ ಪೌಷ್ಟಿಕ ಆಹಾರವನ್ನು ಕೊಟ್ಟಾಗ ಮಾತ್ರ ಅವಳು ಆರೋಗ್ಯವಂತ ಯುವತಿಯಾಗಿ ಹಾಗೂ ಆರೋಗ್ಯವಂತ

ಮಹಿಳೆಯಾಗಿ ಬೆಳೆಯುತ್ತಾಳೆ. ಮತ್ತು ಆಕೆ ಆರೋಗ್ಯವಂತ ಮಗುವನ್ನು ಹೆರುವುದಕ್ಕೆ ಅಂತ ಬೆಳವಣಿಗೆ ಅವಶ್ಯಕವಾಗಿ ಆಕೆಗೆ ಇರಬೇಕಾಗುತ್ತದೆ.

10. ಐಸಿಡಿಎಸ್ ಆಹಾರದ ಪೂರಕ ಸ್ವರೂಪವನ್ನು ಏಜಿಟಪದಿಸುವುದು. ಅಂಗನವಾಡಿಯಲ್ಲಿ ಮಗುವಿಗೆ ಕೊಡುವ ಆಹಾರವು ಮಗು ಮನೆಯಲ್ಲಿ ಸೇವಿಸುವವ ಆಹಾರಕ್ಕೆ ಹೆಚ್ಚಿಗೆಯಾಗಿ ಕೊಡುವಂತಹದಾಗಿರುತ್ತದೆ. ಮತ್ತು ಮಗುವಿನ ದಿನನಿತ್ಯದ ಆಹಾರ ಕ್ರಮದಲ್ಲಿ ಕಂಡುಬರುವ ಕ್ಯಾಲೋರಿ, -ಬೀಜಸತ್ಯದ ಕೊರತೆಯನ್ನು ತುಂಬುವುದಕ್ಕಾಗಿ ಇದನ್ನು ನೀಡಲಾಗುತ್ತದೆ ಎಂದು ತಿಳಿಸುತ್ತಾ ಮಗುವಿನ ತಾಯಿ ತಂದೆ ಅಥವಾ ಪೋಷಕರಿಗೆ ಅಂಗನವಾಡಿಯಲ್ಲಿ ಕೊಡುವ ಪೂರಕ ಆಹಾರದ ಪ್ರಾಮುಖ್ಯತೆಯನ್ನು ವಿವರಿಸಿ ಹೇಳಬೇಕು. ಮಗುವನ್ನು ಅಂಗನವಾಡಿಗೆ ಕಳುಹಿಸುವ ಮುಂಚೆ ಅದಕ್ಕೆ ಆಹಾರ ಕೊಡುವಂತೆ ಮತ್ತು ಮಗು ಅಂಗನವಾಡಿಯಿಂದ ಬಂದ ನಂತರ ಸಹ ಅದಕ್ಕೆ ಆಹಾರ ಕೊಡುವಂತೆ ತಾಯಿಗೆ ಸಲಹೆ ನೀಡಬೇಕು. ಇದರಿಂದ ಐಸಿಡಿಎಸ್ ಆಹಾರ "ಪೂರಕ ಆಹಾರ" ವೆ ಹೊರತು "ಬದಲಿ ಆಹಾರ" ಅಲ್ಲವೆಂಬುವುದನ್ನು ಏಜಿಟಪದಿಸಿದಂತಾಗುತ್ತದೆ.

11. ಸಮುದಾಯದ ಸಹಕಾರವನ್ನು ಪಡೆದುಕೊಂಡು ಮತ್ತು ಅಂಗನವಾಡಿಯಲ್ಲಿ ದೊರೆಯುವ ಹಾಲು ಆಹಾರ ಪದಾರ್ಥಗಳನ್ನು ಉಪಯೋಗಿಸಿಕೊಂಡು ಅಂಗನವಾಡಿಗಳಲ್ಲಿ ೧ ಮತ್ತು ೨ನೇಯ ದರ್ಜೆ ಅಪೌಷ್ಟಿಕತೆಯಿಂದ ಬಳಲುತ್ತಿರುವ ಮಕ್ಕಳಿಗೆ ಹೆಚ್ಚುವರಿ ಆಹಾರ ಒದಗಿಸಿ.

12. ೧ ಮತ್ತು ೨ನೇಯ ದರ್ಜೆ ಅಪೌಷ್ಟಿಕತೆಯಿಂದ ಬಳಲುತ್ತಿರುವ ಮಕ್ಕಳ ಬೆಳವಣಿಗೆ ಬಗ್ಗೆ ನಿಗಾ ಇಡಿ. ಅಂದರೆ, ಪ್ರತಿ ತಿಂಗಳು ತಾಯಂದಿರ ಎದುರಿನಲ್ಲಿ ಅವರ ಮಕ್ಕಳ ತೂಕ ಮಾಡಿ ಬೆಳವಣಿಗೆ ಚಾರ್ಟ್‌ನಲ್ಲಿ ಗುರುತುಮಾಡಿ ಹಾಗೂ ಅವರಿಗೆ ಮಕ್ಕಳ ಪ್ರಗತಿಯನ್ನು ವಿವರಿಸಿಹೇಳಿ. ಪ್ಲಾಸ್ಟಿಕ್ ಕವಚದಲ್ಲಿ ಇಟ್ಟಿರುವ ಮಕ್ಕಳ ಬೆಳವಣಿಗೆ ಚಾರ್ಟ್‌ನ್ನು ತಾಯಿಗೆ ವಹಿಸಿ ಕೊಡಬಹುದು.

13. ಅಂಗನವಾಡಿಗೆ ಬಂದು, ಮಗುವಿಗೆ ಆಹಾರ ಕೊಡುವುದರ ಬಗ್ಗೆ ಹಾಗೂ ಅದರ ಆರೈಕೆ ಬಗ್ಗೆ ತಿಳಿದುಕೊಳ್ಳುವುದಕ್ಕೆ ಮಗುವಿನ ತಾಯಿಗೆ ಉತ್ತೇಜನ ನೀಡಿ.

14. ೧ ಮತ್ತು ೨ನೇಯ ದರ್ಜೆ ಅಪೌಷ್ಟಿಕತೆಯಿಂದ ನರಳುತ್ತಿರುವ ಮಕ್ಕಳ ಸ್ಥಿತಿಯನ್ನು ಮಕ್ಕಳ ಮನೆಗೆ ಭೇಟಿ ಕೊಟ್ಟ ಸಂದರ್ಭದಲ್ಲಿ ಗಮನಿಸಿ.

15. ೧ ಮತ್ತು ೨ನೇಯ ದರ್ಜೆ ಅಪೌಷ್ಟಿಕತೆಯಿಂದ ಬಳಲುತ್ತಿರುವ ಮಕ್ಕಳ ತಾಯಿ,

ತಂದೆ ಅಥವಾ ಪೋಷಕರಿಗೆ ಕೊನೆಯ ಪಕ್ಷ ವಾರಕ್ಕೊಂದು ಸಲ ಅಂಗನವಾಡಿಗೆ ಬರುವಂತೆ ಸಲಹೆ ನೀಡಿ.

16. ೧ ಮತ್ತು ೨ನೇಯ ದರ್ಜೆ ಅಪೌಷ್ಟಿಕತೆಯಿಂದ ಬಳಲುತ್ತಿರುವ ಮಕ್ಕಳಿಗೆ ಎಲ್ಲಾ ಬಗೆಯ ಲಸಿಕೆಗಳನ್ನು ಕೊಡಿಸಿ.

17. ಮಗುವಿಗೆ ೯ ತಿಂಗಳು ಮತ್ತು ೩ ವರ್ಷಗಳ ವಯಸ್ಸಿನ ನಡುವೆ "ಎ" ಅನ್ಯಾಂಗವನ್ನು ಬಾಯಿಯ ಮೂಲಕ ಕೊನೆಪಕ್ಷ ೫ ಡೋಸ್ ಕೊಡಿಸಬೇಕು. ಮತ್ತು ಅದರ ದಾಖಲೆಯನ್ನು ಇಡಬೇಕು. "ಎ" ಅನ್ಯಾಂಗವು ಮಗುವಿನ ಬೆಳವಣಿಗೆಗೆ ನೆರವಾಗುತ್ತದೆ. ಮತ್ತು ಮಗುವನ್ನು ಕಾಯಿಲೆಗಳಿಂದ ರಕ್ಷಿಸುತ್ತದೆ.

18. ಮಕ್ಕಳಿಗೆ ನಿಯತವಾಗಿ ಕಬ್ಬಿಣ ಹಾಗೂ ಪೋಲಿಕೆ ಆ್ಯಸಿಡ್ ಗುಳಿಗೆಗಳನ್ನು ಕೊಡಬೇಕು. ಶೃತಾಪಸ್ಮೆಯಲ್ಲಿ ಉಂಟಾಗುವ ರಕ್ತಹೀನತೆಯು ಮೆದುಳಿನ ವಿಕಾಸವನ್ನು ಖಾಯಂ ಆಗಿ ಹಾನಿಗೊಳಿಸಿದರೆ, ಬಾಲ್ಯಾವಸ್ಥೆಯಲ್ಲಿ ಉಂಟಾಗುವ ರಕ್ತಹೀನತೆಯಿಂದ ಮಗುವಿನ ಕಲಿಕೆ ಸಾಮರ್ಥ್ಯ ಕುಂದುತ್ತದೆ.

19. ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಮಾತ್ರ ಉಪಯೋಗಿಸಿ. ಅಯೋಡಿನ್ ಮಗುವಿನ ದೈಹಿಕ ಮತ್ತು ಮಾನಸಿಕ ಬೆಳವಣಿಗೆಗೆ ಸಹಾಯ ಮಾಡುತ್ತದೆ.

20. ಆಹಾರ ತಯಾರಿಸುವಲ್ಲಿ ಮತ್ತು ಮಕ್ಕಳಿಗೆ ಅದನ್ನು ಉಣಿಸುವಲ್ಲಿ ವೈಯಕ್ತಿಕವಾಗಿ ಮತ್ತು ಆಹಾರದ ದೃಷ್ಟಿಯಿಂದ ಆರೋಗ್ಯಕರವಾದ ವಿಧಾನವನ್ನು ಪಾಲಿಸುವಂತೆ ತಂದೆ ತಾಯಿಗಳಿಗೆ ತಿಳಿ ಹೇಳಿ. ಶೌಚಾಲಯಕ್ಕೆ ಹೋಗಿ ಬಂದ ತರುವಾಯ ಮತ್ತು ಮಗುವಿಗೆ ಆಹಾರ ಉಣಿಸುವ ಮುಂಚೆ ಕೈತೊಳೆದುಕೊಳ್ಳುವ ಸರಳ ಅಭ್ಯಾಸದಿಂದ ಅತಿಸಾರ (ಬೇಧಿ) ತೊಂದರೆ ಉಂಟಾಗುವ ಸಾಧ್ಯತೆಯನ್ನು ಕಡಿಮೆ ಮಾಡಬಹುದಾಗಿದೆ.

21. ಜಂತುಹುಳುಗಳ ಸಮಸ್ಯೆಯಿಂದ ಎಲ್ಲ ಮಕ್ಕಳನ್ನು ಮುಕ್ತಗೊಳಿಸುವ ಕಾರ್ಯವನ್ನು ಸಹ ಕೈಗೊಳ್ಳತಕ್ಕದ್ದು. ಮತ್ತು ಆ ಬಗ್ಗೆ ಅಂಗನವಾಡಿಯಲ್ಲಿ ದಾಖಲೆ ಇಡತಕ್ಕದ್ದು. ಇದರ ಪ್ರಾಮುಖ್ಯತೆಯನ್ನು ಸಮುದಾಯಕ್ಕೆ ವಿವರಿಸಿ ಹೇಳತಕ್ಕದ್ದು ಪ್ರತಿಯೊಂದು ಮಗುವಿನ ಆರು ತಿಂಗಳಿಗೊಮ್ಮೆ ಕೊಡಬೇಕಾದ ಜಂತುಹುಳು ಹೊರಬೀಜವು ಔಷಧಿ, ಔಷಧಿ ಕಟ್ಟಿನಲ್ಲಿರಬೇಕು ೬ ತಿಂಗಳಿಂದ ೩ ವರ್ಷಗಳವರೆಗಿನ ವಯಸ್ಸಿನ ಮಕ್ಕಳು ವಿಶೇಷವಾಗಿ ಜಂತುಹುಳುವಿನ ತೊಂದರೆಗೆ ಸುಲಭವಾಗಿ ಒಳಗಾಗುತ್ತಾರೆ. ಏಕೆಂದರೆ, ಅವರು ಸಿಕ್ಕಿಡ್ಡನ್ನೆಲ್ಲ ಬಾಯಿಯಲ್ಲಿ ಇಟ್ಟುಕೊಳ್ಳಲು ಪ್ರಯತ್ನಿಸುತ್ತಾರೆ. ಇದು ಸೋಂಕು ಹರಡುವ ಮೂಲವಾಗಿ ಪರಿಗಮಿಸುತ್ತದೆ.

Report on State level Workshop for Nutrition Education

Food and Nutrition Board organized one-day workshop on importance of Nutrition Education and how to promote the Nutrition on 29th August 2002. Participants included Karnataka Government officials from Health, Women and Child Development, Education departments, Academicians, NGO staff among others that constituted approximately 75-80 participants.

Morning was technical plenary sessions that focused on few important issues like feeding practices for different age groups. Dr. Asha Benakappa was first speaker who spoke on Breast feeding and infant feeding practices. During the lecture she told the audience that more than 11 million children all over the world are malnourished. Major reason for this problem is poor feeding practices. She explained the group that 1780 million liters of breast milk is wasted every year in the world, as the mothers do not follow best practice as far as breast-feeding is concerned. Breastfeeding is not only for the infant, but it reduces the stress hormone in new mother and can calm her down to very great extent. More over it also helps in child to get its cortical cells activated, which ultimately results in better-developed child. No pre lactates should be given before initiating the breast milk. If one avoids usage of lactates it is always better.

Even for the infant feeding, she told the group that it should introduced only after child attains six months of age. Until then just breast milk is enough for the child. This is because child starts greater body movements only after six months.

Dr. Tara Gopal Das share about the importance of Nutrition education for adolescent age group and she even shared about the few experiences she had in implementing the adolescent school health education programme in Chikmagalur district.

Dr. Subhadra Sheshadri shared about importance of three major micronutrients namely Iron- deficiency of which could lead to Anemia. She told though Anemia is considered as not very major problem, it could be very dangerous to neglect Anemia in situations like pregnancy as this could lead to various complications. Vitamin-A – deficiency of which could lead to poor vision, weaker resistance power, and sometimes can even lead to blindness if neglected for long time. Iodine – deficiency of which could lead to mental retardation. Apart from these she even explained about the various sources of food, which can provide these nutrients.

Dr. Sumitra explained about dietary practices and chronic illnesses. She during the lecture told the audience that due to changing life styles and dietary practices we could lot of chronic non –communicable diseases like Chronic heart diseases, Osteoporosis, Diabetes etc. By following correct dietary practices according to the suggestions of the physicians and little fatness activities could reduce the chance of aggravating the situation. And for the people, which might i.e. in the risk group be able to start following

the healthy dietary habit by introducing more fibrous, protein based food rather than fat and carbo hydrate based foods.

In the after noon session, participants were divided into 5 groups fro group discussions and presentation of results of group discussion. Following were the groups and topics allotted the groups. NGO group- Media strategies, Women and Child development department- Community strategies, Education- school health and nutrition education, Health – their departmental activities for nutrition promotion and academicians – innovative nutrition education strategies for the students.

All the groups presented and the discussions and programme got concluded at 5.00 pm.

Dr Sad And The Power Lunch

KAVERY NAMBISAN

As a young doctor fleeing from the perpetual anxieties of city life, I came to Fakirpur to work in a hundred-bed hospital managed by nuns. Fakirpur was eighty pothole-ridden dacoit-infested kilometers from Patna. Given the bare facilities, we did a decent job of treating those who could not afford city prices.

Antiquated medicines like tincture of belladonna, ipecacuanha, canninative mixture and plaster of turpentine were in common use while penicillin was reserved for nasty infections. We were cheap and reliable. I performed surgery with the naive poise of a fledgling, using a hallowed textbook of surgery as my surrogate boss, friend and adviser. Over the years, I became isolated from the progressing world of medicine. And when I made mistakes, I found out the hard way.

In my fourth year at Fakirpur, a new administrator took over. Sister Perpetual Succour was a nun who had taken her medical degree abroad. She was determined to modernise the hospital and take it to 'new heights of excellence'. Out went the mixtures, plasters and even penicillin, we prescribed capsules and higher antibiotics. Suddenly realising that the hospital was really very backward, the nuns went on a buying spree. Patients watched bewildered as some equipment or the other was unloaded from a truck every week: a new ECG machine, a cardiac monitor, a pulse oximeter. The nuns worked hard to get donations from the local landowners and merchants. The expenses went up and so also the bills. The villagers believed that machines and expensive medicines would somehow provide good health. And they did not complain.

Sister PS was set on making us efficient. Work started at 0700 hours and finished at 1800 hours with a 35-minute break for lunch. She set up committees: waste management committee, drug purchase committee, food committee. She encouraged us to read the foreign journals which she subscribed to. Aware of the deficiencies in my knowledge I made amends by staying longer in the library. I walked with brisk steps to the hospital, relied on machines to tell me the diagnosis, did less and felt triumphant.

Everyone was given a responsibility. I was on the food committee. Instead of the usual thali meal served at the hospital canteen, we had boiled-egg-and-tomato sandwiches wrapped in plastic; puris and idlis for breakfast were replaced by bread and jam. Easier to serve and less messy. For some of the staff including me, it felt good, almost fashionable to be munching abacterial, aseptic sandwiches while reading a journal in the library.

Soon food came to preoccupy me in another way.

An international medical conference was to be held in Mathura which PS kindly recommended that I attend. a two-day jaunt to the land of Sri Krishna, a chance to meet experts, hospitality and entertainment thrown in. i was happy.

The main symposium during the conference was on Nutrition. Why, when there was all of medical

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science? A little thought and I realised that many lives were cut short because of the food people
ate or did not eat.

The conference was two months away. Being alert to the possibility of impressing people at an international conference, I decided to present a paper: The importance of Food in Post-operative Care. I read journals and research papers, prepared slides and realised that it was too dull a subject to impress people with. So I wrote another: Rare Surgical Cases.

It was a showy piece with spectacular, lurid details about some of the operations I had done that were in some way connected with eating. I wrote about the chunk of just-eaten meat I had found in the gut of an undefiled brahmin, the gravel, two pounds of it, that I had evacuated via the rectum in a eight-year-old, the roundworms wriggling inside the belly of a man whose gut was cut to pieces from a gunshot; and about the congealed ball of toffee wrappers blocking the intestines of a young boy Very clever. I could see myself on the podium; and later, the doctors milling around me, eager to listen to more heroics.

I sent in both the papers and waited. Two weeks later came the reply that the papers had been rejected. We have too many submissions, they said, which was a polite way of telling me that mine were inconsequential.

Humbled, I went to the conference, taking the overnight tram to Mathura. I was to stay with Dr Sadashiv, a friend of a friend in Fakirpur and who was originally from the same area. The doctor was slightly built and fortyish, with paan-stained teeth and the pinched look of one who thinks too much. He looked so pensive, I labelled him Dr Sad. He wore terylene bush shirts and scuffed sandals, spoke good English with a Hindi accent and rode a fourth-hand Bajaj that sounded like the rattled breath of an old woman.

