Hunger Malnutrition & Finding the Poor

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Reference Body Weights and Heights of Children
WHO Standards

Age	Height cms (B)	Weight Kg(B)		Height cms (G)	Weight kg(G)
0	49.9	3.3		49.1	3.2
1 year	75.7	9.6		74.0	8.9
2 year	87.8	12.2		86.4	11.5
3 year	96.1	14.3		95.1	13.9
4 year	103.3	16.3		102.7	16.1
5 year	110.0	18.3		109.4	18.2
Adult (NCHS)	177.0	65.0		164.0	54.4

-1-

Absolute Weights – A 35 year trend (Mean in Kg)

	Rural 1977		Rural 2011-12		NCHS Median Values	
Age	F	M	F	M	F	M
01+	7.6	8.0	8.4	8.8	10.8	11.5
03 +	10.5	10.9	11.5	12.1	15.0	15.6
05+	13.7	13.9	14.1	14.8	18.7	19.7
10+	22.2	22.1	24.3	24.2	33.1	31.8
20-24	42.7	48.2	45.0	52.8	56.6	65.1
>70**	39.1	47.3	41.5	49.2	60.6	69.0

Source:** NNMB 1977, 2011-12

Absolute Heights – A 35 year trend (Mean in cm)

	Rural 1977		Rural 2011-12		NCHS Median Values	
Age (Years)	F	M	F	M	F	M
01+	71.7	72.5	74.4	75.5	80.9	82.4
05+	99.6	99.8	102.4	103.7	111.5	112.5
10+	125.7	125.5	130.1	130.3	140.2	139.0
20-24	150.9	163.1	152.3	165.6	163.7	177.0
>= 70	147.3	161.3	147.7	159.9		

Source: NNMB Reports, 1977, 2011-12

% Children who Are Undernourished (<-2SD)

	Boys	Girls	Total
Wt. for age	42.1	41.4	41.8
Ht for age	44.3	41.9	43.1
Wt for Ht	22.5	21.5	22.0

NNMB 2011-12

% DISTRIBUTION OF ADULTS ACCORDING TO BMI CLASSIFICATION - NNMB 2011-12

	< 16 (CED III)	16-17 (CED II)	17-18.5 (CED I)	18.5-20 (Low Wt. Normal)	20-25 (Normal)	> 25 (Over wt.)
Men	7.2	8.8	18.9	19.4	35.7	10.0
Women	8.9	8.6	17.2	17.1	34.7	13.5

Thinness as a public health problem (WHO)
Percentage of Population with BMI <18.5

Low prevalence (warning sign,):	5-9% of population
Medium prevalence (poor situation):	10-19% of population
High prevalence (serious situation):	20-39% of population
Very high prevalence (critical situation):	>40% of Population

Nutritional Status of Indians - National Surveys

Has not changed over the last 35 years,

Not different for men and women

BUT

Worse among the SC, ST

Where did we go wrong ?

We need to go back to Imp Developments in the

30's and 40's.

19th &20th century- Analytical Techniques helped identify ug quantities of "nutrients" in foods

Led to 'Classification' of foods - into

a) Calories or Energy rich Foods (rich in carbohydrates) such as cereals, pulse, sugar etc.)

b)Foods rich in Protein, (pulse, meat, eggs, milk, nuts, fish etc)

c)Foods containing Vitamins and Minerals (Meat, liver, vegetables, fruits), also called protective foods

d)Foods rich in oils and fats (nuts, oilseeds, butter, ghee, various edible oils, etc.)

Beginning of 1900 it was known that

Proteins, Carbohydrates and Fats - were a source of energy (calories) in the body…

1gm of carbohydrate = 4kcals
1gm of protein = 4kcals
1gm of oil or fat =9kcals

And because of this almost ALL foods yielded calories, based on the varying amounts of Carb., Protein or Fat in them.

In addition many foods were important sources of Vitamins and minerals

	Calories	Proteins	Other Nut
Cereals –	++++	++ Poor quality	Vit. +
Pulses	+ +	++ Poor Quality	Min& Vit +
Oil & fat	+++++	Nil	Trace
Nuts& Oilseeds	++++	+++	+++
Milk& Milk Products	+	++++	+++
Meats	+	++++	+++++

	Calories	Proteins	Vit. & Min.
Greens*	Trace	Trace	+++
Root Veg*	+	Trace	++
Other Veg*	Trace	Trace	+++
Fruits*	+	Trace	+++

* Also Rich source of Anti Oxidants, Lycopenes and flavanoids

ENERGY or CALORIES - necessary for doing work and all activities, such as walking, sitting, sowing, running, washing clothes, washing dishes, typing, cycling, carrying loads, and even at rest (called BMR) .

PROTEINS - for laying down muscle, bone and other tissues during growing years-

For the wear and tear of tissues later.

VITAMINS & MINERALS - for physiological function of the body and helping speed up reaction in the body because of their action as enzymes and co enzymes etc.

By 1937, over 300 foods had been analyzed and classified (Health Bulletin No.23, 1st edition).

Subtitled

“The Nutritive value of Indian foods and the planning of satisfactory diets” reflects the confidence of science.

Health Bulletin No. 23.

