Practical Manual

FN504 Advances in Community Nutrition (2+1)

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Exercise 1

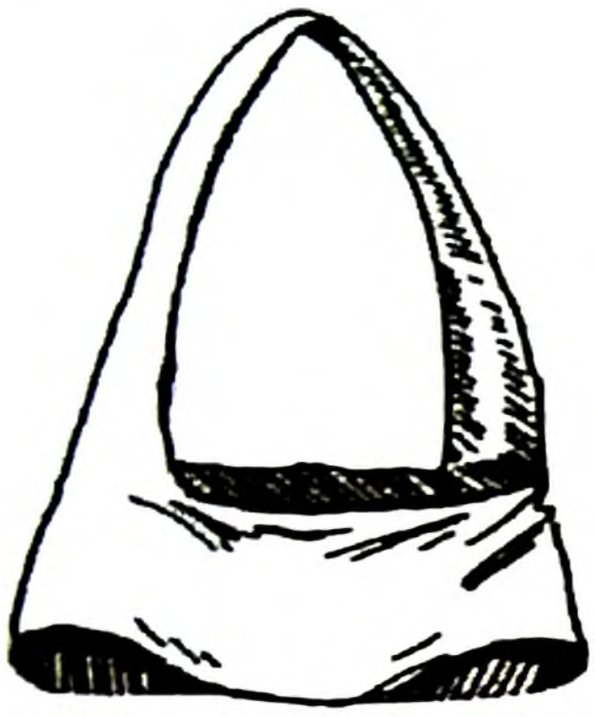
ASSESSMENT OF NUTRITIONAL STATUS OF PRE-SCHOOL CHILDREN BY USING ANTHROPOMETRIC MEASUREMENT.

Introduction

- India contributes to more than one-third of the under nourished children in the world.
- According to NFHS 3 survey (2016), 43% under -five children in India were under weight and 48% were stunted. In Kerala, the prevalence of underweight among under five children is 28.3% and stunting 21.1%.
- Child malnutrition is a wide spread public health problem having international consequences because good nutrition is an essential determinant for their well-being.
- The most neglected form of human deprivation is malnutrition, particularly among preschool children. India is one of the few countries in the world where poor nutritional status among preschool children is detrimental to their health outcome.
- Nutritional status indicators like wasting, stunting, low birth weights, breast feed availability and vitamin A deficiency are also still high in India compared to the USA and China.
- Child malnutrition reflects a number of intermediary processes such as household access to food, access to health services and caring practices. Kerala's health care system is moving through a very turbulent period. In spite of having the best indicators on child development, certain disturbing trends have emerged in the state in recent years affecting this status.

- This includes low birth weight, stunting of growth, wasting, increasing trends of underweight, poor maternal nutritional status and high rate of anaemia among women and children, etc (NFHS-3, 2005-06).
- Though Kerala known world over for its high human development achievements attained without much rural-urban disparities and caste-class differentiation, the State is now facing serious threats, especially in the field **of nutritional status among rural preschool children.**
- Various NFHS rounds and District level household survey (DLHS-3, Kerala) sweeps light on not so rosy picture of child nutritional status.
- **All India child nutritional status reveals that there are 38 percent of stunted, 19 percent of wasted and 46 percent of underweight children whereas Kerala accounts for 21 percent of stunted, 16 percent of wasted and 29 percent of underweight children.**
- These reports also reveals that **rural preschool children** have **more difficulty** in coming out of '**under nutrition trap'** when they enter into the stages of adolescent and adulthood in contrast to the urban children.
- Several previous studies concluded prevalence of large disparities in district wise analysis of child nutritional status in Kerala.
- **Though Kerala has been successfully implementing all nutrition oriented programmes and related programmes of housing, sanitation and potable drinking water, the state could not achieve the nutritional level of best performing states.**

Special Features



- An evaluation of the growth provides useful insights into the nutrition and health situation not only of individuals but also of entire population groups.
- Usually basic measurements of weight and height are collected, sometimes in conjunction with others such as arm circumference and triceps skinfolds (fat folds).
- This information, recorded together with age and sex, provides a valuable profile of body composition and physical development that is an expression of nutritional status.
- Measurements are then evaluated either alone or with each other as ratios, for example weight-for-height, height-for-age, and weight-for-age.
- These ratios, in turn, are compared with reference standards in order to assess the relative status of an individual or group.
- Each index expresses a distinct biological process and their use has permitted a distinction between different types of under nutrition which have different etiologies.
- This distinction is quite important for public health purposes and for the epidemiological assessment of nutritional status.
- Anthropometric indicators are most effectively used to describe the nutritional status of populations as an expression of the magnitude and distribution of under nutrition.
- They are less accurate than other methods, however, when it comes to assessing individual nutritional status.
- In many field situations, where resources are severely limited, it is possible to use anthropometry as a screening device to identify individuals at risk of under nutrition.
- This preliminary diagnosis can be followed up with a more elaborate investigation using other techniques.

- In a similar fashion, growth monitoring is a tool for systematically following the growth of groups at risk, for example children and pregnant women, by measuring rate of growth or body mass.
- Growth monitoring permits the detection of individuals with faltering growth, who can then be appropriately referred to specialized care.
- For children and pregnant women, inadequate growth and weight gain is often, though not exclusively, the result of inappropriate dietary, health and other factors.
- Measuring change in nutritional status is thus an important early warning device and an effective means of preventing even more severe further consequences.
- Technical Officer, Nutrition, Division of Family Health, World Health Organization, Geneva.
- Trend assessment-Thanks to the standardization that has taken place in recent years, it is possible to evaluate changes and trends over time in the nutritional situation in countries where national food and nutrition surveillance systems have been developed, or where nationally representative cross-sectional surveys have been conducted some years apart using identical, or nearly identical, methodologies.
- It is reasonable to state that these changes reflect the impact-positive, negative or null-of overall economic and development policies on the general health and nutritional status of the population.
- These trends may also highlight other changes resulting from an array of factors that affect nutritional wellbeing, for example food production and distribution, the incidence of infectious diseases, and literacy levels, particularly among women.
- Most anthropometric surveys are conducted on preschool children because they grow fast and thus demonstrate changes in nutritional status more rapidly than any other age group.
- In addition, this group reflects the immediate social and economic environment which affects the health and nutritional situation of an entire population.
- Anthropometry has also been used to assess the nutritional status of adults, in particular to evaluate obesity and related problems of over nutrition.
- For this purpose a "body-mass index" is used together with other measurements in order to describe overall body composition and fat distribution.
- Global nutritional status trends - although data that make it possible to evaluate nutrition trends are limited, it is nevertheless possible to gain some insight into the nutritional situation and changes occurring over time in a number of countries.
- Prevalence figures for underweight (low weight-for-age) have been prepared using standard methods for data collection, analysis and presentation.
- For reasons of compatibility, and to the extent possible, representative samples of the preschool population (birth to 5 years) have been weighted by age group.
- This initial look at nutritional status trends is based solely on information concerning underweight preschool children and does not differentiate between wasting and stunting, nor does it evaluate differences between age groups.

- In this evaluation of trends, it is important to bear in mind that each country is unique and any extrapolation on this basis, whether in respect of other countries in the same or other regions, is highly tenuous at best.
- Still, it is interesting, if not statistically significant, that most of the countries for which data are available indicate that there has been a **general improvement in the nutritional status of preschool children.**

Reviews

- The health and nutrition status of children is one of the crucial elements in the assessment of quality of life of the people.
- **Access to healthy diet and optimum nutrition is key to good health.**
- Following reviews focus its attention on the health consequences of malnutrition among children.
- Vinod K. Mishra et al (1999) examines 4 the multivariate analysis of the effects of selected demographic and socioeconomic factors on child malnutrition indicates that the strongest predictors of child nutrition in India are **child's age, child's birth order, mother's education, and household standard of living.**
- Susmita Bharati et al (2001) are to assess the spatial distribution of nutritional status of Indian children, the study shows that there are **gender differences and spatial variations** in the nutritional status of children in India.
- **The weight-for-age and height for-age scores** showed a dismal picture of the health condition of children in almost all states in India.
- Lily Yaa Appoh and Sturla Krekling (2001) examine the relationship between **mother's nutritional knowledge, maternal education, and child nutritional status** in the Volta Region of Ghana.
- **Maternal formal education and marital status** were also found to be associated with child nutritional status in bivariate analysis.
- GirmaWoldemariam and Timotiows Genebo (2002) examines the determinants of nutritional Status of Women and Children in Ethiopia, it reveals **that household economic status, education of parents, number of prenatal care visits of the mother, child's age, birth order and preceding birth interval** are important determinants of child stunting.
- Elangovan and Shanmugan (2002) analyses the immunization and nutritional status among children aged under five in a major district in India, it reveals that Children in rural areas in India die due **to infectious and communicable diseases.**

- Rajaram et al (2003) analyses the childhood malnutrition in Kerala and Goa revealed that the confounding factors that influence the nutritional status of children in these states. The results showed that the **relative prevalence of underweight and wasting was high in Kerala,** but the **prevalence of stunting was medium.** The study **recommends more area-specific policies for the development of nutritional intervention programmes.**
- Susmita Bharati et al (2001) are to assess the spatial distribution of nutritional status of Indian children, the study shows that there are **gender** differences and **spatial** variations in the nutritional status of children in India.
- Uma Sanghvi et al (2004) assessing potential risk factors for child malnutrition in rural Kerala, it indicate that 42-57 percent of all child deaths in developing countries are due to the potentiating effects of malnutrition on **infectious diseases,** of which over three-quarters can be attributed **to mild-to-moderate malnutrition.**
- Jayanta Bhattacharya et al (2004) examine the relationship between nutritional status, poverty and food insecurity for household members of various ages.
- While **poverty** is predictive of **poor nutrition** among preschool children, food insecurity does not provide any additional predictive power for this age group.
- Michele Gragnolati et al (2005) examined the study explores the dimensions of child under nutrition in India and **the effectiveness of the Integrated Child Development Services (ICDS) program** in addressing it.
- Jyothi Lakshmi et al (2005) investigated the **morbidity** profile of preschool children in relation to the child and maternal factors. Prevalence, duration and incidence of infections were marginally lower among female children. Age among the child factors and **literacy status and living conditions among the environmental factors** were found to be critical factors that influenced **the health status of preschool children.**
- K.R.G Nair (2007) analysed the inter-state differentials in malnourishment among children in India, it finds **the ICDS as the best package** to tackle the issues and suggest to extend it and make it more oriented towards **reducing child malnourishment.**
- HarshaAturupane et al (2008) examine the determinants of child weight and height in Sri Lanka: A quantile regression approach, it reveals that reducing child malnutrition is a key goal of most developing countries.
- To combat child malnutrition with the right set of interventions, policymakers need to have a better understanding of its economic, social and policy determinants.
- The above review of various research studies on child nutritional status has given an important insight into the factors influencing child nutritional status of preschool children.

Aim:

To assess the nutritional status of pre-school students wing, various anthropometric measurement.

Characteristics:

- The goal of nutritional assessment is to assess the present nutritional status is to prevent nutritional disorder and increased morbidity and mortality that accompany them.
- Anthropometry has been accepted as important tools for amendment of nutritional status.
- It is simple, useful, practical index which has been widely used to assess the nutritional status of children developing countries.
- Anthropometry could help in the assessment of sub-clinical stages of mal-nutrition.

Methodology:

Select pre-school children 4 to 5 years (Rural / Urban).

- **Measurement of height**: The height of the children has to be measured by using tape. The measurements need to be recorded on the wall. The subjects are asked to stand erect without shoes or chapels. With heels,buttocks, shoulders and occipit against wall. The height has to be read off from the scale on the wall.

- **Measurement of weight**: Record the Weight of children by using a bathroom balance checked by calibration with standard weights, weight has to be recorded with minimum clothing on the subject.

- **Measurement of MUAC (Mid Upper Arm Circumference)**: MUAC is an easy tool for early detection and referral of children with malnutrition.

- **For taking measurement**: The appropriate midpoint between the elbow and shoulder (olecranon and acromium has to determined).**i.e., Mid-Upper Arm Circumference** (MUAC) **Mid-Upper Arm Circumference** (MUAC) is the **circumference** of the left **upper arm**, measured at the **mid**-point between the tip of the shoulder and the tip of the elbow (olecranon process and the acromium).Thus MUAC is used for the assessment of nutritional status.

- **By using fibre glass tape**, measure around the left arm of each child (with arm bend at right angle).

- **Measurements of head circumference** - Measure by placing a tape over the occipital protuberance at the back and just over the super orbital ridge and glabella in front.

- **Chest circumference** –Need to be taken at the level of nipples in mid inspiration portion of children.

Height:

Water laws classification (1972)

Height of Age	Interpretation
<85% of expected height	Severe malnutrition
85-90% of expected height	Moderate malnutrition
90-95% of expected height	Marginal malnutrition
>95%	Normal

Weight:

Gomez Classification

Weight for Age	Interpretation
≤ 60% of weight	**Grade III Malnutrition**
61-75 % of weight	**Grade II Malnutrition**
76-89% of weight	**Grade I Malnutrition**
≥ 90% of weight	**Normal**

ICMR Standard Height and weight for 4-5 years aged Children

		Age 4yrs	**Age 5yrs**
Height	Girl	101 cm	107 cm
	Boy	102 cm	109 cm
Weight	Girl	16 kg	18 kg
	Boy	17 kg	19 kg

Body Mass Index: BMI gives a good correlation with fitness of the body. It may be used as an indicator of health work. **BMI=** $\frac{weightinKg}{heightinM^2}$

Presumptive diagnosis.

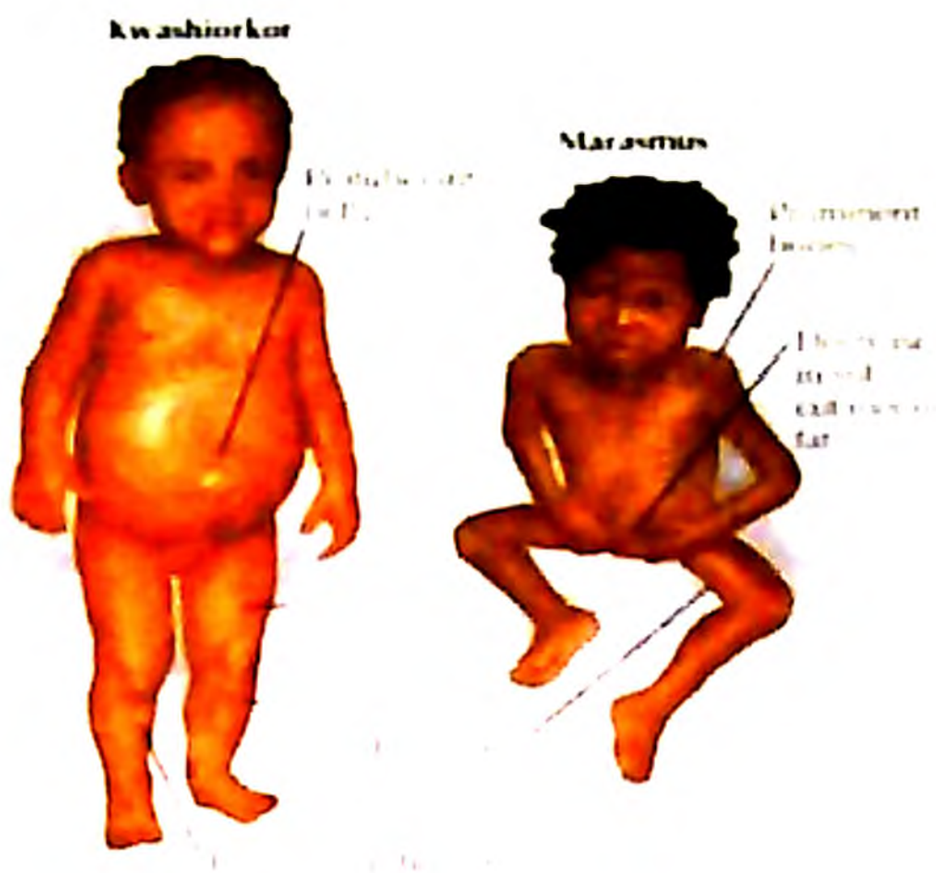
< 16.0	**CED grade 1 severe**
16 -18	**CED grade II Moderate**
17 – 18.5	**CED grade 1 Mild**
18.5 -20	**Low weight / Normal**
20 -25	**Normal**
25 – 30	**Above grade 1**
➢ 30	**Above grade II**

