

Identification of Nutrition Programmes and Projects*

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A. PROGRAMMES:

I. WHY ?

1. Development planners are increasingly confronted with problems of socioeconomic development and economic solutions have alone proved less effective, more and more emphasis is being given to efforts to improve quality of life. Improving nutritional status is an important component of any effort to improve quality of life, especially for the poor.
2. Human capital is one of the most important factors in developmental efforts, not only as a user, but also as a resource; as a nation's human capital potential, malnutrition affecting them has serious development implications.
3. With the alarming population increase and corresponding food shortage, food and nutrition problem is coming more and more in the front-line thinking of planners, politicians and economists alike.
4. International agencies and bilateral agencies are showing increasing interest to support programmes of nutritional development as they are shifting emphasis towards promoting social welfare as well as economic development.

Conceptually, three stages can be identified in the development of nutrition programmes:

Based on the author's paper at the "National Nutrition Policy and Programme Seminar" at Pokhara in September 1978.

a) **Clinical and Medical :**

to diagnose, treat the cause on individual basis, e.g. beri-beri, xerophthalmia, etc.

b) **Preventive and Public Health :**

protein supplements, feed supplements, school feeding, Vitamin A & D, etc.

c) **Developmental :**

multi-sectoral efforts for introducing interventions at appropriate levels in required measures as an integral part of the total development efforts for the upliftment of the society.

It is highly desirable that the always complex and multiple factors responsible for malnutrition be appreciated and understood at all levels before any concerted action can be planned, implemented and followed up.

Perceptions of the nature of the nutrition problem have changed significantly in recent years. Past approaches have largely sought technological answers like increasing agricultural production or development of low-cost protein foods, but increasingly solutions of socio-economic-political nature are being sought to reduce malnutrition.

Multi-faceted nutrition programmes coordinating activities in the agricultural, industrial, health, education and social welfare sectors as well as direct and indirect measures (employment and income generation) measures should be undertaken.

The primary need is a political one: a full-fledged commitment to the eradication of hunger and malnutrition that includes acceptance of the implications in terms of changes in planning and decision making.

The primary concern of food and nutrition policies must be to improve the quality and quantity of food consumed by those inadequately fed, and to remove those health and environmental factors closely associated with malnutrition.

Sectoral activities have to be oriented towards a development pattern that would ensure the reduction of malnutrition simultaneously with the achievement of other development objectives.

SOME IMPORTANT CONSIDERATIONS FOR NUTRITION PROGRAMME DEVELOPMENT

- i) Demographic considerations
- ii) Public health considerations
- iii) Economic considerations
- iv) Human considerations
- v) Socio-cultural considerations

i) Demographic considerations :

- a) dependants' proportion- the number of 'dependants' are defined as children under 15 years plus people over 60 years. This amounts to about 55 percent in Nepal.

The greater part of the dependants are children who are more expensive to care, because they have to be educated and because it costs to keep them healthy.

The proportion of adult producers is low in relation to the number of consumers.

- b) rate of population expansion- with an annual rate of increase of more than 2%, the population is expected to be doubled in about 25 years. This demographic explosion may produce a serious population imbalance between numbers and food production. Even if the population growth remains at the present rate, this means production must be doubled during the period in question, apart from the need to cover the gap between present production and requirements.

ii) Public health considerations :

the health status of a population is very closely related to nutrition status. Without improvements in the nutritional status, it is not possible to improve the health status.

Reduction of morbidity and mortality is possible only when nutrition programmes are launched and make their contribution towards the lowering of infant mortality, maternal mortality in a community. IMR & MMR are very sensitive indicators of a community's health and nutritional status.

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iii) **Economic considerations :**

when nutrition is considered from the national point of view, it has to be borne in mind that the productivity of ill-fed, undernourished population is low, consequently the output of work, energy and drive is low.

The severe degree of malnutrition is associated with signs and symptoms of **mental retardation**. It is not clear how much mental retardation occurs in a mild degree of malnutrition, but nevertheless, nutrition status is increasingly considered as having an impact on the level of mental development.

iv) **Human and Social considerations :**

one of the most important considerations is human side of the problem. It is a disgrace on present day civilization when man has rocketed into the moon and so much of technological breakthrough has occurred that a large majority of the population do not have access to food and nutrition.

v) **Socio-cultural considerations :**

food habits, feeding habits, cultural patterns are very difficult to change and can be an impediment for implementation of nutrition activities.