HEALTH BULLETIN

THE NUTRITIVE VALUE OF INDIAN FOODS AND THE PLANNING OF SATISFACTORY DIETS

PUBLISHED BY THE MANAGER OF PUBLICATIONS, DELHI.
PRINTED BY THE MANAGER, GOVERNMENT OF INDIA PRESS, SIMLA.
1937

Price: Annas 2 or 3d.

Because calorie are needed in large amounts, compared to other nutrients….

Food Requirements laid down in terms of calorie

AND

Computed for workers engaged in different kinds of work such as

Sedentary 2400 kcals

Moderate 2730 kcals

Heavy 3490 kcals

With the assumption that foods

Culturally and regionally appropriate such as wheat, rice, eggs, milk, fowl, pulses, fish, greens, potatos, nuts etc.

would be consumed in quantities which would provide calories and all the other nutrients.

Planners, scientists, and bureaucrats - with their own Nehruvian tryst with destiny –

Trusted science more than the people they governed.

& This

Mixed with Economics proved to be

A Toxic combination for the poor

Quick to advocate "The Cheapest Source of Calories" ….

They did not pause to think even though the bulletin warned several times

THAT

“The non-cereal portion of the diet provide most of the essential nutrients in requisite amounts” (Aykroyd 1944)

MOST IMPORTANTLY The Bulletin had pointed out

“ In working out diets schedules, requirements of proteins, fats, vitamins and minerals should first be attended to, subsequently carbohydrate rich foods can be included in sufficient quantities to fulfill energy requirements.” An important caution which is ignored as time goes by ….

Throughout the text of the Bulletin it advocates milk for children and replacing milled rice with parboiled rice, and addition of oil or ghee in children’s diet.

The Planners/Scientists were in a hurry…the small print could wait…

Cheap Energy sources like cereals were advocated for calorie requirements- It was stated cereals also provide bulk, satiety, and culturally acceptable

Indians had lost the rights to food, lost the war even before it had started…. And it was their own Govt which had taken it away…… Scientifically.

Calculated diets:

The Planners/scientists combine treated food as a lab. Based "Nutrition Science" divorced from the daily lives of people.

They now had unlimited power to create artificial diets with simple calculation and foist it on an unsuspecting population in the name of "Science" and cost effectiveness.

Since RDAs emphasize calories, cheaper foods rich in calories could be put together to provide 2400 calories .

Calorie content in 100gm of food		Amt Req. for 2400kcals		Cost of 2400 kcals	
Cereal --	**340 kcals**		**660 gm**		**20 Rs.**
Oil……..	**900kcals**		**260ml**		**20 Rs.**
Pulse	**350 kcals**		**660gms**		**40 Rs.**
Oil seeds	**560 kcals**		**430gms**		**50 Rs.**
Meat	**100 kcals**		**2.4 Kg**		**240 Rs.**
Milk	**100kcals**		**2.4 L**		**65 Rs.**
Potato	**100 kcals**		**2.4 Kg**		**50 Rs.**

Coefficient for computing calorie requirement of different groups*

Group	Cu-Units
Adult male (sedentary worker)	1.0
Adult male (moderate worker)	1.2
Adult male (heavy worker)	1.6
Adult female (sedentary worker)	0.8
Adult female (moderate worker)	0.9
Adult female (heavy worker)	1.2
Adolescents 12 – 21 years	1.0
Children 9 to 12 years	0.8
Children 7 to 9 years	0.7
Children 5 to 7 years	0.6
Children 3 to 5 years	0.5
Children 1 to 3 years	0.4

*Source: Gopalan et al (1991)

PROTEINS-

It was known that Growing Children, Preg. and Nursing mothers require proportionately more Proteins from Animal foods such as milk, eggs, fish, and meat..

Because

“Protein derived from vegetable foods is of less value to the body than protein derived from animal foods, Animal Foods contain proteins of high biological value

Animal Protein:

Protein of a high Biological Value (BV) is one which has a AA pattern as close as possible to that of human tissues

Common Cereals such as rice, wheat. millet, pulse etc., contain protein (6-10%) but

Eggs and milk protein are considered the standard protein with BV of around 100. the BV of pulse protein is around 60 and cereals fall between 60-70.

More important than the total protein content of the diet is the proportion of protein of high biological value.

Despite the warnings about Vegetarian Proteins and the low BV, Search for milk substitutes- i.e.Vegetarian sources of proteins continues with expts. on children

(Aykroyd and Krishnan 1937; Krishnan & Mitre 1938; Someshwar Rao ; ICMR Special Report Series No. 36, 1961).

Studies on cooked Soya beans, showed that at the end of 20 weeks, the Soya group of children lost considerable weight.

By 1955 it was clear that whatever the sources of vegetable proteins, milk protein was far superior for undernourished children.

Indian Council of Medical Research

SPECIAL REPORT SERIES No. 31

MILK SUBSTITUTES OF VEGETABLE ORIGIN

Price Re. 1/-.

NEW DELHI
1955

Even Though the results of many studies confirm the superior results with milk protein

BUT

The papers conclude that skim milk cannot provide the basis for a large scale solution of the problem of protein malnutrition in underdeveloped countries.

1958

The debates on the sources of proteins and their biological values were still raging when,

New evidence had come in that when 2 or 3 vegetarian foods are consumed at one meal, the BV of the combination can come close to milk protein.

