

Dept of Community Medicine

Nutrition and health

- Nutrition- Science of food and its relationship to health
- Dietetics-Practical application of principals of nutrition

Changing concepts in nutrition

- Nutrition, nutrients and deficiency disorders
- Nutrition and agriculture/animal husbandary
- Nutrition and socio-politico-economical status
- Nutrition and NCDs
- Nutritional epidemiology
- Nutrition and primary health care

Classification of food

- By origin- plant and animal origin
- By chemical composition- carbohydrates, protein, fat , vitamins and minerals
- By predominant functions-Body building, energy yielding, protective
- By nutritive value

Protien

- Complex organic nitrogenous compound
- 20 amino acids of which 8 are essential
- Leucin, isoleucin, tryptophan, lysine, methionine, phenylalanine, threonine, valine, tryptophan, histidine.
- Biologically complete protien- Contain all EAA in amounts corresponding to human need.

Functions of protien

- Body building
- Repair and maintenance
- Osmotic pressure
- Synthesis of antibodies, enzymes, blood components
- Maintaining immune system
- Energy source

source

	Food	Protien per 100 gm
Animal food	Milk	3.2-4.3
Contain all EAA	Meat	18-26
Egg protein considers as reference protein	Egg	13
	Fish	15-23
Plant source	Cereals	6-13
Poor in EAA	Pulses	21-28
	Vegetables and fruits	1-4
	Nuts	4.5-29
	Soybean	43
Others	Oils and fats	0
	sugar	0

- Supplementary action of protein:
- Cereals deficient in lysine and threonine
- Pulses deficient in methionine
- Cereal – pulse combination supplement one another and provides a protein comparable to animal source.

Evaluation of protien

- Net protein Utilization
 - Proportion of ingested protein that is retained in the body under specified condition for maintainance or growth of tissue
- Product of biological value and digestibility coefficient divided by 100

Assessment of protein nutrition status

- Arm muscle circumference
- Creatinine height index
- Serum albumin level
 - <3g/dl- sever malnutrition, 3-3.5gm/dl- mild malnutrition

Protein requirement

ICMR guidelines

- 1gm/kg body weight assuming a NPU of 65 for the dietary protein.
- Pregnancy - +23gm
- Lactation - +19(06 months)
- +13(after 6 months)

Fats

- Classified as
 - Simple lipids- Triglycerides
 - Compound lipids- Phospholipids
 - Derived lipids- Cholesterol
- Classification of fatty acids
 - Saturated fatty acid (SFA)
 - Mono unsaturated fatty acids (MUFA)
 - Polyunsaturated fatty acids (PUFA)
 - Linoleic
 - Alpha linolenic
 - Trans fatty acids (TFA)

Fatty acid composition of fats and oils

Fats	SFA	MUFA	LA	ALA
High SFA				
Coconut	92	6	2	0
Palm kernel	83	15	2	
Butter /ghee	68	29	2	1
High SFA & MUFA				
Palmolien	39	46	11	.5
High MUFA and moderate LA				
Ground nut	19	41	32	.5
sesame	16	41	42	.5
Olive oil	14	72	14	
High LA				
Cotton seed	24	29	48	1
corn	12	35	50	1
Safflower oil	9	13	75	
sunflower	12	22	62	
LA and ALA				
Soyabean	14	24	53	7
canola	6	60	22	10

- Essential fatty acids
 - Linoleic acid
- Source of fats
 - Animal
 - Vegetable
 - others
- Visible and invisible fats
- Hydrogenation
- Refined oils

Functions of fats

- Energy yielding- 9 kcal per gram
- Vehicle for fat soluble vitamins
- Supports viscera
- Structural integrity of cell membrane
- Precursors of prostaglandins
- Production of steroid hormones and bile acids

Fat and Diseases

- Obesity
- Phrenoderma_ deficiency of EFA
- Coronary heart diseases
 - High fat content in diet - $>40\%$ of energy intake
 - High saturated fat intake
 - Low EFA intake
- Cancer- Colon , breast cancer

WHO /FAO recommendation

- Total fat 15-30% of energy intake
- Saturated fat <10%
- PUFA 6-10%-
 - n3 1-2%
 - n6 5-8%
- Transfat <1%
- MUFA- the difference
- Cholesterol <300mg per day

Carbohydrates

- Three major component of CHO

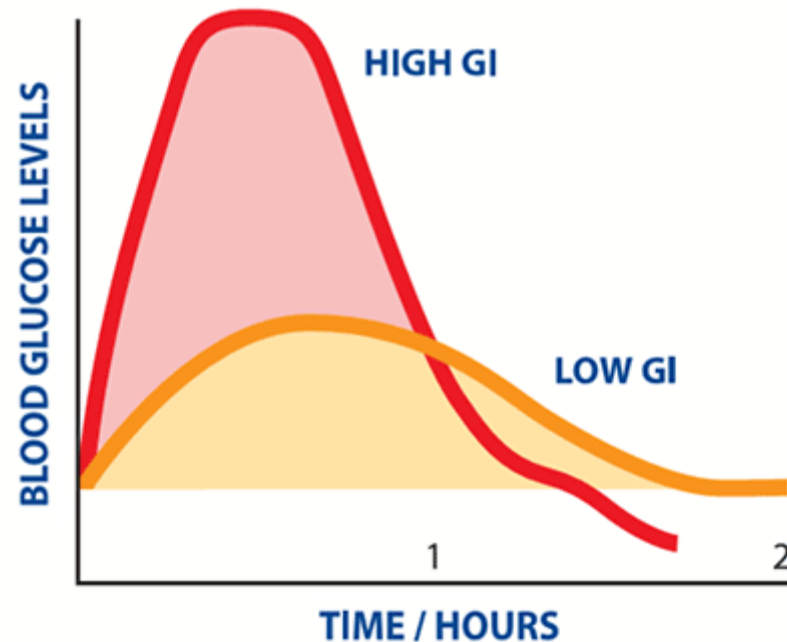
- Starch
 - Sugar
 - Cellulose

- Glycemic index

Area under the 2 hour blood glucose level following ingestion of 50 gm of test carbohydrate expressed as a proportion against the AUC after ingestion of a standard (50gm of glucose or white bread)