III. PLANNING PROBLEMS AND NEEDS

- 1) Problem is to strike the appropriate balance between nutrition objectives and other development objectives.
- 2) Techniques for nutrition planning and policy formulation are in an early stage of development and confront planners with considerable difficulties.
- 3) Need for improved approaches to problem assessment, considering malnutrition within the broader context of poverty and inter-sectoral nature of food and nutrition policies
- 4) Need to define nutrition problem in operationally meaningful terms.

IV. ORGANIZATIONAL NEEDS

The multi-sectoral nature of malnutrition policies development and programme implementation calls for institutional arrangements in planning and decision making.

The customary sectoral division of nutrition responsibilities is not conducive to effective policy formulation.

A body is needed which can affect:
 the decisions of the government with regard to the programmes and budgets allocation of ministries.
 can assist the ministries in identification, design and approval of programmes.
 can do independent analysis.
 A food and nutrition planning body can best function with a small multidisciplinary

B. MALNUTRITION

For effective intervention programmes, causes of malnutrition have to be understood:

CAUSES:

Three main groups of causative factors can be described:

Dietary- three major causes can be noted-

- a) Insufficient intake of food causing hunger and consequent under-nutrition.
- b) Qualitatively inadequate food causing nutrient-specific malnutrition.
- c) Secondary malnutrition as a consequence of illness, infections, environmental.

Insufficient intake can be due to :

- a) poverty- food cannot be bought
 - b) non-availability- agricultural failure, unfavourable climate or season, defective market mechanism and distribution
 - c) lack of knowledge- food may be available but not given to those who need it as for example, pregnant and lactating mothers may not be given legumes, vegetables etc.
2. Infections- infections disease which are very common and especially occur in the vulnerable 'child' age, where resistance is low, creates more demand for nutrients, but because of poor appetite, vomiting, diarrhoea, diet restrictions, etc. produce malnutrition. Parasitic infestations form a major factor of malnutrition in communities with a low state of hygiene.

3. Socio-cultural - breast milk separation

- when-length of breast feeding
- gradual or abrupt
- weaning of food
- local pattern of eating, food preparation, food taboos, cooking, etc

Considerations of age grouping:

Age grouping

From nutritional requirement considerations, children can be classified in the following age groupings:

- i) 0 - 6m: breast feeding, good growth, weight gain
- ii) 6 - 12m: breast feeding continued: quantity no longer sufficient as the infant grows in size: insufficient quantity of carbohydrates with little protein and vitamins: placental immunity in decline making him susceptible to various infections
- iii) 1 - 3yr: breast feeding may or may not continue: amount of protein small: diet, ill-cooked, indigestible and predominantly carbohydrate: continuous infections and parasitic infestations.
- iv) 3 - 5yr: digestibility increases, resistance increases so if food available in the family, he may start growing.

II. MEASUREMENT OF EFFECTS OF MALNUTRITION:

Assessment: Stunting and Wasting

The nutritional status of an individual must assess both past and present malnutrition. Long standing poor malnutrition produces chronic growth failure manifested by deficient height whilst recent malnutrition produces loss of body mass.

The duration of malnutrition can be assessed by the **Stunting** of the child, that means weight or height deficit for age, preferably the latter. Stunting is considered to reflect the cumulative effects of past malnutrition.

The severity of the present episode can be judged from **wasting**, that means weight deficit for height; wasting is associated with a marked decrease in the weight per unit height when compared with that of a normal child of the same age.

Expressions of stunting and wasting permits the grouping or classification of malnourished children in well-defined categories.

The use of such numerical indicators on the adoption and international acceptance of reference for height and weight by age and sex.

Difficulties, however, arise when anthropometric standards derived from population in industrialized countries are applied to children in developing countries. Hence, value judgement or conventional limit appears to be the only way of defining the dividing lines between what is to be considered as reflecting adequate and inadequate nutritional status.