BMI classification as suggested by WHO

< 18.5	**Chronic Energy deficiency**
18.5 – 23	**Normal**
23 -27.5	**Over weight**
27.5 -32	**Obesity grade I**
32.5 -37.5	**Obesity grade II**
>37.5	**Obesity grade III**

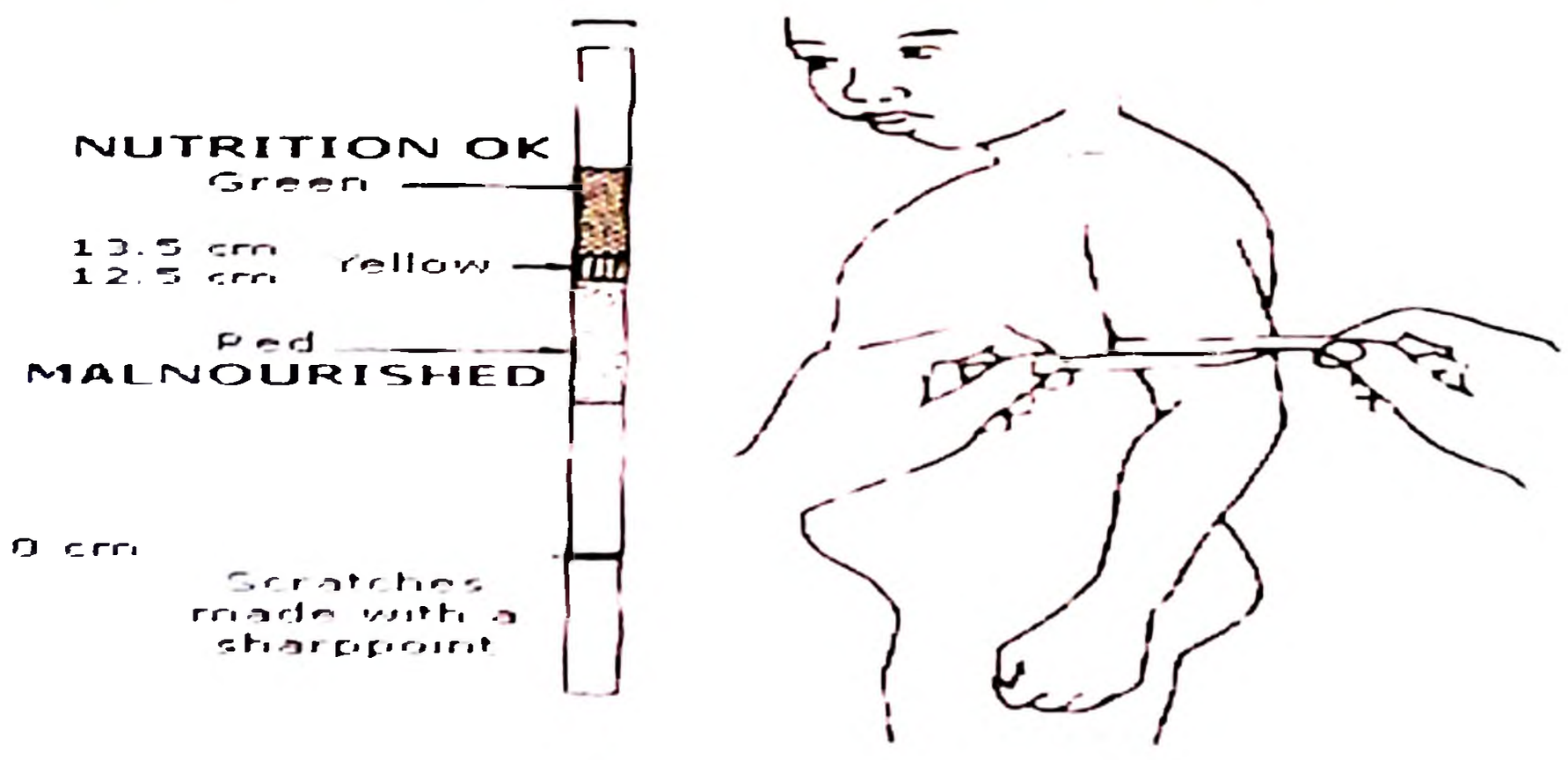
Major reason for CED:

One of the most important causes of maternal mortality is chronic Energy Deficiency (CED) which can cause bleeding and infection-According to UNICEF (2012) ,one of factors causing CED experienced by pregnant women is the lack of nutritional intake of food, especially protein intake.



MUAC

MUAC measurement	Interpretation
< 12.5	Severe malnutrition
12.5- 16.5	Moderate malnutrition
>13.5	Normal


NUTRITION OK
Green
13.5 cm
12.5 cm
Yellow
Red
MALNOURISHED
0 cm
Scratches
made with a
sharppoint


cm
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26

Head - Chest circumference ratio: (CC= Chest Circumference, HC= Head circumference.)

Normal	PEM
H C =CC at 1 year	< 1
CC > after 1 year	$\frac{CC}{HC}$<1 (after 1 year)

Result and Discussion:

Anthropometric measurements of children at an age of 4-5years need to be found out, which include measurements such as height, weight, MUAC, Head and Chest circumference.

The heights of children need to be calculated and the results has to be shown below as depicted with actual photographs.

Height of Age	**Classification**	**No. of respondents**	**%**
<85%	Severely malnutrition	6	30
85-90%	Moderately malnutrition	3	15
90 -95%	Marginal malnutrition	7	35
>95%	Normal	4	25

The results shows that majority of the respondents taken belongs **to marginal malnutrition**

Or which other categories of classifications.

The **weight of the children need to be taken and results needed to be recorded as depicted below.**

Weight of Age	Classification	No. of respondents	%
≤ 60 % of age	Grade III malnutrition	-	-
61 – 75%	Grade II malnutrition	1	5
76 – 89%	Grade I malnutrition	9	45
≥ 90%	Normal	10	50

The result show that majority of children belongs to normal category.

Based on the height and weight of the children, **BMI** need to be calculated and based on which children have to be classified into following categories:

Classification	BMI	No. of respondents	%
Chronic Energy deficiency	<18.5	19	95%
Normal	18.5 -23	1	5%
Over weight	23 -27.5	-	-

The result shows that majority the respondent belongs to chronic energy deficiency group.

N.B. Show original photos of your study.

Mid upper Arm Circumference need to be measured based on which children has to be classified into different categories as depicted below.

Classification	**BMI**	**No. of respondents**	**Percentage**
Chronic Energy deficiency	< 18.4	19	95
Normal	18.5- 23	1	5
Over weight	23 – 27.5	-	-

The result shows that majority of the respondents belongs to chronic energy deficiency group.

N. B. Show original photos of your study.

Mid upper arm circumference of children need to be measured based on which children need to be classified into following categories.

MUAC measurement	**Interpretation**	**No. of respondents**	**Percentage.**
<12.5	Severe malnutrition	-	-
12.5-13.5	Moderate malnutrition	-	-
>13.5	Normal	20	100

The results show that all the children come under normal category, based on their MUAC measurement. Head and chest circumference of children are calculated and they were classified into following ratio category based on chest-head circumference ratio.

N.B. Show-Action Pictures of various measurements taken by you in your study.

Chest- Head circumference ratio of 4-5 years of children.	**Classification**	**No. of respondent**	**%**
< 1	Protein Energy malnutrition	3	15
>1	Normal	17	85

The results shows that majority of the respondents come under normal category with respect to chest-head circumference.

CONCLUSION: For Example

The results shows that majority of the respondents belongs to marginal nutritional category by comparing their height. While comparing with the height, children mostly belong to normal category, followed by Grade 1 Malnutrition.

Based on BMI majority of the children falls in chronic energy deficient group. By taking MUAC measurement, majority of the respondents belongs to normal. By taking chest-head circumference measurement ratio also respondents belongs to normal category.

Suggestions for Improvement.

The broad strategies that need to be adopted to reduce malnutrition of preschool children in rural Kerala are as follows.

- Adopting life-cycle and rights based approaches to nutrition.
- **The primary focus would be to strengthen family practices related to Infant and young child feeding, sick childcare with appropriate medical treatment and nutrition management, prevention of illnesses through immunization and hygiene/sanitation, appropriate cooking and dietary practices in the family, appropriate use of nutritional supplements and micronutrient supplements and diarrhoea management through ORT to be promoted within the family.**(Vipin Chandran K.P., and Gangadharan K.,(2009)
- In order to support **the family based counselling and behaviour, change communication, local community based approach need to be taken up at the neighbourhood and community level to enable a positive environment to promote the appropriate family practices as acceptable social norms.** (Vipin Chandran K.P.,and Gangadharan K.,(2009)

- The performance of food-based interventions needs to be improved by making them more demand driven. Merely scaling up the coverage of the programmes without improving their quality may not be the best way to reduce malnutrition.
- It is essential to reform the public distribution system and simultaneously release some **resources** needed by the **ICDS and midday meal programme**.(Vipin Chandran K.P., and Gangadharan K.,(2009).
- Problem of **under nutrition amongst preschool children** needs to be addressed through **comprehensive, preventive, promotive and curative measures.**
- The community needs to be educated about **environmental sanitation and personnel hygiene and also proper child rearing, breast feeding and weaning practices,** especially in the context **of changing life style** of the rural people in Kerala. **The government needs to spend more money on quality nutritional programs** in order to improve the state of malnutrition and therefore health services, education for females and self help programmes to enhance their productivity.(Vipin Chandran K.P., and Gangadharan K.(2009).

Activities:

- **Record the name, sex, age, Height (cm), Weight (Kg), MUAC, MUAC Interpretation, Chest circumferences, Head Circumferences, Chest – Head Ratio, Chest- Head Ratio Interpretations, BMI,BMI Interpretation by WHO,STD Heights, Deviations(%),STD Weight, Deviation weight (%) etc.**
- **Record each result with accurate original pictures, graphs, plates etc.**
- **Compare it with the national Standards.**
- **Substantiate your results with other scientific studies and inferences.**
- **Collect Review of literature with national and international studies.**
- **Record the constraints in maintaining the records in the preschools and suggestions for improvement of the existing scenario.**

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Exercise 2

STANDARDISATION OF CUPS FOR RAW FOOD EQUVALENT

Aim:

To standardize some commonly consumed cooked foods in terms of household measures and raw foods into equivalent weight of the raw foods.

Objectives:

- To ensure accuracy in diet planning and evaluation of the nutrient content of diets or intake of different food groups, it is essential to have an idea of
- One serving portion of the cooked foods for the various age groups the amount of these foods in terms of common household measures, used for eating or serving conversion of the amounts in household measures to the constituent weight of the raw foods
- Commonly used household measures include large, medium or small katoris, bowls or cups, teaspoon, tablespoon and serving spoons.
- For ensuring accuracy of the standardization, the size of the container in terms of diameter rand height or the volume must be known.
- In case of food items like chapatis, parathas, dosa, idli, the size and thickness needs to be noted

- For pulses and preparations like sambar, the consistency and texture should be known.
- These details facilitate better assessment of the raw weights of the ingredients.
- An idea of the weight of foodstuffs which may be eaten raw, as related to their size, is also beneficial.
- For example, it is desirable to know the weight of a small, medium or large apple or any other fruit, a small or medium cucumber or other salad vegetables, a slice of bread or a bun, or a cup of milk.

Standardization:

- For standardization, known amounts of various raw foods need to be cooked to prepare various commonly consumed food items, in the traditional way of the concerned region.
- For cooking of the various food items, suggested amounts on an average could be 250ml milk, 30-60g pulse, 80-100g of most flesh foods, 80-100 g cereal and 200g vegetables.
- **These weights refer to the edible food portion.**
- An additional exercise could be documentation of the edible content of different raw foods, especially vegetables or flesh foods.
- The food amounts used maybe varied based on the specific preparation and regional dietary patterns.
- It is important to note the amount of onion and tomato, if used, in the preparation, as also the amount of fat. Ginger and garlic are considered as free foods.
- As an example, if cucumber raita is to be standardized, 150 g of *curd* and 50-75 g cucumber could be taken and the raita made.
- **From the amount made, then umber of servings and size of serving need to be assessed.**
- The consistency should also be noted. The data thus obtained will help to know the amount of curd and cucumber that goes into 1 serving of raita, of a specific consistency.
- This in turn will help in meal planning in terms of food amounts to use for one serving and also calculate the nutrient content of 1 serving, as nutrient content of various foods is given by ICMR in terms of edible portion of raw foods.
- Other food preparations may be standardized in a similar manner.
- **For deep fried food items, the approximate amount of fat/oil absorbed maybe assessed by weighing the frying pan with oil, before and after frying the food product.**
- Use of a digital weighing scale or a spring balance with about 2-10 g sensitivity is recommended.

Methodology for standardization:

- The same size of household (HH) utensils should be used , to ensure uniformity.
- Each student could standardize 4-6 food items/ dishes, as decided by the teacher.
- Each item must be standardized in duplicate, if not triplicate and the average values to be noted.
- The data generated and gathered by all the students, should be made available to all the students in the class.

- The recipe used for the preparation of the dishes should be documented with amounts of raw ingredients used (free foods could be left out).
- Regional, commonly used food items served in the homes should be selected for standardization in the 1st stage.
- Subsequently, other regional food items could also be standardized.

Standardization Data Entry Format
Name of Student:
Course Period: ———— to ————
Name of College/ Home / Hospital:
Name of Department:
Food items standardized:
Food group & preparation (name of recipe)
Raw ingredients
Weight of raw ingredients (g)
Cooked Weight (g)
COOKED FOOD
General Observations
(size, thickness, consistency etc)
Nutritive Value Per Serving
Size of 1adult serving in House hold measurement
Total no.of Servings in Household measures
Energy(Kcal)
Protein(g)
CHO(g)
Fat(g)
Dietary Fibre(g)
Milk & milk products
1.
2.
3.
Flesh foods
1.
2.
3.
CALCULATIONS
An example using dry potato (or any other Vegetable)
Raw weight of potato taken= 200g
Raw weight of onion taken= 60g
Weight of oil taken=20g
Cooked weight = ...g (This information will help to determine the approximate amount of raw food required for a specific no. of serving portions or persons)
Cooked amount in HH measures = 2.5 medium katoris
1 serving portion assessed as= 0.75 or ¾ medium katoris
Raw potato in 1 serving (3/4 katoris)= 200/2.5 x 0.75 = 60g
Raw onion in 1 serving(3/4 katoris)= 60/2.5 x 0.75= 18g
Oil in 1 serving(3/4 katoris) = 20/2.5 x 0.75 = 6g
SOME SUGGESTIONS FOR FOOD ITEMS TO BE STANDARDIZED WITH RAW FOOD AMOUNTS
(Other items maybe standardized instead, based on regional diets)

Cooked/Prepared Food Items
Milk & milk products

Cucumber Raita

Curd -125g
Cucumber -50g

Boondi raita

Curd -125g
Besan -30g
Oil -5 to10 g

Rice/ Vermicelli Kheer

Milk -50ml / Rice/vermicelli-10g / Sugar-15g / Nuts &Kissmiss -2g

Mutton Kofta

Chef: Priti Narain /**Recipe Servings:** 8 / **Prep Time:** 10 Minutes/**Cook Time:** 01 Hour/**Total Cook Time:** 01 Hour 10 Minutes /**Difficulty Level:** Medium/Kofta balls made from minced meat, egg, channa powder and coriander leaves, cooked in a sea of yoghurt mixed with spices.