■ a scale from 0 to 100 according to the extent to which they raise blood sugar levels after eating.

- Foods with a high GI are those which are rapidly digested and absorbed and result in marked fluctuations in blood sugar levels.



Dietary fibres

- It includes polysachharides (cellulose, hemicelulose, pectins), oligosachharides, legnins, butyric acids, poylols (sorbitol), gums
- Function
 - Fecal bulking and softening- Crude fiber (cellulose, hemicellulose, pectins)
 - Blood cholesterol attenuation
 - Blood glucose attenuation (gums, pectins)
- Too much fibre hinders absorbtion of micronutrients- ca, fe, zn, mg
- RDA- 40gm per 2000 kcal

Dietary reference intakes

- Recommended dietary allowances (RDA)- the estimated nutrient allowances that is adequate in 97% to 98% of the healthy populations, specific for life stage, age and gender.
- RDA includes *addition of safety factor* to the requirement of nutrient, to cover the variation among individuals, losses during cooking and the lack of precision inherent the estimated requirement
- It is the dietary intake goal for individuals.

- *Recommended Dietary Allowance (RDA):*
 - the **average daily dietary intake** level that is sufficient to meet the nutrient requirement of nearly all (**97 to 98 percent**) **healthy** individuals in a group.
- *Estimated Average Requirement (EAR):*
 - nutrient intake value that is estimated to meet the requirement of **half the healthy** individuals in a group.
 - The RDA is set at **the EAR plus twice the standard deviation** (SD) if known ($RDA = EAR + 2\ SD$);
 - if data about variability in requirements are insufficient to calculate an SD, a coefficient of variation for the EAR of 10 percent is ordinarily assumed ($RDA = 1.2 \times EAR$).

- *Adequate Intake (AI):*

- a value based on observed or experimentally determined approximations of nutrient intake by a group (or groups) of healthy people
- used when an RDA cannot be determined.

- *Tolerable Upper Intake Level (UL):*

- the highest level of daily nutrient intake that is likely to pose no risk of adverse health effects to almost all individuals in the general population.
- As intake increases above the UL, the risk of adverse effects increases.

Reference man

- 60 kgs
- 18-29 yrs,
- Ht- 1.73mt
- BMI- 20.3
- Free from diseases
- Physically fit for active work, on each working day, engaged in 8 hrs work
- Involved in mod. Activity
- Spends 8 hrs in sleeping, 4-6 hrs sitting & moving about, 2 hrs in walking and in active recreation or household duties.

Reference woman

- 18-29 yrs, 55 kgs, non pregnant, lactating
- Ht- 1.61 mt
- BMI- 21.2
- Free from diseases
- Physically fit for active work, on each working day, engaged in 8 hrs work
- Involved in mod. Activity
- Spends 8 hrs in sleeping, 4-6 hrs sitting & moving about, 2 hrs in walking and in active recreation or household duties.

Moderate work

- 3 or more days of vigorous activity of at least 20 min per day
- 20-50 (9.1-22.7 kg) pounds of force is exerted
- 5 or more days of 20-50 pounds intensity work or walking for at least 30 min per day
- 5 or more days of any combination of walking, moderate or vigorous intensity activities
- Males-agricultural, labourer, carpenter, mason, welder, coolie, driver, weaver etc
- Females-maid servant, basket maker, weaver, agricultural labourer

Heavy work

- 7 or more days of any combination of walking, moderate, or vigorous intensity activities
- Vigorous intensity activities on at least 3 days
- 100 pounds or more lifting occasionally or 50 or more pounds of force frequently.
- Males- stone-cutter, black smith, mine worker, wood cutter
- Females- stone cutter

Sedentary work

- Lifting not more than 10 pounds at a time
- Usually sitting with occasional walking or standing
- Standing and walking –total 2 hrs or less per 8 hrs
- Sitting- 6 hrs per 8 hrs on work days
- Males- teacher, executive, priest, barber, retired personnel, peon.
- Females- teacher, tailor, executives, housewives

- **Nutrition Epidemiology:**
Epidemiological assessment of nutritional status, nutritional & dietary surveys, nutritional surveillance, nutritional & growth monitoring, nutritional rehabilitation, nutritional indicators and intervention.