The Scientists were quick to state that

“People do not consume cereals or pulses alone to meet their requirements of protein…, and hence there is little chance of deficiency of a particular essential amino acid setting in”

The “people “ he refers to belong to a particular class and caste…Not many poor people were consuming 2 or 3 vegetarian foods at each meal, or consuming rice and pulse proteins in the ratio of 3:1 in 1960.

INDIAN COUNCIL OF MEDICAL RESEARCH

Special Report Series
No. 35

Dietary Allowances for Indians

CALORIES & PROTEINS

By

V. N. PATWARDHAN
Director
Nutrition Research Laboratories
Hyderabad-Dn.

NEW DELHI
1960

RDA 1968: (Gopalan C)

Once the ghost of BV of proteins from vegetarian foods was laid to rest, a revised and updated publication in 1968 confidently states

"In devising cheap well balanced diets in India, economic considerations often preclude the inclusion of milk or other animal foods in adequate amounts. …. (ICMR Special Report Series No. ICMR 60).

So a Calculated Diet is put in place with appropriate ratios of cereal pulse etc.

Balanced Diet for an adult sedentary male (gms)

Cereals	Pulses	Leafy Veg	Other veg	Roots	Milk	Fats	Sugar
460	40	40	60	50	150	40	30

Source: Recommended dietary intakes for Indians, ICMR, New Delhi, Srikantia 1980

Note- No Eggs, Nuts, fish, Fruit, meat,

Myth of protein gap (C.Gopalan. AJCN, 1970) Thus, vegetarianism for the poor had been endorsed scientifically; the next step takes the country hurtling down a cereal trap.

Diet surveys carried out in children subsisting largely on cereals report that 92% of the children surveyed had calorie deficits and only 35% of them were on an inadequate level of protein intake

He concludes that "These studies would indicate that if the children consume the same type of diets on which they have been subsisting, in amounts sufficient to satisfy their calorie needs, the problem of protein calorie malnutrition would be greatly minimized".

Dr. Gopalan's mantra "Eat more of the usual diets and get adequate calories and proteins"

He however hints at the possible consequences when he states that "Supplements of vitamin A and iron are, therefore, essential".

The kids were consuming a largely cereal based diet with virtually no pulse, milk, eggs or meat. His conclusions were based on calculations of the 6-8% protein in every 100gm of cereal, and if a kid could only eat 300-400gms or better still half a kilo of cereal he would get the 25-30gms of protein.

No one bothered to point out that Children would not be able to eat more of the same cereal, Children's stomach cannot get adequate calories from bulky cereals even if the child eats the whole day (1 gm cooked cereals provides 0.5 to 1 calorie, whereas 1g fat provides 9 calorie).

The Giants in nutrition research forgot the liberal amts. of ghee and butter added to their children's diets of soft khichidi/pongal (30-40% of children's calorie must be derived from fat). Instead they argue for 80% of cereal calorie for the poor.

Children were asked to make "low cost scientific" choices, and not crave for wasteful foods like milk, eggs, and some meat etc.

Percentage of individuals (by age) who have "Adequacy" of foods (> 70% of RDA)

Age (yrs)	Cereals	Pulse	L.V.	Others	R& T	Milk	Fat	Sugar
1-3	54	15	8	35	55	10	10	14
4 - 6	62	29	10	42	56	8	5	11
10-12 Male	58	29	15	39	56	8	3	11
Female	67	30	15	37	55	7	3	12

Percentage of individuals (by age) who have "Adequacy" of Nutrients (>70% of RDA) by Age

Age (yrs)	Protein	Fat	Energy	Calcium	Iron	Vitamin A
1-3	62	23	30	19	15	8
4 -6	73	30	31	28	15	10
7- 9	61	36	38	37	13	7.5
Male	50	54	45	24	9	9
10-12						
Female	41	51	57	22	11	9

- **The WHO Recommendation -Children**
- **Calories - 30-40% must come from fats (low volumes and energy densities)**
- **Vitamin A, Calcium, Iron - from milk, eggs, flesh foods, vegetables, fruit etc. (will also contribute additional calories),**
- **Cereals, pulse to be used to bridge the calorie gap.**
- **In India – it is reversed, cereal load has resulted in simple minded diagnosis of micronutrient deficiencies.**

Energy Density of Foods

Foods	kcals/gm (Raw)	kcals/gm (Cooked)
Rice/Cereal	3.5	0.8
Milk	0.6	0.6
Egg	1.7	1.7
Banana	1.2	1.2
Oil	9.0	9.0
Bread	2.7	2.7
Sugar	4.0	4.0
Potato	1.0	1.0
Vegetables (Greens, Carrots)	<0.5	<0.5

- **Energy density can be increased by adding oil (while cooking) ghee, or adding sugar. So cooking or frying foods with oil has a better energy density, it makes the food tasty, decreases volumes, and reduces the frequency of feeding.**

- **Addition of smashed carrots, tomatoes, liver, GLV, nuts (powdered or roasted) etc. adds to the vitamins and minerals, without decreasing the energy density.**

The Poverty Line:

The Ford Foundation commissioned a study on "Poverty in India" in 1969-70 and asked Dr. V.M. Dandekar and Nilakanth Rath of the Indian School of Political Economy, Pune to investigate the phenomenon.