Dr Sad's wife was a coarse-tongued rustic and they had four children. I shared a cramped little room with one of his school-going daughters. His clinic was an extension of his house. Outside it, a once-white board screamed in red letters that he was MBBS, FR -- Foreign-Returned. Judging from the number of times he was being called to the clinic on a Sunday evening, I reckoned that Dr Sad had a flourishing practice.

We had a simple dinner of dal, chapatti and egg bhujija. "I love food but keep things simple," said Dr Sad. "This meal hasn't cost more than ten rupees." Sad could get away with serving dinner to a guest and then announcing how cheap it was. Later, over elaichi tea, we talked.

He had started in the '60s as a compounder, worked his way into Patna Medical College and then gone to England for a while. He came back after eight months because they objected to his chewing paan.

It was not an irony that the money he made was inversely proportional to the quality of his work. Sad belonged to that rare breed of doctors who believe that their work should be superior to what they earn. I was nonplussed and slightly annoyed by his simplicity and told him in elaborate detail about the changes in our hospital in Fakirpur, about the monitors and scanners that had made work efficient. He was unimpressed. "Sounds like a too-quick transition from a bullock-cart to a bulldozer," he remarked. "The patients will be paying more but are they getting better health?"

He said -- without arrogance -- that he was a good doctor because he made illness more interesting to the patient. Food had great power over the psyche. "Every prescription of mine comes with a diet," he said. "One spoon of oil a day, no chicken; a glass of beetroot juice in the morning for a week, carrot juice the second week and cucumber the third. Patients are happy that their doctor is so caring." He saw the puzzled look on my face. "It's a carefully thought-out strategy. Have you ever wondered about the money patients have to spend on medicines? We know that the drug companies make huge profits on everything they market. A patient can buy half a kilo of carrot or beetroot or cucumber for the price of a vitamin capsule." He looked intently

at me. "You service the same type of community as me. I'll give you a bit of advice. Don't prescribe more than one or two medicines. But prescribe a diet, always. What does it cost you? it is one way of ensuring that poor people spend their precious money on some decent nourishment."

I listened with mild contempt. He was making too much of a fuss about the food people ate. And what could I do about drug companies making profits? As if that was a doctor's business. Pondering over it later that night, I decided that he was an old-fashioned stick-in-the-mud whom I had to suffer for a couple of days.

Imagine my astonishment when Sad told me that he was to speak at the conference. Could he have written a paper so imposing and scholarly that it pipped mine to eligibility? He was secretive, and would not talk about it.

Mathura had donned a festive look, with banners screaming Welcome. Distinguished delegates arrived, and were put up in posh hotels. The two days were as hectic, mismanaged, chaotic, opulent, superficial and meaningful as any conference I had attended in the past. I listened to lectures and wandered around the drug stalls put up to entice us. I learnt all there was to learn about the harmful effects of cholesterol, fatty acids, sugars, food additives and alcohol, heard that the millions who starved in Africa and Bangladesh were being rescued by foreign aid; then headed for lunch, tea or whatever repast was appropriate for the time of day. I ate paranthas with mughlai chicken, ghee rice with lamb curry and finished with Agra pedas; carrying my cup of coffee I staggered back to the conference hall to listen to the Swedish expert talk about the micronutrients essential to health, and to the Danish dietician advocate a daily dose of twelve vitamin tablets and two cholesterol-lowering capsules.

At tea, I sat in the foyer trying to clear my fogged brain. Delegates zipped about carrying their complimentary travel bags that came filled with high-protein breakfast bars. Stalls displayed slimming tablets, easy-to-eat lunches, low-calorie biscuits, no-calorie biscuits and health drinks. Sad stood a little away near the water cooler pulling at his Charminar. His eyes were busy, thinking. He pointed out to me that the infant food package being sold at one of the stalls was unbeatable value. "For every thirty tins of the infant formula purchased you got two free packets of multipurpose protein powder to give poor patients." A long queue had begun to form at the infant food stall. "It's always nice to help someone while helping yourself" Was he being sarcastic? In any case, I had no interest in infant foods and passed up the opportunity to do charity. I asked if listening to the eminent speakers had put him in a panic. A rare smile scissored his face but he wouldn't tell me about his paper.

The first evening passed pleasantly, with light entertainment, drinks, scrumptious food and a special appearance by a TV celebrity. She made a touching speech about how doctors were the cream of society. Replete with food, I listened.

The second day began with an American surgeon speaking about the treatment of obesity. "Calories are the scourge of society," he said, his trim, sun-tanned body taut with the sincerity of his belief. "Fight calories with the same fervour with which you fight any vice. Teach it to the kids: Calories are evil!" Besides a surfeit of pills to restrain hunger, there was the wiring of jaws to prevent any solid food being eaten; as there were operations that helped melt away fat. His own time-tested method was to cut off a portion of the gut and thus limit the absorption of food. If ten out of the twenty-two feet of intestine were knocked off, the food speeding through the shortened gut would have less contact time with the intestine. It would pass out without absorption of the malevolent calories. No-calorie build-up, no-fat accumulation. Result: you eat and get thin. Among the hundreds of cases he had done, there were a mere eight deaths and one of them was from a non-surgical cause. The lady had fallen off the stretcher while being wheeled to the operating theatre and broken her neck. This surgeon who made calorie-fighting his mission had started a helpline for the obese in the town where he lived. One had simply to call the number to find someone with whom to chat, over cake and coffee.

On the last day after tea were the free papers. I was feeling a bit sorry for Sad by then. He had requested that he be the last speaker. With the grand finale of the closing ceremony and the banquet afterwards, he did not have much chance of being listened to. He had no slides, no photographs, no text to be flashed on the screen. He asked that the main lights be switched on and in their glare he looked ludicrous, standing there on the dais in his ill fitting trousers and bush-shirt.

He had titled his talk 'The Nutritive Value of the Sky'. I shifted uncomfortably in my seat. "I have studied the food habits of people for eighteen years," he began. "In the rural town I come from, people eat chapattis, daal, raw onion and green chilli and chew a raw radish or carrot afterwards. Some families buy a metre-length of sugarcane at the market as a Sunday special. Roasted wheat, groundnuts or cucumber with salt serve as snacks. Tea is drunk once a day in summer, twice in winter. For many of the poor, the staple food is sattu -- a mix of channa daal and a little salt, powdered fine and carried in a twist of cloth or a tin. Mixed with water, it is an excellent meal. Sattu does not spoil and so it is never wasted.

"The mushahars are a rat-eating community in our area. They live on large field rats and eat house mice for festive occasions. I have an excellent recipe for rat fry, if anyone is interested. Whether it is sattu, rat meat or chapattis, the caloric value of their diet is 1500 calories a day, plus or minus 200. They put in eight hours work in the fields on this diet and return home to cope with housework: drawing water from the well, feeding the cows and collecting dung.

"I learnt in medical college that an average healthy diet for a working man is 3000 calories, for a woman 2500. Who are they talking about?

"At dinner last night, it occurred to me that there are three categories of eaters: Those who can afford to choose what they eat; those who have just enough and no choice; and the third, who have nothing. The last group lives on any food that comes their way. They live on pavements and in the slums, make our cities ugly and spread disease. We, who belong to the first group, would like them to disappear. But we're good people, we don't go about killing others. Instead we quietly let them starve while we refine our food habits and expand our choices." Sad paused to catch his breath "Last night a doctor I know well ate and drank enough to please the drug company which hosted the dinner. And then vomited it all out in the garden at the back of this hall. While he was thus lightening himself, a few feet away at the garbage bin where the food we wasted was being dumped, I saw two children and a woman. They picked out half-eaten rotis, chicken bones and crumbs of laddu and stuffed it in a plastic bag. For them too, it was a festive meal.

"I have learnt a great deal about food, from the experts here. I wonder: how do some people -- several millions in fact -- survive on a diet that you or I or my patients would starve on? Is there a nutritive value in the sky that looks down on their labours, in the air they breathe, in the sunlight that falls on them as they work, to supplement their power lunches? May we have a long and mindful discussion about the true meaning of malnourishment and its causes? In college I learnt about first-degree, second-degree and third-degree malnutrition. Seeing those children pick at wasted food last night, I thought instead of first, second and third-degree murder. Who is guilty?"

I sat in my seat in the fifth row drinking in the scene. The Americium surgeon, the Danish dietician, the Swedish micro-nutritionist and our own specialists and super-specialists were seated in the out rows: clones of clones sweating manfully in sober suits, their faces stony, impassive. Here was a doctor with his sorrowful, paan-stained smile and his sandpaper voice slipping in the barbs that none of them could counter. Compared to him, they looked second-rate.

There was silence followed by polite applause. Any questions, asked the expert who had chaired the session. Someone cleared his throat, of embarrassment. No questions. We filed quietly out of the hall to have tea and samosas and then wait for the closing ceremony. Dr Sad stood near the

water cooler, drinking glass after glass of water. He looked crestfallen. "There was no response," he said. "Absolutely none. I thought that at least a few might appreciate what I was trying to say..."

A doctor by profession, [Kaveri Nambisan](#) is also the author of *The Truth (almost) About Bharat*, *The Scent of Pepper*, *Mango-coloured Fish* and *On Wings of Butterflies*.

Other short-listed entries will be available on the site tomorrow and the day after.

KARNATAKA STATE NUTRITION POLICY

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FACT SHEET

NUTRITIONAL STATUS OF CHILDREN IN KARNATAKA

Birth Weight < than 2500 g	Urban 21%
	Rural 14%
Infant feeding	
Exclusive breast feeding :	67%
Timely supplements :	53%
Under nourished infants :	4-9%
Malnourished children(1-5 years)	
Normal :	7.2%
Mild :	45.2%
Moderate :	45.2%
Severe :	2.4%
Vitamin A deficiency in children	
Rural :	0.3%
Urban Slum :	1.1%
Tribal :	0.7%
Endemic Goitre regions	
Chickamagalur :	41%
Kodagu :	23%
Dakshina Kannada :	14%
Uttara Kannada :	11%
Iodized salt	
< than 30 ppm iodine	Rural 76%
	Urban 51%
Anaemia in children	
Mild :	19.6%
Moderate :	43.3%
Severe :	7.6%
Enrolment of Children in ICDS programme	
6 months - 1 year :	312448
1-3 years :	1042681
3-6 years :	1384533
	<i>approx. 27 lakh</i>
Supplementary Nutrition	
0-3 years :	AREF
3-6 years :	AREF - 2 days
	Egg - 1 day
	Indigenous recipes - 4 days
Mid Day Meal	
Current Beneficiaries :	56.21 lakh children
Dropout rate :	Reduced from 32.83 % to 11.8%

NUTRITIONAL STATUS OF MOTHER

CED : 36%

Nutrient Adequacy

	Pregnant (%)	Lactating (%)
Macronutrients	Adequate	66-98
Minerals	47-85	61-68
Vitamins	39-100	19-100

ICDS: Enrolment for supplementary Nutrition

Enrolment	Number
Pregnant and Lactating	486995

Percent prevalence of Anaemia

Anaemia	Women	Pregnant Women	Lactating women
Normal	57.8%	51.3%	54.3%
Mild	26.3%	20.9%	30.7%
Moderate	13.6%	24.9%	12.6%
Severe	2.3%	2.9%	2.4%

Source:

1. NNMB - 2000.
2. NFSH - 2 - 1999.
3. Multiple indicator survey - 2000.
4. Directorate of Health & family welfare.

KARNATAKA STATE NUTRITION POLICY

1. INTRODUCTION

The concept of health is the state of the complete physical, mental and social well being. Good health can be achieved through good nutrition. The nutrition well being of all people is a prerequisite condition for the development of societies and it should be the key objective for the progress of human development.

Malnutrition is a silent emergency but the crisis is real and its persistence has profound and frightening implications on children, society and the future mankind.

Eradicating hunger and malnutrition is within the reach of mankind. Political will, well conceived policies and concerted activities at national and state level can have a dramatic impact on these nutritional problems. The basic goal of protecting and promoting nutritional well being for all will be achieved only through a combination of policies involving various sectors at various levels of responsibility.

2. NEED FOR STATE NUTRITION POLICY

The National Nutrition Policy (NNP) was approved by the government of India in 1993. The Government adopted this policy in recognition of the magnitude of the problem of under nutrition in the country despite the dramatic increase in food production. The need for development of State Nutrition Policy is recognized in view of the diversity and heterogeneity in the causation and magnitude of different nutritional problems of the state as revealed by the nutrition surveys (NNMB, NFHS etc.) in the state.

3. OBJECTIVES

The major objective of the nutrition policy is to identify and reinforce intersectoral approach that leads to sustainable benefits in terms of nutrition health and well being of individuals, community and population.

To achieve this objective, identification of short term, intermediate and long term strategies either through direct policy changes or indirect institutional changes is essential.

The state nutrition policy has the following specific objectives:

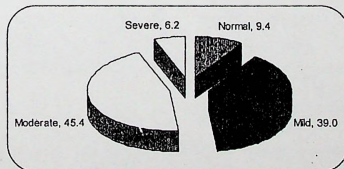
1. Reduction of severe and moderate malnutrition among under five children, especially under two years.
2. Reduction of micronutrient deficiencies i.e., Iron, Iodine and Vitamin A deficiencies.
3. Reduction of maternal malnutrition
4. Reduction of low birth weight babies.

4. CURRENT NUTRITION SITUATION IN KARNATAKA NUTRITION PROFILE

I. Protein Energy malnutrition

Nutritional status is a major determinant of health and well being of children. Inadequate access to food and repeated infections are associated with poor nutritional status among children. NNMB (1996-1997) data indicated that majority of children under five years are malnourished. The children considered normal were only 9.4% however, mild, moderate and severely malnourished includes 39%, 45.4% and 6.2% respectively.

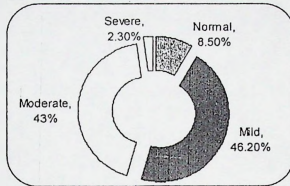
Fig 1: Percentage of children (1-5 years) malnourished according to Gomez classification



Source: Report of Second Repeat Survey rural 1996-1997

NNMB Tribal survey 1998-99 revealed that the prevalence of mild, moderate & severe malnutrition among children under five years of age was 46.2, 43.0 per cent and 2.3 per cent respectively. However, normal children in tribal areas were 8.50%.

Fig 2: Per cent distribution of pre school children (1-5 years) according to Nutritional grade (Boys & Girls pooled)



NNMB report of the tribal survey 1998-1999.

II. Micronutrient Malnutrition

Vitamin A Deficiency

The NNMB reports over the years indicated that Vitamin A deficiency (Bitot's spot) was high in urban slums and comparatively lower in tribal children compared with rural counterparts. However, the trends over the years also showed significant decline in the per cent prevalence of Vitamin A deficiency from 2.31% (1975-1979) to 0.5% (1996) and currently (2002) further reduced to 0.3 per cent in rural areas. Among urban slums and tribal children the reduction were 7.1-1.1% and 1.4-0.7% respectively.

The prevalence was higher among children from urban slums and tribal areas when judged from W.H.O criteria of public Health significant i.e. 0.5%.

Table: 1 Vitamin A deficiency trends in children from rural areas (NNMB report Karnataka)

Year	Per cent prevalence
1975-76	2.3
1988-90	1.1
1996-97	0.5
2002	0.3

Table: 2 Vitamin A deficiency trends in children from urban slums (NNMB report Karnataka)

Year	Per cent prevalence
1975-82	7.1
1993-94	1.1

Table: 3 Vitamin A deficiency in Tribal pre-school children (Karnataka)

Survey	Per cent prevalence
NNMB Tribal Survey 1985 - 1987	1.4
NIN Jenu Kurba Tribal survey 1998	0.7

National survey of blindness report of 1986-1989 shows that prevalence of vitamin A deficiency in rural areas of Karnataka to be lower than all Indian average. The prevalence was also lower when compared to neighbouring states like Andhra Pradesh and Tamilnadu but higher compared to Kerala.

Table: 4 National survey of Blindness 1986-89. Prevalence rate of Vitamin A Deficiency in 0-6 years population

State	Rural Prevalence Rate	Urban Prevalence Rate
Karnataka	1.57	4.9
<u>Other southern states</u>		
Andhra Pradesh	2.78	1.36
Tamilnadu	2.03	10.10
Kerala	0.49	1.45
India (Pooled)	6.54	4.77

Iodine Deficiency

Goitre or the enlargement of the thyroid gland is the most common and visible manifestation of iodine deficiency and Goitre Prevalence Survey, is used as community diagnostic tool for identifying iodine deficiency areas. Surveys conducted in Karnataka state during 1988-1991 revealed that four districts of Karnataka namely, Chikkamagalur, Dakshinakannada, Uttarakannada and Kodagu had prevalence of more than 10% of Goitre thus forming the endemic districts of the state. However, the surveys revealed that none of the districts were free from goitre though not from public health significant point of view.

The prevalence was more among female and in the age group of 12 to 18, warranting implementation of Iodine Deficiency Control Programme by the provision of iodised salt for all.

Table: 5 Per cent prevalence of goitre in different districts in Karnataka 1988-91

Districts	Prevalence
Chikkamagalur	41.11
Kodagu	23.12
Dakshina Kannada	14.18
Uttara Kannada	10.67
Shimoga	6.90
Bidar	5.37
Gulbarga	4.85
Bijapur	4.6
Kolar	2.97
Belgaum	2.53
Tumkur	2.23
Hassan	2.04
Raichur	1.94
Bangalore (rural)	1.79
Bangalore (urban)	1.73
Mysore	1.62
Dharwar	1.57
Mandya	1.20
Bellary	1.00
Chitradurga	0.99
Total	4.91

Goiter re-survey under NIDDCP-2003

Resurvey report conducted in Chickmaglore and Kodagu district indicated the prevalence of goiter to be 25% and 8.67% respectively. However, data indicated decline in the prevalence rate of goiter compared with 1988-91 survey which may be accounted for supply of iodized salt. Since 1990 in these district.

Iodization of Salt

In India, common salt is iodized with potassium iodate to an iodine content level of 30 ppm and to ensure that by the time the salt reaches the retail level it still has at least 15 ppm of iodine.

Table: 6 Per cent prevalence of goiter in Chickmagalore & Kodagu district

District	Prevalence	
	1988-1991	2003
Chickmagalur	41.11	25.0
Kodagu	23.12	8.7

Source: Government Medical college, Mysore

Table: 7 Status of iodine content in salt samples from retailers in Karnataka

Iodine content (PPM)	Per cent	
	Rural	Urban
Nil	21	5
< 15	55	36
15-29	14	7
≥ 30	10	52

Source: AICRP-HSc(F&N), Bangalore Centre, UAS, Bangalore

Iodine content in foods

Iodine deficiency results from geological rather than social and economic condition. The problem is aggravated by environmental factors such as deforestation and soil erosion. Unlike other micronutrients iodine does not occur naturally in specific foods rather it is present in soil and is imbibed through foods grown on that soil. Ideal situation would be to meet the daily needs of iodine from the natural foods grown in iodine rich soils.

Food samples from urban areas were found to contain more iodine than the rural samples. Iodine content of samples from coastal and hilly zone was found to be lower compared with eastern dry zone. Large variation in iodine content was found in samples from different food group.

Table: 8 Mean \pm SD of Iodine Content in food samples ($\mu\text{g}/100\text{g}$) from three Agro Climatic Zones of Karnataka.