There have been a number of approaches for estimating the total population affected by malnutrition. However, as it is easier to measure (a) Failure Or Growth, (b) sickness and death of children resulting from or associated with malnutrition, the main indicators of a nutrition problem in the community are

- a) the number of malnourished children, and
- b) the high rates of child mortality.

The most useful data for assessing the nutritional status of children are those assessed by weight and height at a given age. The available data and analytical techniques provide only a rough idea of the magnitude of the nutrition problem. The assessment of nutritional status and the classification of **malnutrition** are fields in which considerable discrepancies exist. Gaps in important informations have given rise to major disagreements about how large the problem is, how to perceive the problem and therefore, gaps and disagreements are an impediment to action. When urgent action needed, they should not run the risk of immobilising action.

When the nutritional condition of a given child is being defined, not only the end result is important but also preferably the history of how the child came to be the way he is. This is the only way how the multiple factors leading to the ultimate state of malnutrition can be accounted for.

III. METHODS FOR MEASURING NUTRITIONAL STATUS

- i) Clinical- findings of malnutrition are generally non-specific. Malnutrition must be prolonged and severe to produce obvious clinical signs. Even in situations where malnutrition may be a severe problem, specific nutritional deficiencies may be difficult to recognize.

The non-specific nature of the positive findings do not indicate that deficiencies do not exist, rather they point to the need for supporting information to confirm clinical impressions.

1. Information obtained from the statistics section or from records of hospitals and health posts.
 - nutritional and nutrition-related illness - O.P.D. and in-patient records.
 2. Rapid clinical surveys- these surveys can be carried out by paramedical personnel, especially selected and trained and supervised by a competent medical officer.
 - this should be designed to collect the most characteristic signs of one or several nutritional deficiencies. See Appendix B.
 3. Detailed ecological surveys- this should relate to a nutritional disease which assumes importance because of its prevalence, seriousness or problems it presents, eg. Goitre
- ii) Anthropometry- growth charts, growth curves, percentiles, etc. Most commonly used is height for age, weight for age and weight for height. There are different standards and different classifications in use. Gomez classification. Waterlow classification.
- iii) Food consumption survey- food consumption survey is a useful method which can be co-related to the nutritional status. It is extensively used. However, it has its limitations. It has to be recognized that some variations in the food consumption can be due to such causes:

1. Social—the distribution of calories in relation to needs within the family is unequal and is particularly unfavourable for the vulnerable groups

prejudices

taboos

To meet certain expenses such as marriage, etc. farmers must often sell a part of their food crop immediately after harvest.

2. Seasonal—the lack of rainfall and damage due to pests and diseases—poor crops—seasonal famine.
3. Food balance sheet—estimated supplies of different foods within a country (or region) are translated into calories and nutrients to determine the per capita amounts available for human consumption, after taking account of losses and other uses. Supplies are then compared with recommended standards for that country in order to obtain an estimate of the total nutritional gap. There is tremendous problem of data and information collection. It fails to take into account effects of income distribution, regional and seasonal variation etc.
4. Consumer expenditure survey—it utilizes a combination of income distribution data and information on consumer expenditures. The latter often indicates how much and what kinds of food is purchased at specified levels of income or expenditure.

Data availability and reliability is again the problem. It fails to take into account effects of different cooking methods etc. that has effect on ability to food utilization.

c) AVAILABLE INFORMATION ON STATE OF MALNUTRITION IN NEPAL.

Sources of references:

1. Nepal Health Survey, 1965-66, N. K. Shah and R. M. Worth
2. "National Food and Nutrition Improvement Policy and Programme" P. N. Sengupta, FAO, 1973.
3. Nutrition Survey in Nepal, P. Pourbaix, WHO, 1974.
4. Endemic Goitre in Nepal, HMG Paper for WHO Seminar, New Delhi, 1967.

5. Assignment report on Goitre Control, Nepal, Ramalingaswamy et. al. WHO, New Delhi, 1970.
6. Assignment report on Maternal and Child Health, WHO, New Delhi, I. Van Dijk, 1968.
7. Nepal Nutrition Status Survey, USAID/HMG NEPAL, CDC, ATLANTA, 1975.