RECOMMENDED DIETARY ALLOWANCES FOR INDIANS (Macronutrients and Minerals)

Group	Particulars	Body wt. kg	Net Energy Kcal/d	Protein g/d	Visible Fat g/day	Calcium mg/d	Iron mg/d
Man	Sedentary work	60	2320	60	25	600	17
	Moderate work		2730		30		
	Heavy work		3490		40		
Woman	Sedentary work	55	1900	55	20	600	21
	Moderate work		2230		25		
	Heavy work		2850		30		
	Pregnant woman		+350	82.2	30	1200	3 5
	Lactation 0-6 months		+600	77.9	30	1200	25
	6-12 months		+520	70.2	30		
Infants	0-6 months	5.4	92 Kcal/kg/d	1.16 g/kg/d	—	500	--
	6-12 months	8.4	80 Kcal/kg/d	1.69 g/kg/f	19		46 µg/ kg/day
Children	1-3 years	12.9	1060	16.7	27	600	09
	4-6 years	18	1350	20.1	25		13
	7-9 years	25.1	1690	29.5	30		16
Boys	10-12 years	34.3	2190	39.9	35	800	21
Girls	10-12 years	35.0	2010	40.4	35	800	27
Boys	13-15 years	47.6	2750	54.3	45	800	32
Girls	13-15 years	46.6	2330	51.9	40	800	27
Boys	16-17 years	55.4	3020	61.5	50	800	28
Girls	16-17 years	52.1	2440	55.5	35	800	26

RECOMMENDED DIETARY ALLOWANCES FOR INDIANS (Vitamins)

Group	Particulars	Vit. A µg/d		Thiamin mg/d	Riboflavin mg/d	Niacin equivalent mg/d	Pyridoxin mg/d	Ascorbic acid mg/d	Dietary folate µg/d	VitB ₁₂ µg/d	Magnesium mg/d	Zinc mg/d	
		Retinol	β-carotene										
Man	Sedentary work	600	4800	1.2	1.4	16	2.0	40	200	1	340	12	
	Moderate work			1.4	1.6	18							
	Heavy work			1.7	2.1	21							
Woman	Sedentary work	600	4800	1	1.1	12	2.0	40	200	1	310	10	
	Moderate work			1.1	1.3	14							
	Heavy work			1.4	1.7	16							
	Pregnant woman	800	6400	+0.2	+0.3	+2	2.5	60	500	1.2			
	Lactation 0-6 months	950	7600	+0.3	+0.4	+4	2.5	80	300	1.5			
	6-12 months			+0.2	+0.3	+3	2.5						
Infants	0-6 months	—	—	0.2	0.3	710µg/kg	0.1	25	25	0.2	30	—	
	6-12 months	350	2800	0.3	0.4	650µg/kg	0.4				45	—	
Children	1-3 years	400	3200	0.5	0.6	8	0.9	40	80		50	5	
	4-6 years			0.7	0.8	11	0.9				70	7	
	7-9 years	600	4800	0.8	1.0	13	1.6				120	100	8
Boys	10-12 years	600	4800	1.1	1.3	15	1.6	40	140	0.2- 1.0	120	9	
Girls	10-12 years			1.0	1.2	13	1.6				160	9	
Boys	13-15 years			1.4	1.6	16	2.0	40	150		165	11	
Girls	13-15 years			1.2	1.4	14	2.0				210	11	
Boys	16-17 years			1.5	1.8	17	2.0	40	200		195	12	
Girls	16-17 years			1.0	1.2	14	2.0				235	12	

Balanced diet

- Diet which contain a variety of food in quantities and proportions that meet the requirement of energy , amino acids, vitamins and minerals for maintaining health and general well bieng.

Principals of balanced diet

- Firstly, Requirements of proteins should be met- 10-15% of energy intake
- Fat – limited to 15-30%
 - <10 % saturated
 - 8-10 PUFA
 - <1% trans
 - Rest MUFA
- Carbohydrates should contribute to remaining energy 65-75%
- Diet rich in natural fibres
- Less of refined sugars
- Restrict alcohol intake
- Salt intake less than 5 gm per day
- Reduce junk food (empty calorie foods)

Fats, Oils & Sweets
USE SPARINGLY

KEY

● Fat (naturally occurring and added)

▣ Sugars (added)

These symbols show fats and added sugars in foods.

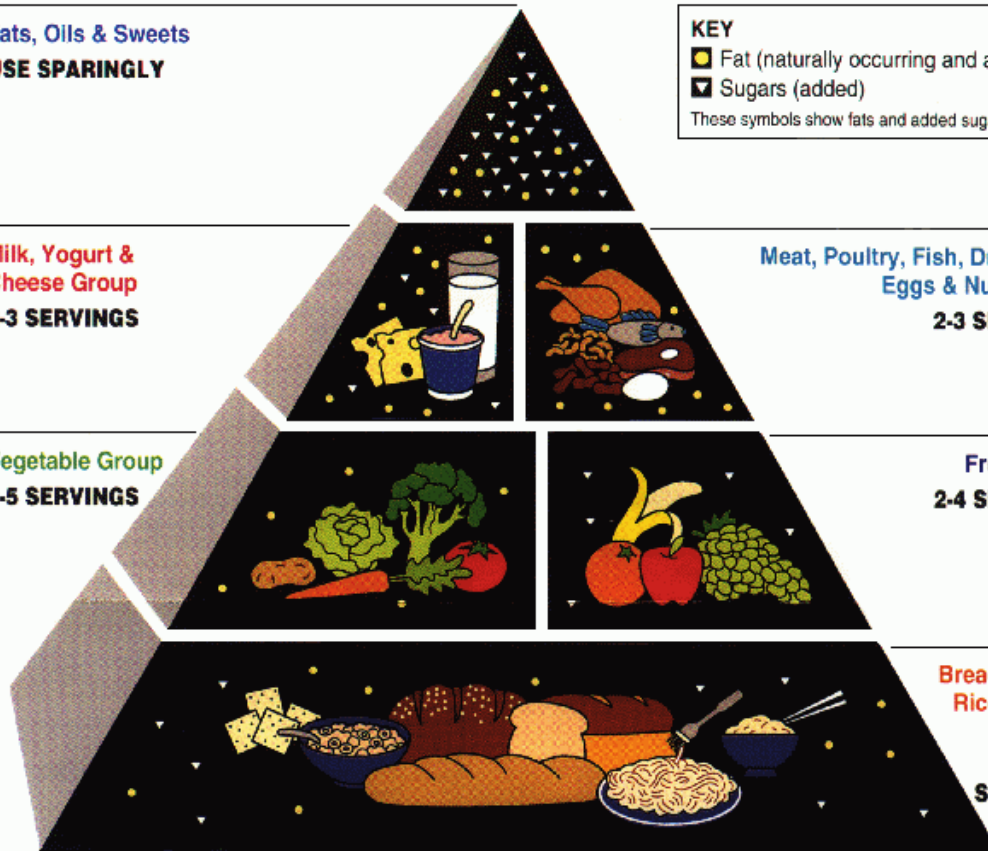
**Milk, Yogurt &
Cheese Group**
2-3 SERVINGS