According to the National Sample Survey, the per capita rural consumption in 1960-61 was Rs, 261.2 per annum. Similarly, the per capita urban consumption in 1960-61 was Rs.359.2 per annum.

Between 75.0 and 80.0 per cent of the total expenditure at levels a little below the average is spent on food and its preparation. The entire food at this level seems to give about 2,250 calories per capita per day. In 1960-61, an annual per capita consumer expenditure of Rs.170 was essential to give a diet adequate at least in respect of calories At consumer expenditure below this level, the diet was inadequate even in respect of calories .

Thus, in 1960-61, about one-third of the rural population lived on diets inadequate even in respect of calories.

Calories adequacy was used in isolation to define the POVERTY LINE. The report does not care to write about other food, or other necessities of life like shelter, clothing, health, travel, lighting, fuel etc. It was assumed that the government sector took care of health and education.

"The official estimates of the poverty line are based on a norm of 2400 calories per capita per day for rural areas and 2100 per capita per day for urban areas".

Minimum Wages Act, 1948 – Another "progressive developments" in post independent India was an attempt to fix minimum wages "scientifically".

A Minimum Wages Bill was introduced and came into force with effect from 15.3.48.

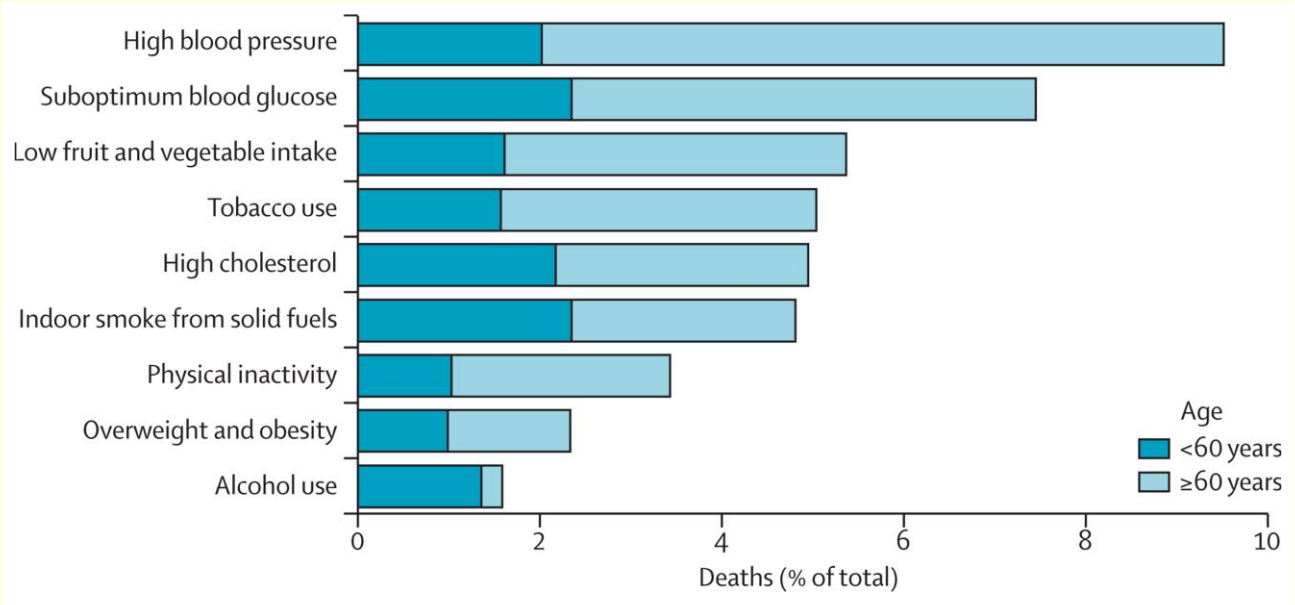
However the norms used were not the 1st balanced diet provided by Aykroyd in 1944 , The Indian Labour Conference in its session held in 1957 rejected Aykroyd"s suggestion and followed the advise of "Nationalist Scientists" by suggesting that the minimum wage should comprise the following :

1. **3 consumption units for one earner.**
2. **Minimum food requirements of 2700 calories per average Indian adult (now 2400 cals)**
3. **Clothing requirements of 72 yards per annum per family.**

Rent corresponding to the minimum area provided for under Government's Industrial Housing Scheme