Food groups	Urban			Rural		
	Eastern dry	Hilly	Coastal	Eastern dry	Hilly	coastal
Cereal grains	106.6 \pm 15.1	35.2 \pm 15.8	19.4 \pm 6.2	64.9 \pm 20.9	36.7 \pm 7.2	16.0 \pm 1.16
Pulses and Legumes	76.2 \pm 37.2	35.7 \pm 1.3	20.0 \pm 6.1	62.9 \pm 36.8	63.2 \pm 13.5	16.1 \pm 1.2
Leafy vegetables	144.6 \pm 50.1	44.8 \pm 18.3	28.1 \pm 7.3	152.7 \pm 89.2	44.6 \pm 13.8	71.9 \pm 41.2
Roots and Tubers	97.4 \pm 46.3	30.7 \pm 7.2	16.1 \pm 3.1	36.7 \pm 15.9	32.6 \pm 0.0	20.0 \pm 1.5
Other vegetables	100.0 \pm 69.6	33.1 \pm 9.0	16.4 \pm 6.8	93.6 \pm 49.6	38.9 \pm 11.6	22.9 \pm 5.6
Nuts and oil seeds	97.8 \pm 73.0	43.7 \pm 35.5	13.7 \pm 5.3	93.0 \pm 12.0	56.6 \pm 25.2	20.4 \pm 6.8
Condiments and spices	93.4 \pm 51.3	23.8 \pm 2.8	19.9 \pm 8.2	76.6 \pm 52.1	34.1 \pm 8.5	24.0 \pm 2.6
Fruits	68.4 \pm 55.8	25.8 \pm 9.5	13.9 \pm 5.9	45.6 \pm 38.5	33.8 \pm 9.3	21.7 \pm 14.5
Meat and Poultry	41.0 \pm 18.1	34.3 \pm 8.3	46.6 \pm 9.1	108.4 \pm 0.0	61.8 \pm 0.0	48.6 \pm 0.0
Milk	153.0 \pm 39.0	143.3 \pm 81.8	89.8 \pm 18.7	147.5 \pm 16.2	14.3 \pm 6.3	42.0 \pm 17.8

Source: AICRP-HSc(F&N), Bangalore Centre, UAS, Bangalore

Iron deficiency

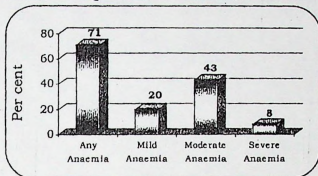
The most common cause of Anaemia is iron deficiency, which is due to inadequate intake of iron in the daily dietary. Anaemia is a serious concern specially for young children because it can affect the overall development of the child and also scholastic achievement.

Studies on prevalence of Anaemia among children in Karnataka.

In Karnataka, haemoglobin levels were tested for children in the age group 6-35 months. On the whole 71 per cent of these children had some level of anaemia including 20% who were mildly anaemic (10.0-10.9 g/dl), 43 per

cent who were moderately anaemic (7.0-9.9 g/dl) and 8 per cent who were severely anaemic (< 7.0 g/dl).

Fig: 3 Anaemia among children: NFHS-2, Karnataka, 1999



Anaemia in relation to background characteristics

NFHS-2 Karnataka, 1999 report indicated that children in the age group 12-23 months and with factors such as normal weaning, children with higher birth order, children living in rural areas and children whose mothers were illiterate are found to be particularly affected with high levels of anaemia. Despite these differentials, anaemia is very wide spread in Karnataka.

Table: 9 Per centage of children classified as having iron-deficiency anaemia by selected background characteristics, Karnataka, 1999.

Back ground characteristics	Mild anaemia	Moderate anaemia	Severe anaemia
Age of child			
6-11 months	23.5	45.0	2.2
12-23 months	20.3	48.0	9.2
24-35 months	16.5	36.8	9.1
Sex of child			
Male	17.5	45.8	9.4
Female	21.9	40.8	5.8
Birth order			
1	16.4	40.8	5.5
2-3	21.8	44.2	8.7
4-5	22.2	40.8	9.3
6+	13.4	60.7	7.7
Residence			
Urban	19.5	41.7	5.1
Rural	19.7	44.1	8.9
Mother's education			
Illiterate	19.2	46.9	11.4
Literate < middle school complete	21.1	40.5	4.0
Middle school complete	17.7	47.7	5.9
High school complete and above	20.3	36.4	2.9

Source: NFSH-II, 1999

According to the study conducted by university of Mysore in urban slums 25-90% of girls were found to suffer from Anaemia. However, the study conducted by Division of Home Science in rural areas of Devanahalli taluk, Bangalore District revealed that 84% of boys and 79% of girls in rural schools suffered from varying levels of anaemia.

III. MATERNAL NUTRITIONAL STATUS

Anthropometric measurements such as height and weight data were used to calculate body mass index (BMI) which is calculated as weight in kilograms divided by the height in metres squared (Kg/m^2). The height of an adult is an outcome of several factors including nutrition during childhood and adolescence. The cut off point for height, below which a women can be identified as nutritionally at risk, varies among populations, but it is usually considered to be in the range of 140-150 centimeters (cm).

NFHS-2 (1999) found a mean height for women in Karnataka to be 152 cm. However, they are one cm taller than the mean height for women.

The BMI for women in Karnataka is 20. Malnutrition in women is measured in terms of chronic energy deficiency (CED). CED is usually indicated by a BMI of less than 18.5. More than 1/3 rd of women in Karnataka have a BMI below 18.5, indicating a high prevalence of chronic energy deficiency. However, 11% of women are with a height less than 145 cms indicating the risk of difficult deliveries and also prone to deliver low birth babies.

Table: 10 Mean height, Per centage with height below 145 cm, BMI and per cent with BMI below 18.5 kg/m² of women, Karnataka 1999.

Age	Height		BMI	
	Mean Height (cm)	Percentage below 145 (cm)	Mean BMI	Percentage with BMI Below 18.5 kg/m ²
15-19	152.1	7.7	19.0	45.6
20-24	151.9	7.4	19.1	48.5
25-29	152.4	9.3	20.0	39.4
30-34	151.9	9.7	20.6	37.6
35-49	151.8	11.3	21.3	33.2

Source: NFHS-II, 1999

According to NNMB report 1998-1999 adult tribal population were found to suffer from chronic energy deficiency (CED). Per centage of women (55.4%) with CED were found to be higher than men(49.3). Judging from weight for height criteria around 43% of women were normal.

Table: 11 Per cent distribution of tribal adult population according to BMI (1998-1999)

Category	BMI grade		
	CED (18.5)	Normal (18.5-25)	Over weight (25-30)
Men	49.3	49.8	0.9
Women	55.4	43.4	1.3

Source: NNMB Report 1998-1999

NNMB report 2001-2002 indicated that 34.5% of males and 31.1% of females from rural areas were normal as judged from BMI. However, lower weight and severe wasting ranged from 19-22 and 5-8% respectively.

Table: 12 Per cent distribution of adults (>18 yrs) from rural areas according to BMI

Category	Males	Females
CED III (16)	5.3	8.3
CED II (16-17)	8.3	10.3
CED I (17-18.5)	22.6	23.1
Low weight (18.5-20)	22.1	19.3
Normal (20-25)	34.5	31.1
Obese (25-30)	6.8	7.0
Obese II (>30)	0.3	0.9

Source: NNMB - 2001-2002

Well nourished mothers gain an average of 10-12 kg of weight during pregnancy and deliver babies whose mean birth weight exceeds 3 kgs. The NFHS-2 (1999) report also indicated that women's height can be used to identify women at risk of having a difficult delivery since, small stature is often related to small pelvic size. The risk of having a baby with a low birth weight is also higher for mothers who are short.

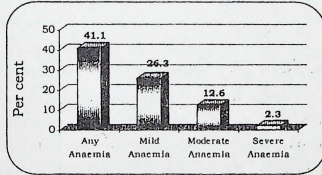
Nutritional status of the infants is closely related to the maternal nutritional status during pregnancy. Maternal nutritional status is the

most decisive factor in preventing low birth weight babies since, birth weight of infants is the most important determinant for child survival, it is necessary to tackle the problem of maternal malnutrition to prevent not only low birth babies and for child survival but also to bring down the maternal mortality perse.

Anaemia in women

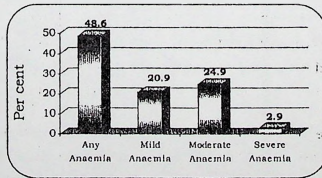
Anaemia being a serious problem in India NFHS-2 measured the haemoglobin levels of women aged 15-49 years and results indicated that 41 per cent of women had some degree of Anaemia. Prevalence was higher for pregnant women and lactating women compared with other women. Iron and folic acid tablets are provided to women in order to prevent anaemia during pregnancy.

Fig 4: Anaemia in women (NFHS - 2, 1999)



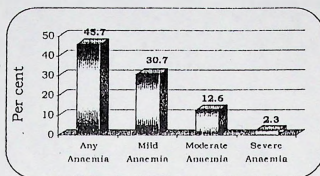
Source: NFHS-II, 1999

Fig 5: Anaemia in pregnant women (NFHS - 2, 1999)



Source: NFHS-II, 1999

Fig 6: Anaemia in Lactating women (NFHS - 2, 1999)



Source: NFHS-II, 1999

Low birth weight babies

Weight at birth is a key indicator of the infant's health and survival capability. Under government of India's child survival and safe motherhood programme, all children are to be weighed at birth and their weight is entered in a birth registration card given to the parent. About 58 per cent urban and 32 per cent rural children below age five years were weighed at birth. Based on documentary entry and recall, 21 per cent from urban and 14 per cent rural are reported to have weighed less than 2500 g at birth. Low birth weight is a major contribution to neonatal mortality, maternal nutrition being the major cause. The other risk factors are age, height and weight of the mother, interval between pregnancies and anaemia etc.

IV. INFANT FEEDING PRACTICES

Infant feeding practices and nutrition have sufficient effects on child survival. Breast feeding improves the nutritional status of young children and reduces mortality and morbidity. Breast milk not only provides the child with important nutrient but also protects the child against infection.

The Baby Friendly Hospitals initiative, launched by the United Nations Children's Fund (UNICEF) recommends initiation of breast feeding immediately after child birth. The World Health Organisation (WHO) and UNICEF recommends that infants should be given only breast milk for the first six months of their life. However, according to NFHS-2 data 67 per

cent of infants in Karnataka are exclusively breast fed which is higher than the national level of 55 per cent.

By age seven months, adequate and appropriate supplementary foods should be added to the infant's diet in order to provide sufficient nutrients for optimal growth. It is recommended that breast feeding should continue, along with complementary foods, through the second year of life or beyond. However, in Karnataka (NFHS-2) the introduction of complementary food was delayed for a substantial proportion of children. Only 38 per cent of breast feeding children age 6-7 months consume solid or mushy foods. This proportion increased to 75 per cent or more at age 16-35 months. Only 40 per cent of breast feeding children age 6-9 months receive solid or mushy food as recommended. However, comparatively better than the level of 35 per cent for India as a whole.

V. DIETARY INTAKE

Nutrients that are obtained through food have vital effects on physical growth and development, maintenance of normal body function, physical activity and health. Nutritious food is, thus needed to sustain life and activity hence, diet must provide all essential nutrients in the required amounts. Requirement of essential nutrients vary with age, gender, physiological status, physical activity and stress. Eating too little food during the vulnerable periods of life and eating too much at any age can lead to harmful consequence. Carbohydrates, fats and proteins are macronutrients needed in large amounts and vitamins and minerals constitute the micronutrients required in small amounts.

Requirements of macronutrients are met to a great extent in the diets of adults and children as per the NNMB-2000 data for rural population. However, nutrients such as iron, vitamin A, B-complex vitamins and folic acid the adequacy compared to RDA is not upto the satisfactory level. The adequacy level of nutrients specially in terms of minerals and vitamins have been very low for children in age group 1-3 years.

Table: 13 RDA and Per cent adequacy of Macronutrients consumed in the diet of rural population (NNMB-2002)

Group	Particulars	Protein (g)		Total fat (g)		Energy (Kcal)	
		RDA	% A	RDA	% A	RDA	% A
Man	Sedentary work	60	100	20	179	2425	97
	Moderate work	60	104	20	147	2875	84
Women	Sedentary work	60	89	20	157	1875	112
	Moderate work	60	92	20	121	2225	96
	Pregnant (Sedentary)	65	92	30	117	2175	105
	Lactating (Sedentary)	68	84	45	66	2275	98
Children	1-3 years	22	84	25	44	1240	59
	4-6 years	30	89	25	62	1690	62
	7-9 years	41	81	25	70	1952	66
Boys	10-12	54	77	22	102	2190	74
Girls		57	70	22	92	1970	79
Boys	13-15	70	69	22	122	2450	79
Girls		65	72	22	108	2060	91
Boys	16-17	78	68	22	135	2640	81
Girls		63	85	22	116	2060	99

Note: RAD - Recommended Dietary Allowances

Source: Nutritive value of Indian foods, ICMR, 2000.

Table: 14 RDA and Per cent adequacy of Minerals consumed in the diet of rural population (NNMB-2002)

Group	Particulars	Calcium (mg)		Iron (mg)	
		RDA	% A	RDA	% A
Man	Sedentary work	400	184	28	63
	Moderate work	400	185	28	66
Women	Sedentary work	400	170	30	52
	Moderate work	400	157	30	56
	Pregnant (Sedentary)	1000	85	38	47
	Lactating (Sedentary)	1000	68	30	61
Children	1-3 years	400	50	12	37
	4-6 years	400	62	18	38
	7-9 years	400	85	26	36
Boys	10-12	600	79	34	35
Girls		600	72	19	62
Boys	13-15	600	109	41	36
Girls		600	88	28	51
Boys	16-17	500	151	50	32
Girls		500	138	30	59

Note: RAD - Recommended Dietary Allowances

Source: Nutritive value of Indian foods, ICMR, 2000.

Table:15 RDA and Per cent adequacy of Vitamins consumed in the diet of rural population (NNMB-2002)

Group	Particulars	Vitamin A (mg)		Thiamine (mg)		Riboflavin (mg)		Niacin (mg)		Vitamin C (mg)		Free folic acid (mg)	
		BD	% A	BD	% A	BD	% A	BD	% A	BD	% A	BD	% A
Man	Sedentary work	600	44	1	125	1	64	16	89	40	72	100	57
	Moderate work	600	28	1	121	2	56	18	84	40	100	100	58
Women	Sedentary work	600	38	1	155	1	73	12	105	40	80	100	50
	Moderate work	600	25	1	136	1	61	14	98	40	88	100	51
	Pregnant (Sedentary)	600	39	1	136	1	69	14	100	40	87	100	55
	Lactating (Sedentary)	950	19	1	133	1	69	15	91	80	44	400	15
Children	1-3 years	400	24	1	67	1	43	8	52	40	27	30	62
	4-6 years	400	30	1	67	1	40	11	59	40	47	40	70
	7-9 years	600	23	1	80	1	42	13	62	40	52	60	55
Boys	10-12	600	27	1	91	1	46	15	66	40	57	70	56
Girls		600	30	1	100	1	72	13	76	40	65	70	57
Boys	13-15	600	32	1	108	1	53	16	66	40	65	100	43
Girls		600	36	1	120	1	58	14	83	40	50	100	45
Boys	16-17	600	27	1	108	2	56	17	70	40	72	100	48
Girls		600	51	1	130	1	75	14	87	40	62	100	47

Note: RAD - Recommended Dietary Allowances
Source: Nutritive value of Indian foods, ICMR, 2000.

CURRENT SITUATION IN NUTRITION RELATED AREAS

1. FOOD SECURITY AND AGRICULTURAL PRODUCTION

In spite of attaining food self-sufficiency malnutrition continues to be a development challenge. Food production increases have not been translated into food and nutrition security. This is partly due to high levels of poverty and the lack of purchasing power among poor households which reduces the access to food and nutrition. Nutrition security is defined as the condition when every person has a diet, nutritionally adequate in quantity and quality and the food consumed is biologically utilized for a healthy living.

Karnataka state has to achieve a food production level of 112.23 lakh tonnes and 115 lakh tonnes in order to provide food security to its present population of 5.22 crores, and projected population of 6.5 crores by 2007-08 respectively. The additional financial resources are made available to improve dry lands, irrigation resources, reclamation of affected lands, and arrangements are made to provide inputs, marketing and other infrastructure facilities. It is proposed to give more emphasis for increasing production of dry land crops like Jowar, Ragi, Bajra and minor millets. It has been suggested to promote the production of nutritionally rich foods like pulses, oil seeds etc, with a view to attain self sufficiently. It is proposed to increase the production level of pulses to 13.23 lakhs tonnes by 2007-08. It is also proposed to increase the production level of oilseeds to 29.78 lakhs tonnes by the end of 2007-08. The department is implementing various thrust programs in order to increase production and productivity of different crops like Rice, Jowar, Ragi, Wheat and other millets. In order to help the farmers to control pests and diseases of agricultural produces during storage, pesticides and equipment like storage bins and rat-traps are supplied at subsidised rates. Adequate extension services are also provided to the farmers.

Table:16 Food production in Karnataka during 2001-2002

Foods	Production
Cereal & Millets	80.15 (lakh tonnes)
Pulses	7.56 (lakh tonnes)
Oil seeds	10.64 (lakh tonnes)
Milk	4784 (Thousand tonnes)
Egg	20273 (lakhs)
Fish	2.49 (lakh metric tonnes)
Meat	97373 (Thousand tonnes)

Source: Estimates of high power committee, Directorate of Agriculture

2. HORTICULTURE PROGRAMMES

Namma Mane - Namma Thota

It is a state sector scheme implemented in all the districts of the state wherein the seedlings of various fruit crops worth of Rs.2000/- are distributed to small and marginal farmers who can grow these fruit plants in their kitchen gardens/backyards

A short term training is offered to house wives every month in processing and preservation of fruits and vegetables and training of 1-5 days is offered to both farmers and rural women folk on processing and preservation of various horticulture produce at district and taluk levels itself.

Social Horticulture

Under the programme community orchards with plants of economic importance will be developed at schools to popularize the economic importance of horticulture plants including their nutritive value among school children. Expansion of this programme is also felt necessary even among rural women folk and rural youth.

Under Nutrition garden scheme, it is envisaged to supply 10 fruit plants worth of Rs.50/- per beneficiary so that the plants are grown in and around the dwelling house, as a kitchen garden.

Food and Civil Supplies

Livelihood access determines the entitlements and affordability. These entitlements can be altered through public action and public programmes. Government policy can increase the entitlements of the people, either by enhancing incomes or subsidising consumption or both. This would improve affordability and food access. PDS is one such programme of the government and effective implementation will have an impact on the outcomes.

Food grains procured and stocked by the food corporation of India is distributed to the respective state government through the ministry of food for distribution through fair price shops. Since, 1987-1988, the PDS has spread to more households. As per the National Council for Applied Economics research survey, conducted in 1994, 75 per cent of the households in Karnataka were using the PDS for some commodity or the other. A variation has been introduced in 1997 by way of targeted PDS in order to remove the element of universality from the system. The ration card holders are partitioned into families below the poverty line and above the poverty line. The price, at which the food grains are to be sold to the families below poverty line, is set at half the economic cost of the operations to the government. Food grains are sold at economic cost to the above poverty line families.

Karnataka state food and civil supplies has 20,372 public distribution systems. The total number of ration cards includes Anthyodaya anna yojana ration card 4,79,700. Green ration cards 56,83,284 and yellow ration cards 2,26,407. To all the card holders certain entitlement such as 28 kg of rice, 7 kg of wheat and 3 kg of sugar is given per month at subsidized rate so that demand in the open market to that extent is reduced.

All these interventions are made with the assumption that the savings accrued to the families and institutions due to the availability of food grains at the subsidized prices, would be used for increasing the consumption of

other items which would increase the nutritive value of the total food that is consumed.