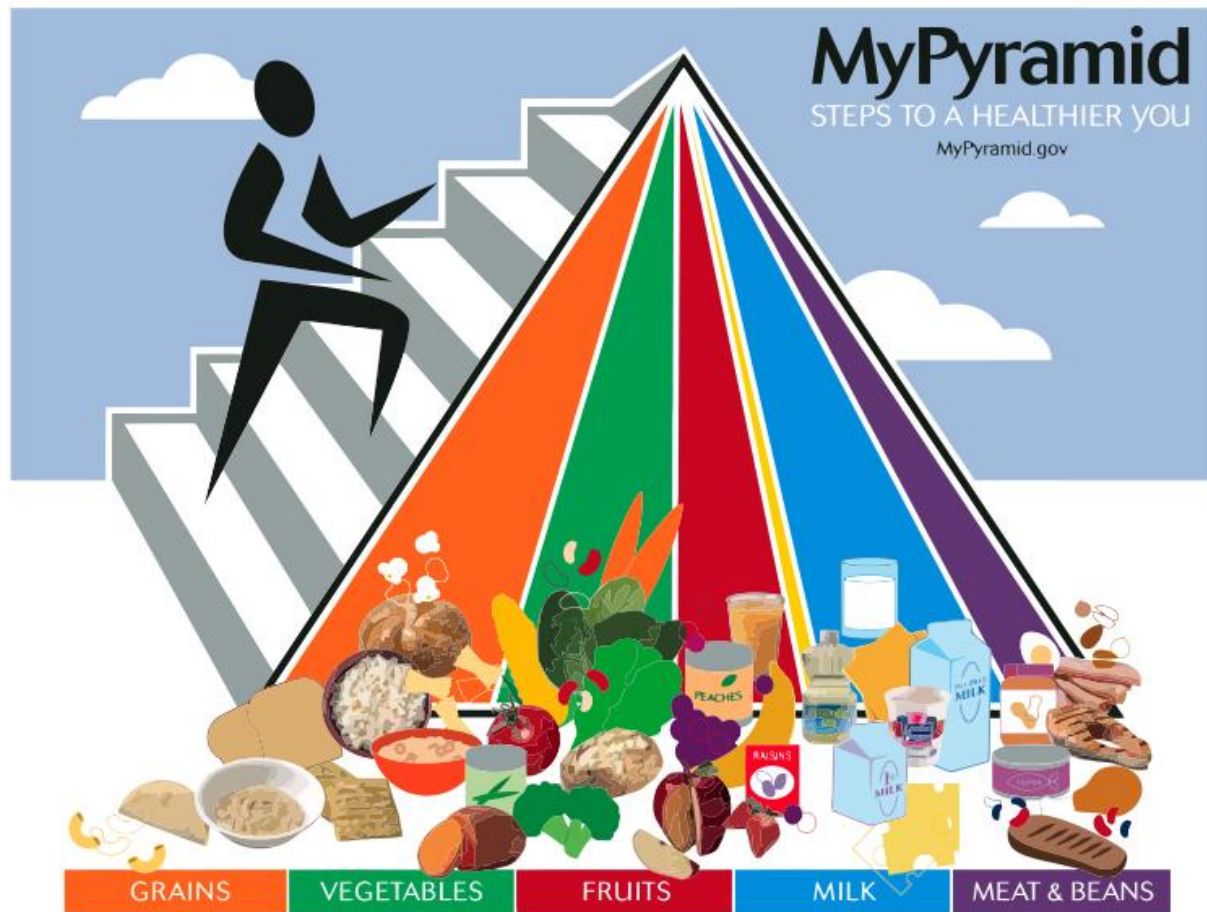
**Meat, Poultry, Fish, Dry Beans,
Eggs & Nuts Group**
2-3 SERVINGS

