

Hello students, welcome to this module on food Exchange under the unit principles of meal planning

of the subject nutritional lifespan approach. I will talk on the food exchange and its usage .

outline

1. What is food exchange list?
2. IFCT 2017
3. Uses of food exchange list and
4. the different food exchanges

Expected outcome: At the end of the module Students should be able to

- to explain the uses of food exchange lists
- plan a diet using a food exchange list.

what is a full exchange?

It is a grouping of foods in which specified amounts of all the foods provide approximately equal amount of carbohydrate, protein and fat and hence energy content. Specific foods within the group may vary slightly in its nutritive value from the averages stated in the group. These differences in composition tend to cancel out because of the variety of foods selected from day to day. Thus, any food within a given list can be substituted or exchanged for any other food in that list in the given quantities.

There are certain steps which have been used in the development of exchange list. There are three steps.

1. the standardization of serving or portion size- portion size largely vary in India .eg. Idlis, dosas, chapattis and puris of different sizes in different states in different households. Despite this, some attempts have been made to define portion sizes.
2. calculating the energy, the carbohydrate, protein and fat content of 1 serving or portion size of the different dishes. one need to keep in mind that you need to convert the cooked weight of 1 serving of a dish to raw weight of the ingredients that have gone into it. Although allowances should be made for cooking losses, this has not been done and in fact it can be Done in future. from the raw weights of the ingredients in one serving and using the Indian food composition Table energy,macronutrient content per serving can be calculated.
3. creating an exchange list of different dishes in terms of standard portion sizes that would provide approximately the same energy or carbohydrate or fat as the case may be. Since foods contain widely varying amount of the macro nutrients, serving or portion sizes are defined for a group of more. Or less homogeneous foods.

Indian food composition tables was released by National Institute of Nutrition and ICMR in 2017. It provides the nutritional values for 528 key foods and each food was compositely sampled from 6 different regions covering the entire country, thus representing the National food supply and consumption pattern. The nutrient mean of six regions represents the national value and Standard deviation represents the national variability. Data on vitamin D2, oligosaccharides, phyto sterols, organic acids and individual polyphenols are hallmark contributions by IFCT. It provides pictorial description of foods along with scientific nomenclature and names in 17 Indian official languages. The new IFCT 2017 is

expected to bring about paradigm change in nutrition research in the country. There are 12 tables providing nutrient data and proximate principles and dietary fiber. Water soluble vitamins, fat soluble vitamins, carotenoids, minerals and trace elements such as individual sugars, complete fatty acid profile, amino acid profile, organic acids, polyphenols, oligosaccharides, phytosterol, saponin content, phytate and complete fatty acid profile of edible oils and fats.

IFCT has got a number of food entries in each food group which are 24 of cereals and millets, 25 grains and legumes, around 34 green leafy vegetables, 78 of other vegetables, 68 fruits, 19 types of roots and tubers, condiments and spices of values of around 33, 21 nuts and oils seeds have been included. Sugar mushrooms 4 varieties, miscellaneous foods, Milk and milk products(4), milk and milk products(4), poultry(19), 63 types of animal meat, 92 varieties of marine fish, 8 types of marine shellfish. Apart from that, marine mollusks(7) and freshwater fish and self shellfish(10) is also being included.

Use of food exchange especially for a dietitian or a nutritionist

The nutritive value may be calculated from food composition tables. In fact, the IFCT tables are used to calculate therapeutic diets, we would find it very cumbersome and time consuming and needlessly precise. Undoubtedly, as we are using IFCT, the values are going to be precise, but Dietitian does not have the time to calculate for each day the energy and nutrient composition of the food required to fulfill the dietary prescription. Thus, an Exchange List was evolved.

Food exchange system allows one to choose a variety of foods with adequate nutrients.

The food exchange system is important in planning a nutritious diet. Essentially, the Food Exchange System allows variety to be introduced into the diets without altering the energy or the macronutrient contents. The exchange lists are especially useful in planning diets for metabolic diseases and are very useful in the management of obesity and in fact in dealing with various other clinical conditions.

Types of exchanges

- cereal and pulses exchange
- Milk and milk product exchange, which has been derived based on the food composition table, if you take approximately around 35 grams of cereals or 30 grams of quinoa or 30 grams of rice or 30 grams of

Pulses on an average it is contributing to around 100 Kcalories. 30 grams of pulses is going to on an average give you 6.3 grams of protein whereas cereals contribute to 3.6 grams of proteins. Any type of cereals or 35 grams approximately except for of course rice, will 22.8 grams of carbohydrates whereas rice contributes to 23gms. Earlier we would call this as 100 kcal Exchange.

- egg. If you take whole boiled egg, it's going to contribute to 74 kilocalories, whereas fat content is 5.2 grams and protein is 6.7 grams. If you take whole egg white or yolk the value differs.
- Leafy vegetables- 100 grams of leafy vegetables will provide us with approximately 34 Kcalories and 3.5 grams of carbohydrates, whereas 100gms of other vegetables can contribute to 28 kilocalories of energy and four grams of carbohydrates. In fact, if one consume 100 grams of mushrooms, it will give 35 Kcalories

- Fruit exchange -fruits for convenience has been categorized as low sugar fruits, an high sugar fruits and we can see the contributions that it can make with regard to exchanges on.
- nuts and oilseeds
- sugars
- fats,
- miscellaneous products such as sugar cane juice and coconut water.

So in case if you take 5grams of sugar in your diet, it's going to contribute to 20Kcalories and directly 5 grams of carbohydrates. 5 grams of fat is going to give you only energy to the extent of 45K calories and five grams of fats.

The features of food exchanges are although the exchange system reflects average and not specific energy and nutrient values, the therapeutic success that results when the values are used to calculate a diet pattern demonstrate that the method is accurate and it is enough to serve this purpose.

Please peruse IFCT 2017 in detail and the other list of references and the dietary Guidelines by ICMR, which is going to give you more insight . Thank You very much.