Ingredients:

Mutton (finely minced) – ½ Kg / Egg -1 / Chana (roasted, ground & sieved)-2 **tbsp** / Corriander chopped -2tsp / Poppy seeds (soaked in water)-**1tbsp** /Garlic pods-15-20 Nos. / Ginger -1½ Inch Piece/Onions(finely sliced)-4 / Tomatoes(skinned & pureed)- 4 Nos. / Coriander powder-2tsp Turmeric powder -1 tsp /Salt - to taste /Yoghurt (whipped)-1 ½ cups /Oil-1 cup /Water (as needed)/ Cardamom (black) -2 Nos. /Whole pepper -1 tsp / Cloves-5-6 Nos. / Cardamom (green) -5 Nos./ Bay leaves -2 Nos./Cinnamon stick -1 inch .

- **Method:**1 Grind the garlic, ginger and the poppy seeds together. Keep aside /2 Heat oil in a pan and add the onions to it. 3 Fry till they turn brown in color /4 Add a little water to it and stir. /5 In another pan mix the whole spices and a cup of water and simmer for 10 minutes. Keep aside /6 In the onion mixture add the ginger-garlic paste and the poppy seeds mixture and fry for another 2-3 minutes. /
- 7 Add the coriander powder, turmeric powder and salt. Mix well /8 Add the chopped tomatoes and stir.
- 9 In the meantime, mix the egg, chana powder, coriander leaves and the mutton mince with salt
- 10 Grease hands with little oil and make small koftas and keep aside. / 1 Add them to the onion mixture.
- 12 Strain the water from the whole spices and add to the koftas. / 13 Bring it to a boil. Cook for about five minutes and then add yogurt
- 14 Reduce the heat and cook for about 45 minutes. / 15 Decorate it with a coriander leaf and serve it hot.

Carrot/ Bottle Gourd Kheer

Milk	-250ml
Carrot/ Bottlegourd	-50g
Sugar	-15g

Fruit Custard

Milk	- 250g
Custard powder	-15g
Sugar	-15g
Fruit	-100g

Panir Curry

Panir	-50g
Onion	- 20g
Tomato	- 25g
Oil	-5g

Flesh foods
Meat/Chicken Curry

Meat/Chicken -100g
Onion -50g
Tomato -50g
Oil -5g to 10g

Pulses
Dry Dal

Pulse (eg. Bengal gramdal-30g)/ Oil- 5g /Optional-Onion /Tomato

Liquid texture Dal

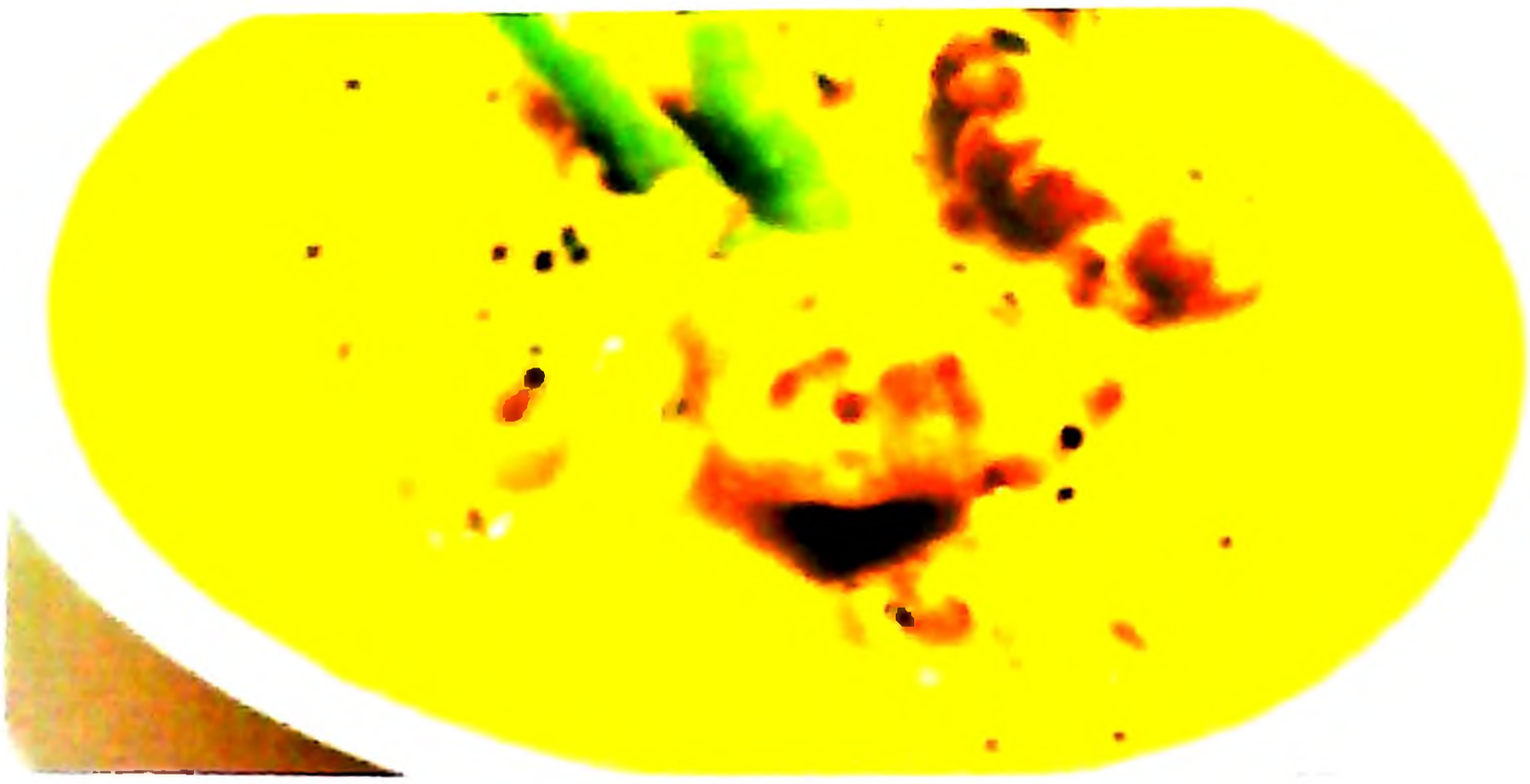
Red gram dal-30g /Oil- 5g /Optional-Onion /Tomato

Sambar

Red gram dal - 30g

Carrot-15g / Pumpkin -15g/ Onion-15g/ Drumstick -15g/ Oil -5g

Kadhi



Bengal Gram Flour -30g / Curd -100g / Onion -20g /Oil - 5g / Oil for frying balls- 5 to10g

Nutrinuggets in gravy

Soya Nutrinuggets-20g

Onion-25g

Tomato-25g

Oil -5g

Vegetables (A Group)

Dry Spinach/GLV Bhujia

Spinach/ other GLV- 200g
Onion -20g
Tomato - 25g
Oil - 5g

Spinach Saag (gravy)

Spinach/ other GLV-200g
Onion -20g
Tomato - 25g
Oil -5g

Bottle Gourd Dry

Bottle gourd - 200g
Onion - 20g
Tomato - 25g
Oil -5g

Vegetables (B Group)

Potato Pea Curry

Potato -50g
Shelled peas -50g
Onion -20g
Tomato - 25g
Oil -5g

Dry Potato

Potato -100g
Oil -5g

Dry Ladies Finger

Ladies finger -100g
Onion - 25g
Oil -10g

Stuffed Tomato/Capsicum

Capsicum/tomato (whole)-50g
Potato - 50g
Onion -20g
Oil - 20g

Vegetable Pakora

Vegetable/ Potato - 50g/Gram flour (*besan*) -30g / Oil (for frying)-5-10g

Cereals

Boiled Rice

Rice -100g

Khicheri

Rice -70g
Pulse -30g
Oil -5g

Chappathi

Wheat flour (atta) - 100g

Paratha(stuffed)

Wheat flour -100g
Vegetable/potato -150g
Oil -10g

Puri

Wheat flour - 100g
Oil - 5-10g
Oil for frying -100g

Broken Wheat/ Semolina/ Ragi Porridge

Cereal -20g
Milk -250g
Sugar -10g

Upma/ Poha

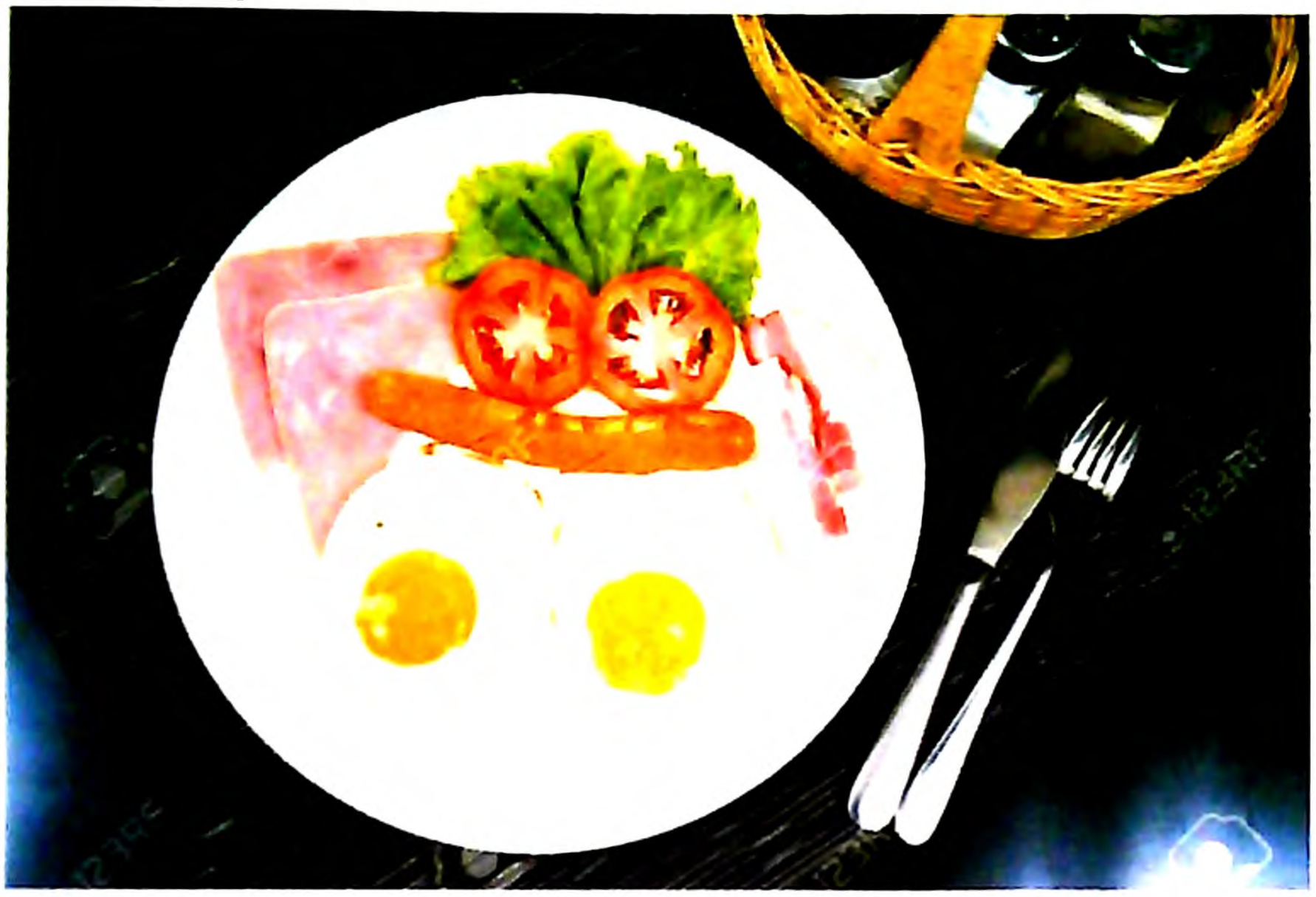
Semolina /Rice flakes- 40g
Onion -20g
Potato -30g
Peanuts - 5g
Oil -5g

RAW FOOD ITEMS (some examples)

Milk & Its Products

Milk 1 medium , large cup
1 small, medium, large glass
Curd 1 medium katori
Panir 1 1/2" cube
Cheese 1 ½" cube

Animal Foods



Egg 1 small, medium, large
Ham 1 thin slice
Cocktail sausage 1 link

Pulses

Raw pulse 1 medium katori
Green gram sprouts 1 medium katori

Vegetables

Cucumber, Tomato, Onion, Potato, Capsicum, Carrot, Bitter gourd etc -
1 small, medium, large
Peas pods with shell: 20 in number
Peas shelled 1 medium katori
Spinach 1 small bunch with stalks
1 small bunch with stalks removed

Fruit

Banana, Apple, Pear, Mango, Sapota, Guava, Orange, Sweet lime,Lemon
1 small, medium, large
Musk melon 1 small, medium
Water melon 1 small, medium
Pineapple 1 slice
Orange/ sweet lime juice 1small orange/sweet lime
1 medium orange/ sweet lime

Cereal
Bread 1 medium slice, 1 larger slice
Glucose/marie biscuits 4 pieces
Salto biscuits 4 pieces
Cookies 4 pieces
Cornflakes 1 medium katori
Miscellaneous Items
Custard powder, sugar, fat/oil, butter, Jam, Jaggery, Groundnuts, Almonds etc
1 teaspoon, 1 tablespoon

Note:

- Other food items and different food amounts maybe suggested
- The teacher could allot food items to be standardized to the students
- Suggestions for size of household measures to be used may kindly be made,if those given here are not found suitable.
- **Uniform size andvolume of HH measures must be used at all hospitals.**

SIZES:

- **Sizes could vary a little but capacity or volume should remain the same across all homes for results to be comparable & standard.**
- **Ideally, thesame size utensils should be used everywhere.**
- **Comments on the HH measures to be used and their size and capacity**

HH Measure Size/Dimension Volume (ml)

1. Katorimedium3"dia, 1 ½" ht125ml
2. Glass large 2 ½" x 4 ½"ht x 2' 240ml
3.Glass medium 2 ¼" x 4"ht x 1 ¾" 200ml
4. Cup large 2 ¾" dia x 3 ½ " ht250ml
5. Cup medium 2 ½" dia x 3" ht200ml
6.Serving spoon/
Karchilarge 2 ¾" dia, 1 ¼ " deep50ml
7. Serving spoon/
Karchimedium 2 ¼ "dia, 5/8" deep 25ml
8. Serving spoon/
Karchismall 1 7/8 "dia, 5/8"deep15ml
9. 1 teaspoon 5ml
10. 1 tablespoon 15ml

Aim of the Exercise

To standardise the cups for raw rice equivalent.

Characteristics: Commonly used household measures include large, medium or small bowls

or cups for ensuring accuracy of the standardization, the size of the containers in terms of diameter and height or volume of the nutrient content of the diet.

Procedure:

- Take 100 g of raw rice and soak it in known amount of water. Weigh the net cooked amount and calculate common factor. Conversion factor is the ratio of raw rice and cooked rice weight.

- After that, take a set of cups of varying sizes, mark the edges of the cups to a particular level and fill each of the cups in a uniform way with cooked rice and weigh them.
- Deduct the weight of empty cup from total weight of the cup with the cooked rice.
- Convert the net cooked amount in each cup to raw amount by multiplying it with conversion factor.
- **Observation:**

Raw rice (g)	Water used (ml)	Net weight of cooked amount (g)	Conversion factor raw rice/Cooked rice.
100	1000	460	100/460 = 0.217

Raw Rice / water used/ Cooked Rice.

To find out raw rice equivalent, weight of cooked rice Common factor

SL. No	Cup Used	Weight of empty cup (g)	Weight of cup with cooked rice (g)	Net amount of cooked rice (g)	Raw rice equivalence	Raw rice in each cup by using conversion factor.
1.	1 cup of 200 ml	33.82	193.68	159.86	159.86X0.217	34.68
2	½ cup or 100 ml	14.86	100.28	85.42	85.42 X0.217	18.53

Results

Two different cups measuring 200 ml, 100 ml used for the standardization of the cups for raw rice equivalents. The amount of raw rice in each cup after using the conversion factor was 34.68 and 18.53 respectively.

Activities:

- Use different types of cups and spoons.
- Find out the conversion factors
- Compare it with the Standard measurements.
- Substantiate your finding with supportive studies.
- Take the pictures of the Standard measuring cups & spoons.
- Take the pictures of the HH cups and HH spoons used for this scientific study.
- In depth knowledge about the actual quantity by accurate measurement of raw and cooked food for the development quality products.
- Do learn the raw to cooked Ratio of commonly used food items by proper measurements.
- Collect adequate Review of literature
- Write results and discussions with supportive scientific studies.