Vegetable Group
3-5 SERVINGS

Fruit Group
2-4 SERVINGS

**Bread, Cereal,
Rice & Pasta
Group**
**6-11
SERVINGS**





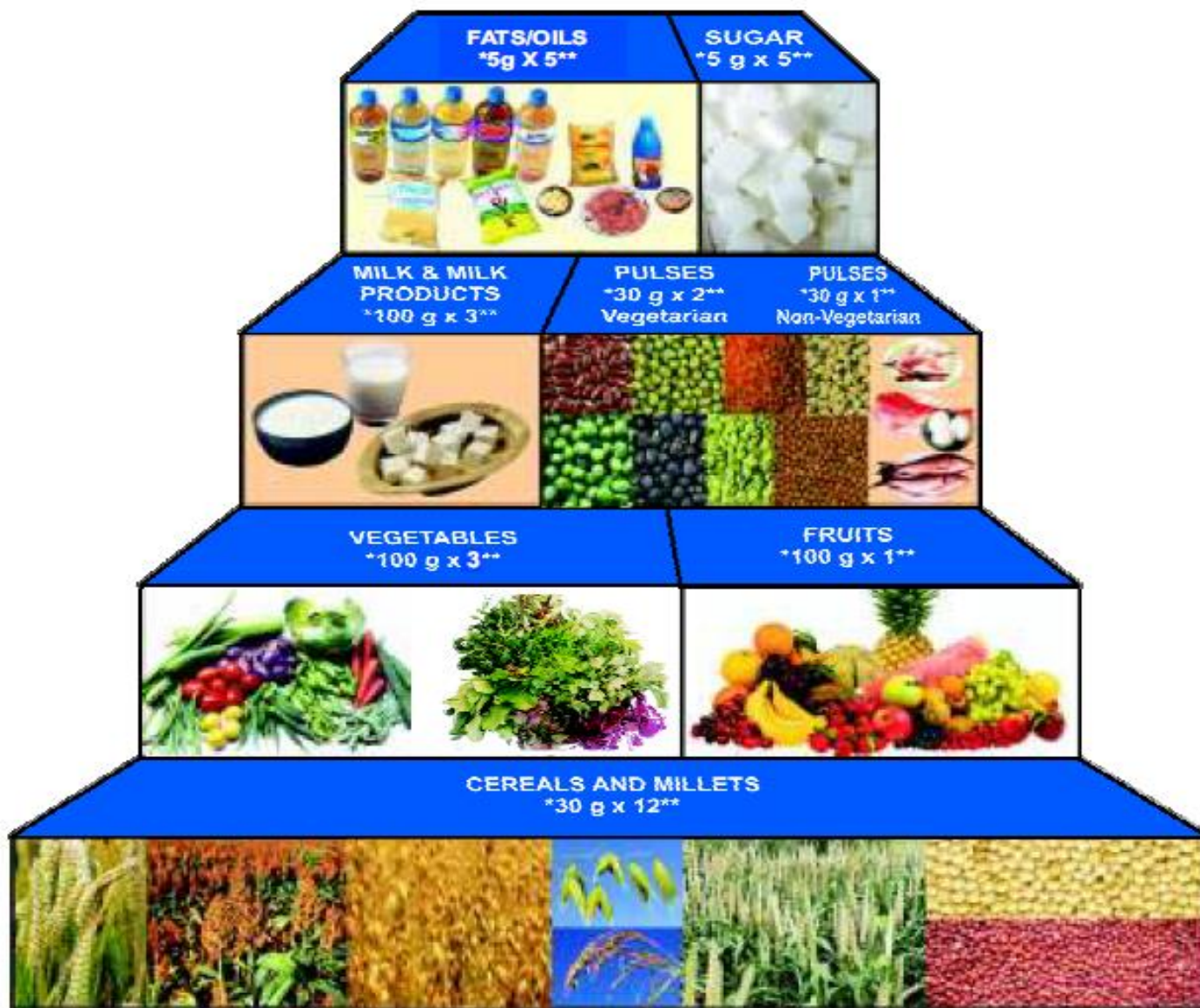
Servings size

	Rice, upma, kichidi, porridge, cereal flakes	1 cup
	Pulses	½ cup
	Boliled egg, omlet	1 no
	Chicken urry , mutton curry	¾ cup
	Fish	2 big piece
	Tea, coffee, milk	1 cup
	Apple, banana, orange, mango	1 medium size
	Water melon, pineapple	1 slice
	Grpes	30 peices

**Balanced Diet for Adults - Sedentary/ Moderate/ Heavy Activity
(Number of portions)**

	Type of work						
	g/portion	Sedentary		Moderate		Heavy	
		Man	Woman	Man	Woman	Man	Woman
Cereals & millets	30	12.5	9	15	11	20	16
Pulses	30	2.5	2	3	2.5	4	3
Milk & milk products	100 ml	3	3	3	3	3	3
Roots & tubers	100	2	2	2	2	2	2
Green leafy vegetables	100	1	1	1	1	1	1
Other vegetables	100	2	2	2	2	2	2
Fruits	100	1	1	1	1	1	1
Sugar	5	4	4	6	6	11	9
Fat	5	5	4	6	5	8	6

BALANCED DIET FOR ADULT MAN (SEDENTARY)



* Portion Size.