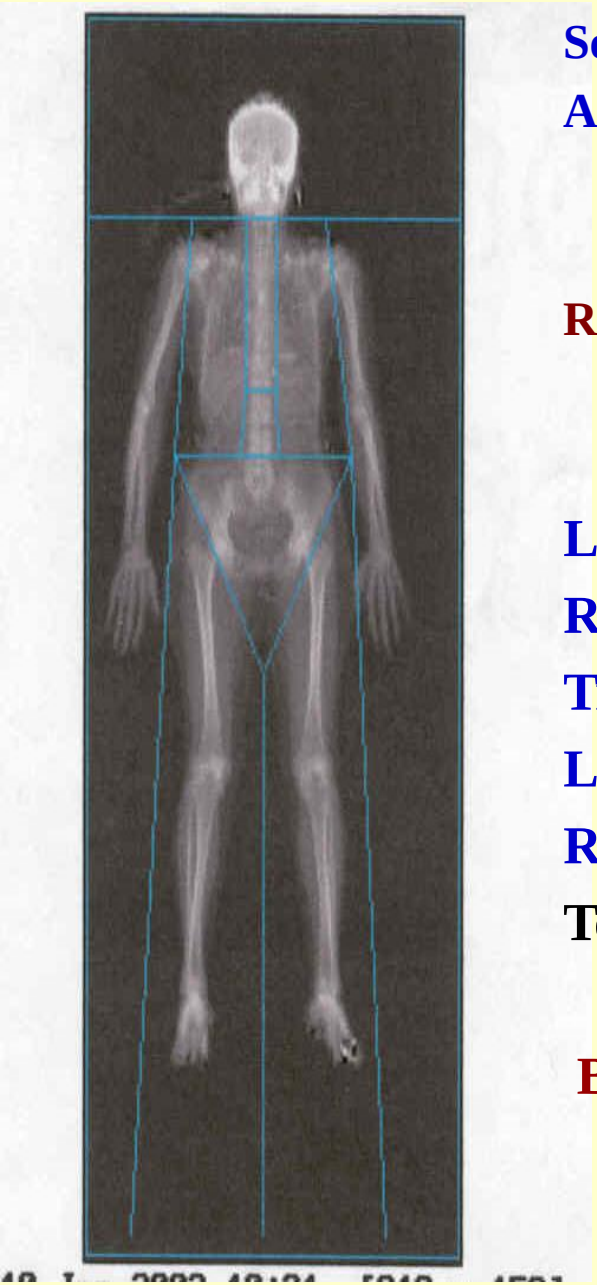
Fuel, lighting and other miscellaneous items of expenditure to constitute 20% of the total Minimum Wages.

Figure 3



Source: Estimates of deaths attributable to nine chronic disease risk factors

The Lancet 2011; 377:413-428 (DOI: 10.1016/S0140-6736(10)61188-9)



Sex : F Weight 39Kg Ht. 148cm

Age: 37Yrs BMI 17.8

Region	BMC (g)	Fat (g)	Lean (g)	Total (g)	%Fat (%)
L Arm	80.5	719.2	1247.0	2046.7	35.1
R Arm	89.5	863.8	1412.3	2365.6	36.5
Trunk	275.7	5807.7	12431.0	18514.5	31.4
L Leg	183.5	2489.6	3936.3	6609.3	37.7
R Leg	183.9	2753.7	3696.7	6663.4	34.8
Total	1135.7	13319.2	25282.9	39737.9	33.5

BMD : 0.798

	1-3 years	4-6 years
Intake kcals*	719	1020
RDA kcals +	1240	1690
Deficit kcals	521	670

- If you have a 10-12 Kg child in the age 1-3yrs. The RDA 1200kcals.

- **We need to factor in-**
- **Present weight**
- **Expected weight**
- **Stomach capacity of (30gm/kg),**
- **Calorie Density**
- **Frequency**
- **Variety**
- **Nutrients**
- **Extent of food deficit**

- **In an Under Nourished child, Factor in**
- **Present weight & Expected weight**

- **Amount of Food Required - child gets about 100Kcals /Kg of expected body weight**.

- Therefore if a child is **2 years old** with a weight of just **8Kg**

- Then expected weight is **12 Kg** the kid must get about **1200 Kcal** works out to **150Kcal / Kg body weight.**

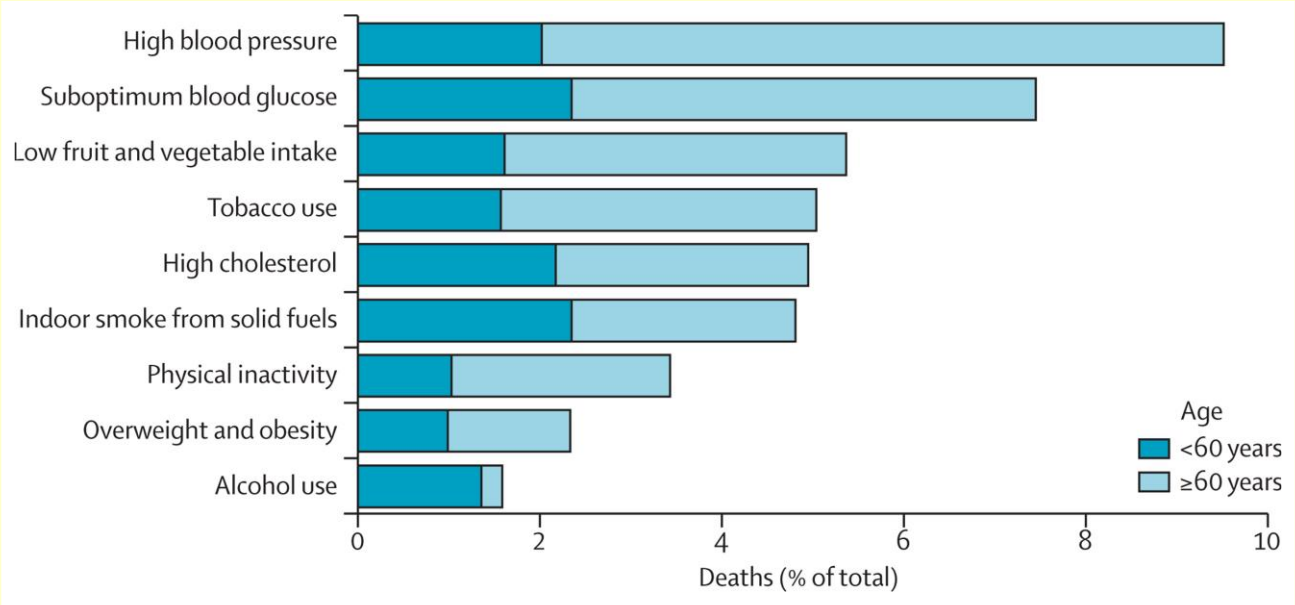
- **Meal Frequency** The number of meals is usually 4-5 times but depends on the energy density of the food. Since the child's stomach capacity is limited (30gms/Kg body weight) the above child with a weight of 8Kg who needs 1200Kcals will need to be fed as follows:

Energy Density of food	Total stomach Vol	Calories /feed	Number of Feeds
0.6kcals/g	240	144	8-9
0.8kcal/g	240	192	6-7
1.0kcal/g	240	240	5

- **Proteins should provide 8-12% of calories, Carbohydrates not more than 60-65%, and fats should provide the rest (30-35% of calories)**

- **With the above details, there are broad guidelines internationally recognized for child feeding. These are**

Figure 3



Source: Estimates of deaths attributable to nine chronic disease risk factors

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Fortification of cereals,

- **Main reason for MN deficiency is the low calories**
- **diets largely derived from cereals. The only way to**
- **address this is by accessing the additional 400-500kcals**

- **deficit from many sources, such as milk, nuts, fruits,**
- **vegetables, oils, pulse, eggs, etc. This will not only**

- **fill the calorie gap but will also provide good quality**
- **proteins, fats, vitamins and minerals**.

- In 1940s Dr. Aykroid (author of the 1st RDA)
- wrote that "The non – cereal portion of the diet provide
- most of the essential nutrients in requisite amounts"

- Micronutrient fortification will foreclose any attempts to improve the dietaries of children (qualitative and quantitative).

- Cereals (fortified) will provide the deficient vitamins and minerals. Children are already getting most of their calories from cereal carbohydrates , (80%)

- Poor children's diets will become qualitatively bereft of any nutrient except what has been added to the fortified cereal. In addition it will contribute to sheer bulk, monotony and lack of energy density.

Wheat flour fortification

To increase intakes of iron – using whole wheat flour (cereal) - iron availability is only – 1-2%

Other option - chemical addition to whole wheat flour

NaEDTA – to increase iron availability by 2-3 times

However, it increases viscosity of the flour

? Toxicity – and binding with other metal ions

Costly – four times

Ferrous sulfate - without EDTA low bioavailability

alters taste – with EDTA – iron amount have to be decreased net iron intake the same

Elemental iron – Low bioavailability

Fortification of flour in the West is carried out using MAIDA (refined flour)

Options – whole country to switch to Refined flour (MAIDA) or

Tolerate Toxicity of EDTA

Safe levels to be calculated in undernourished populations

Intake should not be more than 2.5 mg / kg body weight

At this level of EDTA it does not provide adequate iron for children

No studies on the use of fortified flour in children

Millions of tons of cereals will be processed so that a few mg quantities of a nutrient is added– and only 1-5% is available to humans

Need to re-look at strategy

Studies done in the following countries did not show improvements in haemoglobin after the distribution of iron fortified wheat flour.