1. PROTEIN-ENERGY MALNUTRITION

All reports mention the high incidence of protein-energy malnutrition among the child population in the country, although the parameters used for assessing the extent of such malnutrition has varied considerably. However, the data and their trend lead one to conclude that child malnutrition is the most glaring problem in the country and protein-energy malnutrition is the most predominant type.

a) The following table gives the overall picture of PEN among 6 to 72 months infants and children in Nepal according to Waterlow classification using a combination of height for age and weight for height; this method is much refined one and is capable of distinguishing between acute and chronic state of malnutrition. This table is extracted from the Nepal Nutrition Status Survey, based on a sample of 6578 children from 219 sites: (USAID/HMG/CDC Survey).

<u>Optimal Sample</u>	<u>Survey Sample</u>
79.9% Normal	45.3%
18.2% Stunting	48.1%)
1.2% Wasting	2.8%)-54.7%
0.6% Wasting & Stunting	3.8%
	100.0%

Region-wise data from this survey is presented in the next table.

Percentage of Survey Population below 80% of NAS Median Weight-for-Height or below 90% of Median Height-for-age by Geo-Political Division.

Weight/Height		Height/Age	
%	80%	%	90%

	of NAS Median	of NAS Median
Total Country	6.6%.	51.9%.
<u>Development regions</u>		
Far West	7.1%.	55.5%.
West	5.7%.	55.3%.
Central	7.7%.	49.6%.
East	6.0%.	48.5%.
<u>Terrains</u>		
Hills	5.8%.	55.5%.
Terrai	8.7%.	45.1%.
<u>Sub-Terrains</u>		
Far West-West Hills	6.3%.	55.9%.
Far West-West Terrai	7.2%.	47.8%.
East-Central Hills	5.1%.	55.0%.
East-Central Terrai	9.3%.	44.0%.
<u>Sub-Regions</u>		
Far West Hill	7.6%.	56.8%.
West Hill	5.3%.	55.2%.
Central Hill	7.0%.	54.7%.
East Hill	3.2%.	55.4%.
Special Group	1.9%.	18.8%.

Based on weight for age criteria (IAP standards), the following table gives the overall picture based on sample of 1044 pre-school children from 17 areas (Pourbaix), and another sample of 6562 children from 221 selected sites (USAID/HMG).

	Pourbaix	USAID/HMG 1975 using IAP standards
Normal	30%.	29.3%.
1st degree malnutrition	29%.	41.5%.
2nd degree malnutrition (needing careful watch)	25.4%.)	24.0%.)
	41%.	29.1%.
3rd degree malnutrition (needing treatment)	15.6%.)	(5.1%.)

Based on weight for height criteria on these two samples, the following results are obtained:

	USAID/HMG	
	Pourbaix	1975
Normal	12.1%.	12.6%.
Slight deviation (90-99)	31.0%.	41.5%.
Needing careful watch (80-89)	37.6%.	32.2%.
	57%.	47%.
Needing treatment (below 70)	19.3%.	6.8%.

The incidence of clinically established cases of PEN like Kwashiorkor or Marasmus or their mixed types in the community indicate the severity of incidence. Clinically established cases, though few in number, are the "tips of icebergs" and atleast 10 times more would be the number of those children who might escape clinical detection but nevertheless are in a dangerous situation.

b) Prevalence of clinical PEN cases, such children at risk of death needing nutrition rehabilitation or hospitalisation in 17 different areas where the survey was done according to Pourbaix is described in the following table:

<u>Area</u>	<u>Prevalence of Clinical PEM %.</u>
West Mountain (Jumla-rural)	10.9 %.
Kathmandu Valley	7.4%.
East Hills (Ilam-rural)	6.7%.
East Terai (Saptari-rural)	3.2 %.
East Terai (Biratnagar-urban)	2.9%.
Kathmandu City	1.0%.
East Hills (Ilam-urban)	0%.
Total of 17 places	<u>5.2%.</u>

The incidence of clinical PEM to the extent of 5.2% is very alarming.

Incidence of 3rd degree malnutrition to the extent of 15.6% is also very alarming.

2. Endemic Goitre and Cretinism

Endemic goitre and associated cretinism and deaf-mutism is another nutrition deficiency condition of serious magnitude in Nepal that should cause concern to everyone, although

endemic goitre has attracted some attention due to glaring physical deformity, the problem is more serious with mental retardation, cretins and deaf-mutes.