** No. of Portions

Elderly man: Reduce 3 portions of cereals and millets and add an extra serving of fruit

BALANCED DIET FOR ADULT WOMAN (SEDENTARY)



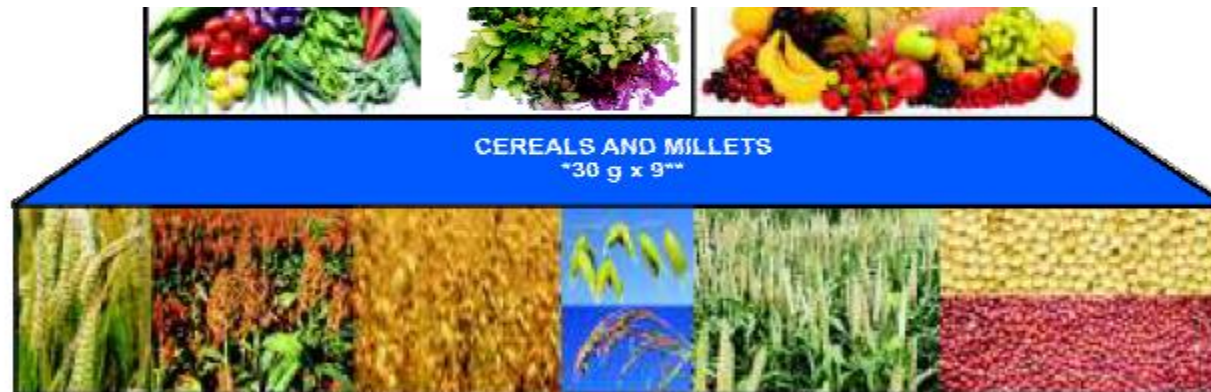
Extra Portions:

Pregnant women : Fat/Oil-2, Milk-2, Fruit-1, Green Leafy Vegetables-1/2.

Lactating women : Cereals-1, Pulses-2, Fat/Oil-2, Milk-2, Fruit-1, Green Leafy Vegetables-1/2

Between 6-12 months of lactation, diet intake should be gradually brought back to normal.

Elderly women : Fruit-1, reduce cereals and millets-2.



* Portion Size.

** No. of Portions

Extra Portions:

Pregnant women : Fat/Oil-2, Milk-2, Fruit-1, Green Leafy Vegetables-1/2.

Lactating women : Cereals-1, Pulses-2, Fat/Oil-2, Milk-2, Fruit-1, Green Leafy Vegetables-1/2

Between 6-12 months of lactation, diet intake should be gradually brought back to normal.

Elderly women : Fruit-1, reduce cereals and millets-2.

Nutritional problems in public health

- Low birth weight
- Protein energy malnutrition
 - Gomez classification
 - Waterlows classification
 - Height for age
 - Weight for height
 - WHO classification
 - Arm circumference

Preventive measures

- Health promotion
 - Promotion of breast feeding
 - Low cost weaning foods
 - Nutrition education
 - Family planning
 - Nutritional supplementation
- Specific protection
 - Providing protien and energy rich food
 - Immunization
 - Food fortification
- Early diagnosis and treatment
 - Periodic surveillance
 - Treatment of infections
 - ORT
 - Supplementary feeding programs
 - Deworming

Nutritional problems in public health

- Xerophthalmia
- Nutritional anemia
- Iodine deficiency disorders
- Fluorosis
- Lathyrism
- Cardiovascular diseases
- Diabetes
- Obesity
- Cancer

Food borne diseases

- Disease which is infectious or toxic in nature caused by agents that enter the body through ingestion of food.
- Foodborne intoxication
 1. naturally occurring toxins in food
 - Lathyrism (beta oxylal amino alanine)
 - Endemic ascitis (pyrolizidine alkaloids)
 - Epidemic dropsy (sanguinarine)
 2. Toxins produced by bacteria
 - Botulism
 - Staphylococcus poison
 3. Toxins produced by fungi
 - Aflatoxin
 - Fusarium
 - Ergot
 - 5 Food borne chemical poisoning
- Food borne infection

Nutrition & Health

■ Assessment of Nutrition status:

1. Clinical examination
2. Anthropometry- Ht., Wt., Skin fold thickness, arm circumference, head & chest circumference among children.
3. Laboratory & biochemical assessment- Hb, stool & urine tests, nutrient estimation like Serum retinol or metabolite estimation
4. Functional assessment- erythrocyte fragility, prothrombin time, heart rate, sperm count

Nutrition & Health

■ Assessment of Nutrition status:

4) Assessment of dietary intake

- i. Weighment of raw food
- ii. Weighment of cooked food
- iii. 24 hr recall method
- iv. Inventory method list
- v. Expenditure pattern method
- vi. Diet history
- vii. Duplicate samples
- viii. Recording method

Nutrition & Health

■ Assessment of Nutrition status:

5) Vital statistics

- i. Mortality
- ii. Morbidity

6) Assessment of ecological factors

- i. Food balance sheet
- ii. Socio-economic factors- family size, occupation
- iii. Health & educational services
- iv. Conditioning influences- parasites, bacteria, virus

Common Nutrition Programme

- Vit A prophylaxis programme
- Prophylaxis against nutritional anemia
- Control of Iodine deficiency disorder
- Balwadi nutrition programme
- Integrated Child Development Services (ICDS)
- Mid-day meal programme
- Mid-day meal scheme

Research: Diets & Lipid Profiles

2009, small study (n=18), 4 week maintenance phase of 3 diets:

Diet	Category	Effect on LDL
South Beach	Mediterranean, low-carb, high-pro	↓ 11.8%
Ornish	High-carb, low-fat	↓ 16.6%
Atkins	High-fat, high-pro, low-carb	↑ 8.1%

Brachial artery testing to measure flow-mediated vasodilation found an inverse correlation with intake of saturated fat

Omega-3 Fatty Acids

- Group of polyunsaturated fatty acids
- Essential – must be obtained in the diet
- Component of cell membranes
- Mediate inflammation, regulate blood clotting and contraction/relaxation of arterial walls
- May be helpful in relieving symptoms in rheumatoid arthritis and age-related macular degeneration