Srilanka

Bangladesh

Thailand

Morocco

Ivory coast

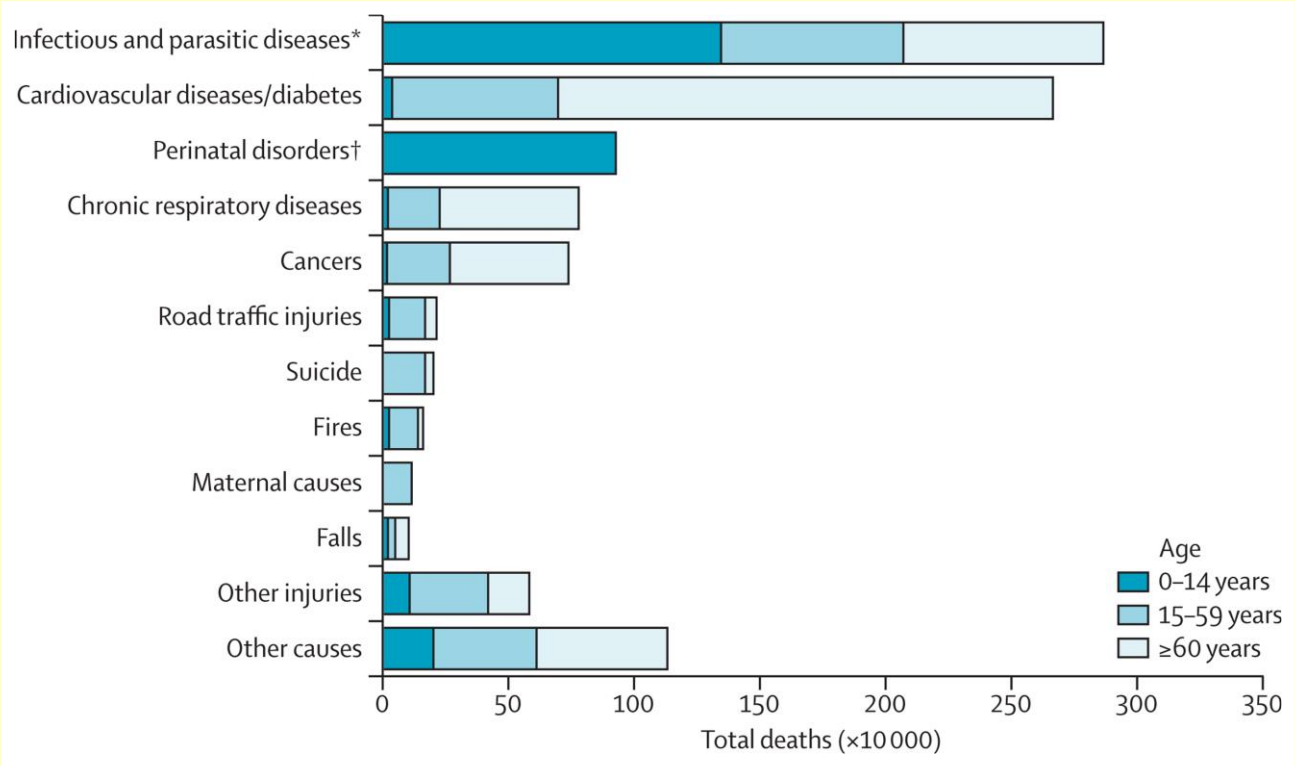
India

33 million people are currently affected with IHD in India (Gupta 2005)

Approximately 1.2 million people die every year due to acute coronary syndromes (Chaturvedi and Bhargava 2007; Gupta 2005; Jha et al. 2006).

Mortality rates for people with age-specific chronic diseases estimated to be higher in India than in high-income countries.

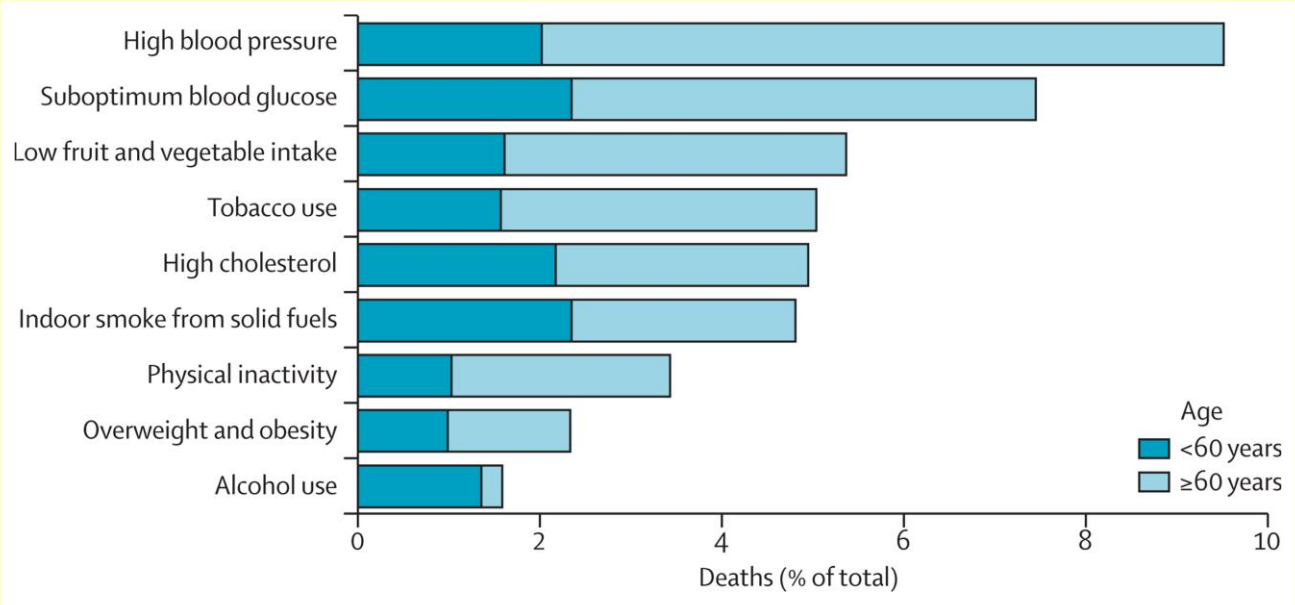
Figure 1



Estimated number of deaths due to selected diseases and injuries in India in 2004

Source: The Lancet 2011; 377:413-428 (DOI:10.1016/S0140-6736(10)61188-9)