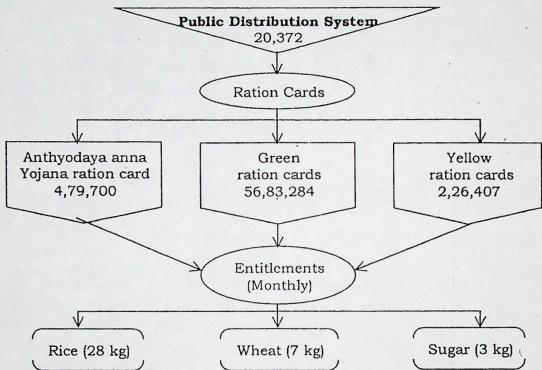


Fig 7

Flow chart indicating different types of ration cards and entitlements.

Health Facilities

The department of Health & Family Welfare Services implements various National and State Health Programmes of Public Health importance and also provides comprehensive health care services to the people of the state through various types of Health and Medical Institutions.

Rural Health Services

In line with the government of India guide lines a three-tier infrastructure namely sub-centres, primary health centres and community health centres are established. One Health sub centre for every 5000 population in plain and for every 3000 population in hilly and tribal areas are established. Currently 8143 sub centres are working.

The primary health centre provides basic health services, which includes curative preventive and promotive health care services. National and State Health Programmes are also being implemented through the primary health centres. For every 30,000 population in plain areas and 2000 population in tribal and hilly areas one primary health centre is established.

At present there are 12,676 primary health centres in the state. In order to provide first referral services, community health centres, are established for one lakh population with minimum of 30 beds providing specialist services and 249 community health centres are established, so far. The district hospitals provide treatment to patients and other major teaching hospitals and specialized hospitals provide specialized services having different specialties to cater to the needs of the patients of the state.

The national programmes mainly RCH programme helps in achieving the designed goals in respect of reduction of IMR, MMR, Low birth weight, babies and birth rate (population control). Control of communicable diseases, like TB, leprosy, diarrhoeal diseases etc, help in promoting the health status of the people.

Safe drinking water

Safe drinking water has been accepted as one of the most important basic services. National norms for the supply of water for domestic purposes aim at providing at least 55 litres per-capita daily to rural habitation to meet minimum requirements. This water has also to be safe for drinking and free from bacterial and chemical contamination.

According to multiple indicator survey-2000 for Karnataka 86% of the rural house holds and 96% of the urban households have an access for improved drinking water facility of which 18 per cent of the rural and 49% of the urban households have drinking water facility within the premises of the household. However, more than 95 per cent have a facility within 500 metres of the household. Households spent a mean time of 16 minutes per trip i.e. 18 in rural and 14 minutes in urban areas to catch water.

5. ON GOING NUTRITION INTERVENTIONS IN KARNATAKA

Direct Interventions

1. ICDS
2. ICDS - Adolescent girls programme
3. Programmes for prevention of micronutrients deficiencies
 - Vitamin A prophylaxis programme against vitamin A deficiency.
 - National Iodine deficiency disorders control programme
 - Prophylaxis against nutritional Anaemia among mothers and children.
4. National Nutrition Mission
5. Akshara dasoha 101 211 327
6. Pradhana Mantri Gramodaya Yojana

Indirect Interventions

1. Food and Nutrition Board.
2. Swarna Jayanthi Shahari Rozgar Yojana.
3. Sampurna Grama Swaraj Rozgar Yojana.
4. Food for work programme.

Direct Intervention

1. Integrated child development services

Integrated child development focuses on essential needs of the children below 6 years, pregnant women and nursing mothers residing in socially and economically backward village and urban areas. ICDS provides supplementary nutrition to children, Pregnant mothers (PM) and Nursing mothers (NM) for 300 days in a year budget being Rs.1.50 per day per child and Rs.3 per day per PM/NM. Children in the age group of 0-3 years exclusively fed with AREF for all the six days in a week however, children from 3-6 years consume AREF for 2 days and egg for 1 day and indigenous recipes (pongal) for the remaining four days. On an average supplementary nutrition programme provides 300-350 calories and 10-15 g protein per beneficiary per day.

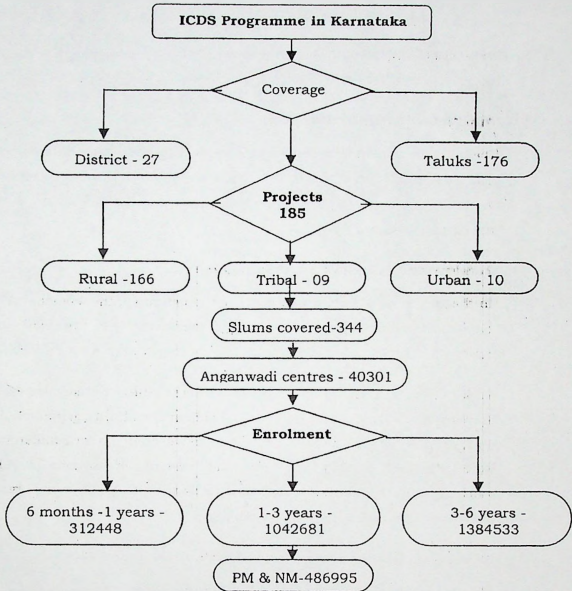


Fig: 8

Growth monitoring

At the Anganwadi centres children below 3 years of age are weighed every month and children between 3-6 years are weighed once in a month. Growth charts help in detecting growth faltering and assessing nutritional status. The Anganwadi worker identifies the severely malnourished children (in grade III & IV) and provides special supplementary food.

Health checkup

Periodical health checkup is being done by the medical officers of the near by primary health centre once in a quarter and whenever necessary.

Nutrition and health education

Basic health and nutrition messages related to child care, infant feeding practices, utilization of health services, family planning and environmental sanitation are given to the women through group discussion, house visits and demonstrations.

2. Adolescent girls scheme in Karnataka

In the context of the objects of the ICDS programme, the women and child have to be looked upon as an integral and composite unit. This gap is represented by the adolescent girls, who bridges the child and the women.

Girls between 11-15 years of age are covered under the scheme wherein they are given training on home management, health, hygiene, child care etc., Girls between 15-18 years of age are covered under Balikamandals where they will be imparted vocational training for six months. All the adolescent girls enrolled under this scheme are given supplementary nutrition worth of Rs.2/- per girl per day.

3. Programmes for prevention of micronutrients deficiencies.

Prophylaxis programme against Vitamin A deficiency

The deficiency of vitamin A can result in the impairment of health, which can manifest in the form of eye lesions, increase susceptibility to infection of respiratory system or intestinal tract.

A mega dose of Vitamin A concentrate is administered orally to the children of 9 months to 3 years. One ml of vitamin A concentrate containing one lakh I.U. is given to the children of 9 months along with measles immunization 2 ml of vitamin A concentrate containing 2 lakh I.U. is given to the children of 1-3 years at six monthly intervals.

As a long term strategy, the community is encouraged to take vitamin A rich foods like green leafy vegetables and carrot and fruits like papaya, mango and also to grow them through kitchen garden to increase the consumption of vitamin A rich foods.

National iodine deficiency disorders control programme

The national iodine deficiency disorders control programme was initiated in order to control severe form of iodine deficiency disorders such as mental retardation, deafness, mutism, cretinism etc.

In accordance with National policy of universal access to iodised salt, state also banned the sale of non-iodised salt in the entire state during August 1995 in order to promote universal consumption of iodised salt.

Under this programme intensive educational activities are under-taken to develop awareness among the community about the consumption of iodised salt in controlling iodine deficiency.

Prophylaxis against Nutritional anaemia among mothers and children

In order to prevent nutritional anaemia among mothers, one tablet of iron and folic acid containing 100 mg elemental iron and 0.5 mg of folic acid is given daily to pregnant women for 100 days while those with anaemia are given two tablets per day.

For children of 1-5 years one tablet containing 20 mg of elemental iron and 0.1 mg of folic acid is given to prevent dietary deficiency. For smaller children who cannot swallow tablets, limited quantity of liquid preparations are also being supplied. The daily dose is 2 ml which is equivalent to one tablet.

4. National Nutrition Mission

The objective of the mission are to reduce macro and micro malnutrition and also the chronic energy deficiency. The project is operating in Gulbarga and Kolar district. In the project undernourished adolescent girls and

pregnant and lactating mothers in the community are weighed four times in a year and their nutritional status monitored. The undernourished women during pregnancy and lactation gets 6 kgs of food grains from PDS shop free of cost for three consecutive months. In addition nutrition education is given to women and girls.

5. Akshara dasoha

The main objective of serving hot cooked mid day meal is to improve enrolment and attendance, to reduce dropout rate and further, to improve the nutritional status of the children.

6. Pradhan Mantri Gramodaya Yojana (PMGY)

PMGY is a new initiative which aims at achieving the objective of sustainable human development at the village level. The yojana specially provide for nutritional supplementary feeding cost to children from 6 months - 3 years of age and to combat malnutrition.

Indirect Intervention

1. Food and Nutrition board

The government of India's Food and Nutrition Board, organizes awareness programmes on healthy nutritional practices, using locally available inexpensive foods. These IEC activities target the vulnerable segments of the community. Training in domestic methods of fruit and vegetable preservation and nutrition education is imparted to housewives, adolescent girls and self help group members. Technical guidance on manufacture of any preserved fruits and vegetable and instant infant food mixes is extended if taken up as income generating schemes.

The activities of the Board are limited to areas around Bangalore and Mangalore city only, where the two units are stationed. Since the educational component plays a very vital role in reducing the extent of malnutrition, there is a need to set up more such units to cover the northern districts.

7. KARNATAKA STATE NUTRITION POLICY

Karnataka state Nutrition policy emphasises the need for reduction of malnutrition of all types including micronutrient malnutrition among children, adolescent girls and women of child bearing age.

Since nutrition is a multi-sectoral issue, it needs to be talked at various levels, both through direct short-term nutrition intervention especially for vulnerable groups, as well as through other long-term policy intervention.

THRUST AREAS IN NUTRITION POLICY

1. Chronic Energy Deficiency among children.
2. Tribal Nutrition.
3. Hidden hunger caused by micronutrient deficiencies.
4. Prioritization of resource according to nutritional problems of the particular geographical area.
5. Maternal and foetal malnutrition.
6. Infant feeding practices: Emphasis on timely supplementary feeding.
7. Enhancing purchasing power through sustainable livelihood for food security.
8. Horticulture intervention to combat micronutrient malnutrition.
9. Effective coverage of Public Distribution System.
10. Better linkages with RCH components.
11. Enrolment of children below 2 years of age to ICDS.
12. Focus on Adolescent girls in all the ongoing programmes.
13. IEC activities: Strengthening of IEC activities in the on going nutrition programmes.
14. Ensuring participation of NGO's in Nutrition programmes.
15. Intersectoral Coordination.
16. Essential periodical monitoring.

Infant's feeding practices (Ahab) (C.B.S.)

8. PLAN OF ACTION

Short term strategies

- The ICDS programme has made an impact in reducing severe forms of malnutrition. However, a major portion of children are suffering from moderate and mild malnutrition. Since, the peak prevalence is at the age of 2 years, it is important that the programme, shifts its emphasis in providing supplementary nutrition to children below 2 years of age.
- The programme of adolescent girls in the ICDS needs to be intensified not only for supplementary feeding but also for development of home based skills, non-formal education particularly nutrition and health education. All adolescent girls of economically poor section should be included in the ICDS in phased manner.
- Emphasis is required to cover all children, adolescent girls and women of child bearing age under ICDS in tribal areas.
- Growth monitoring which is a tool for educating the mothers needs to be intensified.
- Strengthening of IEC activities in ICDS programme through developing educational material with regard to exclusive breast feeding, timely and proper weaning food for supplementary feeding.
- To control and prevent micronutrient malnutrition the existing prophylactic programme for Vitamin A deficiency and anaemia should include all children below 3 years both in urban and rural areas on a continuous basis.
- Monitoring of prophylactic programmes should be given higher priority.
- Continuing of Akshara dasoha programme for improving attendance at school and also to reduce dropout rate. Further, the programmes helps to improve the nutritional status of children in school age.
- Distribution of iodized salt in endemic areas of the state.
- Fortification of salt with iron along with iodine needs to be taken up.
- Providing iron and folic acid tablets in medicine kit distributed to Anganwadi centres.

Long term strategies

To overcome malnutrition an enabling environment will have to be created for household by ensuring food security, access to basic health services and adequate care for women and children.

In the light of economic reforms which have pressurized the poor, the action of the state would be on the following lines.

- Strive for nutrition security rather than just food security.
- Development of nutrient dense foods through research.
- Activities towards empowerment of women should be taken up besides creating employment opportunities.
- Strengthening of women self help groups.
- More emphasis on universal immunization in tribal and remote areas.
- Improved prenatal and post natal care should be made accessible to all women.
- Small family norms and adequate spacing should be encouraged so that the food available in the family will be sufficient for providing adequacy of nutrients to all members
- Assured access to adequate safe drinking water to all habitants.
- Sanitation and hygienic conditions in anganwadi centres should be addressed.
- Horticulture intervention to increase production of horticulture crops to combat micro-nutrient malnutrition.
- Promotion of nutrition gardens at anganwadi centres wherever possible.

9. MODALITIES FOR IMPLEMENTING THE NUTRITION POLICY

The state nutrition policy can be effectively implemented by convergence of service, better coordination of activities by different sectors. For this purpose various sectors be involved and intrasectoral linkage established at various levels i.e. state, district and sub district.

At the state level

The coordination committee headed by chief secretary is already in existence of reviewing the state plan of action for the child in the state. The

same committee should also coordinate and monitor the implementation of state nutrition policy.

A state level task force will be constituted consisting of representatives from government, NGOs, experts from professional bodies and international agencies. The task force will provide technical guidance and managerial support for implementing the state nutrition policy and ensure that the implementation at the district and taluk level is directed the original objectives of the policy. The task force would also suggest measures in programme planning, training, implementation, monitoring and evaluation.

The task force will also be responsible for obtaining a continuous feed back of the implementation at the state level.

At the district level

The nodal agency will be the women and child development department and ensure convergence of available community services from different department like health, education, rural development and ICDS etc., support of NGOs in the field of nutrition would also be encouraged.

At the Sub-District level

At this level the focus will be on the implementation of nutrition related interventions. The front line worker of various departments including Anganwadi workers and NGOs will have to identify the vulnerable and unreached families for the various programmes and enable women as well as other family members to participate in the activities.

10. NATIONAL NUTRITION SURVEILLANCE SYSTEM (NSS)

To achieve HEALTH FOR ALL BY 2000 AD, promotion of nutritional well-being was considered an essential element. The GOI had formulated the National Nutrition Policy (NNP) in 1993 and as a part of its policy the NSS (National Nutrition Surveillance System) has been established to provide early warning about nutrition problems for initiating prompt action and to ensure optimal nutrition to the "at risk" groups. With UNICEF support,

NIN, Hyderabad has been using the ICDS infrastructure to collect information which will be useful in decentralized micro-planning. The essence of the surveillance is triple A cycle of ASSESSMENT, ANALYSIS and ACTION and the training module developed and presently in use has been found to be extremely useful.

Advantages of NSS

- Entire population, especially the vulnerable groups, will be under surveillance.
- It provides information on various process and impact indicators at various levels at quarterly intervals for initiating appropriate action.
- It enables preparation of action plans on nutrition for implementation by the district officials.
- "At risk" groups and areas i.e. children less than 3 years, SC and ST population can be identified.
- It can provide timely warning signals about the impending nutritional problems.
- It will help in better programme management as it helps to identify workers, who are performing poorly.
- Intervention programmers can be evaluated on a continuous basis by assessing the extent of achievement against the goals.
- Growth monitoring at quarterly intervals enables early diagnosis of children with growth faltering and prompt initiation of remedial measures.
- It enables "mapping" of the extent of under nutrition at sector / project / district levels. Such an information will enable demarcation of most nutritionally vulnerable "villages / sectors / projects".
- It will assist in enhancing the interaction between departments concerning maternal and child health and development.
- It confers accountability at all levels and enables better management of limited resources available by diverting them to needy areas.

This programme is under implementation all over Karnataka.

Handwritten notes:
 This is a state level initiative of Karnataka planning to decentralize the ICDS to the village level.

Handwritten notes:
 data from ICDS - MPP monthly programme report

From: Umesh Kapil <kapilumesh@hotmail.com>
Sent: Monday, June 21, 2004 5:01 PM
Subject: National workshop on IDA,VAD and IDD,All India Institute of Medical Sciences,

Dear Colleague,

Nutrition disorders due to deficiencies of Vitamin A, Iron and Iodine are major public health Problems in our country. Faculty members and Research Scientists from Medical and Home Science Colleges, National and State Level institutions have been undertaking research surveys to assess the magnitude of Vitamin A Deficiency Disorders (IDD), Iron Deficiency Anemia (IDA) in the communities to strengthen the various intervention programmes.

In a recent review of research studies undertaken/ published during last 50 years, in the field of Vitamin A, Iron and Iodine deficiency disorders revealed that the indicators utilized for assessment of VAD, IDA and IDD are not uniform and at times scientifically not correct.

In view of above, Department of Human Nutrition, All India Institute of Medical Sciences in collaboration with Indian Public Health Association, Indian Association of Social Medicine, Nutrition Society of India (Delhi Chapter) and Indian Academy of Pediatrics (Nutrition Chapter) is organizing a "National Workshop on Methodologies for Assessment of Vitamin A Deficiency, Iron Deficiency Anemia and Iodine Deficiency Disorders" as per the following schedule:

Date : 13th to 15th September, 2004
Time : 10:00 AM to 5:00 PM
Venue : Jawaharlal Nehru Auditorium, AIIMS, New Delhi

Objectives of the workshop:

1. To update the participants about the current status of Vitamin A Deficiency Disorders (VADD), iron Deficiency Anemia (IDA) and Iodine Deficiency Disorders (IDD) and the national programmes for their prevention and Control.
2. To update the particulars about the WHO global indicators for assessment of VADD, IDA and IDD in a community.

13th to 15th September, 2004

Expected participants of the workshop:

- i) Faculty members, scientists, post graduate students of Medical and Home Science Colleges
- ii) Research Scientists from National and State Level Institutes
- iii) Health Planners, Administrators, Programme Managers from state governments
- iv) Scientists and Nutritionists from International, Bilateral and Voluntary organizations

Expected outcome of the National Workshop:

The participants would be updated about the magnitude of micronutrient deficiency i.e. Vitamin A Deficiency Disorders, Iron Deficiency Anemia and Iodine Deficiency Disorders and strategies for their prevention and control. They will also be updated about recent methodologies for assessment of magnitude of micronutrient by utilizing global indicators recommended by WHO.

It is expected that this national workshop would strengthen the research methodological skills of scientists working in the field of Vitamin A Deficiency Disorders. The Workshop would help the scientists in generating data by utilizing scientifically valid indicators which would facilitate in inter-state and international comparisons about the magnitude of Vitamin A Deficiency Disorders, Iron Deficiency Anemia and Iodine Deficiency Disorders.

On behalf of the Organizing Committee, I invite you to participate in this national workshop.

Looking forward to meeting you,

22/6
☉

6/22/04

Lab-nutrition file
Sh
22/6

6/22/04

Your sincerely,

Umesh Kapil

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Community Health Cell

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Sent: Monday, October 18, 2004 10:03 AM
 Subject: Wonder Candies for Indian poor children and mothers

Dear Colcaguc

The below mentioned letter and Press release is self explanatory.

International Voluntary organisation wants that "Wonder Candies" should be given to our poor children and mothers.

I look forward for comments from you

Prof Umesh Kapil
 AIIMS
 New Delhi

Dr. Luc
 Regional Director,
 Micronutrient Initiative,
 208, Jor Bagh, New Delhi
 India 110003

Dear Dr. Luc,

I read the News item entitled School becomes sweeter with candies published in Times of India,

Delhi Edition dated September 28th on Page No. 11 with great interest (The copy of the article is reproduced below).