Omega-3 Fatty Acids

ALA: alpha-linolenic acid	Vegetable oils: canola, soybean, flaxseed Nuts (walnuts), flax Brussels sprouts, kale, spinach, greens Can be converted – in very small amounts – to EPA + DHA in the body
EPA: eicosapentaenoic acid	EPA + DHA Fatty fish: salmon, herring, mackerel, trout, sardines
DHA: docosahexaenoic acid	DHA: brain development, nervous system

AHA Omega-3 Recommendations

If no documented CHD:

- Eat fish at least 2 times (2 servings per week)
- Serving is 3.5 oz cooked, about $\frac{3}{4}$ cup flaked fish

If documented CHD:

- 1 gram per day of EPA + DHA
- Preferably from fatty fish but consider supplements

If ↑↑ TG:

- May need 2-4 g/day

EPA + DHA Content of Foods (6oz)

Food	DHA + EPA (mg)	Food	DHA + EPA (mg)
Atlantic salmon, farmed	3,650	Sardines, veg oil (3 oz)	840
Atlantic salmon, wild	3,130	Halibut	790
Coho salmon, farmed	2,180	Rockfish	750
Rainbow trout, farmed	1,960	Ocean perch	640
Coho salmon, wild	1,800	Scallops	620
Rainbow trout, wild	1,680	Skipjack tuna, fresh	560
Swordfish	1,390	Pacific cod, yellowfin tuna	470
Bumble Bee Salmon (3 oz)	1,200	Blue crab (3 oz)	400
Sardines, tomato sauce (3 oz)	1,190	Catfish, wild or Haddock	400
Pacific oysters (3 oz)	1,170	Chicken/Sea Pink Salmon 3 oz	350
Flounder or Sole	850	Shrimp (3 oz)	270

Omega-6 Fatty Acids

- Essential polyunsaturated fatty acids
- Lower LDL cholesterol
- Reduce inflammation
- Protect against heart disease
- Intake usually adequate due to vegetable oil intake
- Goal: shift ratio omega-3 ↑ and omega-6 ↓

Fish: Friend or foe

- **Known or likely benefits:**
- eating about 2 grams per week of omega-3 fatty acids in fish, equal to about one or two servings of fatty fish a week, reduces the chances of dying from heart disease by more than one-third. ([1](#))
- the omega-3 fats in fish are important for optimal development of a baby's brain and nervous system, and that the children of women who consume lower amounts of fish or omega-3's during pregnancy and breast-feeding have evidence of delayed brain development.
- **Possible benefits:** Eating fish once or twice a week may also reduce the risk of stroke, depression, Alzheimer's disease, and other chronic conditions.
- **Possible risks:** . The contaminants of most concern today are mercury, polychlorinated biphenyls (PCBs), dioxins, and pesticide residues. Very high levels of mercury can damage nerves in adults and disrupt development of the brain and nervous system in a fetus or young child. The effect of the far lower levels of mercury currently found in fish are controversial. They have been **linked to subtle changes in nervous system development and a possible increased risk of cardiovascular disease**. The case for PCBs and dioxins isn't so clear. A comprehensive report on the benefits and risks of eating fish compiled by the Institute of Medicine calls the **risk of cancer from PCBs "overrated"**.

Recommendation for fish consumption in pregnancy

- Don't eat **shark**, swordfish, **king mackerel (ayakoora)**, or tilefish (sometimes called golden bass or golden snapper) because they contain high levels of mercury.
- Eat up to 12 ounces (two average meals) a week of a variety of fish and shellfish that are lower in mercury. Shrimp, canned light tuna, salmon, pollock, and catfish are low-mercury fish. Albacore ("white") tuna has more mercury than canned light tuna. So limit your intake of albacore tuna to once a week. You can find a table of various fish, their omega-3 fatty acid content, and their average load of mercury and other contaminants online in the article by Mozaffarian and Rimm. ([1](#))
- Check local advisories about the safety of fish caught by family and friends in your local lakes, rivers, and coastal areas. If no advice is available, eat up to 6 ounces (one average meal) per week of fish you catch from local waters, but don't consume any other fish during that week.

Table 2. Levels of n-3 Fatty Acids and Contaminants in Commonly Consumed Fish, Shellfish, and Other Foods* (cont)