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Exercise 3

Visit to Anganwadi (ICDS)

Introduction

- **Integrated Child Development Services (ICDS) is a government programme in India which provides food, preschool education, and primary healthcare to children under 6 years of age and their mothers. The scheme was launched in 1975, discontinued in 1978 by the government of Morarji Desai, and then relaunched by the Tenth Five Year Plan.**
- Tenth five year plan also linked ICDS to Anganwadi centres established mainly in rural areas and staffed with frontline workers
- In addition to fighting malnutrition and ill health, the programme is also intended to combat gender inequality by providing girls the same resources as boys.
- A 2005 study found that the ICDS programme was not particularly effective in reducing malnutrition, largely because of implementation problems and because the poorest states had received the least coverage and funding
- During the 2012–13 fiscal year, the Indian central government spent ₹159 billion (US$2.2 billion) on the programme.
- The widespread network of ICDS has an important role in combating malnutrition especially for children of weaker groups
-

• Background

- Majority of children in India have underprivileged childhoods starting from birth. The infant mortality rate of Indian children is 44[4] and the under-five mortality rate is 93 and 25% of new born children are underweight among other nutritional, immunization and educational deficiencies of children in India. Figures for India are substantially worse than the *country average*.[5]
- ICDS was launched in 1975[6] in accordance to **the National Policy for Children** in India.[7]
- Over the years it has grown into one of the largest integrated family and community welfare schemes in the world.[5]
- Given its effectiveness over the last few decades, Government of India has committed towards ensuring universal availability of the programme.[8]

• Scope of Services

The following services are sponsored under ICDS to help achieve **its objectives**:[9]

1. **Immunization**
2. **Supplementary nutrition**
3. **Health check up**
4. **Referral services**
5. **Pre-school education(Non-Formal)**
6. **Nutrition and Health information**

• Implementation

- For nutritional purposes ICDS provides **500 kilocalories** (with **12-15 grams of protein**) every day to **every child below 6 years** of age.[10]
- For **adolescent girls** it is up **to 500 kilo calories** with up to **25 grams of protein every day.**
- The services of **Immunization, Health Check-up and Referral Services** delivered through Public Health Infrastructure under the **Ministry of Health and Family Welfare.**[6] **UNICEF** has provided essential supplies for the ICDS scheme since 1975.[9]
- **World Bank** has also assisted with the financial and technical support for the programme.[8]

- The cost of ICDS programme averages **$10–$22 per child a year** The scheme is centrally sponsored with the state governments contributing up to ₹1.00 (1.4¢ US) per day per child.[109]
- Furthermore, in 2008, the **GOI** adopted the **World Health Organization** standards for measuring and monitoring the child growth and development, both for the ICDS and the **National Rural Health Mission (NRHM**
- These standards were developed by WHO through an intensive study of six developing countries since 1997
- They are known as **New WHO Child Growth Standard** and measure of physical growth, nutritional status and motor development of **children from birth to 5 years age**.

• Impact

- By end of 2010, the programme is claiming to reach **80.6 lakh expectant and lactating mothers along with 3.93 crore children (under 6 years of age** There are 6,719 operational projects with 1,241,749 operational **Aanganwadi centres**.
- Several positive benefits of the programme have been documented and reported
    - A study **in Andhra Pradesh and Karnataka** demonstrated significant **improvement in the mental and social development** of all children irrespective of their gender.
    - A 1992 study of **National Institute of Public Cooperation and Child Developmentconfirmed improvements in birth-weight and infant**
    - **Mortality of Indian children along with improved immunization and nutrition.**
- However, World Bank has also highlighted certain key shortcomings of the programme including inability to target the girl child improvements, participation of wealthier children more than the poorer children and lowest level of funding for the poorest and the most undernourished states of India

THE ANGANWADI AND ITS FUNCTIONING

- **The Anganwadi is the focal point for delivery of services to children and mothers right in their village or ward in urban slum areas.**
- An Anganwadi normally covers a population of 1000 in rural and urban areas and 700 in Tribal areas.
- But if villages are smaller, there should be an anganwadi for each village having a population of atleast 300. Smaller villages can be grouped under one anganwadi wherever feasible.
- The actual number of anganwadi in any project will depend on the total population, the number of villages in the project area and the topography.
- **The anganwadi is run by the anganwadi worker.**
- The anganwadi worker is a female selected from within the local community.
- The selection is made by a committee eat the project level.
- The anganwadi worker is an honorary worker and gets a monthly honorarium.
- A helper is appointed at each anganwadi to assist the anganwadi worker.
- The helper should normally be a woman and be selected from the local community by the committee at the project level.
- As soon as the ICDS project is started in an area and an anganwadi worker is selected, the first task of anganwadi worker is to select a place for running the anganwadi in the village/ward.
- **Since the anganwadi worker belongs to the local community, she has to play an important role in this regard.**
- Normally, it is expected that the local community should provide the accommodation for the anganwadi center free of rent.
- This is the best way of involving the community in the ICDS scheme right form the beginning.
- It has been found that, usually, in rural and tribal ICDS projects, the village community either provides some existing building as accommodation for the anganwadi free of rent or gets an anganwadi building constructed.
- The anganwadi need not necessarily be run in a pucca building.
- If the community lives in huts, a good hut may be used for the anganwadi also, but it should have a kitchen, a small store and small place for the indoor activities of the children. There should also be separate bathroom and a sanitary latrine.
- In some villages the local communities may be too poor to arrange for any accommodation, and it may become necessary to hire some place on rent.
- Anganwadi building can also be constructed by utilizing contribution from local people and other sources.
- In the case of urban project there may be difficulties in getting the anganwadi accommodation free of rent.
- Therefore, hire accommodation is provided in an urban project area.
- Special care should be taken to see that the place selected is such that children and women belonging to the scheduled castes, scheduled tribes and the weaker sections of society can freely come and take the benefit of services at the anganwadi.

BASIC EQUIPMENTS :

- The following basic equipments are also provided for organizing an anganwadi by the CDPO :

For general use :

1. Small Mats or Duries
2. One cupboard with one or two racks.
3. Low wooden chowki with a low table.
4. First aid box.
5. National Flag.
6. One vessel for storing drinking water.
7. Files, Registers etc.

8 **Health cards and Growth charts.**

KITCHEN EQUIPMENTS :

1. Tumblers, plates and spoon.
2. Two to three vessels with leads for cooking
3. Wick stove (kerosene)

Bath ROOM Equipment

1. Two buckets or vessels for storing water.
2 .One or two mugs.
3. One or two soap containers.
4. Four towels.
5. Disinfectant fluids.
6. Brooms, Brushes and other cleaning materials.

Indoor Play Equipments:1. Building Blocks (Wooden of different sizes)
2. Counting Frames.
3. Paints, Paint and coloured chalk sticks.4. One Dholok.. Three or four pairs of Scissors.

Besides Following materials are also provided for
Nutrition and health education activities.
1. Weighing Scale.
2. Tricolour strips.
3. Medicine kit.
4. Aids for organizing pre-school education and nutrition and health education.

Activities in the Anganwadi
The activities in an anganwadi are to be organized in such a manner so that an anganwadi worker can easily -
1. Deliver the package of services.
2. Cover all the beneficiaries fully, and
3. Perform all responsibilities
For this purpose an anganwadi worker is required to undertake certain activities daily viz. **Supplementary Nutrition/ Pre-school education/Home visits (Particularly the families having at risk children and mothers)/ Record keeping.**

Following activities are to be organized periodically:
01. Health check-up.
02. Immunization.
03. Weighing children and preparing growth charts.
04. Giving vitamin A etc.
Below mentioned are the initial activities to be performed by the AWW for organizing anganwadi activities
01. To select the place for the anganwadi and set up the anganwadi with the basic equipments.
02. To make contact the members of Panchayat and Mahila Mandal, the Health Guide. the Health Worker(Female) and other local staff in the village.
03. To conduct the family survey by house to house visit and to prepare a Family Survey Register.
04. **To screen children by means of Tricolour strip or by weighing and growth chart method.**
05. To select malnourished children and prepare a list of beneficiaries children for supplementary nutrition.
06. To select pregnant women and nursing mothers for supplementary nutrition.
07. To select beneficiaries for pre-school education.
08. To prepare a list of all children and identify unimmunized children.
After completion of the initial activities **following services are to be provided daily to children and mothers those are the regular features of ICDS programme.**
01. Supplementary Nutrition
02. Pre-school Education.
For the delivery of above mentioned services activities to be performed by AWW are mentioned below.
Supplementary Nutrition Programme :

- An anganwadi worker has to organize and provide supplementary nutrition for children, pregnant women and nursing mothers.
- She has to educate mothers, how to look after the normal nutritional needs of their Children.

- **It is thus important for an Anganwadi worker need to have basic knowledge about food and nutrition, healthy cooking practices, and child rearing practices.**
- **The Anganwadi workers are given excellent training about the basic important functions of Food and Nutrition, Importance of nutritional care, Health and Hygiene, Preschool education, Psychology, etc. which in turn, they have to impart to the pregnant and nursing mothers, adolescence and children.**
- Food provides the following major functions for all:

01. Provides energy
02. Maintenance of growth and repair of the body
03. Protecting the body against disease

No one food alone can do all these functions. In order to keep a child in good health, his diet should include a variety of foods, so that all functions are performed well. Such a diet is called Balanced Diet.

FOOD FOR ENERGY :

Food for Energy Includes

01. Staple food that comprises cereals like Rice, wheat, Jowar, Maize and Bajra.
02. Roots and Tubers like Potatoes, Sweet Potatoes and Tapioca.
03. Jaggery and Sugar.
04. Fats and Oils viz. Vegetables oils, Butter and Vanaspati.

Food for Growth and Maintenance:

- All Legumes viz. Pulses (Moong / Green gram, Green gram dal,Bengalgram,Bengal Gram dal,Black gram dal, Ghana, Arhar, Masuretc.) Peas and beans (Soyabean, Rajma etc.) and nuts (Ground nut, gingelly etc.) are good sources of Proteins.
- Foods for growth and maintenance also come from animal sources, viz. milk and milk products, eggs, meat and fish. But eggs, meat and fish are expensive.
- Cereals also contain Proteins, though in smaller amounts.

Food for Protection:

- There are certain foods which are needed for the proper functioning and protection of body. These foods contain important minerals and vitamins.
- The most important minerals are Calcium and Iron.
- Mother milk is the best source of Calcium.
- Animal milk, Jowar, Bajra and leafy vegetables esp. lady's Finger also contain Calcium.
- Iron is essential for the formation of blood.
- Green leafy vegetables, Bajra, and ragi, meat and eggs are sources of Iron.
- Vitamins are the essential for the maintenance of good health.
- Good sources of Vitamin A are some animal foods like milk, milk product and eggs.
- Vegetable foods like dark green leafy vegetables and yellow vegetables and fruits are also rich in Vitamin A.
- Vitamin- B is essential for normal growth. Meat, fish, eggs, milk, nuts and cereals are good sources of Vitamin B.
- Vitamin C is essential for good health and protection against disease. Fresh fruits and vegetables are rich sources of Vitamin C.
- Vitamin Dis essential for the formation of the bones. Vitamin D is formed in the body by the action of Sunlight on the skin.
- The availability of leafy vegetables, yellow vegetables and fruits vary from place to place.
- **The AWW is thus required to prepare a list of cheap, easily available leafy vegetables and yellow vegetables and fruits of the area in which she is concerned and advise their inclusion in the diet of children as well as mothers.**
- Besides, most foods except fruits and some vegetables are cooked before they are eaten.
- Cooking is done to improve the taste, flavor and digestibility.
- Heat kills disease causing germs which may be present in the food.
- However, cooking can lead to loss of nutrients if the necessary precautions are not taken.
- The longer the food is cooked, the greater is the loss of nutrients.
- Proper care also be taken in cutting and peeling of vegetables, sprouting of pulses and proper storage.
- Therefore, to provide more nutritious food to children and also to provide additional nutritional care to pregnant women and nursing mothers.

An AWW is required to:

1. Wash rice in cold water for the minimum number of time.
2. Adjust the amount of water used to cook rice or vegetables so that it is all absorbed.
3. Add finely chopped green leafy vegetables to rice, chappatis, kitcheri or dal.
4. Cook cereals and pulses together.
5. Choose fresh vegetables at the market.
6. Include sprouted pulses and fermented foods.
7. Encourage good and healthy beliefs and nutritional and healthy child rearing practices.
8. Include foods from all the three groups in the diet of the child for his proper growth.
9. Emphasis on the inclusion of energy giving foods in the child's diet.
10. Minimize losses of nutrients by following proper method of cooking.

Pre - School Education ;

- Non-formal pre-school education is an important component of ICDS programme which is essential for all round development of the children.
- Pre-School education is provided to children in the age group of 3 to 6years.
- As the name suggests, formal education is not important to the children but children are encouraged to grow at their own pace.
- The anganwadi should thus become the first step in the process of education before the child goes to primary school.
- Pre-school education thus becomes a link between the anganwadi and the primary school.

Objectives Of Pro-School Education :

- **Pre-school education at the anganwadi should aim at the total development of the child's physical, moral and social and the development of language and intelligence.**
- **The objectives of pre-school education are :**

1. To develop in the child a good physique, proper muscular co-ordination and motor skills.
2. To develop child's creativity and imagination, initiative and curiosity.
3. To develop attitudes of social responsibility and desirable relationship.
4. To help the child to learn to live with other children and to respect the rights of others.
5. To control the child's natural aggressiveness and destructiveness, to channelize Spontaneous energies to good behaviour and work and to inculcate human values like Concern for others, sharing co-operation with others, patience, tolerance, fairness, truthfulness, integrity, modesty, courage and equality, humanity.
6. To help the children to grow intellectually, acquire the ability for expression in their own language, recognize and name the object in the environment, recall and compare events and objects and form clear concepts of things and events around itself.
7. To encourage the child to learn to work and play independently and to be able to accept Guidance and help from adults.
8. To develop good habits of health and hygiene.

Thus pre-school education plays an important role in the total development of the child's Personality development. The AWW should, therefore, develop proper attention to this important component of ICDS programme, and organize the following activities aimed at the development of different aspects of the child.

01. Activities like walking, running, jumping, climbing, crawling, hopping and bending for gross physical, and motor development.
02. Activities like Drawings, threading of beads, tearing and pasting of paper, sorting of seeds, pebbles and leaves etc. for the finer motor muscle development.
03. Story telling, dramatics, interpreting picture of poster etc. for language development.
04. Activities like drawing, painting etc. for emotional development and development of creativity and imagination.
05. Activities like washing hand before eating supplementary nutrition food, sitting down and eating properly, cleaning the place after eating will help to develop good habits among children.
06. Activities like pre-reading, pre-writing and pre-number will promote intellectual development of the child and make him ready for school.
07. Activities like group games involving single rules, taking care of anganwadi property and keeping the anganwadi clean will encourage social development among the children.

Nutritional Care of PREGNANT WOMEN AND NURSING MOTHERS:

- All anganwadi workers should always give high priority to provide adequate nutritional care to pregnant women and nursing mothers.
- Both pregnant women as well as nursing mothers must eat sufficient amount of food.
- They have to look after the needs of two lives – their own and that of their babies.
- They should eat more of what they normally eat - more cereals, more pulses, more fruits and more vegetables.
- Thus, they should eat a mixed balanced diet, a variety of food, so that all their nutritional needs are met.
- Nursing mothers need to drink more fluids, especially water, that they normally drink, in order to produce milk for the baby.
- Therefore, an anganwadi worker should give high priority for providing nutritional care to pregnant women and nursing mothers.
- Every community has particular beliefs and practices regarding feeding during pregnancy and lactation.
- Some of the beliefs are actually harmful and should be discouraged and good beliefs and practices are to been couraged.
- The food intake of pregnant women and nursing mothers belonging to the poor income groups is usually inadequate.
- **An anganwadi worker should therefore, enlist as beneficiaries for supplementary nutrition at the anganwadi about pregnant women and nursing mothers belonging to the families of :**

1. Landless Labourers.
2. Marginal farmers.
3. Scheduled Castes.
4 .Scheduled Tribes.
5. Other poor section of the society.

