Recommended dietary allowances
Introduction:

- The first attempt to recommended dietary allowances of energy, protein, iron, calcium, Vitamin A, thiamine, ascorbic acid and Vitamin D for Indians was made by the Nutrition Advisory Committee of the League of Nations in 1937.
Recommended Dietary Allowances (RDA) for Indians:

• RDA is defined as the nutrients present in the diet which satisfy the daily requirement of nearly all individuals in a population. This implies addition of safety factor amount to the estimated requirement to cover
  ▪ Variation among individuals
  ▪ Losses during cooking
  ▪ Lack of precision in estimated requirement

• Recommended Dietary Allowances = Requirements + Safety factor
Recommended Dietary Allowances of an individual depends on many factors like:

- Age
- Sex
- Physical work
  - Sedentary
  - Moderate
  - Hard (Heavy)
- Physiological stress
  - Pregnancy
  - Lactation
For all the nutrients (except energy) estimates of allowances are arrived at by determining the average. Taking mean requirement of nutrients and adding to it twice the standard deviation of the mean.

\[
\text{Requirement} = \text{Mean} \pm 2\text{SD}
\]

The value will meet more than 97.5% of the population which is composed of individuals with a satisfactory normal distribution of requirements.
ICMR has defined well nourished Indian adults who had satisfactory growth during childhood as

- Reference man
- Reference woman

Reference Man is between 20 – 39 years of age, and weighs 60 kg. He is free from disease and physically fit for active work. On each working day he is employed for 8 hours, 4-6 hours sitting and moving about, and 2 hours in walking or in active recreation or household duties and 8 hours in bed.
Reference Woman is between 20-39 years of age, and healthy, and weighs 50kg. She may be engaged 8 hours in general household work or in light industry or in any other moderately active work. Apart from 8 hours in bed, she spends 4-6 hours sitting or moving around in light activity, and 2 hours walking or active recreation or household chores.
Scientists have prescribed RDA for adults, depending on the level of activity of individual.

**Sedentary workers:** Those who sit and do work using brain and hands.

Ex: teachers; clerks, typists, officers
Moderate workers: Works vigorously for a few hours using many parts of the body like hands, feet and muscles.

   Ex: postman; mali; maid servant; housewife doing all household work.

3. Heavy workers: Use different parts of body for several hours.

   Ex: rickshaw pullers; coolies; workers in mines; sports persons, masons etc.
**Energy:** Only nutrient where extra allowances are not made. The energy requirements of an individual is the level of energy intake from food that will balance energy expenditure when the individual has a body size and composition and level of physical activity, consistent with long term good health that will allow for maintenance of economically necessary and socially desirable activity.
The unit of energy is the Kilocalorie (kcal).

Recently, International Union of Sciences and International Union of Nutritional Sciences adopted “Joule” as unit of energy.
Protein:

- Dietary protein provides amino acids for synthesis of body proteins and other biologically important nitrogenous compounds in the body.

- During pregnancy and lactation, additional proteins are required for
  - Synthesis of foetal tissue protein
  - Synthesis of milk proteins

- Dietary protein should provide all eight essential amino acids.
FATS

Fat is a major nutrient and has several functions like:

- It is a concentrated source of energy and increases the energy density of the diet.

- It helps in the absorption of beta-carotene and other fat soluble vitamins.
Dietary fat must also provide essential fatty acids which are the functional components of membrane lipids and have other important metabolic function.

Considering the EFA requirement of different groups and knowing that the total invisible fat in a cereal based diet can meet more than half the linoleic acid requirement of an adult.

The visible fat should preferably be in the form of an oil containing at least 20% linoleic acid.
VITAMINS:

Vitamins are accessory food factors which carry out diverse functions in the body.

Vitamin A is needed for visual function and growth, while vitamin D is needed for Ca absorption and bone formation.
The B-group vitamins, thiamine, riboflavin, nicotinic acid and pyridoxine take part as coenzymes in a number of reactions involving the metabolism of carbohydrate, protein and fat.

The requirements of B-complex vitamins are generally related to energy intake. Two vitamins, folate and B\textsubscript{12} are needed for haemopoiesis or the formation of red cells.
Minerals

They are the naturally-occurring chemicals we need to live – excluding oxygen, nitrogen, hydrogen and carbon.

There’s no such thing as *essential* minerals – because all dietary minerals are essential. However, we need more of some than others. That’s why we have major minerals (or macro-minerals).
The recommended daily amount of major minerals is typically 100mg or more

Micro or trace minerals are those minerals which the body requires less than 100 milligrams per day.
Deriving RDA

- Dietary intake of healthy individuals

- Growth – during infancy
  Nutrition balance studies. Intake = Output. Ca:P
  Intake = Output
- Obligatory/endogenous losses. eg. Protein

- Factorial methods: Iron, energy

- Depletion – repletion studies (water soluble vitamins)

One or more methods are used for deriving RDA