MI representative has mentioned in the above News article that the fortified candies developed and distributed by MI are the best and most effective option available for providing micronutrients to children and mothers.

An important issue which need to be answered is , do we have adequate data on effectiveness of these fortified candies, under the public health intervention conditions, to prove that there was a reduction in prevalence of anemia, improvement in growth, reduction in prevalence night blindness amongst women and children. I would be grateful if the published data can be shared so that I can update myself on this issue.

It will be also interesting to know the exact cost of these fortified candies produced. I am sure that while calculating the cost the following aspect would be considered

- i.) Capital cost of the machinery and equipments
- ii) Cost of construction / hiring the infrastructure for placement and use of machinery and equipments
- iii) Cost of raw material used in preparation of candies
- iv) Cost of storage of raw material
- v) Cost of Manpower employed for production
- vi. Cost of training of functionaries
- vii. Cost of distribution of candies
- viii. Cost of monitoring of distribution
- ix. Cost of depreciation of machinery and equipments
- x. Wastage and transmission losses

India is a developing country, where there is a strong need of a judicious utilization of meager resources available for underprivileged the mothers and children.

Looking forward to an early response

With Kind regards

Umesh Kapil

School becomes sweeter with candies

Tuesday, September 28, 2004
New Delhi

The Times of India,

By Shivani Singh/TNN

New Delhi: This toffee has made school going a more appetizing proposition. Packed with essential micronutrients, fortified candies have pushed up the enrolment rate to almost 90% at government-run kindergartens or Aaganwadi centres in certain districts of West Bengal, Bihar, Gujarat and Andhra Pradesh.

This wonder toffee is doing brisk business where the government's much-discussed mid-day meal scheme for primary students, is only dawdling.

It has, however, helped another sarkari scheme, the Integrated Child Development Scheme; pick up momentum in some parts of the country.

Through out by a Canadian NGO, Micronutrient Initiative (MI), which is also funding the project, these fortified candies are being distributed free of cost to young children (3-6 years) and pregnant and lactating mothers under the ICDS.

In West Bengal, where the project started two years back, enrolment has gone up to 90-95%, MI's national programme manager, Saraswati Buiusu, claims.

These candies are being given along with the regular nutritious food under the ICDS. We thought of several products, sandesh and rosogolla, that could be fortified to give supplement nutrition to children and mothers. Hard-boiled centre-filled candies seemed the best and most cost-effective option, Buiusu Added.

There are fortified edible products like cornflakes and atta available in the market. But not within the reach of economically underprivileged. Fortified candies provide iron and vitamin supplements to a large number of children and mothers suffering from anaemia, decreased growth and night blindness, Buiusu said.

About 50% of pregnant women, 65-70% of adolescent girls and children suffer from iron deficiency. Fortified food candies, atta and iodised salt, could be an effective way to fight it, Buiusu caims.

Impressed by its success in West Bengal, the state governments of Andhra Pradesh, Bihar and Gujarat have invited MI to run similar project at their Aaganwadi.

Dr. Umesh Kapil MB, DNB, FAMS, FIPHA, FIAPSM
Professor Public Health Nutrition
Department of Human Nutrition
All India Institute of Medical Sciences,

10/20/2004

Page 4 of 4

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CHC

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Cc: <unaids@unaids.org>; <upadhyam@who.org>; <vinayakan@pciindia.org>;
 <webinfo@rockfound.org>
Sent: Thursday, November 11, 2004 4:36 PM
Attach: Issue - 8.pdf
Subject: CHIN News-8

November 11, 2004

Dear friends,

Festive greetings from the Communication for Health India Network (CHIN) Secretariat, CHETNA!

Realizing the critical need for exchanging information with like minded organizations, CHIN strives to share information, innovative approaches on health and development of the vulnerable groups in India including the partner's efforts. To enable this to happen, the network publishes CHIN News (e-newsletter) thrice in a year focusing on different themes. A total of seven issues have been developed and disseminated so far. We are pleased to share with you the much awaited 8th issue of CHIN News on "Nutrition and Health" particularly child health.

Please share the newsletter with your partners and let us know whether you would like to continue receiving it. In case of no response from your side, your address would be deleted from the mailing list.

We welcome your valuable suggestions on this issue of newsletter.

Happy reading

With warm personal regards,

Ms.Chitra Iyer
 CHIN Coordinator
 For CHIN Secretariat, CHETNA

Attachment: (PDF)

Let's celebrate the birth of a girl child.....

16-Nov-04



Nutrition and Health

Nutrition plays a critical role in the physical, mental and emotional development of human beings. In most parts of the world (particularly in developing countries), inequity, poverty, underdevelopment, unequal distribution and poor access to food and health care leads to severe impoverishment.

Nearly 30% of humanity, especially those in developing countries - infants, children, adolescents, adults and older persons bear this triple burden.

Dr. Gro Harlem Brundtland, Director General at the World Economic Forum 2000

Nutrition and Child health

The nutrition needs vary according to the age group, status and work pattern. Hence it is important that health and development concerns are addressed during each stage of life adopting a comprehensive approach.

India has ratified the UNCRC and the Constitution of India guarantees equal rights to all citizens. However, a large part of the children's population in India is not able to meet its required nutritional needs due to various reasons.

What ails our children?

- Poverty, unequal distribution of resources, lack of food security, continued discrimination in food and health care during the growing period
- Infancy, early childhood and adolescence affect the physical and psychological development during later years of life.
- Poverty leads to inadequate intake of nutritious food, making them more disease prone.
- Inadequate or inappropriate food leads to stunted growth and premature death.
- Nutrient deficient diet provokes health problems; malnutrition increases susceptibility to diseases such as nutritional anaemia.
- Gender discrimination, low literacy rates and lack of awareness affecting the nutritional status of the children especially girls.
- Delay in initiation of breastfeeding, myths related to colostrum feeding, initiation of feeds other than breast milk during the first few hours after birth, bottle-feeding and delay in initiation of complementary foods; and faulty feeding during and after illness.
- Unsatisfactory conditions of hygiene, causing worm infestation, diarrhoea, environmental sanitation and limited coverage of immunization against communicable diseases further aggravates the grave situation.
- Irrational beliefs and prejudices about nourishing foods and ignorance about how to make nutritional use of locally available foods results in intake of inappropriate food.
- Lactation in the existing programmes, policies and poor implementation of the programmes, lack of availability and accessibility to timely quality preventive health care services to mother and children due to which the disease prolongs.
- Continuous stretch of poverty, hunger, illness and inaccessibility can result in death.

All these factors impact on the state of the health of India's children and would continue to impact unless the multiple determinants of health are addressed.

There is an urgent need for holistic and sustainable health interventions, which provide access to quality and affordable health care through well planned, gender sensitive, comprehensive and integrated policies and programmes that provide care for millions of children irrespective of any bias. Let us join hands for ensuring quality health for all children. We invite parents, community, programme planners and policy makers to join us in upholding the rights of the children.

CHIN Secretariat, CHETNA

November 2004

Mission

CHIN aims to increase access to appropriate information and to influence policies and practices for improving the health and well-being of vulnerable groups.

CHIN News wishes its readers a Happy Deepawali (Festival of Lights).

We hope you find this newsletter interesting and meaningful!



Children's right to food & nutrition

As proclaimed by the UN Convention on the Rights of Children (UNCRC 1989), childhood is a protected niche in the social environment, a special time and place in the human life cycle. All children have a right to be adequately nourished to attain and maintain optimum health and development. Children are the worst sufferers of increased commercialization, globalisation, environmental degradation and gender discrimination, the struggle for survival starts even before their birth. If they do survive, most of them are underweight with widespread chronic malnutrition particularly in developing countries.

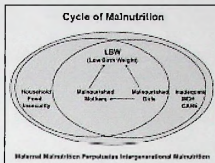
Nutrition rights of children

- Have access to adequate food and nutrition to ensure healthy development from birth onwards.
- The Convention on the Rights of the Child states that it is the right of the children to enjoy the highest attainable standard of health, that governments shall ensure food security and provision of nutritious food, and that parents and children have information about nutrition
- Have the right to survive especially girl child. Exclusive and continued breastfeeding to reduce infant mortality and morbidity.
- Have access to quality and functional health services to address children's health need specifically.
- Increased intensification of child survival programmes, protection from social and physical environment, communicable diseases and diseases like HIV/AIDS.
- Ensuring basic rights to childhood

While child health is an urgent need, in developing countries, it is essentially linked to the health and nutrition of adolescents and women's health. Developing countries like India, Nepal, Bangladesh and Pakistan contribute significantly to global maternal and child deaths. Women and children are the worst sufferers from the ravages of various forms of malnutrition because of their increased nutritional needs. Equitable food distribution both within the community as well as the household and better nutritional awareness are required to alleviate the situation.

Nutrition matters throughout the life of a child

Ensuring adequate nutrition for children (particularly girl child) from early age (0-3 years) and throughout their life will help prevent low birth weight in new born and break the intergenerational cycle of malnutrition.



Main consequences of malnutrition throughout the course of life

Common nutritional disorders	Main consequences
Pregnant and lactating women	
Protein energy malnutrition (PEM), Iodine deficiency disorders (IDD), Vitamin A Deficiency (VAD), Iron deficiency Anaemia (IDA), Folate deficiency	Insufficient weight gain in pregnancy, maternal anaemia, maternal mortality, increased risk of infection, night blindness, low-birth weight/high risk death rate of fetus
Embryo/fetus	
Intrauterine growth retardation IDD Folate deficiency	Low birth weight Brain damage Neural tube defects, Still births
Neonate	
Low birth weight IDD	Growth retardation Development retardation, brain damage and early anaemia
Infant and young child	
PEM IDD VAD IDA	Continuing malnutrition, development retardation Increased risk of infection High risk of death Goitre, Blindness, Anaemia
Adolescent	
PEM, IDD, IDA Folate deficiency Calcium deficiency	Delayed spurt Stunted height Delayed/retarded intellectual development Goitre, Blindness, Anaemia
Adult	
PEM, IDA Obesity Diet related diseases	Thin Lethargy Obesity, Heart disease, Diabetes, Cancer, Hypertension/stroke, anaemia
Older persons	
PEM, IDA Obesity Osteoporosis Diet-related diseases	Obesity Spine, hip fractures, accidents Heart diseases Diabetes, Cancer

Source: Nutrition for Health and Development, WHO

Acronyms

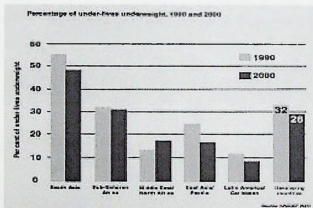
IDA: Iron deficiency anaemia IDD: Iodine deficiency disorders
PEM: Protein energy malnutrition VAD: Vitamin A Deficiency

Nurturing nutritional well-being and health is a life long process, with each phase affecting the next. Hence every concerned citizen should be equipped to take appropriate timely measures for healthy living.

Global Scenario

Malnutrition is associated with about half of all child deaths worldwide. Malnourished children have lowered resistance to infection; they are more likely to die from common childhood ailments like diarrhoeal diseases and respiratory infections; and of those who survive, frequent illness saps their nutritional status, locking them into a vicious cycle of recurring sickness, faltering growth and diminished learning ability.

Under weight prevalence declined from 32 % to 28% in developing countries over the past decade with the most remarkable progress in East Asia and Pacific, but the high levels of under nutrition in children and women in South Asia and Sub-Saharan Africa pose a major challenge for child survival and development.



Any progress could be made only when provision of basic services is combined with support for initiatives that inform and empower communities and families (particularly women) to ensure adequate nutrient intake and prevent infectious diseases.

Nutrition Status in India

India accounts for the largest number of undernourished children in the world. Survival and health of children is influenced by nutrients available not only to them but also to their mothers.

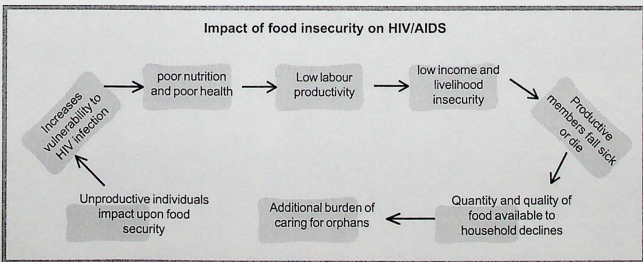
Mr. Pedro Medrano, Country Director, WFP at the Regional Consultation on Mission 2007: Initiatives for Hunger Free India quoted that in spite of having largest surplus of food in the world, largest food protection systems such as Integrated Child Development Services (ICDS), Public Distribution System (PDS), Food for Work, Mid Day Meal (MDM) programme, India still has largest number of malnourished children/people in the world – a major risk limiting the development potential and active learning capacity of India's children.

Every fourth child in India is born with Low Birth Weight and almost every second child below the age of three years is malnourished

Source: UNICEF Mater Plan of Operations 2003-2007

Major nutrition problems of India:

Chronic hunger, Hidden hunger (micronutrient deficiency) resulting in - Protein Energy Malnutrition (PEM), Iron deficiency- Nutritional Anaemia, Iodine deficiency disorder, Vitamin 'A' Deficiency, diseases of poverty, Transient hunger caused due to seasonal dimensions, emergencies such as natural calamities, market distortion, urbanization are some of the problems related to malnutrition in India. Poor care practices of young children; insufficient maternal nutrition, inadequate hygiene, nurturing and psychosocial care, inappropriate infant and young child feeding practices, and home health practices add to the existing food security.



Existing Nutritional Policies/Programmes in India

To deal with the issue of the malnutrition, various efforts are being made by GOs/NGOs. Some of the existing policies/programmes are:

1. National Nutrition Policy, 1993

In view of the crucial role of nutrition in development as well as the complexity of the problem, the Government of India brought in force the National Nutrition Policy which serves as a guideline for administering and monitoring the effectiveness of the existing nutrition programmes.

2. Integrated Child Development Services

The Integrated Child Development Services (ICDS) scheme introduced by the Government of India (GOI) is the largest nutrition programme for children under six years of age, and women who are pregnant and breast-feeding. Launched in 1975, the services provided are supplementary nutrition, immunization, health check-up, referral services, non-formal pre-school education and nutrition and health education. It is an appropriate vehicle to combat micronutrient malnutrition, however the programme presently covers only 50% of children of which children below three years are excluded.

3. Mid Day Meal Programme

Initiated in 1956 by Madras State, the programme was then sponsored by central government from 1962-63 in all states to improve the nutritional status of the school children and to attract children to enroll themselves into school and to encourage regular attendance by providing supplementary nutrition, the programme provides one meal to the children attending the school.

4. Reproductive and Child Health

In order to fulfill commitments made in the International Conference on Population and Development (ICPD), Cairo, 1994, the Government of India launched the Reproductive and Child Health Programme in 1997 which incorporates components of Child Survival and Safe Motherhood and also includes components, related to Reproductive Tract Infections/Sexually Transmitted Diseases, STD/HIV/AIDS, infertility and abortion. Under this Anaemia prophylaxis programme, all pregnant women, lactating mothers are given minimum 100 tablets of Iron Folic Acid and universalisation of Vitamin A to all children of 0-5 years to reduce deficiency of Vitamin A, iron and folic acid and iodine among vulnerable groups

5. Goitre Control Programme

Initiated in the year 1962 to identify goiter endemic regions and to assess the impact of goiter control measures. The availability and production of iodized salt, strengthening of administrative machinery controlling the entry of non-iodized salt in the endemic regions have been recommended as measures to improve the implementation of the programme.

6. Food and Nutrition Board

Reconstituted in 1990, the board advises government, coordinates and reviews the activities in regard to food and nutrition extension/education, development, production and popularization of nutritious foods and beverages, measures required to combat deficiency diseases and conservation and efficient utilization as well as augmentation of food resources by way of food preservation and processing.

Priorities for action

Given the complexity of the problem, the challenge is to generate requisite political will, develop realistic policies and taking concerted action nationally and internationally. Some of the priority actions for policymakers/programme planners/NGOs/parents/family/communities could be:

Policy & Planning

- Countries/States should develop their specific plans of action on Infant and Young Child Feeding targeting most needy states, communities and children.
- Introduction of appropriate incentives, pricing and taxation policies to meet the national nutritional needs of adolescents, women and children
- Introduction of mobile crèches to guarantee the women and child their nutritional and health rights

- Implementation of proper land use policy to prevent diversification of agriculture land for commercial purpose.
- Effective implementation of land reforms measures to reduce the vulnerability of landless labour.
- Expand nutritional intervention net through Integrated Child Development Services (ICDS) to reach out to all children in the 0-6 age group
- Ensure equitable food distribution through expansion of public distribution system - access to the essential food articles
- Involve the Community through their local self governance (Panchayat) or where Panchayat do not exist, through beneficiary committees in the management of nutrition programmes and interventions

Enhancing awareness and mobilizing support (GO/NGOs)

- Create awareness about importance of nutrition and health, balance diet, low cost nutrition, National Nutrition Policy through media (electronic, folk and print) to combat malnutrition especially among girls, adolescent girls and women in the reproductive age group.
- Strengthen the National Literacy Mission to educate and empower women to have greater roles in decision making, particularly those relating to nutrition and feeding practices.
- Sensitize and build capacities of local self governments (panchayat) and establish linkages to ensure convergence of programmes and services for the health and development of community.
- Popularize low cost nutritious food from indigenous and locally available raw material
- Promote kitchen gardens, food preservation, preparation of weaning food processing units through women's self help groups both at home level as well as at the community
- Generation of effective demand at the level of the community for all services relating to nutrition.
- Organize discussions with all stakeholders (teachers, pregnant women, lactating women, husbands, youths, family members, child care workers, health workers and field based functionaries) to influence attitudes and public opinion on nutrition practices.
- Encourage role of male members in the family and community to take care of the nutritional needs of girls, adolescents and women in particular.

Priority areas for Programme Improvement

- Increase the purchasing power of the poor, improve the provision of basic services to the poor and to devise a security system through which the most vulnerable sections of the poor can be protected.
- Fortification of essential foods.
- Integration of Nutrition and Health Education in the school curriculum

Advocacy

- Advocate at all levels to build political commitment for effective implementation of health and development programmes.

Research

- Initiate research into various aspects of nutrition to enable selection of new varieties of food with high nutrition values.

Monitoring and Evaluation

- Establish a mechanism for monitoring and ensure periodic monitoring of the nutritional status of children, adolescent girls and pregnant and lactating mothers below the poverty line - monitoring of various nutritional programmes

Efforts

Global level - Millennium Development Goals

The Millennium Development Goals (MDGs) commit the international community to a comprehensive vision of development - one that places human development as the centrepiece of social and economic progress.

Millennium Development Goals

- Promote gender equality
- Eradicate extreme poverty and thereby reduce child mortality

National level: India as a party to decisions is organizing a series of round table conferences to have a dialogue with experts from government/NGOs and other international organisations to achieve the overall health and development of the nation. One of the major aims is to reduce the under 5 mortality rate by two thirds by 2015.

Local level: Striving for achieving the Millennium Development goals of India, the major highlight during May to August 2004 was organisation of a series of consultations and seminars on strengthening Early Childhood Development (ECD) and Integrated Child Development Services (ICDS) by Government and the Civil Society Organisations to formulate recommendations for holistic development of children. The CHIN partners observed Nutrition Week (September 1-7) by conducting and participating in various activities through their field partners.

National Partners' Meeting on Breastfeeding

Breastfeeding (BF) is the single most effective intervention for reducing childhood mortality, however in India, studies reveal that a meagre 15% women breastfeed within a day of birth and 37% breastfeed at one month of birth and only 55% infants under 4 months are exclusively breastfed.