Immunization:

Immunization of all infants against the following disease are generally carried out in the ICDS projects:

1. Diphtheria2. Whooping Cough
3. Tetanus4. Poliomyelitis (Polio)
5. Tuberculosis (T.B.) 6. Measles.

Besides all expectant mothers are immunized against tetanus.

- An anganwadi worker plays a very important role in providing immunization to children and mothers to her area.
- Actual immunization i.e. injections or oral drops, are given by the health staff.
- **But all other activities are undertaken by the AWW. CDPO or Mukhya Sevika will inform the date and AWW will carry out the following functions :**

1. To prepare a list of children up to six years and pregnant women be immunized according to the schedule or instruction given by CDPO or doctor.

02. To visit the homes of those children and pregnant women who are to be immunized, to tell the mothers to come with their children to the anganwadi on the particular date and time of the immunization programme.

03. To make arrangements for actual immunization at the anganwadi or any other selected place.

04. To inform the parents of children the next dose of immunization, if any and the date and time, if possible.

05. To make entries in the immunization register.

06. To take active initiative to remove any doubt of people in some communities who still refuse immunization.

07. To convince the leading persons and mothers of children about the importance of Immunization.

Health checkup and Referral Services:

Like immunization, **these services are also provided to children and mothers by the health staff and medical officer. But the AWW performs an important role in this regard because the anganwadi is the focal point for delivery of these services.**

Health checkup and referral services consist of:

01. Prenatal care of pregnant women.

02. Postnatal care of nursing mothers and care of new born infants.

03. Care of children under six years of age.

Regarding prenatal care the 3BMWF should ensure that:

01. Every pregnant woman should be given at least **four physical examination** by the health staff.
02. Every pregnant woman be **given tetanus toxoid immunization, Iron and Folic acid tablets and supplementary nutrition.**
03. Every pregnant woman be given **nutrition and health education** including information about **proper diet, personal hygiene, need for rest and avoidance of heavy labour or carrying heavy loads.**
0 4.Every expectant mother be conveyed about **breastfeeding, infant feeding, different aspects of childrearing and the benefits of small family.**

As regard postnatal care an A.W.W. should do the following:
01. Make arrangements for at least two visits to mothers within the first day of delivery by the Health Staff.
02. Weigh **the baby after birth as soon as possible** and to check whether the baby is at risk.
03. Update the Individual family Record.
04. Ensure that the newborn is given immunization according to schedule.

Referral Services:

- Referral services are generally provided to at – risk pregnant women and at - risk children.
- An AWW should identify these pregnant women and children and refer them to a Primary Health Centre or to a City hospital.

COMMUNITY ACTION AND PARTICIPATION FOR CHILD CARE:

- Community action and participation are very important for the success of the ICDS programme.
- The impact of nutrition and health services will depend not only on the acceptance of these services by parents and community, but on their total involvement in the programme.
- For this purpose, the community will have to be educated in health, nutrition and child care practices.
- One of the objectives of the programme is -
- To enhance the community to look after the normal health and nutritional needs of the child.
- This can be done through proper nutrition and health education.
- **An AWW should emphasize the following basic message concerning child care while educating the parents and community.**

01. Breast feed the Infant as long as possible.
02. Introduce the child to Semi - solid food at five to six months of age.
03. Feed young children five to six times a day.
04. Do not reduce the child's food when the child is ill.
05. Use the health services available.
06. Get children Immunized.
07. Keep yourself and your anganwadi clean, drink clean water.
08. Do not have more than two children; and have the second child after two to three years after the first.

Besides the above, the beneficiaries of ICDS will be followed consistently about The following important facts by the AWW:

01. A pregnant woman should eat more than the usual and visit the PHC doctor / health staff regularly.
02. Mother's milk is the best, continue breastfeeding.
03. Immunize child to prevent the child from getting certain preventable disease.
04. Keep the child and its surroundings clean, wash hands before feeding the baby.
05. Keep clean the kitchen and feeding utensils and keep food covered.
06. Use safe drinking water from a clean and safe source.

The community may be educated in the child care messages by the following methods:

01. Lectures
02. Group discussions
03. Demonstrations
04. Role Play
05. Exhibitions and village - level camps.
06. Folk Media.
07. Audio -visual Aids
08. Home visits.
09. Posters, slides, flip charts, flannel graphs etc.

Prevention and early detection of childhood disabilities:

- A moderate number of children out of total children born, either born with a disability or may become disabled
- In many cases it can be prevented or can be cured, if it is early detected. The following types of disabilities are generally found in children

01. Mentally retarded children
02. Partially or totally deaf children
03. Children with speech defects

04. Partially sighted or blind children
05. Children with muscular disability

The major causes of disability among children are:

01. Inadequate nutrition of mothers and children and efficiency of specific nutrients.
02. Prenatal damage or damage at or after birth.
03. Disease like polio.
04. Accidents
05. Genetic Defects

In order to prevent mental retardation and disabilities due to accidents an anganwadi worker should convey the following message to the community.

01. Marriage between close relatives should be avoided
02. Pregnancy in women over 35 years of age should be avoided.
03. Pregnant women should be medically checked regularly.
04. Mothers must have a keen eye on the development of child according to age.
05. In the matter of dressing a child, do not use pins or needles.
06. Do not let the child to go to stove or lamp.
07. Do not allow a child play near container containing water.
08. Do not let children fly kites in roofs.
09. Keep poisonous materials beyond reach of children.
10. Do not let a child to play with electric switches.
11. Do not keep sharp objects in the reach of children.

It is also the duty of anganwadi worker to identify children with slight disability and accordingly advise the parents of the children to go to the doctor or refer the child to the primary health centre.

Water for Sanitation:

- Drinking water must always be clean and safe as because polluted water is the source of many diseases such as Diarrhoea, Gastro-Intestinal disorders, Cholera, Typhoid, Jaundice etc.
- Sanitation is also important for child health.
- Poor sanitation facilitates spread of many diseases. The main source of disease is dirt of which human excreta is a major contributor. The filth causes the following diseases

01. Diarrhea
02. Hepatitis
03. Typhoid
04. Cholera
05. Worm Infection
06. Trachoma
07. Scabies
08. Other disease

Thus an anganwadi worker should educate children, mothers and the community about the importance of safe drinking water and sanitation.

Records and Registers :

- Work reporting is the vital element of the Management Information system.
- In goal-oriented Management, comparison must be made between the desired effects and the actual results of the programme implementation.
- Basic data necessary for the monitoring and evaluation of the programme must be gathered. In order to provide a complete in all aspects of the programme, pertinent, accurate and reliable work, reports are essential.

- For this purpose, responsibility centres are identified, various reports and time periods are indicated and for comparison purpose, responsibility, centre performance standards are set.
- Records and registers at each level of responsibility enable ICDS at that level to assess their own performance, identify services that need improving and report on their progress.
- **It has been observed that Anganwadi workers are overburdened with paper -• work.**
- **To reduce the paper – workload of the anganwadi workers and to ensure uniform record keeping throughout the country, the following registers are prescribed for the anganwadi worker:**
  01. Anganwadi Survey Register
  02. Register of Immunization services
  03. Register of services for pregnant women and Nursing mothers
  04. Register of services for children
  05. Anganwadi food stock register
  06. Diary - cum-visit Book
  07. Stock Register
- **In addition, the anganwadi workers will also maintain growth charts and health cards.**
- **It is at the anganwadi level that the services of supplementary nutrition, immunization, health check- up, referral services, nonformal pre-school education, and nutrition and health education are actually provided to children and mothers in their villages / wards.**

- To what extent are these services being delivered?
- How do they compare with performance standards, goals, milestones and targets?
- What are the results of the programme implementation?
- How do they compared with the desired results?

- Are the objectives and goals of the ICDS scheme being achieved?
- Are any problems or difficulties being encountered in the implementation of the programme?
- Is any corrective action needed?
- **These important questions can be answered only by analyzing the data collected at the aganwadi level.**
- **For this purpose, the following reports are prepared by the AWW**

1. Monthly Progress Report (MPR)

2. Monthly Monitoring Report (MMR)

The formats of MPR & MMR (Refer the latest version)

MONTHLY MONITORING REPORT OF THE AGANWADI WORKER

Refer the latest version.)

. Reporting month _____ 2. Year_____

. Village where Aganwadi is located _____

. SI.No of the Anganwadi_____.

, Total population in the Aganwadi Area_____ .

. No. of days supplementary nutrition distributed at anganwadi _____.

'. No.of malnourished children:-

. Grade II _____ or yellow

). Grade III _____' or red

. Grade IV _____ _____

3.Diarrhoea

. No. of children with diarrhoea _____.

). No. of children advised oral rehydration therapy_____.

) (a) Total no of children in the age group

) (b) Whether the following immunization was carried out in the month:

3CG Yes/No

DPT Yes/No

Polio Yes/No

DT Yes/No

PT Yes/No

10. Births and Deaths.

Nature of event No.in the Reporting Month

(a)Live births

Total No. since January till now

Last day or the reporting month.

(b)Stillbirths

Deaths in age group above

0 to below 1 year

Deaths in the age groups

Above 1 to below 3 years

Deaths in the age group

Above 3 to below 6 years

Deaths of pregnant women

During delivery

11. **Pregnant women :**
Total no. in the Anganwadi
12. Nursing Mothers
a. Total no.
b. No. received mother and child welfare pamphlet
13. Reviewed by Date Signature
i. HWF
ii. HAF
iii MO PHC
12.Do you have the following materials?
Item -Is the quantity sufficient/insufficient/ Nil
i. **Utensils for cooking**
ii. **Utensils for feeding**
iii. Guide book for Anganwadi worker
iv. **Health and nutrition card**
v. Anganwadi Equipment
vi. Stationery (Forms and Registers)
vii. First aid materials (i.e. simple drugs etc.)
viii. **Weighing scale**
ix. Coloured strips (for measuring mid-upper-arm-circumference)
x. Kit for Non formal pre-school Education
xi. Boxor Almirah
xii. Lighting arrangements
13. Supplementary Nutrition:
Category Total No.in the Anganwadi area
a.No.enrolled
No.actually received
No. of feeding days in the month
i. Pregnant women
ii. Nursing mothers (of infants 0-6 months age)
iii. Children 6 months to 3 years
iv. Children 3 years to 6 years
v. Total

MONTHLYPROGRESS REPORT OF THE ANGANWADI WORKER
(Refer the latest version)
Part - A
Report for the month of_____
1. Name of village/Locality _____
2. Name of Block/Town: _____
3. Population of Anganwadi area:
4. Date of commencement of anganwadi:
5. Have you received training? _____
6. Are you a matriculate (or above)/non-matriculate/ illiterate?
7. In which building are you running the Anganvadi? (Panchayat /School/Other public building/Free of rent by community/on rent/other arrangement)
8.(a) Classification of nutritional status by tricolor strip(measurement of mid-Upper -arm-circumference)

MUAC

I. Total No. of children whose mid-upper-arm circumference was measured (1-6 years)
ii. No. of children in the red zone
iii. No. of children in the yellow zone
iv. No. of children in the Green zone
10(b) Classification of nutritional status by weight for age.
i. Total no. of children weighted
ii. No. of children with normal weight
(above line 1 in the growth chart)
iii. No. of children in grade 1
(Weight falling between lines i and ii in the growth chart)
iv. No. of children in grade 11 Weight failing between line (ii) and (iii)in the growth chart
V No. of children in grade(iii)(Weight falling between lines iii and iv) in the growth chart
vi. No. of children in grade iv(Weight falling below line iv in the growth chart)
11. Non-formal pre-school Education (3-6 years)
a. No. of children enrolled
b. No. of children attending
(Including who attended for 15 days or more)
12. Number of children referred to the PHC/Sub Centre/Referral Hospital/Clinic -
13. Visits to your Agnanwadi during the month under report.
Visitors - Number of Visitors
(a) CDPO
(b) ACDPO
(c) Mukhya Sevikas
(d) HWF/HAF/PHN/HWM/HAM
(e) Medical Officer
14. Nutrition and Health Education
(a) How many houses were visited by you during the month under report?
(b) How many Camps/demonstration were organized for nutrition and health education during the month under report?
(c) Any other activity during the month under report:
No. of film shows
No. of slide shows
15. Birth and deaths
(a) Total live births during the month under report
(b) Stillbirths
(c) Child deaths, if any, during the month under report
i. Children below one year
ii. Children of one year and above but below six years

Signature of the Anganwadi Worker:
Date:
Exercise: Students need to visit the Anganwadi (ICDS programme) (rural/Urban)and thoroughly learn about the grass root level works of the very essential and successful functioning of ICDS programme and collect and record all details depicted from page 42 to 60 (as enlisted above) in your records.

Characteristics:

- The word Anganwadi Court yard shelter in Indian language.
- They were started by the Indian government in 1975 as part of **the Integrated Child Development Service (ICDS) Programme** to combat child hunger and malnutrition.
- A typical Anganwadi Centre which provides basic health care in Indian villages.

Description with actual Pictures of each activities enlisted from pg 42 to 61 above.

Observations: Note down all your observations.

The major activities carried out in Anganwadi need to be discussed with proper pictures ,graphs, tables. Figures etc. of the ongoing all activities of ICDS.

For example:

1. **Providing nutrient rich food to all children daily.**

   Morning 10.30a.m- Either peanut- candy (10g) or 1 glass of milk.

   Noon 12.30 - Rice porridge with green gram (50g+10g)

   Evening 3.00p.m.-Wheat Uppuma (50g).

2. **Activities for under nourished children:** For eg. Selected **5 girls** from the locality having underweight are been provided with **wheat upma- 120g per day** in the evening.(Observe and record it with original pictures)

3. **Supplementary Nutrition for all pregnant and lactating women (up to 6 months) every month:** For eg. 3 kg of wheat, 250 g of coconut oil and 250g of either black gram or Bengal gram distribution.(Observe ,record it with pictures).

4. **Supplementary Nutrition for infants** with more than **6 months of age, For e g., Amrutham mix (** Nutrient mix powder) was given at the rate of **2 kg per** month **up to 3 years**.(Observe, record the activity with pictures)

5. **Anthropometric Measurement:** For eg. Body weight of all the children below 5 years in the locality is taken every month and children with **underweight are, supplied with more Amrutham mix every month.** Then for them **twice in a month, their weight is recorded until they reach normal weight of that age.**

(N.B. Students must take the anthropometric Measurements of underweight children, record it with original pictures and write the inferences. Substantiate your observations with other corresponding scientific studies.)

6. **Awareness class:**

For old age: Health related problems - Monthly check up., BP and Diabetes.

For parents: Classes for water sanitation, life style diseases etc.

For adolescence: Health & Sex education classes.

Activities:

- Record the name, sex ,age, Height (cm), Weight (Kg), MUAC, MUAC Interpretation, Chest circumferences, Head Circumferences, Chest – Head Ratio, Chest- Head Ratio Interpretations, BMI,BMI Interpretation by WHO,STD Heights, Deviations(%),STD Weight, Deviation weight (%) etc. **of all the beneficiaries the anganwadi you visit (ICDS programme (Urban / Rural)**

- **Record each result with accurate original pictures, graphs, figures etc.**
- **Compare your results (Urban / Rural) with the national Standards.**
- **Substantiate your results with other scientific studies and inferences in other states of India where ICDS programmes are implemented.**
- **Collect Review of literature with state level / national studies.**

- **Record the constraints in Anganwadi and suggestions for improvement of the existing scenario of nutritional status and other essential aspects of ICDS.**

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- CHAPTER 2 THE INTEGRATED CHILD DEVELOPMENT SERVICES PROGRAM (ICDS) – ARE RESULTS MEETING EXPECTATIONS? (PDF). World Bank. Retrieved 22 March2011.