Nepal Health Survey, reports 57% prevalence amongst 6957 population who were 13 years old and above—out of a total survey of 7466 population the incidence rate in 8 out of 19 villages was more than 19% while in two villages it was 100%.

Ramalingaswamy et al reports from children population 9–14 years, 100% incidence in Trisuli and 88% in Jumla. The mean iodine content of water in these areas was found to be 0.111 mcgm/litre of water as compared with 0.205/mcgm/litre of water in endemic areas in Bihar state of India and 1.25 mcgm/litre in the endemic areas of Sri Lanka.

Other surveys and studies also mention the high incidence of goitre, cretinism and deaf-mutism.

3. Nutritional Anaemia

There are few reliable informations on the extent of anaemia problem but in view of the widespread hookworm infestation, this seems to be of considerable significance. The Nepal Nutrition Survey reports the following results of haemoglobin estimation:

Age group	% of survey population	
	Low (less than 10 gm Hg per 100 ml)	Normal (more than 10 gm)
i) 6–23 mths.	19.5%	80.5%
ii) 24–71 mths.	25.9%	74.1%
	(less than 11 gm Hg per 100 ml)	(more than 11 gm)

Age specific haemoglobin criteria is adopted from Sauberlich. The increase in Haemoglobin values with age is expected. The criteria for diagnosis of anaemia are established as a haemoglobin level less than 10 gm 100 ml. for children 6–23 months and lower than 11 gm 100 ml. for children 24–71 months.

Anaemia is an important problem among rural children 6–71 months of age and probably reflects iron deficiency. The true dimension of the problem will only be realized when the incidence of anaemia amongst pregnant women is determined because they are the most vulnerable ones.

4. Vitamin A Deficiency

Some reports including findings of Dr van Dijk from records of M. C. H. C in Kathmandu valley mention vitamin A deficiency of major public health import

D. INTERVENTION PROGRAMMES

There is more relevant data available for nutrition problem analysis than people realise, although the data may be sometimes scattered. Therefore, development of a planned approach towards nutrition policy planning, programme development project identification and implementation need not and should not be postponed.

Intervention programmes have to go beyond the conventional health or agricultural boundaries because the causation of malnutrition as already discussed are deeply rooted in the perpetual syndrome of poverty-Ignorance-malnutrition-disease (ill-health) and death. In other words, malnutrition is not a clinical disease. It is a social disease because it is man made, it is more than a disease in that it reflects a societal phenomenon. There is no drug to solve, treat or cure malnutrition. There is no vaccine to prevent it.

Malnutrition exists, to the extent that food intake fails to match the body's biological demands. It may be in the form of deficiencies of proteins or calories, vitamins particularly A and D, B complex, minerals, particularly Iron and Iodine etc. But in practice, malnutrition is always associated with more than one deficiency, and the cause is always multiple.

Therefore, intervention programmes are changing emphasis from sectoral to multisectoral programmes and also from such general programmes like feeding programme to school children to composite programmes especially directed to the critical age group of 6-36 months, and pregnant and lactating women.

This does not, however, mean that the health sector does not have an important role to play in the control of malnutrition. It does, but non-food factors play a definite role in the occurrence of malnutrition. As for example, bad sanitation and infection are responsible for creating a state of malnutrition. More than that, it is the lack of knowledge, education, a perpetual state of poverty which is at the root of malnutrition. So the interventions in the health sector can be effective only as a component of a more comprehensive efforts of social development. In other words, health interventions can be only complementary to more fundamental measures aimed at the reduction of poverty.

It is futile to expect any noticeable improvement only through health efforts unless sufficient efforts are also made to alleviate the underlying causes of poverty, ignorance and social inequality. But, there is no denying the fact that health has a major responsibility, more than that, it has to stay as a watchdog.

Protein calorie malnutrition is the most frequent form and constitutes one of the most severe health problems. PCM actually is a spectrum of pathological conditions primarily affecting the young. It is the greatest concern because PCM in early childhood, is responsible for the so called Triple M complex: Malnutrition-Morbidity-Mortality; The effects of the Triple M Complex being:-

- i) Physical - impaired growth and development, illness and death.
- ii) Mental - diminished learning capacity and mental retardation.
- iii) Economic - reduces productivity and working life.

