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18/MHS01/271

MEDICAL LABORATORY SCIENCE

BCH 206 ASSIGNMENT

1. Functional foods are foods fortified with new ingredients or components not normally found in a particular food. They include foods which have been naturally enhanced through special growing conditions, new feed composition, genetic manipulation or otherwise.

b. Different types of functional foods

CONVENTIONAL FOODS; These are foods grown by the administration of antibiotics and growth hormones to improve the growth and well being of foods.

FORTIFIED FOODS; these are foods to which extra nutrients have been added. Examples of these nutrients include vitaminA, vitamin B, vitamin D, folic acid, iodine and iron.

MEDICAL FOODS; These are foods that are specially formulated and intended for the dietary management of a disease that has distinctive nutritional needs that cannot be met by normal diet alone.

PROCESSED FOODS; this includes foods that have been cooked, canned, frozen, packaged or changed in nutritional composition with fortifying, preserving or preparing in different ways.

c. Clinical implications of functional foods and relevant examples

Dairy products are functional foods which are one of the best sources of calcium, an essential nutrient which can prevent osteoporosis and possibly colon cancer.

Some functional foods such as beef hasve and anticarcinogenic acid known as conjugated linolenic acid (CLA). It is effective in suppressing forestomach tumors and also to change body composition.

Cranberry has been recognized as efficacious in the treatment of urinary tract infections, it also inhibits the adherence of Escherichia coli to uroepithelial cells.

Citrus fruits are protective against a variety of human cancer as well as broccoli and other cruciferous vegetables.

1. Nutritional status assessment is a method used to determine whether a person or a group of people is well nourished or malnourished. It involves the interpretation of anthropometric, biochemical, clinical data.

b. Anthropometric techniques of nutritional assessment and its applications.

Accurate measurement of height and weight is essential. The results can then be used to evaluate the physical growth of the child.For growth monitoring the data are plotted on growth charts over a period of time that is enough to calculate growth velocity, which can then be compared to international standards.

Measurements for adults

Height:The subject stands erect & bare footed on a stadiometer with a movable head piece. The head piece is leveled with skull vault & height is recorded to the nearest 0.5 cm.

Anthropometric Measurements

Mid-arm circumference

Skin fold thickness

Head circumference

Head/chest ratio

Hip/waist ratio

Waist/Hip RatioWaist circumference is measured at the level of the umbilicus to the nearest 0.5 cm.The subject stands erect with relaxed abdominal muscles, arms at the side, and feet together.The measurement should be taken at the end of a normal expiration.

Waist circumference

Waist circumference predicts mortality better than any other anthropometric measurement.It has been proposed that waist measurement alone can be used to assess obesity, and two levels of risk have been identified.

LEVEL 1 and 2 for males 94cm and 102cm

Level 1 and 2 for females 80cm and 88cm

Waist circumference/2

Level 1 is the maximum acceptable waist circumference irrespective of the adult age and there should be no further weight gain.Level 2 denotes obesity and requires weight management to reduce the risk of type 2 diabetes & CVS complications.

Hip Circumference

This is measured at the point of greatest circumference around hips & buttocks to the nearest 0.5 cm.The subject should be standing and the measurer should squat beside him.Both measurement should taken with a flexible, non-stretchable tape in close contact with the skin, but without indenting the soft tissue.

Interpretation of WHR

High risk WHR= >0.80 for females & >0.95 for males i.e. waist measurement >80% of hip measurement for women and >95% for men indicates central (upper body) obesity and is considered high risk for diabetes & CVS disorders.A WHR below these cut-off levels is considered low risk.

c. Nutrition as it relates to life stages.

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| Life stage | nutritional needs |
| pregnancy | Increased requirements; energy, protein, essential fatty acids, vitamin A, vitamin C, B-vitamins( B1, B2, B3, B5, B6, B12, folate, choline) and calcium, phosphorus, magnesium, potassium, iron, zinc, copper, chromium, selenium, iodine, manganese, molybdenum. Women in pregnancy are expected to feed well and keep their weight intact not overweight or underweight as this can lead to a difficult delivery, endangering the woman and the child. |
| lactation | Increased requirements; vitamin A, C, E, and all B- vitamins, sodium, magnesium  Decreased requirements; iron. |
| Infacy and childhood | Increased requirements; energy protein, essential fatty acids |
| adolescence | Increased requirements; energy, protein, calcium, phosphorus, magnesium, zinc (females only) |
| Early adulthood( 19-50) | Increased requirements for males compared with females; vitamins C, K, B1, B2, B3, and choline, magnesium, zinc, chromium, manganese.  Increased requirements for females cpmpared to males; iron |
| Middle age(51-70) | Increased requirements; vitamin B6, vitamin D |
| Elderly age (70 and above) | Increased requirements; vitamin D  Decreased requirements; energy, iron |