Refer Also:

- India Portal
- Government of India Portal

- Malnutrition in India
- Malnutrition in India (Section ICDS)
- School Meals in India
- Mina Swaminathan
- 15 point Programme for minorities
- Balwadi Nutrition Programme

External links

- **UNICEF India ICDS**
- **National Institute of Public Cooperation and Child Development**
- **ICDS in the various states of India**
- **ICDS in Bihar/ICDS in Maharashtra/ICDS in Kerala**

Exercise 4
ASSESSMENT OF NUTRITIONAL STATUS THROUGH FOOD LIST METHOD.

Aim:

To assess the nutritional status of food supplied in Horticulture ladies Hostel through food list method.

Characteristics:

Food list or food inventory method is a type of dietary survey method of nutritional assessment. This method is mainly employed in institution like hostels, army Barracks, orphanage etc places where a group of people take their meal from a common kitchen.In this method, the main **advantage** is that cover a **large sample** in short time. Proper record keeping by hostel wardens, applicable only to educated community etc are some of the challenges.

Exercise:

Methodology :

- Students need to select the Institution for conducting the study.
  (For eg.Harsha- Haritha—Harniya ladies hostel complex of Horticulture College may be selected for conducting study)

- Two visits may be made, on concecutive days within 10 days (In the beginning of week and also at the end of the week.).
- The mess secretaries may be requested to show the data of food stock.

- The data regarding food stock of any purchased or discarded during the week must be taken in to account.
- The average in take per person per day is calculated by using the formula.

$$\frac{\textit{Stock at beginning of week} - \textit{Stock at end of the week}}{(\textit{Total no. of hostels inmates}) \; X \; (\textit{No. of days of survey})}$$

- Then the corresponding nutrient scores for each of the food item need to be found out, which included **protein, fat, carbohydrate, Ca, Fe** content and corresponding energy values in **Kcal.**
- The nutrient scores need to be added to find out the total value.
- **Compare it with Recommended Dietary Allowances score for moderately working Indian women.**
- Plot appropriate graphs
- Intake per person per day in gram for cereals & millets, pulse, milk and milk product, roots and tubers, green leafy vegetables, other vegetables, fruits, sugar, fat etc need to be found out.(ICMR Classification)
- Compare it with **mean food intake** around as per **ICMR.**
- Attach Action pictures.
- Show Photos of actual purchased food items and Balance amounts at the end of the week.
- Apply appropriate statistical tool if needed
- Substantiate your findings with adequate recent scientific studies.
- Collect adequate Review of literature.

RESULT & DISCUSSION PATTERN

- Find out the average intake of different food items per person per day
- Find out Nutrient score of each food items
- Compare it with RDA scores are as given below.
- Prepare the result and discussion as shown in the table below.
- Take original action pictures of the student involvement in weighing each food items
- Take the original pictures of the food stocks in the beginning and end of the study period.
- Quote scientific studies to support your inference.
- Prepare graphs, tables statistically.

For example:

Proximate principle	Nutrient intake/ person/day	Nutrient score as per RDA	Percentage reduction/change
Protein (g)	25.55	50	(-)48.92
Fat (g)	36.69	25	(+) 46.76
Carbohydrate(g)	165.55	130	(+)27.34
Calcium (mg)	174.39	400	(-)56.40
Iron (mg)	4.48	30	(-)85.07
Energy (Kcal)	1073	2225	(-)51.77

(+) % nutrient increment.

(-) % nutrient reduction.

- In case of **protein**, hostel food is supplementing only **48.92% less protein** as compared to **RDA** to meet their requirements. Hostel food supplies **46.76% extra fat and 27.34% extra carbohydrate than** required as per **RDA.** There is **56.41% less Calorlesand85.07% less Iron** in hostel food than required as per RDA. Hostel food supplies only less than **half of required energy** to its inmates and it has **deficit by 51.79% energy** than required.

Food Items	Mean Food Intake as per ICMR (g)	Intake/person/day (g)	Percentage Intake (%)
Cereals & Millets	330	94.5	-71.36
Pulses	75	80.3	+7.07
Milk and Milk product	300 (ml)	100 ml	-66.66
Roots & tubers	200	64.8	-67.6
Green leafs vegetable	100	5.9	-94.1
Other vegetables	200	62.34	- 68.83
Fruits	100	45.9	-54.1
Sugar	20	56.6	+183
Fat	25	36.69	+46.76

- Other than sugar and fat, all other items intake of hostel inmates per person are far or less than that of ICMR recommendation of mean food intake.
- There is a 71% reduction intake of cereals and millets and 66% reduction in case of milk and milk products.
- The intake of roots and tubers and leafy vegetables are very less by hostel intake 67% and 94% reduction respectively.
- Other vegetables intake is 68% less and fruit intake is 54% less than required.
- Only sugar and fats are excess amount in hostel food, which are plain calories only.

CONCLUSION: (For Example)

The results show that the hostel food is very much lacking in its essential nutrients and minerals of moderately working adult women. Quote adequate scientific studies.

This result clearly indicates the huge percentage reduction as food intake by hostel inmates per day. The food does not contain sufficient amount of protein, energy, calcium and iron. But it contain carbohydrate, sugar and fat content is high in food.

Suggestions for Improvement: (For example)

Therefore, there is an immediate need for planning the mess by considering its deficiencies of vital nutrients and minerals and restructure in a balanced way.

Prepare the Table for Tabulation of the Observations made

Sl.No.	Item	Qty in Kg on Starting dt.	Qty in Kg on ending date	Qty Used in Kg	Average Intake /person/ day

Pro/100g	AR	Fat/100g	Fat/Person/day (g)	CHO/100g	CHO/person/day(g)

Energy(in Kcal)	Energy/Person/day (Kcal)	Ca (in mg)/100g	Ca/Person/day(mg)

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Exercise 5

VISIT TO PRIMARY HEALTH CENTRE

AIM:

To know about the goal, principles, functioning and strategies of **essential health services** accessible to every individuals and families in an acceptable and affordable manner at our **Primary Health Centres (PHC).**

ROLE OF PHC:

- Essential part of **health care**
- Main principles are equity,
- **Health** promotion and disease prevention,
- Community participation,
- Appropriate **health** technology
- Multi sectoral approach
- Dental services
- Nutrition/dietician services
- Case management services to area citizens, regardless of ability to pay
- Accessible to all individuals and families in a community.
- **Primary healthcare (PHC)** refers to **essential health care** that is based on scientifically sound and socially acceptable methods and technology, which make **universal healthcare** accessible to all individuals and families in a community

Goal:

- The ultimate **goal of primary healthcare** is the attainment of better **health** services for all.
- It is for this reason that World **Health** Organization (WHO), has identified five key elements to achieving this **goal**: reducing exclusion and social disparities in **health** (universal coverage reforms).

Elements of Primary Health Care

- Education on health problems and how to prevent and control them
- Development of effective food supply and proper nutrition
- Maternal and child healthcare, including family planning
- Adequate and safe water supply and basic sanitation
- Immunization against major infectious diseases.
- Local endemic diseases control.

primary care provider (PCP)

- Is a health care practitioner who sees people that have **common** medical problems.
- Often a **doctor** is the PCP
- PCP may be a **physician assistant** or a **nurse** practitioner
- A **primary care physician** (PCP) is a **physician** who provides both the first contact for a person with an undiagnosed **health** concern as well as continuing **care** of varied **medical** conditions, not limited by cause, organ system, or diagnosis.
- One of the important **duties** of a **primary care physician** is to make **referrals** to specialists as the patient's condition indicates.
- In these cases, the **primary care physician** is also responsible for managing the overall **care** of the patient and communicating with the specialist or specialists as needed.
- The **primary health care approach** embraces **five types of care-**
- **Promotive**
- **Preventive**
- **Curative**
- **Rehabilitative**
- **Supportive / Palliative**
- The **primary health care approach** is effective in responding to the needs of various client groups from individuals through families and communities to populations.
- The **declaration (WHO)**also defined **eight essential components** of primary health care, which helped outline a means of providing health care globally-
- **Maternal and Child Health Care**
- **Drug Provision**
- **Immunization**
- **Proper Nutrition**
- **Accessible Treatment**
- **Public Education**
- **Clean Water & Sanitation**

- **Maternal and Child Health Care -**
- Ensuring comprehensive and adequate health care to children and to mothers, both expecting and otherwise, is another essential element of primary health care.
- By caring for those who are at the greatest risk of health problems, WHO helps future generations have a chance to thrive and contribute to globally.
- Care for these individuals involves adequate counseling on family planning and safe sex.

- **Drug Provision -**
- By providing essential drugs to those who need them, such as antibiotics to those with infections, caregivers can help prevent disease from escalating. This makes the community safer, as there is less chance for diseases to be passed along.
- **Immunization -**

By administering global immunizations, WHO works to wipe out major infectious diseases, greatly improving overall health globally.

- **Proper Nutrition -**

Nutrition is another essential component of health care. WHO works to prevent

malnutrition and starvation and to prevent many diseases and afflictions.

- **Accessible Treatment-**

Another important component of primary health care is access to appropriate medical care for the treatment of diseases and injuries. By treating disease and injury right away, caregivers can help avoid complications and the expense of later, more extensive, medical treatment.

- **Public Education -**

Public education is one of the most essential component of primary health care.

By educating the public on the prevention and control of health problems, and

encouraging participation, the World Health Organization works to keep disease

from spreading on a personal level.

- **Clean Water & Sanitation -**

A supply of clean, safe drinking water, and basic sanitation measures regarding

trash, sewage and water cleanliness can significantly improve the health of a

population, reducing and even eliminating many preventable diseases .

- The primary tier is designed to have **three types of health care institutions**, namely:
- A **Sub-Centre (SC)** for a population of **3000-5000** people
- A **Primary Health Centre (PHC)** for **20000 to 30000** people
- A **Community Health Centre (CHC)** as referral centre for every four **PHCs** covering a population of **80,000 to 1.2 lakh.**
- **Reviews :**
- It is through their **full participation** and at a **cost** that the community and the country can **afford** to maintain at every stage of their development in the spirit of self-reliance and self-determination.[1]

- In other words, PHC is an approach to health beyond the traditional health care system that focuses on health equity-producing social policy.[2][3]
- PHC includes all areas that play a role in health, such as access to health services, environment and lifestyle.[4]
- Thus, primary healthcare and public health measures, taken together, may be considered as the **cornerstones of universal health systems.**[5]
- **History**
- This ideal model of healthcare was adopted in the declaration of the International Conference on Primary Health Care held in Alma Ata, Kazakhstan in 1978 (known as the "Alma Ata Declaration"), and became a core concept of the World Health Organization's goal of Health for all.[6]
- The Alma-Ata Conference mobilized a Primary Health Care movement of professionals and institutions, governments and civil society organizations, researchers and grassroots organizations that undertook to tackle the "politically, socially and economically unacceptable" health inequalities in all countries.
- There were many factors that inspired PHC; a prominent example is the Barefoot Doctors of China.[4][7][8]

Goals and Principles of PHC

- The ultimate goal of primary healthcare is the **attainment of better health services for all**. It is for this reason that **World Health Organization(WHO)**, has identified **five key elements** to achieving this goal:[9]

- **Reducing** exclusion and social disparities in health (universal coverage reforms);
- **Organizing** health services around people's needs and expectations (service delivery reforms);
- **Integrating** health into all sectors (public policy reforms);
- **Pursuing collaborative** models of policy dialogue (leadership reforms); and
- **Increasing stakeholder participation.**

- Behind these elements lies a series of basic principles identified in the **Alma Ata Declaration** that should be formulated in national policies in order to launch and sustain PHC as part of a **comprehensive health system and in coordination with other sectors:**[1]

- **Equitable distribution of health care** – according to this principle, primary care and other services to meet the main health problems in a community must be provided equally to all individuals irrespective of their gender, age, caste, color, urban/rural location and social class.
- **Community participation** – in order to make the fullest use of local, national and other available resources. Community participation was considered sustainable due to its grass roots nature and emphasis on self-sufficiency, as opposed to targeted (or vertical) approaches dependent on international development assistance.[4]

Health workforce development – comprehensive healthcare relies on adequate number and distribution of trained physicians, nurses, allied health professions, community health workers and others working as a health team and supported at the local and referral levels.

Use of appropriate technology – medical technology should be provided that is accessible, affordable, feasible and culturally acceptable to the community.

Examples of appropriate technology include refrigerators for vaccine cold storage.

Less appropriate could include, in many settings, body scanners or heart-lung machines, which benefit only a small minority concentrated in urban areas.

They are generally not accessible to the poor, but draw a large share of resources.[4]

Multi-sectional approach – recognition that health cannot be improved by intervention within just the formal health sector; other sectors are equally important in promoting the health and self-reliance of communities.

These **sectors** include,-

Agriculture (e.g. **food security**);

Education; communication (e.g. concerning prevailing health problems and the methods of preventing and controlling them);

Housing; public works (e.g. ensuring an adequate supply of safe water and basic sanitation);

- **Rural development**; industry; community organizations (including Panchayats or local governments, voluntary organizations, etc.).
- **PHC recognizes that healthcare is not a short-lived intervention, but an ongoing process of improving people's lives and alleviating the underlying socioeconomic conditions that contribute to poor health. The principles link health and development, advocating political interventions, rather than passive acceptance of economic conditions.**[4]

GOBI-FFF

- Selective PHC approach consists of techniques known collectively under the acronym **"GOBI-FFF".**

The targets and effects of Selective PHC are specific and measurable. The approach aims **to prevent most health and nutrition problems before they begin**:[12][13]

Growth monitoring: the monitoring of how much infants grow within a period, with the goal to understand needs for better early nutrition.[4]

Oral rehydration therapy: to combat dehydration associated with diarrhea

Breastfeeding

Immunization

Family planning (birth spacing)

Female education

Food supplementation: for example, **iron and folic acid fortification/supplementation to prevent deficiencies in pregnant women.**

PHC and population aging

- Given global demographic trends, with the numbers of people age 60 and over expected to double by 2025, PHC approaches have taken into account the need for countries to address the consequences of **population ageing.**

- In particular, in the future the majority of older people will be living in developing countries that are often the least prepared to confront the challenges of rapidly ageing societies, including **high risk** of having at least one **chronic non-communicable disease, such as diabetes and osteoporosis.**[14]
- According to WHO, dealing with this increasing burden requires **health promotion and disease prevention intervention at community level** as well as **disease management strategies within health care systems.**

PHC and mental health

- Some jurisdictions apply PHC principles in planning and managing their healthcare services for **the detection, diagnosis and treatment of common mental health conditions at local clinics, and organizing the referral of more complicated mental health problems** to more appropriate levels of mental health care.[15]

Activities:

- Visit the Primary Health Centre.
- Observe and record all activities detailed above from page 68 to 73 in meeting the goals of PHC.
- Quantify the data collected.-Maternal and Child Health Care/Drug Provision
- Immunization/Proper Nutrition/Accessible Treatment/Public Education
- Clean Water & Sanitation
    - How many Beneficiaries in each category. Nutritional Supplementation for each category. Inpatient / Outpatient facilities. Compare it with National and International Standards. Analyze data statistically.
    - Substantiate your inference with scientific studies.
    - Discuss all your results with adequate figures, graphs, plates, original pictures, action pictures etc.
    - Write suggestions for improvement of the present scenario.

For example:

Visit to primary Health centre located at any block Panchayath on which (record) **DD/MM/YYYY. Time of Visit**. Data collected on the following major activities.