It needs to be emphasised that the primary causes of PCM can be overcome only by significant changes in the socio-economic characteristics of the community. Insufficient purchasing power is one of the main problems that need to be tackled to make any appreciable change in the scarasis of PCM.

As already mentioned, malnutrition is always multiple in causation; so, an examination of the interventions shows that any specific intervention may have a critical, but, of itself, limited or insufficient role in controlling malnutrition. For example, clean water supply, environmental sanitation like personal hygiene, housing, fly control etc. are essential for reducing the high incidence of infant diarrhoea. Yet, the health worker (or any other worker including community village volunteers) must assist by

- educating and motivating the mother on the continuous need for clean and safe water in the care feeding of infants
- educating the family including the mother in the need for and way to carry and stores clean water from its source to home
- assisting and providing oral rehydration therapy.

It is therefore imperative that the interventions be analysed in such a inter-related manner.

The interventions have to be related to the determinants of the nutritional status. The accompanying diagram (1) on the determinants of the nutritional status clearly illustrates the different factors and their relationship to food consumption and biological utilisation, which are the primary determinants of the nutritional status. It is thus possible to specify in clearer terms the intervention programmes that are necessary and feasible to develop and to relate one intervention to another in a meaningful way so that it is possible to achieve a specific objective.

There are direct intervention as well as indirect interventions that can be carried out in clear out ways by individual sectors in a coordinated way. The accompanying diagram (2) attempts to point this out.

i) Direct interventions in sectors like Health and Food having direct impact on the nutritional improvement as well as ii) Indirect interventions in sectors like Education, Health & Family Planning, Agriculture having direct influences on nutritional status and iii) governmental policy interventions on food, land reform, food industry and social welfare etc. having direct and indirect influences,

The major nutritional problems in NEPAL like PCM, GOITER etc. can be attacked in different sectors by developing and coordinating sectoral programmes in Health, Agriculture, Education etc. This is illustrated in diagram (3).

Specific projects in the form of activities can be formulated in each sector as a follow up of above. As for example, in the Health sector, these projects have been mentioned in the accompanying diagram (4) which outlines the various activities at different levels of health services to achieve a specific project objective.

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DIRECT NUTRITIONAL INTERVENTION	
Health—	1. Nutrition Surveillance including arm circumference measurement and remedial measures 2. Nutrition Education person to person in the form of mobile village health workers and other health and other categories of workers including mass Media e. g. radio 3. Mass control of infectious diseases e. g. malaria etc. 4. Supplementary feeding programs e. g. CSM etc.
Food—	1. Improvement in food production —Quantitywise —Qualitywise 2. Improvements in food distribution

SATUS IMPROVEMENT

(Diagram

INDIRECT NUTRITION INTERVENTION		
DIRECT INFLUENCES	1. Increase in level of general Education 2. Nutrition education incorporated in curriculum at all levels, specially primary 3. Health care programs 4. Environmental sanitation 5. Family Planning	---- Education ---- Health and Family Planni
	1. Improved Agricultural technology, techniques, seeds and crops 1. Food —Transport —Storage —Trade	---- Agriculture ---- Govt. Policy ---- on Food
INDIRECT INFLUENCES	1. Land Reform 2. Increase in family purchasing power 3. Pricing policy	---- on Land Reform ---- on Social Welfa
	1. Development of new nutritional foods	---- on Food Indust

(Diagram 3 A)

	Health Services	
	PREVENTION	TREATMENT
<u>B. ENDEMIC GOITER, CRETINISM AND DEAF-MUTISM</u>	* Use of Iodised salt * Injection of Iodine in oil (Depot Iodine) in areas where goiter is associated with high prevalence of cretinism and deaf mutes & mental retardation.	* Iodine and Thyroid hormone preparations.
	PREVENTION	TREATMENT
<u>C. ANAEMIA</u>	* Education of mother regarding need and use of iron containing appropriate foods. * Prevention against Hookworm	* Specific treatment available -Iron therapy -Iron rich food -Treatment against Hookworm infestation.