Figure 3



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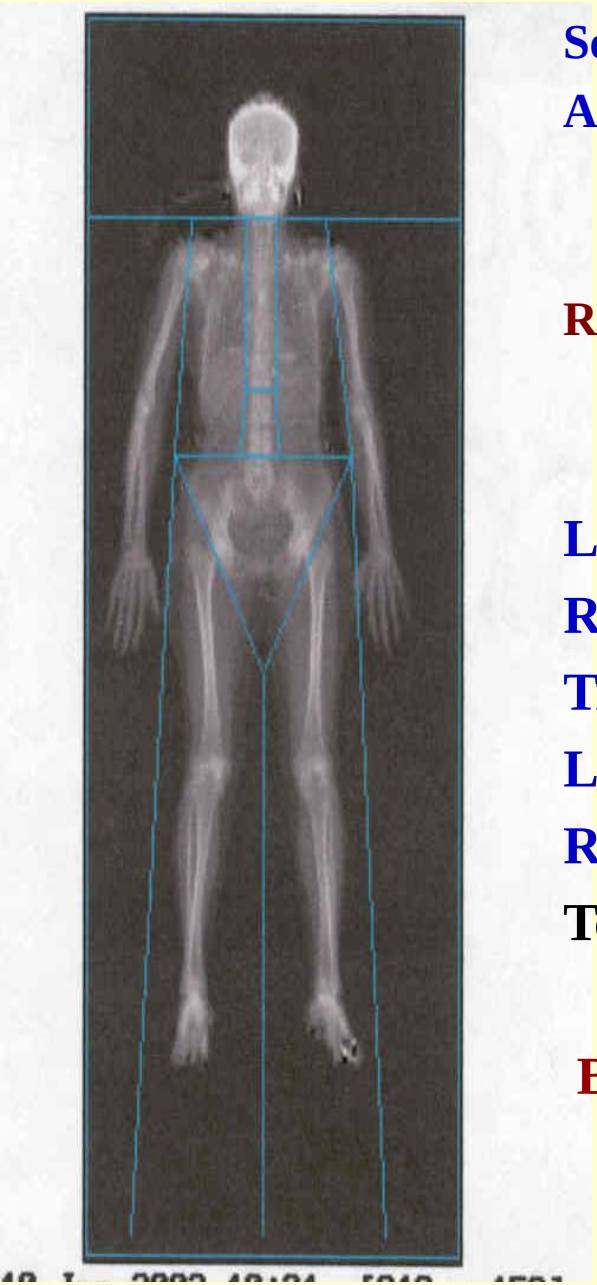
Nutritional Status of Indians

What is obesity in Indian Populations?



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Adults- BMI Classification James et al

BMI	Nutritional Grade
<16	III degree CED
<16.0 -17.0	II degree CED
17.0-18.5	I degree CED
18.5-20	Low Normal
20.0-25.0	Normal
25.0-30.0	Overweight
>30.0	Obesity

Adults- BMI Classification-WHO

BMI	Nutritional Grade
20-23	Normal*
23-30	Overweight
30-35	Obesity I
35-40	Obesity II
>40	Obesity III
*Asians	

There is an epidemic

Women c/o tiredness, tingling numbness, bone pains dizziness, backpain…a syndrome which has no name…but the markets have arrived with solutions…

Hunger Bazaar is as follows

1) Micronutrients for children
2) Ready to Eat Foods (biscuits)
3) Atta Fortification
4) Cash Transfers

Despite these conclusive findings, the heady mix of Science at the service of a new class of vegetarians nationalists, in search of cheap solutions to the country's state of under nutrition, resulted in a landmark paper titled

"Treatment of Nutritional edema Syndrome (Kwashiorker) with vegetable protein". (Venkatachalam PS., et al., 1956)

Composition of a Balanced Diet

	Oz.	Gm
Cereals	14	420
Pulses	3	90
Green leafy vegetables	4	120
Root vegetables	3	90
Other vegetables	3	90
Fruits	3	90
Milk	10	300
Sugar and jaggery	2	60
Vegetable oil, ghee, etc	2	60
Fish and meat	3	90
Eggs	1 egg	60

Source: W.R.Aykroyd. The nutritive value of Indian foods and the planning of satisfactory diets, Health Bulletin No.23, 1944.

% of Children with Intakes (> 70% of RDA)

Age (yrs)	Cereals	Pulse	L.V.	Others	R& T	Milk	Fat	Sugar
1-3	54	15	8	35	55	10	10	14
4 - 6	62	29	10	42	56	8	5	11
10-12 Male	58	29	15	39	56	8	3	11
Female	67	30	15	37	55	7	3	12
> 18 Male	81	51	15	47	60	33	10	31
Female	77	39	10	50	56	37	27	50

% of Kids with Nutrient intakes (>70% of RDA) by Age

Age (yrs)	Protein	Fat	Energy	Calcium	Iron	Vitamin A
1-3	62	23	30	19	15	8
4 -6	73	30	31	28	15	10
7- 9	61	36	38	37	13	7.5
Male	50	54	45	24	9	9
10-12						
Female	41	51	57	22	11	9
Male	40	65	55	32	10	11
13-15						
Female	39	58	70	25	15	9
Male	40	60	70	32	12	9
16-17						
Female	43	62	70	35	14	10
Male	77	85	80	70	29	11
>18						
Female	78	77	89	61	15	11

Cheapest source of Calories

100gm contains	For 2400kcals..Cost(Rs)
Cereal -- 340 -360kcals	660gms……20
Potato -- 100 kcals	2.4 kgs…….. 40
Sapota….. 100kcals	2.4Kg …….75
Oil……. 900kcals	260ml…….20
Oilseeds… 560kcals	430gm…… 50
Pulse ……. 340-350kcals	660 gm…… 40
Milk…….. 100kcals	2.4 Litres….65
Meat……100kcals	2.4Kg……. 240