- **Maternal and Child Health Care**
- **Drug Provision**
- **Immunization**
- **Proper Nutrition**
- **Accessible Treatment**
- **Public Education**
- **Clean Water & Sanitation**

For Example:

One of the Major activities

1. They provide immunization for children to prevent diseases.

Immunization chart

Period	**Dose**
Birth	BCG Polio drop – 0 dose Hepatitis B vaccine-Birth dose
6 weeks (1½ months)	Pentavalent-1 Polio vaccine-1st dose
10 weeks (2½ months)	Pentavalent- Polio vaccine -2nd dose
14 weeks (3½ months)	Pentavalent -1 Polio vaccine – 3rd dose
9th month	Measles vaccine Vitamin A
15th month	MMR vaccine (Mumps, Measles, Rubella)
18th month	DPT (Triple), 1st booster dose Polio vaccine. Vitamin A 2nd dose Every 6th month till 5 years giving Vitamin A single dose.
5year	D.T Booster Dose /Polio Vaccine/Vitamin A -9th Dose
10years	T.T. Vaccine
16 years	T.T Vaccine

- Observe and record, how do the medical team assess the vital signs of beneficiaries /**bedridden patients** and examine their health status and also provide medical aids for different ailments and under **pain** and **palliative** care program.
- How do they conduct **medical camps** in rural villages.
- How do they provide nutrient supplements/ Nutrition education.
- **Dosage-Vitamin A** drops 1 dose provides **1 lakh IU.**
- **B.C.G**- Bacillus Calmette Guerin Vaccine
- **D.P.T.**-Diphtheria, Pertussis and tetanus vaccine
- **M.M.R**- Measles, Mumps and Rubella Vaccine
- **T.T.**-Tetanus Vaccine
- **D.T.**- Diphtheria and tetanus toxoids
- **Pentavalent**-It is given to Diphtheria, Tetanus, whooping Cough, Hepatitis B, Haemophilus influenza Type B.

Exercise:Likewise report all other activities with proper Inference.

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Exercise 6

FOOD WEIGHMENT METHOD

Introduction:

- **Food weighment method** is a prospective dietary assessment **methods**
- **It provides** descriptions of the **foods** consumed and eating occasions
- It provide excellent estimates for energy, nutrients, **foods** and **food** groups
- Dietary Outcome can be measured
- Recommendations are based upon multiple days of food diary entries rather than a single day in order to have an account for daily variation in diet.
- Energy and nutrient intake of total diet, Intake of specific nutrient or food, dietary pattern,Within-individual comparison, Between-individual comparison, Meal composition , Frequency of eating/meal occasions , Eating environment etc can be very well assessed.
- Measurement involves respondents or investigators weighing each and every item of food and drink before cooking, after cooking, at the time of consumption and left overs in the serving plate.
- Record all weighments-Water, Dietary supplements, Alcohol, Ingredients, Eating occasions and other relevant information.

Timeframe

- Since daily variations are there in what people eat, 7 days of recording is needed.
- The more number of days, the less bias toward certain days of the week (i.e. weekday/weekend variation)
- The more number of days, the more likelihood of capturing information on foods sporadically consumed.

- Researchers may also request a respondent to do the assessment repeatedly to account for seasonal differences in consumption: e.g. 2-day food diaries (weekend and weekday) four times over a year.

Procedure

- Instructions and record sheets or booklets are provided, together with a set of weighing scales for the food and drink
- For each food item consumed, the respondent records the description of the food, its brand, the weight served, and leftovers
- For composite foods which could not be readily split such as a fruit pie or meat casserole, the respondent provides recipe details
- For recording the foods eaten away from home, the respondent is asked to record the details as much as possible. Pocket booklets probing information on portion size, price, place of purchase and any leftovers can be used
- A short questionnaire can also be included to aid interpretation of the record and to record details of core foods regularly eaten e.g. type of milk, and to inquire about non-food items such as dietary supplements
- The respondent may keep packages and labels as parts of records
- Recording may also be maintained either by using an electronic device including an audio device and a digital camera [1]

Usage:

- Recording exact portion sizes, such as in study of dietary behaviours
- Providing excellent estimates of energy, nutrient, food and food group intake and thus useful for study of diet-disease associations
- To develop or calibrate diet history or food frequency questionnaires methods
- Traditionally used for the assessment of dietary intakes in national surveys [3, 4]

How are estimates of diet derived?

- Estimates of diet can only be derived following **extensive data entry.**
- One person may have more than 50 items per day, and the number of food items in a population-based study can readily become thousands.
- Data entry should consider the following issues:

- Hand-written records may be unreadable and may include spelling mistakes.
- Ideally, those are to be confirmed by contacting the respondent
- For a group-level assessment, entry names are to be harmonized, often by using food codes: e.g. coca cola and fizzy drinks (no brand) may be kept as they are and also coded into a food code of 'soft drinks' and brand
- Ideally, food codes are comprehensive to capture every dietary item consumed in a given population, including brand names and sub-types.
- Text entry for further details is needed.
- Quantity needs to be entered as well, in a standardized manner, including raw information, information with specific units (gram or volumes), and uncertainty

- **Each dietary entry may include the following attributes:**

- Temporal factors: date; day of a week; and time
- Item: food name; food code; food group (text+ code); and recipe if any (text + code); home-made or purchased (text + code); brand
- Quantity: amount in gram; amount in volume
- Setting: occasion (e.g. consumed as breakfast); location; with whom; watching TV (yes/no); sitting table (yes/no)
- Outcomes can vary, depending on aims, detail of information, and number of days.
- Outcomes extracted from diaries may be averaged across multiple days of measurement to estimate a typical day's consumption.
- **Example of dietary estimates from weighed food diaries include:**

- Temporal information on dietary consumption: e.g. dietary consumption in different contexts (e.g. breakfast, weekend)
- Frequency: e.g. how often take always are consumed per week; how often breakfast is skipped by using 1-week diaries (but not by 2-day diaries)
- Items can be specific foods (e.g. fried chicken purchased outside) or food groups (e.g. total chicken)
- Dietary components, such as nutrients, phytochemicals, and toxins, can be estimated, as far as a food-composition table is available and linked to food items entered from diaries.
- Levels can be from an overall diet or specific dietary items (e.g. iron intakes per day from an overall diet, meat, and supplements, separately)

Strength and limitations

Strengths

- Does not rely on individual memory and recall as the food/drink are recorded at the point of consumption
- Provides weighed portion sizes and therefore does not rely on portion size estimation
- Detailed descriptions of the foods consumed and all eating occasions are provided
- Findings from quantitative surveys that could inform food and nutrition policy options

    - Mean consumption of foods and nutrients by socio-economic and demographic groups
    - Frequency of consumption of specific foods /food groups
    - Diet adequacy of different population groups

Limitations

- The weighed food diary imposes the biggest respondent burden among all methods and individuals must be motivated and compliant
- The more number of days, the less accurate towards the end of the period because of study fatigue
- The individual must be numerate and literate
- Weighing and recording food eaten away from home can be difficult
- Foods eaten less than once or twice a week may not be captured

- The individual may alter his/her diet to make it easier to record, or to conceal poor eating habits (reactivity bias)
- The method is also time consuming and labour intensive for researchers to conduct data entry and standardization of data; and is therefore costly in staff and time
- Dietary data input and translation into nutrient data is complex
  - Thoroughness and errors are likely to be differential, depending on whether or not the individual prepare meals by themselves
- Diet /disease relationships. Limited in that it may not provide details of accurate quantities or portion sizes.

Populations

- Pregnancy –Suitable
- Infancy and lactation-Requires proxy
- Toddlers and young children-Requires proxy
- Adolescents – Under-reporting apparent in adolescents
- Adults- under reporting reported in adults
- Older Adults – May require proxy
- Ethnic Groups- Requires language /cultural specificity

Further considerations

- Instructions must be provided on food recording, ideally face-to-face or alternatively via phone call; a practice session is conceivable
- Once complete, trained fieldworkers can go through the record with the individual to probe for the level of detail required to code dietary intake
- Feedback can be given to fieldworkers on the quality of their coding and probing
- Phone calls or mobile phone messages can be sent to respondents during the period of food recoding to maintain compliance and motivation
- Dietary feedback can be provided to respondents about their diet after the completion of diary coding
- Individuals should be instructed to keep food labels of any unusual foods and ready meals consumed to help coders identify or clarify items
- If a respondent consumes meals with family members or peers, their understanding and cooperation should be sought
- Diaries should be formatted to allow sufficient space to record the entire dietary intake
- It is useful to supply a separate instruction book so this can be referred to when the diary is being completed
- A pocket notebook is also useful to record consumption away from home, weighing food eaten away from home can also be problematic
- Food could be photographed by study participants to help interpretation

Resources required

- Weighed food diary in record sheet or pocket booklet form for when away from home
- Weighing scales
- Additional questionnaire to aid interpretation
- Trained research assistants to instruct individuals on undertaking a weighed food diary
- Clear written instructions on completion and return of the tool
- Trained diet coders
- Nutrient database and analysis program

Instrument library

A method specific instrument library is being developed for this

Development of new tool/method

- Weighed food diaries are known as a resource-intensive method.
- This could not be adopted readily in a common epidemiological study with a large sample size.
- Food diaries (estimated or weighed) are realistic and conceivable to implement in a subset of a study population, although this still requires expert knowledge on data entry and further processing.
- Food diary data in a subset are then to be combined with dietary data of an entire study population deriving from another dietary assessment (e.g. multiple 24-hr recalls, food frequency questionnaires).
- Unique statistical approaches are required to validly merge multiple dietary datasets from multiple methods [9].

Exercise:

- **Students have to assess the nutritional status of food supplied in a selected home by food weighment method.**
- Students need to visit the household before the food to be cooked and weigh with the help of calibrated balance.
- All the food stuffs (edible portion) that will be cooked for the day has to be measured.To be accurate, measure the cooked food, consumed food, left overs in the served plates and calculate the food and nutrients intake by making the best use of Diet Cal Tool (Gurdeep Kaur 2018).
- Record all data collected in a Food diary for tabulation.
- The average intake of different **food items per person for day** and **nutrient scores of each food items** need to be found out.
- Calculate the **nutritive value of food stuffs** and **compare** it with normal **RDA**
- Substantiate your findings with corresponding studies
- Collect related reviews and represent your results with graphs, action pictures, figures etc.

For example: Aim – (Write The Aim -To assess the nutritional status of food supplied in a home, through food weighment method)

Introduction: (write a brief introduction with adequate citations)

Weighment of food either raw/cooked is actually weighed using an accurate balance. It is ideal to conduct the survey for 7 consecutive days to know the true picture of diet. Every day food is weighed in the morning and evening before actual cooking is began by the house wives. Only edible portion of raw food is weighed.

Methodology :(explain the methodology followed).

For example: A five member family has to be selected for conducting study. The investigator visits the household before the food to be cooked and weigh with the help of calibrated balance. All the food stuffs (edible portion) that will be cooked for the day were measured. Calculated the nutritive value of food stuffs and compared with normal RDA.

RESULTS & DISCUSSION :(Explain it with supportive studies)

For example: The average intake of different food items per person for day and nutrient scores of each food items were found out.

Ingredients	Amount - g	Carbohydrate - g	Protein (g)	Fat (g)	Energy (Kcal)	Vit.A (µg)	Calcium (mg)	Fe (mg)
Rice	1170	9248	74.88	4.68	4048.2	-	105.3	11.4
Rava	500	374	52	4	174	-	80	8
Maida	250	173.5	30.25	4.25	852.5	62.5	5.75	6.75
Onion	250	27.7	3	6.25	125	-	117.25	1.5
Green chilli	50	1.5	1.45	0.3	14.5	87.5	370	5.85
Banana	500	136	6	1.5	580	390	85	1.8
Potato	250	56.5	4	0.25	242.5	60	25	1.2
Egg	200	-	26.6	26.6	346	840	120	4.2
Fish	250	-	42	3.8	252.5	-	225	6.25
Sugar	55	54.67	0.055	-	218.9	-	6.6	0.085

Comparison with RDA

Proximate principle	Nutrient requirement as per RDA.	Nutrient intake/person
Protein (g)	50	54.44
Fat (g)	25	41.52
Carbohydrate (g)	130	358.434
Calcium (mg)	400	478.33
Iron (mg)	30	9.567
Energy (Kcal)	2225	2025.02

- In case of protein, the home food is supplementing 54.4 g which is actually a little more than required RDA.
- Food supplies 41.52 g fat, which is much more than needed and above all its plain unhealthy calories devoid of other nutrients.
- Food supplies 358.4 g of carbohydrate. RDA recommendation is only 130g.
- Food and supplies 2025K.Cal of energy which is approximately equal to the recommendation.
- The home food supplies 9.84 mg of iron, which is very much less than requirement of 30mg and 478.33 mg of Calcium, which is sufficient.

Food Items	Mean Food intake as per ICMR (g)	Intake/person (g)
Cereals & Millets	330	834
Pulses	75	-
Milk & Milk products	300 ml	200 ml
Green leafy Vegetables	100	-

Other Vegetables	200	40
Egg	40	100
Fruits	100	40
Fish	40	50
Fat	25	23
Sugar	30	11

- Pulse, green leafy vegetables and other vegetables consumption of the family members is nil.
- The cereals consumed by each members per day is 834g.
- The diet does not contribute pulses, green leafy vegetables and other vegetables
- Egg, fish and fruits were in sufficient amount.

Conclusion:

The results shows that the home food is lacking in its essential nutrients and minerals to meet the day today energy requirements of a moderately working adult member of the family. The results clearly indicate that, there is a lack of pulses, green leafy vegetables and other vegetables consumption by family members. The diet does not contribute sufficient amount of iron. The protein, calcium is present in sufficient quantity, but members should concentrate on consuming balanced diet.

Weighed food records – Evaluation: The weighed food record or duplicate-food collection method is often regarded as the **most precise method for estimating food and/or nutrient intakes of individuals.**

- Here, the amounts of food consumed are actually weighed and recorded so more accurate measurements of actual intake than calculations based on food composition tables can be obtained.
- Make the best use of the Diet Cal Tool developed by Dr.Gurdeep Kaur (2017) latest version for easy and accurate calculation.
- Weighed intakes may be used as the comparison method with other dietary methods.
- The disadvantage of this method, however, is that it is costly in both time and money, and requires highly motivated subjects with high levels of literacy.

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Exercise 7

MARKET SURVEY FOR FORTIFIED AND SUPPLEMENTARY FOODS

Introduction:

- As defined by the **World Health Organization** (WHO) and the Food and Agricultural Organization of the United Nations (FAO), **fortification** refers to "the practice of deliberately increasing the content of an essential micronutrient, ie. vitamins and minerals (including trace elements) in a food irrespective of whether the nutrients were originally in the food before processing or not, so as to improve the nutritional quality of the food supply and to provide a public health benefit with minimal risk to health", whereas **enrichment** is defined as "synonymous with fortification and refers to the addition of micronutrients to a food which are lost during processing".[2]
- **Staple foods of a region** can **lack** particular **nutrients** due to the soil of the region or from inherent inadequacy of a normal diet. Addition of **micronutrients to staples and** condiments can **prevent large-scale deficiency diseases** in these cases.[1]
- **Fortified foods** are **foods** to which extra nutrients have been added. Examples of these nutrients include vitamin A, B vitamins, vitamin D, folic acid, iodine, and iron.
- The original purpose of **food fortification** is to **decrease the occurrence of nutrient deficiencies.**
- **Enriched** means nutrients that were lost during **food** processing have been added back. An example is adding back **certain vitamins lost in processing** wheat to make **white flour.**
- **Fortified** means vitamins or minerals have been added to a **food** that weren't originally in the **food**. An example is **adding vitamin D to milk**
- **Food fortification** or enrichment is the process of adding micronutrients (essential trace elements and vitamins) to **food.**
- **Grain products** (like bread and pasta) with **folic acid**
- **Milk** fortified with **vitamin D**. Vitamin D is crucial for strong bones, normal muscle function and aids in keeping the immune system healthy.
- Fortified **orange juice** with **calcium**
- **Eggs** fortified with **omega-3 fatty acids**.
- **Fortification** is a means of improving the **nutritional** status of a population (or potentially a sub-population).
- Some foods are **fortified** by law (e.g. white bread), others voluntarily (e.g. breakfast cereals, fat spreads).
- **Fortification** is adding vitamins and minerals to **foods** to **prevent nutritional deficiencies.**
- The nutrients regularly used in grain **fortification prevent diseases, strengthen immune systems, and improve productivity and cognitive development.**

- Under the **food supplements** Directive (Directive 2002/46/EC) **food supplements** are **defined** as foodstuffs that are meant to **supplement** the normal diet and which are concentrated sources of nutrients or other substances with a nutritional or physiological effect, alone or in combination, marketed in dose form.
- **Food supplements are** concentrated sources of nutrients taken as a **dietary** top-up. They include **fish oils**, which have been shown to **benefit heart health**, minerals like **iron** to help **prevent anaemia**, and a whole list of vitamins, from **A to K.**
- **Supplements** contain higher amounts of nutrients than **are** found in most **foods.**

Exercise:

- **Students have to do a market survey for fortified and supplementary foods (as example given below)**
- **Record the Nutrient content and cost of each fortified and supplementary food.**
- **Write inference with supportive studies and adequate photos based on data collected, action photos of the survey**
- **Collect review about fortified, enriched and supplementary foods**
- **Result and discussions**
- **Inference**
- **Conclusions**
- **For Example: Fortified Foods**

SL. No	**Food Items**	**Brand**	**Fortified**
1.	**Baby food** NIDO NUN Cerlac Nestum	 Nestle Nestle Nestle Nestle	 Fortified with Calcium Fortified with calcium Fortified with baby cereals with milk.
2.	**Salt**	TATA IFLO Ishakthi	Doubled with iodine Fortified with iron

3	**Health Drinks**		
	Junior Horlicks	Horlicks	Fortified with Ca and DHA.
	Mother's Horlicks	Horlicks	Fortified with omega 3 fatty food.
	Women's Horlicks	Horlicks	Fortified with Fe & Ca.
	Horlicks Gold	Horlicks	Fortified with multigrain
	Bournvita	Cadbury	Vit.D and Calcium
	Boost	Boost	Wheat, barley, Soy protein.
4	Nutri choice	Britannia	Fortified with Vit.D
5	Soya milk	Olilk	Fortified with Vit.C
6	Rice bran oil	Priya	Fortified with Vit.D
7	NEDO Milk Powder	Nestle	Fortified milk with Vit.C and Ca
8	Wheat flour	Supply Co	Fortified with Fe
9	UpmaRava	Nirapara	Fortified with Vit.B
10	Mixed fruit juice	Lachin	Fortified with Vit.C
11	**Oil**		
	Sunlite	Fortune	Fortified with Vit. A & d
	Dhara	Dhara	Fortified with Vit.A and D_2

Supplementary foods:

1. Infant formula

Lactodex (up to 6 months)	**Nestle**	Fortified with protein, Fats, mineral, Vit. C, E, B, K, Iodine, Chlorine, Ca, Mg, Na, Fe, Zn, Cu.