	EPA + DHA, mg/serving (Serving Size)	EPA + DHA, mg/100 g (3.5 oz)	Selenium, µg/g (ppm)	Mercury, µg/g (ppm)	PCBs, ng/g (ppb)	Dioxins, TEQ pg/g (ppt)
Shellfish						
Clams	241 (3 oz)	284	0.64	<0.05	3 (2001-2003) ¹¹² 2 (2002) ¹¹⁰	0.05 (2001-2003) ¹¹² 0.05 (2002) ¹¹⁰ 0.10 (1997-1998) ¹⁰⁰
Crab	351 (3 oz)	413	0.40	0.09	6 (2002) ¹¹²	0.55 (2002) ¹¹² 1.05 (1998) ¹¹¹
Lobster	71 (3 oz)	84	0.43	0.31		0.69 (1998) ¹¹¹ 0.12 (1997-1998) ¹⁰⁰
Mussels	665 (3 oz)	782	0.90	<0.15	7 (2001-2003) ¹¹² 0.8 (2002) ¹¹² 2 (2002) ¹¹⁰	0.09 (2001-2003) ¹¹² 0.11 (2002) ¹¹² 0.07 (2002) ¹¹⁰ 0.39 (1998) ¹⁰⁰ 0.45 (1995-1996) ¹⁰⁷
Oysters	585 (3 oz)	688	0.77	<0.05	17 (2001-2003) ¹¹² 0.8 (2002) ¹¹²	0.46 (2001-2003) ¹¹² 0.19 (2002) ¹¹²
Scallops	310 (3 oz)	365	0.28	<0.05		0.16 (1998) ¹¹¹
Shrimp	267 (3 oz)	315	0.40	<0.05	2 (2002) ¹¹⁰ 0.2 (2002) ¹¹²	0.06 (2002) ¹¹² 0.11 (2002) ¹¹⁰ 0.06 (2001) ¹¹⁰ 0.19 (1995-1997) ¹⁰⁰ 0.08 (1995-1996) ¹⁰⁷
Other Foods						
Beef	0	0	0.19	0	22 (2001) ¹¹⁰	0.13 (2001) ¹¹⁰ 0.27 (1995) ¹²⁰
Bologna	0	0	0.14	0		0.16 (2001) ¹¹⁰ 0.29 (1995) ¹²⁰
Butter, regular	0	0	<0.05	0	70 (2001) ¹¹⁰	0.22 (2001) ¹¹⁰ 0.31 (1995-1996) ¹⁰⁷ 0.66 (1995) ¹²⁰
Cheese	0	0	0.22	0		0.25 (2001) ¹¹⁰ 0.77 (1998) ¹¹¹ 0.34 (1995) ¹²⁰
Chicken	0	0	0.23	0	32 (2001) ¹¹⁰	0.02 (2001) ¹¹⁰ 0.20 (1995) ¹²⁰
Eggs	22 (1 egg)	43	0.23	0	19 (2001) ¹¹⁰	0.05 (2001) ¹¹⁰ 0.52 (1998) ¹¹¹ 0.31 (1995) ¹²⁰
Milk, whole	0	0	0.02	0		0.01 (2001) ¹¹⁰ 0.12 (1995-1996) ¹⁰⁷ 0.13 (1995) ¹²⁰
Pork	0	0	0.34	0	18 (2001) ¹¹⁰	0.10 (2001) ¹¹⁰ 0.23 (1995) ¹²⁰

*All values are in mg/100 g (3.5 oz) unless otherwise noted. EPA = eicosapentaenoic acid; DHA = docosahexaenoic acid; PCBs = polychlorinated biphenyls; TEQ = toxic equivalents.

DASH diet

- **DASH.** In the first DASH trial, which was completed in 1997, half of the 459 participants were assigned to a diet that emphasized fruits, vegetables, and low-fat dairy foods, and that limited red meat, saturated fats, and sweets. The other half got a standard Western diet. All of the participants' meals were prepared by the DASH kitchen. After eight weeks, the DASH diet reduced systolic blood pressure (the top number of a blood pressure reading) by 11.4 millimeters of mercury (mm Hg) and the diastolic pressure (the bottom number of a blood pressure reading) by 5.5 mm Hg. (4) The second trial looked at the impact of a low-sodium DASH diet. It worked even better. Lower sodium reduced blood pressure whether it was part of the usual U.S. diet or the DASH diet.

Tips to increase fruits and veg intake

- Try these tips to fit more fruits and vegetables into your day:
- **Keep fruit out where you can see it.** That way you'll be more likely to eat it. Keep it out on the counter or in the front of the fridge.
- **Get some every meal, every day.** Try filling half your plate with vegetables or fruit at each meal. Serving up salads, stir fry, or other fruit and vegetable-rich fare makes it easier to reach this goal. Bonus points if you can get some fruits and vegetables at snack time, too.
- **Explore the produce aisle and choose something new.** Variety is the key to a healthy diet. Get out of a rut and try some new fruits and vegetables—include dark green leafy vegetables; yellow, orange, and red fruits and vegetables; cooked tomatoes; and citrus fruits.
- **Bag the potatoes.** Choose other vegetables that are packed with more nutrients and more slowly digested carbs.
- **Make it a meal.** Try some new recipes where vegetables take center stage, such as [Tunisian carrot salad](#) and [spicy broccolini with red pepper](#).

Tips for alcohol

- **1. If you don't drink, there's no need to start.** For some people—especially pregnant women, people recovering from alcohol addiction, people with a family history of alcoholism, people with liver disease, and people taking one or more medications that interact with alcohol—the risks of drinking outweigh the benefits. There are other ways to boost your heart health and lower your risk of diabetes, such as getting more active, staying at a healthy weight, or eating healthy fats and whole grains.
- **2. If you do drink, drink in moderation—and choose whatever drink you like.** Wine, beer, or spirits—each seems to have the same health benefits as long as moderation's the word (no more than one drink per day for women, and no more than two drinks per day for men). To read more about whether the type of alcohol consumed has any effect on health, read ["Is Wine Fine, or Beer Better?"](#)
- **3. Take a multivitamin with folic acid.** Folic acid is the synthetic form of folate, a B vitamin that may help lower the risk of heart disease and cancers of the colon and breast. Those who drink may benefit the most from getting extra folate, since alcohol moderately depletes our body's stores. The amount in a standard multivitamin—400 micrograms—is enough, when combined with a healthy diet. To learn more about [folate](#), check out the vitamins section of The Nutrition Source.
- **4. Ask your doctor about your drinking habits.** If you (or your friends) think you may have a problem with drinking, talk to a doctor or other health professional about it. He or she can help.
- **5. Pick a designated driver.** Alcohol and driving do not mix. If you've been out drinking