To reiterate the importance of appropriate infant feeding practices, each year Global Breastfeeding Week is observed all over the world, during the first week of August. This year the theme was "Exclusive Breastfeeding for the first six months: Achieving the Gold Standard - Safe, Sound, Sustainable". In a national partners meet organised by the Ministry of Health and Family Welfare (MoHFW) on August 7, 2004, about 150 representatives from the GO/

NGO, professional bodies and funding agencies participated. The objectives were to launch a national partnership for catalysing countrywide promotion of breastfeeding and mobilize convergent support and actions for improved infant feeding practices ensuring young child's survival, growth and overall development.

Ms. Panabaka Lakshmi, Hon'ble Minister of State in her keynote address reiterated the national commitment of promoting exclusive breastfeeding for the first six months of life. The discussions focused on efforts by GO/NGO, promote BF in Reproductive and Child Health programmes and areas for convergence and commitment of stakeholders. Role of Traditional Birth Attendants (Dai) was highlighted in supporting women in initiating breast-feeding within first hour of life. Participants expressed a need to enhance coordination among ICDS and Health Department at all level.

On behalf of NGO community, CHETNA committed to promote the BF practices and recommend for women and child friendly policies and programmes.

Strengthening Integrated Child Development Services (ICDS)

In response to the need for enhancing community participation and strengthening the existing efforts of Government through ICDS for improving the health and nutritional status of women (pregnant and breastfeeding) and infants, as a resource, CHETNA built capacities of ICDS functionaries and adolescents, through training, teleconferencing and widespread dissemination of education material in Rajasthan, Gujarat and Madhya Pradesh States of India.

"Early Childhood Stimulation programme" - Community's challenge to malnutrition

Child In Need Institute's (CINI) life cycle approach, which targets the critical periods of life stages (pregnancy, 0-2 years & adolescence), currently has 0-2 years as one of its main focus areas. Beyond 2 years, CINI works closely with the system and the children become part of few government programs like Health, Integrated Child Development Services scheme (ICDS) and Education, which would ensure healthy childhood, proper development and education. However, due to several constraints these programmes do not always reach out to the household level and cover all.

Since parental, family & community involvement is pivotal for effective early childhood care & stimulation, CINI's "Early Childhood Stimulation programme", aims to provide the children a better start in their life by focusing on early childhood development and ensuring education for 2-6 year olds through a community-based programme involving adolescents.

Adolescents are involved to create awareness on malnourishment amongst the mothers in the community and in the health service centres learn about effective indigenous methods to deal with it. Mothers are also sensitized on proper nutrition during pregnancy to prevent low birth weight, exclusive breast feeding and early childhood care along with the need for complete and timely immunization. Adolescents who are prospective parents also get empowered with their knowledge about growth, development and nutritional care of the children.

Village Health and Education Committee (VHEC) comprising of members from the stakeholders and the community, play a pivotal role in identifying the adolescents and monitoring the process of developments. They also support the activities of the ICDS.

The programme has been initiated in both rural and the urban belts of West Bengal. In case of CINI ASHA- the urban unit, the last one and a half years' experience has been very encouraging. To ensure sustainability the concept of foster care for children of working mothers in the community is also being considered. It is realized that the concept is possible to translate into action only if all the mothers in the community are properly sensitized on early childhood care and nutrition. When well nurtured and cared for in their earliest years, children are more likely to survive, to grow in a healthy way, to have less disease and fewer illnesses and to fully develop thinking, language, emotional and social skills.

Nutrition-Road to better life

CINI's experiences

I am a mother of a 10-year-old child, Purba. Both my husband and myself are HIV positive. My husband died of HIV/AIDS. Purba is a severely malnourished child. We were referred to the Bandhan HIV/AIDS Unit of CINI by the local self government of our area. Looking at Purba's condition, she was asked to undergo HIV test and unfortunately she was declared HIV positive.

I am very concerned about Purba who had been sick for a couple of years. While initiating the treatment, Purba's weight was measured to be only 16 kg. She was immediately admitted to CINI Nutrition Rehabilitation Centre (NRC), as an urgent need of proper nutritional treatment was also felt along with prompt medical attention.

In NRC, Purba was provided with the right amount and type of food required by her. Being an HIV positive person, I was made aware of the nutritional aspects and received training on nutritional aspects and the effect of malnourishment to enable me to follow the practices at home. Easy to follow methods to prepare simple and low cost foods at home which has high nutritive value was demonstrated. I also participated in a training programme organized by CINI for the caregivers of

people living with HIV/AIDS. We were taught about maintaining proper hygiene along with good nutrition.

Gradually Purba's health improved at NRC as her weight increased to 19 kg within a span of just two weeks. She was discharged from CINI and sent home. But soon she fell seriously ill. At that time she was referred to Medical College and Hospital for further treatment and she got admitted there.

As a child, my Purba lost her childhood. At an age, when she is expected to play around, she has been made to face a hard reality of life. This made her extremely withdrawn. Realising this she was constantly counselled to help her overcome her depression. CINI Team explained me to take proper care of my child as well as manage the acute stress I was facing everyday. While I was fighting not only for the barest sustenance, but on the other hand I was making efforts to survive and make my child survive!

However continuous counseling and nutrition support led to the improvement in our health. Purba has joined her school and is very sincere in attending it regularly. It is difficult for Purba to understand the adversity of the disease, but she sustains the pain with the dreams in her eyes, which she aims to fulfill.

Communicating Health through Radio Programmes

CHETNA collaborated with All India Radio (AIR) to broadcast a series of 13 episodes entitled "Parivar nu Sukh" (Family's Happiness) during April to June 2004 and provided technical input and facilitated the process.

The objectives were to harness the power of radio to air health programmes and to provide a platform to people of all age groups particularly the adolescents to share their experiences and to create awareness about various health issues affecting them. A total of 13 episodes on different issues of adolescent health and development were broadcast.

The experience has been documented and the recorded programme is available at CHETNA in Gujarati language.

RUHSA's Contribution Towards Achievement of Millennium

As a part of its poverty alleviation activities, for the first time, RUHSA studied a sample of 180 individuals. Nearly 75% of the indicators used for measuring the MDGs were met by RUHSA. Download the document from: www.uisanet.unisa.edu.au/aart/Frank/RUHSA%20student1reports.htm

Network News

The CHIN partners presented their efforts in a meeting at Child in Need Institute, Kolkatta during July 26-27, which clearly evidenced a breadth of activities on rights, advocacy, resource development, research and communication work in the area of women's health from conception to old age.

Followed by this, the partners participated in a workshop on "Communicating for Advocacy- A rights based approach" during July 28-30 at Kolkatta, organized jointly by Association for Women with Disabilities, West Bengal, Healthink Worldwide, United Kingdom and Social Assistance & Rehabilitation for the Physically Vulnerable, Bangladesh.

A session on "Cross learning" between Communicating for Advocacy (CFA) partners and CHIN was organized on July 31, 2004. The objective was to provide a forum for exchange between the networks wherein the lead partners contributed in the discussions. CHIN envisages contributing to CFA in building capacities on different health issues, IEC material development, website development, resource exchange and networking.

Resources & Publications on Health and Nutrition

1. Available at CHETNA

- Early Childhood Development- CHETNA's perspective paper
- Breastfeeding-Nature's way
- Manual on Complimentary food
- Camp as an Approach for Parent's Education
- Balmela (Children's fair) and Gram Yatra (Village Rally)
- Reports on Celebration of Nutrition Week
- Health and Nutrition Exhibition
- Anaemia kit

These publications are available for sale.
Contact: Ms.Vibhuti Vaidya, chetna@icenet.net

2. Papers on Nutrition (year 2000 onwards)

- White paper on National strategy to prevent micronutrient malnutrition in women and children through ICDS, 2000
- Women and nutrition: Victims or decision makers, 2000

- Enabling community participation in nutrition initiatives for better health, 2000
- Gender issues in nutrition, 2000
- Forgotten wealth, women's health! - empowering women to meet health and nutritional needs, 2001
- Ensuring health through gender equality, 2001
- Food and Nutrition Security and Empowerment - a concept of CHETNA, 2001
- Building on people's knowledge for better nutrition and health, 2003

3. Resources and Publications available on health and nutrition with other organizations (only the recent ones are listed)

Newsletters

- Breastfeeding and Food Security, BPNI, New Delhi, Email: bpni@bpni.org
- RRC-VHAI Newsletter (Abhilasha) on Priorities in Child Health and Nutrition, VHAI, New Delhi, Email: vhairrc@vhai-rrc.org
- Nutrition News, National Institute of Nutrition, 2003

Reports

- The State of the World's Children 2004, UNICEF
Email: pubdoc@unicef.org
The Role and Rhyme of Public Distribution in India, Food and Civil Supplies

Books

- Children in Globalising India - challenging our conscience, HAQ: Centre for Child Rights, Email: haqrc@vsnl.net
- Flip book on guidelines for nutrition of children below six years
- Set of 5 books on Child Care and Health Education

Contact: UNICEF, ECD - Learning Resource Centre, Department of HDPS, Faculty of Home Science, M.S. University, Vadodara

Websites

Global nutrition data banks - to analyse global and regional malnutrition trends and assess progress towards achieving national and global goals. Website: www.who.org

Recent publications on other issues by CHIN partners and other organisations

- Reports on State level Consultation on Young People: Towards Healthy Future, CHETNA
- Booklet on Adolescent Sexuality in Tamil, RUHSA

- Report of a seminar on HIV/AIDS advocacy, Website: www.hindu.com/2004/07/24/stories/2004072406500300.htm
- Health dialogue (newsletter)
- Issues: 1. Palliative care 2. Domestic Violence
- Health Development CD ROM issue 6, TALC, UK - includes information about CHIN and CHIN News. The CD is available free of charge. Email: info@talcuk.org
- NGO Capacity Analysis - A toolkit for assessing and building capacities for high quality responses to HIV/AIDS, International HIV/AIDS Alliance, Email: publications@aidalliance.org

News you can use

Short course on "Evaluation of Behaviour Change Programme in the context of emerging Reproductive and Sexual Health Issues" during December 13-18, 2004 at Kolkata organised jointly by CINI and London School of Hygiene and Tropical Medicine

For details contact: crc@cinindia.org

An appeal to readers

Would you like to be a Voice for the rights of the Vulnerable Group, then read on ...

The CHIN partners have expertise and varied experience and are willing to support you.

Contact any of the partners for Capacity Building workshops, Ordering and Developing IEC materials, as a Resource or Consultant for any of your projects/ programmes/seminars or Conferences related to development concerns.

Support us to support the vulnerable groups in India

For details contact:

CHETNA

chetna@icenet.net, info@chinindia.org

CINI

crc@cinindia.org

CMAI

varuldas@cmal.org, reena.luke@cmal.org

RUHSA

abel_rajaratnam@hotmail.com

Healthlink Worldwide

curtis.d@healthlink.org.uk

aljube.k@healthlink.org.uk



Compiled by

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Alok Mukhopadhyay

Member

Executive Committee, National Nutrition Mission
National Commission on Macroeconomics & Health
National Commission on Population
National AIDS Control Board
Empowered Action Group

Government of India

NOT-4

B-40, Qutub Institutional Area,
New Delhi-110016

Phone : 26518071-72, 51688152-53

Fax : 26853708 E-mail : vhai@vsnl.com

CE-3

August 30, 2004

Ms. Thelma Narayan
Coordinator
Community Health Cell
367, Srinivasa Nilaya
Jakkasandra 1 Main, 1 Block
Koramangala
BANGALORE - 560 034

Dear Thelma,

National Nutrition Mission

I thank you for your important response to my letter regarding the National Commission on Macroeconomics & Health. We will be using your feedback substantially while preparing the report of the Commission.

Keeping in view the concern of the present Government on the issue of Food Security and Nutrition, a **National Nutrition Mission** has been set up under the Prime Minister with following Terms of Reference:

1. To review and revise the goals set out in the National Nutrition Policy 1993 and the National Plan of Action on Nutrition 1995, keeping in view the present nutrition profile of the country;
2. To review the existing strategies adopted by the various Ministries concerned with nutrition and revise them for achieving the goals set out by the Mission;
3. To put in place effective mechanism for coordinating the efforts of different Ministries concerned with implementation of nutrition programmes to subserve the nutrition goals;
4. To review the systems of data collection and monitoring of the nutrition status across different regions, groups and particularly the vulnerable population of the country;
5. To review research & development and dissemination in the field of nutrition, specially regarding low-cost balanced diet, safe drinking water & sanitation, women & child development and health & family welfare;
6. To address special problems of nutrition during natural calamities; and
7. Any other nutrition related issues arising from time to time.

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Lib. - Nutrition file
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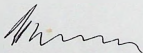
The Mission includes 8 Chief Ministers of States, which have serious Food Security and Nutrition related problems and the Chief Ministers of Tamil Nadu, Punjab and Kerala, who have done reasonably well. The Mission also includes Deputy Chairman (Planning Commission) as well 8 Cabinet Ministers of related Ministries. To ensure that the Mission's work is speeded-up, focused and accomplished in an energetic manner, an Executive Committee of the National Nutrition Mission has also been set up with the following Terms of Reference:

1. To identify nutritionally backward regions and groups in the country requiring special focus on implementation of nutrition programmes;
2. Close monitoring of implementation of the nutrition programmes with particular attention to resource constraints, institutional bottlenecks or any other matter affecting service delivery;
3. Evolve mechanisms for coordination of all the nutrition related programmes both at the policy and implementation levels;
4. Conduct of evaluation and impact studies of the programmes and identify mid-course corrections in strategies and implementation issues; and
5. Any other function vested on it by the Mission.

As a Member of the Executive Committee of the National Nutrition Mission and keeping in view your concern on the issue covered by the Mission, I am requesting you to send me your feedback, experiences and recommendations. If you also have any relevant publication, literature or documents, the Mission will greatly benefit from them. At this stage, you can also suggest any other issue that you might find important for the Mission to consider.

With best wishes,

Sincerely yours,



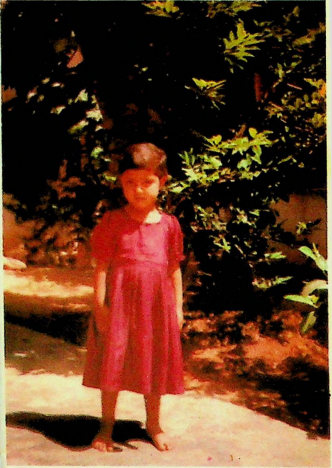
Alok Mukhoapdhyay
Member
Executive Committee, National Nutrition Mission

NUTRITION SNAKES & LADDERS GAME

100 FINISH GOOD HEALTH	99 KEEPS EYES HEALTHY & PREVENTS BLINDNESS	98	97 PROTECTS AGAINST SICKNESS	96	95 NO FOOD GARDEN	94	93 TO MAKE THE BODY HEALTHY AND STRONG	92	91 FRESH FOODS ARE THE BEST FOODS
81 STAY HEALTHY AND GROW WELL	82	83 EATING GREEN LEAFY PANTAW, OR PUMPKIN EVERY DAY	84	85	86	87 EAT GREEN LEAVES FOR STRONG BLOOD	88	89 BUILDS STRONG & HEALTHY BODIES	90
80	79	78 BOTTLE-FED BABIES	77	76 EATING FRUIT AND VEGETABLES	75	74	73 PREVENTS DIARRHOEA AND WORMS	72	71
61	62	63	64	65 MEANS SPENDING MONEY ON FOOD	66	67 EAT A MIXTURE OF GOOD FOODS	68	69	70 EATING FISH MEAT, BEANS & PEANUTS
60	59 CHILDREN WHO EAT 3 MEALS A DAY AND HEALTHY SNACKS	58	57 PLANT FRUIT TREES FOR HEALTHY SNACKS	56	55	54	53 WASHING HANDS BEFORE PREPARING OR EATING FOODS	52 TO MAKE SURE HE IS GROWING WELL	51
41	42	43	44 TO GIVE ENERGY TO WORK AND PLAY	45	46 HAVE HEALTHY FOOD TO EAT	47	48	49	50 SUGAR, SWEETS AND SOFT DRINKS
40 A CHILD WHO DOES NOT HAVE BREAKFAST	39	38 EAT LOCAL STARCHY FOOD CROPS	37	36	35	34	33 CLINIC TAKE BABY TO CLINIC EVERY MONTH	32	31
21	22	23	24	25 GET SICK EASILY	26	27 PLANT A FOOD GARDEN	28	29 KEEPS MOTHER AND BABY HEALTHY	30
20	19 CANNOT DO WELL IN SCHOOL	18	17 BRUSH TEETH EVERY DAY	16	15 ARE HEALTHY BABIES	14	13 GOING TO CLINIC DURING PREGNANCY	12	11
1 START ➔	2	3 BREAST-FED BABIES	4	5	6 GREEN COCONUT IS A HEALTHY DRINK	7	8	9 CAUSE TOOTH DECAY	10

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ಅಯೋಡಿನ್ ಅಂಶದ
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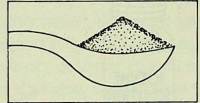
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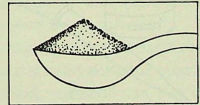
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ಅಯೋಡಿನ್ ಉಪ್ಪು ಎಂದರೇನು ?

ಅಯೋಡಿನ್ ಕೊರತೆಯಿಂದಂಟಾಗುವ ನ್ಯೂನತೆಗಳನ್ನು ತಡೆಗಟ್ಟಲು ಅಯೋಡಿನ್ ಯುಕ್ತ ಉಪ್ಪನ್ನು ಉಪಯೋಗಿಸಲಾಗುತ್ತದೆ. ಇದು ಅತ್ಯಲ್ಪ ಪ್ರಮಾಣದಲ್ಲಿ ಅಯೋಡಿನ್ ಅಂಶವನ್ನು ಹೊಂದಿರುವ ಅಡಿಗೆ ಉಪ್ಪು (ಸಾಮಾನ್ಯ ಉಪ್ಪು) ಇದರ ಬಣ್ಣ, ರುಚಿ, ವಾಸನೆ ಸಾಮಾನ್ಯ ಉಪ್ಪಿನಂತೆಯೇ ಇರುತ್ತದೆ. ಹಾಗೂ ಇದನ್ನು ಸಾಮಾನ್ಯ ಉಪ್ಪಿನಂತೆಯೇ ಉಪಯೋಗಿಸಬೇಕು.



Iodated Salt



Common Salt

ಮನುಷ್ಯನಿಗೆ ಸಾಕಷ್ಟು ಪ್ರಮಾಣದಲ್ಲಿ
ಅಯೋಡಿನ್ ದೊರೆಯದಿದ್ದರೆ
ಏನಾಗುತ್ತದೆ ?

ಅಯೋಡಿನ್ ಕೊರತೆಯಿಂದ ಉಂಟಾಗುವ ಅನೇಕ
ದುಷ್ಪರಿಣಾಮಗಳಲ್ಲಿ ಗಳಗಂಡ ರೋಗವೂ ಒಂದು.
ಇದರ ಪರಿಣಾಮದಿಂದ ಕೆಲವು ಅಲ್ಪ ಪ್ರಮಾಣದ
ಹಾಗೂ ಕೆಲವು ತೀವ್ರ ಗತಿಯ ದೈಹಿಕ ಮತ್ತು
ಮಾನಸಿಕ ವಿಕಲತೆಗಳುಂಟಾಗುತ್ತವೆ.



ನಿಖರವಾಗಿ ಗಳಗಂಡ
ರೋಗವೆಂದರೇನು ?