NutricaDexolac Premium (After 12 months}	Nestle	Vit. A, E, C Na, Zn,Fe,I, Cu, P, Mg, Vit.D Protein Omega 3
Nan Pro-3 (After 12 months)	Nestle	Soya protein Mineral Vitamins Oleic acid α-lenoleic acid

Food Adult Supplementary

Original protinex	Ntrica	Hydrolysed protein Essential Vitamin Minerals Protein

For Pregnancy & Lactation

Pro - PL	British biological	Saffron enriched Haemoglobin boosters Bone health nutrients Vitamins and Minerals Protein

Other Supplementary foods

	1	Rice, Banana powder with Njavara rice	Ragi Vita	
	2.	Banana powder	Banana tree	
	3	Lactogen 1, 2,3,4	Nestle	
	4	Ragitone	Jeevans	

5	Pedia sure	Abot
6	Proteinse	Dumex
7	Power Vita	Patanjali
8	Doxolac	Nutrica
9	Junior proteinex	Nutrica
10	Farex	Nutrica
11	Nutrimalt	Aachi
12	Health mix	Aachi
13	Nutrigro	Complan
14	Protinox	Nutrica
15	Ensure	Abott
16	Prosure	Abott
17	D Protein	British biological
18	B Protein	British biological.

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Exercise 8

LOW COST RECIPE FOR PRE SCHOOL CHILDREN

Introduction:

- To present how best to provide supplementary foods at minimal cost, recipes involving the use of inexpensive foods like common cereals, pulses, nuts and oilseeds green leafy vegetables , other vegetables and indigenous foods available in the location which are the cheapest and the best sources of all nutrients especially protein and calories in our country
- Pulses are the richest natural sources of proteins. They contain about 22 to 25% protein.Cereals supply about 350 calories per 100 g
- The pulses commonly used are bengalgram, greengram, blackgram, redgram. lentil etc.
- Oilseeds have a double advantage. They are good sources of protein and are also rich in calories because of their high oil content.
- Green leafy vegetables, other vegetables and fruits are rich sources of vitamins and minerals

Aim:To prepare low cost recipe for pre-school children.

Exercise:

- **Student need to select low cost nutritious recipe and prepare delicious items**
  - **Calculate the cost and nutrient contents**
  - **Explain the benefits of the low cost nutritious recipe using the indigenous ingredients**
  - **Inference with sufficient supportive studies.**
  - **Review collection**
  - **Low cost recipe collection**
  - **Add photos of the recipe prepared, pictures, action pictures, tables, prepare CDs**
- **References**
- **Example of a recipe:**

Item: Mixed Milk Porridge

Ingredients

Parboiled rice : 25 g

Green gram dhal : 25 g

Bengal gram dhal: 25 g

Milk : 250 ml

Jaggery:30g

Procedure:

- Cook green gram dhal, Bengal gram dhal after roasting in ghee in a pressure cooker with enough water.
- Cook parboiled rice separately.
- Boil the milk
- Add cooked Dhal mix and rice
- Stir thoroughly.
- Add Jaggery (After liquidifying in low flame)
- Care should be taken to avoid sand and other dirt settled in bottom.
- After reaching good consistency, off the stove and serve hot.

COST CALCULATION:

SL.NO	Item	Cost/100g (Rs)	Cost (Rs)
1.	Rice	12	3
2.	Green gram dhal	20	5
3.	Bengal gram dhal	20	5
4.	Milk	4.4	11
5.	Jaggery	12	3.5

Total cost = Rs.27.5/ (Rupees Twenty Seven and fifty paise only)

Calculate the Nutrient Contents:

SL.No	Ingredients	Amount (g)	Protein (g)	Fat (g)	Energy Kcal	Ca (mg)	P (mg)	Fe (mg)	Carbo-hydrate (g)
1	Rice	25	1.6	0.1	89.75	2.5	35.75	0.25	19.75
2	Green gram	25	6.125	0.3	87	18.75	101.25	0.975	14.975
3	Bengal gram	10	2.23	0.17	33.5	73	30.4	0.27	5.76
4	Milk	250ml	8	10.25	167.5	300	225	0.5	11
	Total		**17.955**	**10.82**	**377.75**	**394.25**	**392.4**	**1.995**	**79.985**

CONCLUSION:

Mixed milk providing porridge provide 17.95 g protein, 10.82g fat, 79.985 carbohydrate, 377.75 Kcal Energy,394.25 mg Ca, 392.4 mg P &1.995 mg Fe, The cost for ingredients are only Rs.27.5. More over is a delicious dish and preschool children will consume it without hesitation, which also provide sufficient nutrients to them.

Exercise 9

Nutrition awareness programme for school children

Introduction:

- **Nutrition education is such an intervention since, it provides people with the knowledge, skills and motivation to make wise dietary and lifestyle choices, thus building a strong basis for a healthy and active life**
- Nutrition education as a means for improving the nutrition and health of the community
- Lack of nutritional awareness about the dietary requirement and nutritive value of different food is the main cause of malnutrition among school children, pregnant woman, lactating mother and other vulnerable sections of the community.
- School Children can be a channel for community participation, for example via school garden projects or school canteens, or through local inter sectoral committees
- They can provide cost-effective nutrition interventions (other than education)
- There are two main types of chronic nutritional problems that are found at either ends of the spectrum of malnutrition: those due to insufficient intake of good quality and safe foods, and those due to an excessive or unbalanced intake of food or certain types of food. Both can be prevented or reduced with an adequate or proper diet
- **Whether food supplies are scarce or abundant, it is essential that people know how best to use their resources to access a variety of safe and good quality foods; to ensure nutritional wellbeing**
- Households need sufficient resources to produce and/or purchase adequate food to adequately nourish everyone at home
- In addition, they need the understanding of what constitutes an appropriate diet for health, as well as the skills and motivation to make sound choices on family care and feeding practices
- **Food and nutrition education thus play a vital role in promoting food security, as it is especially important for poor households to make optimal use of local foods and practice healthy eating patterns**
- **Effective nutrition education is also important for combating the rise in non-communicable, diet-related diseases** seen in many countries
- **Schools are also ideal settings for promoting healthy eating, for many other reasons**:
- They reach most children, for a number of years, on a regular basis
- They have a mandate to guide young people towards maturity. Given the vital role of nutrition in a healthy fulfilled life, nutrition education is part of this responsibility.
- They have qualified personnel to teach and guide
- They reach children at a critical age when eating habits and attitudes are being established
- They provide opportunities to practise healthy eating and food safety in school feeding programmes, and through the sale of food on their premises

- They can establish school policies and practices – for example, sanitation facilities, rules about hand washing – that can improve health and nutrition
- They spread the effect by involving families in their children's nutrition education
- Primary schools are particularly suitable vehicles for nutrition education
- They catch children younger, when their habits are still being formed
- They reach a larger proportion of the population
- **Nutrition lessons should be simple, interesting, colourful and easily learned by Quiz competitions, Lectures, exhibitions, demonstration, illustration and practical action – approaches which are natural to primary education.**

Special features:

- Nutrition education should be practical and should be easily adaptable to the socio economic status ,food habits and the available local food resources (indigenous) ,generally needed for the purpose of demonstrations and feeding of the locally available audience
- Nutrition education programme should become a part of the community
- Set in **objectives for the Nutrition Education programmes**
- The main objectives are- To develop nutrition advisory services and nutrition education for the public and to impart and coordinate in Community Nutrition programmes with the cooperation of people working in other disciplines like social workers, village health workers and nurses etc and also with the help of social welfare agencies.
- **Major function of Nutrition Education Activities-**
- Increase awareness
- Enhancing people's motivation
- Facilitating the ability to take action
- Improving environmental support
- Nutrition educators can also use a growth centred educational approach
- Nutrition educators can also work in coalitions with other professional and operational non-governmental Agencies Sectors.
- To help in developing Supplementary Nutrition programme where ever necessary
- To improve the nutritional levels of the community by available means
- The lectures should be simple and too elaborate and should be adoptable by people attending the course
- The demonstrations should be simple and thus should make good use of locally available resources with the help of which ,it can be adopted by the community
- **Methods of Nutrition Education :**
- **Lectures and Demonstrations**
- **Workshops**
- **Film and Slide shows**
- **Posters, charts and exhibition**
- **Books, pamphlets, bulletins and news papers**

- **Radio and Television**
- **Quiz programmes**
- **Lectures and Demonstration:**
- Should be simple and elaborate with major points
- **Workshops:**
- The Nutrition work should discuss the prevailing nutritional problem in the community in simplest form and the solution for it
- **Film Shows and slide shows:**
- The most effective mode of Nutrition education
- They should be practical and illustrative and easily understandable
- **Posters, charts and exhibitions**
- Should be simple
- Should immediately catch the attention of the viewers
- Should be written in regional language
- The letters should be clearly and easily visible at a distance
- Charts should be in a position to stimulate the interest of the people
- The charts should be well Balanced with the use of appropriate colour and should not be crowded
- **Exhibitions**:
- Posters, charts – are the best mode of nutrition education
- Should be set up, keeping in mind the educational level of the people –the nutrition education programme is catering to –
- **Books, pamphlets, Bulletins and newspaper article:**
- Printed matter for nutrition education is suitable for educating students, teachers and other professionals
- Prepare them in regional language and should give adequate informations
- **Radio and Television**
- Radio and Television programmes reach a large number of audience within no time
- Jokes, stories, dramas, actual situations etc., involving the local people about any nutritional requirements or any nutritional problems confronting at present etc will help to create large scale nutritional awareness among the community.
- **Quiz:**
- A quiz is a form of game or mind sport, in which the players (as individuals or in teams) attempt to answer questions correctly.
- It is a game to test your knowledge about a certain subject.
- In some countries, a quiz is also a brief assessment used in education and similar fields to measure growth in knowledge, abilities, and/or skills.
- Quizzes are usually scored in points and many quizzes are designed to determine a winner from a group of participants – usually the participant with the highest score.

- Multiple choice Questions

- Subject specific
- Styles and Methods the Quiz master can design

- **Activity-based nutrition education** is a set of methods by which better food and nutrition habits are introduced by means of various activities, such as nutritional plays and games, story composing, nutritional songs, nutritional diaries, role plays, discussion and cooking
- **Elementary nutrition education** should be based on various activities that take into consideration the children's **intellectual and physical** development because these students are in **a concrete operational stage** and they are naturally **active, curious, and inquisitive**(Lee K.A.2003)
- Various activities are been developed for elementary nutrition education, and educational effect and teaching methods are suggested
- Children can be highly motivated and naturally absorb knowledge and desirable attitudes with respect to food and nutrition

CONCLUSION

- Good nutrition education helps children to become nutritionally literate
- Children educated in this way will come to know, for example, how to achieve a good diet with limited means, what food is nutritionally valuable, where to find it, how to prepare food safely and make it appetizing, and how to avoid food dangers
- It will impart good knowledge to make good food- and lifestyle-choices and develop good eating habits for themselves and for others
- If they are in an agricultural community they will have good ideas about plantation, cultivation, harvest and preservation and postharvest technologies.
- School children will know where to shop, which food outlets are unhygienic and how to give a considered reaction to alluring advertising
- All will know the vital importance of clean safe water for drinking and washing
- When they will become parents, they will be aware of the nutritional risks run by pregnant women and babies, know about breastfeeding and complementary feeding, and be able to establish good eating and hygiene habits in their own children
- Nutritionally literate adults will know where to get answers to questions about food and diet, will respect dietary cultures but know how to vary and extend them, will challenge dangerous food myths, and will have the educational background to understand community policy, intervene in debate and promote action for health
- The value of nutrition education to the long-term development of a society
- The causes of malnutrition are complex and interconnected, and so are the solutions
- Nutrition education is a must for children, parents, teachers and school staff, all sectors, governments, ministries and curriculum developers for healthy and nutritious eating pattern to make them strong.
- To impart powerful motivations which can be enlisted on the side of education about healthy eating. " **NUTRITION EDUCATION CAN FIGHT MALNUTRITION**"

Exercise:

- **Student need to select any four feasible methods of Nutrition awareness / Nutrition education programme for school children**
- **Write elaborately about importance of conducting awareness programme on Nutrition Education through –any 4 methods you have chosen. For eg. Lecture / Quiz programmes etc. by quoting adequate references.**
- **Write the plan of action - About the conduct and how enthusiasm can be created among school children.**
- **While the student select the programme, be specific in selecting the feasible method, in consultation with your Course teacher , preferably take into consideration the present scenario of the school you select and their requirements.**
- **Calculate the cost of materials, prizes etc. required.**
- **List the equipment needed**
- **Explain the benefits of these nutrition awareness / nutrition education programme for school children and how can it impact their healthy life styles through the judicious selection of low cost at the same time nutritious indigenous foods.**
- **Evaluation of the effectiveness of the programmes**
- **Inference with sufficient supportive studies.**
- **Review collection**
- **Take action photos any four feasible methods of Nutrition awareness / Nutrition education programme for school children, you have selected and implemented successfully**
- **Prepare tables based on the Baseline survey, pre and post test results and final evaluation by the participants, you obtained while you conducted this programme.**
- **Prepare action CDs along with the final report**
- **Evaluate the programmes thoroughly by collecting the opinions of students, teachers, parents, community involved apart from self-evaluation for the betterment of future programmes.**
- **References**

For Example:

Aim: To conduct an awareness program to the adolescents through nutritional education.

Location:

KAU School, Vellanikkara of Thrissur District

Method

- Lecture /Demonstrations/exhibition
- Nutrition quiz competition
- **Topic selected**
- Healthy Diets and Nutritional Disorders
- Nutrition and health /Food Habits and Health

Action Plan:

Name of the programme
Place and date
Inaugural Function
Lecture: By whom (student)
Quiz – By whom (student)
Demonstration – By whom (Student)
Exhibition by –whom (students)
Preparation of Materials
Preparation of simple Questioners (Base line, Pre / Post tests (simple statements and answers – yes or no or do not know), Final Evaluation)
Data collection
Valedictory Function
Chief Guest
Evaluation Report
Prize distribution
Vote of Thanks

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