ಕತ್ತಿನ ಮುಂಭಾಗದಲ್ಲಿರುವ ಥೈರಾಯಿಡ್
ಗ್ರಂಥಿಯ ಊತವೇ ಗಳಗಂಡರೋಗ. ನಮ್ಮ
ದೇಹಕ್ಕೆ ಸಾಕಷ್ಟು ಪ್ರಮಾಣದಲ್ಲಿ ಅಯೋಡಿನ್
ಅಂಶ ದೊರಕದಿದ್ದಲ್ಲಿ ಥೈರಾಯಿಡ್ ಗ್ರಂಥಿಯ
ಗಾತ್ರ ಹೆಚ್ಚುತ್ತದೆ. ಇದು ಪ್ರಾರಂಭದಲ್ಲಿ ಕಣ್ಣಿಗೆ
ಕಾಣಿಸುವುದಿಲ್ಲ. ಇದನ್ನು ತಜ್ಞ ವೈದ್ಯರು ಮಾತ್ರ
ಪರೀಕ್ಷೆ ಮಾಡಿ ತಿಳಿದುಕೊಳ್ಳಬಹುದು. ಗಳಗಂಡ
ರೋಗ ಹೆಚ್ಚಾದಾಗ ಮಾತ್ರ ಎಲ್ಲರಿಗೂ ಕಾಣುತ್ತದೆ.
ಗಳಗಂಡ ರೋಗ ಇರುವವರಿಗೆ ಕಣ್ಣಿಗೆ
ಗೋಚರಿಸದೆ ಇರುವ ಇತರ ಅಯೋಡಿನ್
ಕೊರತೆಯ ನ್ಯೂನತೆಗಳು ಇರಬಹುದು.



ಅಯೋಡಿನ್ ಕೊರತೆಯಿಂದಂಟಾಗುವ ನ್ಯೂನತೆಗಳು ಯಾವುವು ?

ಅಯೋಡಿನ್ ಕೊರತೆಯಿಂದ ಅನೇಕ ನ್ಯೂನತೆಗಳು ಉಂಟಾಗುತ್ತವೆ. ಅವುಗಳಲ್ಲಿ ಗಳಗಂಡ ರೋಗ, ಬುದ್ಧಿಮಾಂದ್ಯತೆ, ಕಿವುಡು, ಮೂಗತನ, ಮಾಲುಗಣ್ಣು, ನಿಂತುಕೊಳ್ಳಲು ಮತ್ತು ನಡೆಯಲು ತೊಂದರೆಯಾಗುವುದು, ಅವಯವಗಳ ಕುಂಠಿತ ಬೆಳವಣಿಗೆ ಇವು ಸೇರಿವೆ. ಅಯೋಡಿನ್ ಕೊರತೆ ಇರುವ ಸ್ತ್ರೀಯರಿಗೆ ಆಗಿಂದಾಗ್ಗೆ ಗರ್ಭಪಾತವಾಗುತ್ತದೆ ಮತ್ತು ಮಕ್ಕಳು ಸತ್ತು ಹುಟ್ಟುತ್ತವೆ. ಇಂತವರಿಗೆ ಅಂಗವಿಕಲತೆ, ಬುದ್ಧಿ ಮಾಂದ್ಯತೆ ಇರುವ ಮಕ್ಕಳು ಹುಟ್ಟುವ ಸಾಧ್ಯತೆ ಇರುತ್ತದೆ. ಕೇವಲ ಅಲ್ಪ ಪ್ರಮಾಣದಲ್ಲಿ ಅಗತ್ಯವಿರುವ ಅಯೋಡಿನ್ನಿನ ಕೊರತೆಯಿಂದ ಇಷ್ಟೆಲ್ಲಾ ದುಷ್ಪರಿಣಾಮಗಳಂಟಾಗುವುವು. ಅವುಗಳಲ್ಲಿ ಗಳಗಂಡ ರೋಗವೇ ಕಡಿಮೆ ಪ್ರಮಾಣದ ದುಷ್ಪರಿಣಾಮ.



ಮಗುವಿನಲ್ಲಿ ಮಾನಸಿಕ ಮತ್ತು ದೈಹಿಕ ವಿಕಲತೆ ಉಂಟಾಗಲು ಕಾರಣವೇನು ?

ತಾಯಿಯ ಗರ್ಭದಲ್ಲಿ ಶಿಶುವಿನ ಮಾನಸಿಕ ಮತ್ತು ದೈಹಿಕ ಬೆಳವಣಿಗೆ ಕ್ರಮಬದ್ಧವಾಗಿ ನಡೆಯ ಬೇಕಾದರೆ ಆ ಶಿಶುವಿಗೆ ಸತತವಾಗಿ ಸಾಕಷ್ಟು ಪ್ರಮಾಣದಲ್ಲಿ ಅಯೋಡಿನ್ ಅಂಶದ ಪೂರೈಕೆ ಅಗತ್ಯ. ಈ ಅಯೋಡಿನ್ ಅಂಶವು ತಾಯಿಯ ದೇಹದಿಂದಲೇ ದೊರೆಯಬೇಕು. ಆದರೆ, ತಾಯಿಗೆ ಅಯೋಡಿನ್ ಅಂಶದ ಕೊರತೆ ಇದ್ದಲ್ಲಿ ಆ ತಾಯಿಯ ಗರ್ಭದಲ್ಲಿರುವ ಶಿಶುವಿಗೂ ಅತ್ಯಾವಶ್ಯಕ ಪೌಷ್ಟಿಕಾಂಶದ ಕೊರತೆಯಂಟಾಗುತ್ತದೆ. ತೀವ್ರ ಅಯೋಡಿನ್ ಅಂಶದ ಕೊರತೆ ಇದ್ದಲ್ಲಿ ಶಿಶುವಿನ ದೈಹಿಕ ಹಾಗೂ ಮಾನಸಿಕ ಬೆಳವಣಿಗೆ ಸಮರ್ಪಕವಾಗಿರದೆ ಆ ಮಗು ತೀವ್ರತರದ ಶಾಶ್ವತ ವಿಕಲತೆಯನ್ನು ಹೊಂದುವುದಲ್ಲದೇ ಮಗು ನಡೆಯಲು ಸಾಧ್ಯವಾಗದೆ ಮಾತನಾಡಲಾಗದ ಯೋಚಿಸುವ ಶಕ್ತಿ ಇಲ್ಲದೆ ನಿಷಪ್ರಯೋಜಕ ವಾಗುತ್ತಾನೆ. ತಾಯಿಗೆ ಅಯೋಡಿನ್ ಕೊರತೆ ಅಲ್ಪ ಪ್ರಮಾಣದಲ್ಲಿದ್ದಲ್ಲಿ ಪ್ರಾರಂಭದಲ್ಲಿ ಮಗುವಿನ ಬೆಳವಣಿಗೆ ಸಹಜವಾಗಿ ಕಂಡುಬಂದರೂ ಮಗು ಬೆಳೆದಂತೆ ಅದರ ಮೆದುಳಿನಲ್ಲಾಗಿರುವ ಹಾನಿಯ ಪರಿಣಾಮ ಕಡಿಮೆ ಮುಟ್ಟಿದ ಶಾಲಾ ಪ್ರಗತಿ ಹಾಗೂ ಅಸಮರ್ಪಕ ದೈನಂದಿನ ಕಾರ್ಯನಿರ್ವಹಣೆ ಇವುಗಳಿಂದ ವ್ಯಕ್ತವಾಗುತ್ತದೆ. ನಮ್ಮ ದೇಶದಲ್ಲಿ ಲಕ್ಷಾಂತರ ಜನ ಈ ರೀತಿಯ ಅಯೋಡಿನ್ ಕೊರತೆಯಿಂದ ನರಳುತ್ತಿರುವುದರಿಂದ, ಆರ್ಥಿಕ ಹಾಗೂ ಸಾಮಾಜಿಕ ಪ್ರಗತಿಯ ಮೇಲೆ ಪರಿಣಾಮ ಬೀರಿದೆ.

ಭಾರತದಲ್ಲಿ ಅಯೋಡಿನ್ ಕೊರತೆ
ಯಿಂದುಂಟಾಗುವ ನ್ಯೂನತೆಗಳು ಯಾವ
ಯಾವ ಪ್ರದೇಶಗಳಲ್ಲಿ ಕಂಡುಬರುತ್ತವೆ ?

ಭಾರತದಲ್ಲಿ ತೀವ್ರ ತೀಯ ಅಯೋಡಿನ್ ಕೊರತೆಯ
ನ್ಯೂನತೆಗಳು ಹಿಮಾಲಯ ಪರ್ವತ ಪ್ರದೇಶದಲ್ಲಿ,
ಜಮ್ಮು ಮತ್ತು ಕಾಶ್ಮೀರದಲ್ಲಿ ಹಾಗೂ ಭಾರತದ
ಈಶಾನ್ಯ ಭಾಗದ 2500 ಚ.ಮಿ. ವಿಸ್ತಾರದಷ್ಟು
ಪ್ರದೇಶದಲ್ಲಿ ಹೆಚ್ಚಾಗಿ ಕಂಡುಬಂದಿವೆ.
ಮಹಾರಾಷ್ಟ್ರ, ಗುಜರಾತ್, ಮಧ್ಯಪ್ರದೇಶ, ಆಂಧ್ರ
ಪ್ರದೇಶ, ಓರಿಸ್ಸಾ, ಕರ್ನಾಟಕ, ಕೇರಳ,
ತಮಿಳುನಾಡು, ಗೋವಾ, ರಾಜಸ್ಥಾನ, ಪಶ್ಚಿಮ
ಬಂಗಾಳ ಮತ್ತು ದೆಹಲಿಗಳಲ್ಲಿಯೂ
ಕಂಡುಬಂದಿದೆ. ಅಷ್ಟೇ ಅಲ್ಲದೆ ಭಾರತದಲ್ಲಿ
ಅಯೋಡಿನ್ ಕೊರತೆಯಲ್ಲದ ರಾಜ್ಯವೇ
ಇಲ್ಲವೆಂದು ತಿಳಿದು ಬಂದಿದ್ದು ದಿನೇ ದಿನೇ ಹೊಸ
ಹೊಸ ಅಯೋಡಿನ್ ಕೊರತೆಯುಳ್ಳ ಪ್ರದೇಶಗಳನ್ನು
ಗುರುತಿಸಲಾಗುತ್ತಿದೆ.

ಪ್ರತಿದಿನ ಅಯೋಡಿನ್ ಯುಕ್ತ ಉಪ್ಪನ್ನು
ಬಳಸುವುದರಿಂದ ಗಳಗಂಡರೋಗ,
ದೈಹಿಕ ಹಾಗೂ ಮಾನಸಿಕ ವಿಕಲತೆ
ಮುಂತಾದ ಅಯೋಡಿನ್ ಕೊರತೆ
ಯಿಂದುಂಟಾಗುವ ನ್ಯೂನತೆಗಳನ್ನು
ಗುಣಪಡಿಸಬಹುದೆ ?

ದೈಹಿಕ ಮತ್ತು ಮಾನಸಿಕ ವಿಕಲತೆ
ಗುಣಪಡಿಸಲಾಗದ ಒಂದು ಶಾಶ್ವತ ನ್ಯೂನತೆ.
ಗುಣಪಡಿಸಬಹುದಾದ ಕೆಲವು ರೀತಿಯ ಗಳಗಂಡ
ರೋಗಗಳನ್ನು ಹೊರತು ಪಡಿಸಿ ಇತರ ಅಯೋಡಿನ್
ಕೊರತೆಯ ನ್ಯೂನತೆಗಳಂತೆ ಈ ನ್ಯೂನತೆಯನ್ನು
ಗುಣಪಡಿಸಲಾಗುವುದಿಲ್ಲ. ಆದರೆ ಇದನ್ನು
ಸುಲಭವಾಗಿ ತಡೆಗಟ್ಟಬಹುದು.
ಅಯೋಡಿನ್ ಯುಕ್ತ ಉಪ್ಪನ್ನು ನಿರಂತರವಾಗಿ
ಬಳಸುವುದರಿಂದ ಅಯೋಡಿನ್ ಕೊರತೆಯ
ದುಷ್ಪರಿಣಾಮಗಳಿಂದ ಇಂದಿನ ಹಾಗೂ ಮುಂದಿನ
ಪೀಳಿಗೆಯನ್ನು ರಕ್ಷಿಸಬಹುದು.

ನಾನು ಸೇವಿಸಬಹುದಾದ ಅಯೋಡಿನ್
ಅಂಶ ಹೇರಳವಾಗಿರುವ ವಿಶೇಷ ಆಹಾರ
ಪದಾರ್ಥಗಳಾವುವು ?

ಸಮುದ್ರದ ಕಳೆ ಬಿಟ್ಟರೆ ಸ್ಯಾಫಿರವಿಕವಾಗಿ
ಹೇರಳವಾಗಿ ಅಯೋಡಿನ್‌ನನ್ನು ಹೊಂದಿದ ಯಾವ
ಪದಾರ್ಥಗಳೂ ಇಲ್ಲ, ಎಲ್ಲಾ ಆಹಾರ
ಪದಾರ್ಥಗಳೂ ಅವು ಬೆಳೆಯುವ ಮುಳ್ಳಿನಿಂದ
ಅಯೋಡಿನ್ ಅಂಶವನ್ನು ಪಡೆಯುತ್ತವೆ.
ಅಯೋಡಿನ್ ಕೊರತೆಯುಳ್ಳ ಮುಳ್ಳಿನಲ್ಲಿ ಬೆಳೆದ
ಆಹಾರ ಪದಾರ್ಥಗಳಲ್ಲಿ ಅಯೋಡಿನ್ ಅಂಶ
ಕಡಿಮೆ ಇರುತ್ತದೆ. ಆದ್ದರಿಂದ ಅಯೋಡಿನ್
ಕೊರತೆಯುಳ್ಳ ಪ್ರದೇಶಗಳಲ್ಲಿ ವಾಸಿಸುವ ಜನರಿಗೆ
ಸತತವಾಗಿ ಅಯೋಡಿನ್ ದೊರೆಯಬೇಕಾದರೆ
ಪ್ರತಿನಿತ್ಯ ಆಹಾರದಲ್ಲಿ ಅಯೋಡಿನ್‌ಯುಕ್ತ
ಉಪ್ಪನ್ನು ಬಳಸುವುದೇಂದೇ ಮಾರ್ಗ.

ಅಯೋಡಿನ್‌ನನ್ನು ಉಪ್ಪಿನಲ್ಲಿ ಏಕೆ
ಸೇರಿಸಲಾಗಿದೆ ? ಅದನ್ನು ಔಷಧಿಯಂತೆ
ಉಪಯೋಗಿಸಬಾರದೇ ?

ಅಯೋಡಿನ್ ಬಗ್ಗೆ ಮುಖ್ಯವಾದ ಅಂಶವೆಂದರೆ
ಇದು ಬಹಳ ಕಡಿಮೆ ಪ್ರಮಾಣದಲ್ಲಿ ಬೇಕಾಗಿದ್ದರೂ
ಪ್ರತಿನಿತ್ಯ ಇದರ ಅವಶ್ಯಕತೆ ಇದೆ. ಇತರ ವಿಟಮಿನ್
(ಜೀವಸತ್ವ) ಮಾತ್ರಗಳನ್ನು ತೆಗೆದುಕೊಳ್ಳುವಂತೆ
ಔಷಧಿಯನ್ನು ತೆಗೆದುಕೊಂಡಂತಿರುತ್ತದೆ. ಪ್ರತಿನಿತ್ಯ
ಸಾಮಾನ್ಯವಾಗಿ ಎಲ್ಲರೂ 10 ರಿಂದ 15 ಗ್ರಾಂ
ಉಪ್ಪನ್ನು ಸೇವಿಸುತ್ತಾರೆ ಮತ್ತು ಈ ಉಪ್ಪಿಗೆ
ಅಯೋಡಿನ್ ಸೇರಿಸಿರುವುದರಿಂದ ನಮಗೆ ಅಗತ್ಯ
ಪ್ರಮಾಣದಲ್ಲಿ ಅಯೋಡಿನ್ ಸಹಜವಾಗಿ
ದೊರೆಯುತ್ತದೆ.

ಅಯೋಡಿನ್ ಕೊರತೆ ಇಲ್ಲದ
ಪ್ರದೇಶದಲ್ಲಿ ನಾನು ವಾಸಿಸುತ್ತಿದ್ದು
ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಬಳಸಿದರೆ
ಅಯೋಡಿನ್ ಅಂಶ ಹೆಚ್ಚಾಗಿ ಅದರಿಂದ
ತೊಂದರೆಯುಂಟಾಗುವುದಿಲ್ಲವೇ ?

ಇದರಿಂದ ಯಾವ ತೊಂದರೆಯೂ ಇಲ್ಲ. ದೇಹದ
ಕಾರ್ಯಗಳು ಸಮರ್ಪಕವಾಗಿ ನಡೆಯಬೇಕಾದರೆ
ಎಲ್ಲರಿಗೂ ಕೆಲವು ಪ್ರಮಾಣದ ಅಯೋಡಿನ್
ಅಗತ್ಯ. ಒಂದು ಪಕ್ಷ ದೇಹದಲ್ಲಿ ಅಗತ್ಯ
ಪ್ರಮಾಣದ ಅಯೋಡಿನ್ ಇದ್ದಲ್ಲಿ ಹೆಚ್ಚಾದ
ಅಯೋಡಿನ್ ಮೂತ್ರದ ಮೂಲಕ ದೇಹದಿಂದ
ವಿಸರ್ಜಿಸಲ್ಪಡುತ್ತದೆ. ಒಂದು ಪಕ್ಷ ದೇಹದಲ್ಲಿ
ಅಯೋಡಿನ್ ಕೊರತೆ ಇದ್ದಲ್ಲಿ ಥೈರಾಯಿಡ್ ಗ್ರಂಥಿ
ಅಗತ್ಯ ಪ್ರಮಾಣದ ಅಯೋಡಿನ್ ಅಂಶವನ್ನು
ಉಪಯೋಗಿಸಿಕೊಂಡು ಹೆಚ್ಚಾದ ಅಯೋಡಿನ್
ಅಂಶವನ್ನು ನಿರಾಕರಿಸುತ್ತದೆ. ಆದ್ದರಿಂದ ಎಲ್ಲರಿಗೂ
ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪು ಸುರಕ್ಷಿತ. ಅಯೋಡಿನ್
ಒಂದು ಅಗತ್ಯ ಪೌಷ್ಟಿಕಾಂಶವೇ ಹೊರತು
ಔಷಧಿಯಲ್ಲವೆಂಬುದು ಜ್ಞಾಪಕದಲ್ಲಿಡಬೇಕಾದ
ಅಂಶ.

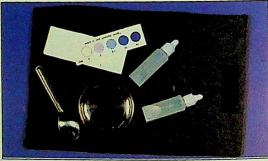
ಗರ್ಭಿಣಿಯರು, ಚಿಕ್ಕಮಕ್ಕಳು,
ರೋಗಿಗಳು ಅಯೋಡಿನ್‌ಯುಕ್ತ
ಉಪ್ಪನ್ನು ಉಪಯೋಗಿಸಬಹುದೇ ? ಇದು
ಸಾಮಾನ್ಯ ಅಡಿಗೆ ಉಪ್ಪಿನಂತಿದೆಯೋ,
ಹೇಗೆ ?

ಹೌದು ಚಿಕ್ಕವರು, ದೊಡ್ಡವರು, ರೋಗಿಗಳು
ಮತ್ತು ಆರೋಗ್ಯವಂತರಲ್ಲರಿಗೂ ಪ್ರತಿ ದಿನ
ಅಯೋಡಿನ್ ಅಗತ್ಯವಾಗಿ ಬೇಕು. ಗರ್ಭಿಣಿಯರಿಗೆ
ಮತ್ತು ಚಿಕ್ಕಮಕ್ಕಳಿಗೆ ಎಲ್ಲರಿಗಿಂತಲೂ ಅತಿ ಮುಖ್ಯ
ವಾಗಿ ಬೇಕು. ಆದ್ದರಿಂದ ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪು
ಸುರಕ್ಷಿತವಷ್ಟೆ ಅಲ್ಲ. ಇದನ್ನು ಅಗತ್ಯವಾಗಿ
ಪ್ರತಿನಿತ್ಯವೂ ಉಪಯೋಗಿಸಬೇಕು.



ಉಷ್ಣದಲ್ಲಿ ಅಯೋಡಿನ್ ಅಂಶ ಇರುವ
ಬಗ್ಗೆ ನಾನು ತಿಳಿದುಕೊಳ್ಳುವುದು ಹೇಗೆ ?

ಕಡಿಮೆ ಬೆಲೆಗೆ ಅಯೋಡಿನ್ ಅಂಶವನ್ನು
ಪರೀಕ್ಷಿಸುವ ಪಟ್ಟಿಗೆ ದೊರೆಯುತ್ತದೆ. ಇದರ
ಸಹಾಯದಿಂದ ಸ್ಥಳದಲ್ಲಿಯೇ ಉಷ್ಣದಲ್ಲಿರುವ
ಅಯೋಡಿನ್ ಪ್ರಮಾಣವನ್ನು ತಿಳಿಯಬಹುದು.



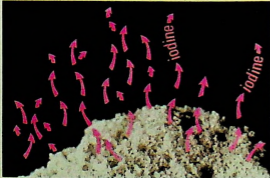
ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಪಶುಗಳ
ಆಹಾರದಲ್ಲಿ ಸೇರಿಸಬಹುದೆ ?

ಹೌದು. ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಪಶುಗಳಿಗೆ
ಕೊಡುವುದರಿಂದ ಅವು ಆರೋಗ್ಯವಾಗಿರುತ್ತವಲ್ಲದೆ
ಅವುಗಳಿಗೆ ಗರ್ಭಪಾತವಾಗುವುದು, ಕರುಗಳು ಸತ್ತು
ಹುಟ್ಟುವುದು ಕಡಿಮೆಯಾಗುತ್ತದೆ. ಅಲ್ಲದೆ
ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಸೇವಿಸಿದ ಪಶುಗಳ
ಹಾಲಿನಲ್ಲಿ ಅಯೋಡಿನ್ ಅಂಶ ಹೆಚ್ಚಾಗಿರುತ್ತದೆ.



ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು
ಸಾಮಾನ್ಯ ಉಪ್ಪಿನಂತೆಯೇ
ಶೇಖರಿಸಬಹುದೇ ?

ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಶೇಖರಿಸಿಡಬೇಕಾದರೆ
ಕೆಲವು ಮುಂಜಾಗ್ರತಾ ಕ್ರಮವನ್ನನುಸರಿಸಬೇಕು.
ಏಕೆಂದರೆ ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಬಿಸಿಲಿಗೆ
ಅಥವಾ ಗಾಳಿಗೆ ಬಹಳಕಾಲ ತೆರೆದಿಟ್ಟರೆ
ಅದರಲ್ಲಿರುವ ಅಯೋಡಿನ್ ಅಂಶವು ಆವಿಯಾಗಿ
ಹೋಗುತ್ತದೆ. ಆದ್ದರಿಂದ ಅದನ್ನು ಪ್ಲಾಸ್ಟಿಕ್,
ಗಾಜು,-ಪಿಂಗಾಣಿ ಅಥವಾ ಮರದ ಡಬ್ಬಿಯಲ್ಲಿ
ಹಾಕಿ ಬಿಗಿಯಾಗಿ ಮುಚ್ಚಿ ಇಡಬೇಕು.
ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಆದಷ್ಟು ಬೇಗ
ಉಪಯೋಗಿಸುವುದು ಒಳ್ಳೆಯದು.



ಸ್ಥಳೀಯ ಮಾರುಕಟ್ಟೆಯಲ್ಲಿ
ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪು
ದೊರೆಯದಿದ್ದರೆ ನಾನು ಏನು
ಮಾಡಬೇಕು ?

ಭಾರತ ಸರ್ಕಾರವು ದೇಶಾದ್ಯಂತ ಅಯೋಡಿನ್
ಯುಕ್ತ ಉಪ್ಪು ದೊರೆಯುವ ವ್ಯವಸ್ಥೆ ಮಾಡಿದೆ. ಅದು
ಸ್ಥಳೀಯ ಮಾರುಕಟ್ಟೆಯಲ್ಲಿ ದೊರೆಯದಿದ್ದಲ್ಲಿ,
ರಾಜ್ಯದ ಅಥವಾ ಕೇಂದ್ರಾಡಳಿತ ಪ್ರದೇಶದ ಆಹಾರ
ಮತ್ತು ನಾಗರಿಕ ಸರಬರಾಜು ಇಲಾಖೆಗೆ ಇಲ್ಲವೇ
ಹತ್ತಿರದ ಉಪ್ಪಿನ ಉಪ ಆಯುಕ್ತರಿಗೆ ಅಥವಾ
ಕೇಂದ್ರ ಸರ್ಕಾರದ ಆರೋಗ್ಯ ಮಂತ್ರಾಲಯ
ಇವರಿಗೆ ಪತ್ರ ಬರೆಯಬಹುದು. ವಿಳಾಸವು ಈ
ಪುಸ್ತಕದ ಕೊನೆಯಲ್ಲಿದೆ.

ನಾನು ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಎಷ್ಟು ಅವಧಿಯವರೆಗೆ ಉಪಯೋಗಿಸ ಬೇಕು ?

ನೀವು ಅಯೋಡಿನ್ ಕೊರತೆ ಇರುವ ಪ್ರದೇಶದಲ್ಲಿ ವಾಸಿಸುತ್ತಿದ್ದರೆ ಆ ಪ್ರದೇಶದಲ್ಲಿನ ಮಣ್ಣಿನಲ್ಲಿ ಅಯೋಡಿನ್ ಅಂಶದ ಕೊರತೆಯು ಸರಿಹೋಗುವ ಸಂಭವ ಬಹಳ ವಿರಳ. ಕಾರಣವೇನೆಂದರೆ, ಆಗಿಂದಾಗ್ಗೆ ಉಂಟಾಗುವ ಪ್ರವಾಹ ಚಂಡಮಾರುತ ಮುಂತಾದ ಪ್ರಕೃತಿ ವಿಕೋಪಗಳಿಂದ ಮೇಲ್ಮೈ ಮಣ್ಣಿನಲ್ಲಿರುವ ಅಯೋಡಿನ್ ಅಂಶವು ಕೊಚ್ಚಿ ಹೋಗಿ ದಿನೇ ದಿನೇ ಮಣ್ಣಿನಲ್ಲಿರುವ ಅಯೋಡಿನ್ ಅಂಶವು ಕಡಿಮೆಯಾಗುತ್ತಾ ಹೋಗುತ್ತದೆ. ಹೀಗೆ ವಾತಾವರಣದಲ್ಲಿ ಅಯೋಡಿನ್ ಅಂಶವು ಕ್ಷೀಣಿಸುತ್ತಾ ಹೋಗುವುದರಿಂದ ಪ್ರತಿ ದಿನದ ಆಹಾರದಲ್ಲಿ ಅಯೋಡಿನ್ ಅಂಶವನ್ನು ಪೂರಕವಾಗಿ ಸೇರಿಸುವುದು ಅನಿವಾರ್ಯ.

ಅಮೆರಿಕಾ ಮತ್ತು ಯೂರೋಪ್ ದೇಶಗಳಲ್ಲಿ 1920ರಿಂದಲೂ ಸತತವಾಗಿ ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಬಳಸುತ್ತಿದ್ದಾರೆ.

ಲಕ್ಷಾಂತರ ಜನಸಮೂಹದ ದೈಹಿಕ ಹಾಗೂ ಮಾನಸಿಕ ಆರೋಗ್ಯದ ಮೇಲೆ ದುಷ್ಪರಿಣಾಮ ಬೀರುವ ಅಯೋಡಿನ್ ಅಂಶದ ಕೊರತೆಗೆ ಉತ್ತರ ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಉಪಯೋಗಿಸುವುದು. ಇದು ಸುರಕ್ಷಿತ ಹಾಗೂ

ಸುಲಭ.

ನಿಮ್ಮನ್ನು ನಿಮ್ಮ ಮಕ್ಕಳನ್ನು ಹಾಗೂ ಅವರ ಮಕ್ಕಳನ್ನು ಸಂಪೂರ್ಣವಾಗಿ ತಡೆಗಟ್ಟಬಹುದಾದ ಅಯೋಡಿನ್ ಕೊರತೆಯಿಂದಂಟಾಗುವ ದುಷ್ಪರಿಣಾಮಗಳಿಂದ ರಕ್ಷಣೆ ಪಡೆಯಬೇಕಾದರೆ ಪ್ರತಿದಿನ ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಬಳಸುವುದೊಂದೇ ಉತ್ತಮ ಮಾರ್ಗ.

ನಿಮ್ಮ ಅಲ್ಪವೆಚ್ಚ ನಿಮ್ಮ ಮಕ್ಕಳು ದಕ್ಷ ಹಾಗೂ ಆರೋಗ್ಯದಿಂದಿರುವ ಸಹಾಯ ಮಾಡುತ್ತದೆ. ಅಯೋಡಿನ್ ಕೊರತೆಯಿಂದಂಟಾಗುವ ಸಂಪೂರ್ಣವಾಗಿ ತಡೆಗಟ್ಟಬಹುದಾದ ದುಷ್ಪರಿಣಾಮಗಳಿಂದ ನಿಮ್ಮನ್ನು ಮತ್ತು ನಿಮ್ಮ ಮಕ್ಕಳನ್ನು ರಕ್ಷಿಸುವ ಮಾರ್ಗವೆಂದರೆ ಪ್ರತಿದಿನ ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಬಳಸುವುದು.

ಸಾಲ್ಟ್ ಕಮಿಷನರ್

ಭಾರತ ಸರ್ಕಾರ

17, ಶಿವಾಜಿ ಮಾರ್ಗ, ಸವಾಯಿ ರಾಮಸಿಂಗ್ ರಸ್ತೆ
ಜಯಪುರ್-302 004 ರಾಜಸ್ಥಾನ

ಡಿಪ್ಯೂಟಿ ಸಾಲ್ಟ್ ಕಮಿಷನರ್

11ನೇ ಬ್ಲಾಕ್, 11ನೇ ಮಹಡಿ, ಶಾಸ್ತ್ರಿ ಭವನ್
ಪೋಸ್ಟ್ ಡಬ್ಬು ನಂ. 706, ಮದರಾಸು-600 006
ತಮಿಳುನಾಡು

ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಬಳಸಿ



ದೈಹಿಕ ಮತ್ತು ಮಾನಸಿಕ ವಿಕಲತೆ ತಪ್ಪಿಸಿ

ಪ್ರಕಟಣೆ :

ಐ.ಡಿ.ಡಿ. ಶಾಖೆ.

ಜೈವಿಕ ಆಹಾರ ವಿಭಾಗ

ಆರೋಗ್ಯ ಮತ್ತು ಕುಟುಂಬ ಕಲ್ಯಾಣ ನಿರ್ದೇಶನಾಲಯ
ಬೆಂಗಳೂರು - ೫೬೦ ೦೦೯.

- ಅಯೋಡಿನ್ ನಮ್ಮ ದೇಹಕ್ಕೆ ಬೇಕಾದ ಒಂದು ಸೂಕ್ಷ್ಮ ಪೋಷಕಾಂಶ.
- ಆಹಾರದಲ್ಲಿ ಅಯೋಡಿನ್ ಅಂಶ ಕಡಿಮೆಯಾದಲ್ಲಿ ಅನೇಕ ದುಷ್ಪರಿಣಾಮಗಳುಂಟಾಗುತ್ತವೆ.

ಅವುಗಳೆಂದರೆ :

೧. ಮಕ್ಕಳಲ್ಲಿ :

- ಅ) ಬುದ್ಧಿಮಟ್ಟ ಕಡಿಮೆ ಮತ್ತು ಕಲಿಕೆಯಲ್ಲಿ ಹಿಂದುಳಿಯುವಿಕೆ.
- ಆ) ಶಕ್ತಿಯ ನಷ್ಟ
- ಇ) ದೈಹಿಕ ಹಾಗೂ ಮಾನಸಿಕ ವಿಕಲತೆ
- ಈ) ಬುದ್ಧಿ ಮಾಂದ್ಯತೆ
- ಉ) ಕಿವುಡು ಹಾಗೂ ಮೂಕತನ
- ಊ) ಮೆಳ್ಳೆಗಣ್ಣು, ಸ್ನಾಯುಗಳ ಮರಗಟ್ಟುವಿಕೆ
- ಋ) ಕುಬ್ಜತನ ನಡಿಗೆಯ ತೋಷ ದೋಷಗಳು
- ೠ) ಗಳಗಂಡ ರೋಗ

೨) ಗರ್ಭಿಣಿಯರಲ್ಲಿ

- ಮೈಯಿಳಿತ ಮತ್ತು ಸತ್ತು ಹುಟ್ಟುವ ಮಕ್ಕಳ ಸಂಖ್ಯೆಯಲ್ಲಿ ಹೆಚ್ಚಳ ಮುಂತಾದ ಸಂತಾನೋತ್ಪತ್ತಿಯ ತೊಂದರೆಗಳು.
- ಶಿಶುವಿನ ಮಿದುಳಿನ ಮೇಲೆ ಸರಿಪಡಿಸಾಗದಂತಹ ತಡೆಗಟ್ಟ ಬಹುದಾದ ಈ ರೀತಿಯ ಮಿದುಳಿನ ತೊಂದರೆ ಮತ್ತು ಮಾನಸಿಕ ವಿಕಲತೆಗೆ ಅಯೋಡಿನ್ ಅಂಶದ ಕೊರತೆಯೇ ಕಾರಣ.

೩) ವಯಸ್ಕರಲ್ಲಿ

- ನಿಶ್ಯಕ್ತಿ ಮತ್ತು ದೈನಂದಿನ ಕಾರ್ಯ ನಿರ್ವಹಣೆಯಲ್ಲಿ ವೈಫಲ್ಯತೆ.
- ಗಳಗಂಡ ರೋಗ

೪) ಪ್ರಾಣಿಗಳಲ್ಲಿ :

- ಹಾಲು, ಮೊಟ್ಟೆ, ಮಾಂಸ ಮತ್ತು ಉಣ್ಣೆಯ ಉತ್ಪತ್ತಿಯಲ್ಲಿ ಇಳಿತ
- ಸಂತಾನೋತ್ಪತ್ತಿಯ ವಿಫಲ
- ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ದಿನನಿತ್ಯವೂ ಆಹಾರದಲ್ಲಿ ಉಪಯೋಗಿಸುವುದರಿಂದ ಅಯೋಡಿನ್ ಕೊರತೆಯಿಂದ ಉಂಟಾಗುವ ಈ ದುಷ್ಪರಿಣಾಮಗಳನ್ನು ತಡೆಗಟ್ಟಬಹುದು.
- ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪಿನ ಸೇವನೆ ಸುರಕ್ಷಿತ.
- ಸಾಮಾನ್ಯವಾಗಿ ಒಬ್ಬರಿಗೆ ಒಂದು ದಿನಕ್ಕೆ ೧೫೦ ಮೈಕ್ರೋಗ್ರಾಂನಷ್ಟು ಮಾತ್ರ ಅಯೋಡಿನ್ ಬೇಕು. ದಿನನಿತ್ಯವೂ ಅಯೋಡಿನ್‌ಯುಕ್ತ ಉಪ್ಪನ್ನು ಬಳಸುವುದರಿಂದ ಈ ಅಗತ್ಯ ಪ್ರಮಾಣ ದೊರೆಯುತ್ತದೆ.

'ಅಯೋಡಿನ'ಯುಕ್ತ

ಉಪ್ಪನ್ನು

ಬಳಸಿರಿ ಸಂಪೂರ್ಣವಾಗಿ

ತಡೆಗಟ್ಟಬಹುದಾದ

ಅಯೋಡಿನ

ಕೊರತೆಯ

ದುಷ್ಪರಿಣಾಮಗಳಿಂದ

ರಕ್ಷಣೆ ಪಡೆಯಿರಿ

Sources:-

Natural foods are poor sources of vitamin D. Small amount is present in egg yolk, liver, and fish egherring, sardine, tuna and salmon fish liver oils, cold liver and halibut oil also contain vitamin D. Sunlight cannot always be depended upon to supply the body with adequate U.V.R. for synthesis of vitamin D. Because, these rays are easily strained out by dust, fog, smoke, clothing and ordinary window glass. Fortification of milk i.e. 400 I.U./quart of milk could be an ideal solution because milk is consumed by growing children and because it contains calcium and phosphorus whose utilization it favours.

Deficiency:- Occurs when there is prolonged insufficient intake of vitamin D or in dark, overcrowded section of cities where sunshine cannot penetrate through fog, smoke, and soot. Dark skinned individuals are more susceptible than those with white skin.

Manifestations are:- 1. Rickets, 2. Tetany, 3. Dental caries, 4. Osteomalacia.

Rickets:- Deficiency of vitamin D, ^{due} to inadequate absorption of calcium ^{and} phosphorus from the intestine. Thereby faulty mineralization of bone and tooth structures results. Thus, the inability of soft bone to withstand stress of weight leads to skeletal malformation.

A fully developed ~~case~~ of ricket shows:-

1. Delayed closure of fontanelles softening of skull, i.e., cranobabes bossing of the forehead hotcross bun.
2. Soft fragile bones which are widened at ends of long bones. Bowing of legs and enlargement of costochondral junction results in rows of knobs resembling beads:- called ^{Rickety} Rectific rosary. Projection of the sternum produces pigeon breast. There is also depression of ribs and narrowing of pelvis apart from kyphosis.
3. Enlargement at wrists, ankles and knees may be manifested as knock knees.
4. POORLY developed muscles and lack of muscle tone produces. (pot belly formation), There is also delayed walking.
5. Restlessness and nervous irritability.
6. Low ~~inorganic~~ ^{inorganic} blood phosphorus with high serum phosphatase.

II Tetany:- Results from abnormal calcium ^{phosphorus} and ~~poor~~ metabolism due to

- i. failure of absorption of calcium or vitamin D.
- ii. insufficient dietary calcium and vitamin D.
- iii. from disturbance of parathyroids.

Symptoms:- Short flexion of wrists and ankle joints, muscle twitching, cramps and convulsions. *convulsions*

Treatment:- Calcium for acute spasms liberal diet/ in calcium and vitamin D. concentrate.

III Dental carries:- Delayed ^{dentition} dentition, malformation of teeth and predisposition of dental carries.

IV Osteomalacia:- Is adult rickets which results from failure of calcification in respect of other metabolic processes. Caused by lack of vitamin D and calcium. Also, possible when there is interference with fat absorption. One third of cases may be due to inherent resistance to vitamin D.

This is specially common in our women who are pregnant or lactating and who are indoor most of the time, also among Muslim women who observed 'purdha'.

Symptoms:-

- i) softening of bones - so severe as to produce deformities specially in bones of legs, spine, thorax and pelvis.
- ii) pain of rheumatic type in bones of legs and lower part of back.
- iii) general weakness specially difficulty in climbing ~~stairs~~ stairs, patients have haswaddling gait.
- iv) spontaneous multiple fractures.

Treatment:- High protein and high caloric diet. Therapeutic doses of vitamin D.

Hypervitaminosis:- Nausea diarrhoea weightless, ^{polyuria} polyuria nocturia, fatigue, renal damage, calcification of soft tissues, eg., heart, blood vessels, bronchi, and tubules of kidneys.
