Unit 12

NUTRITION INTERVENTION PROGRAMMES AND POLICIES

Nutrition is a major factor in bringing out the maximum potential that one is endowed both physically and mentally. Widespread malnutrition is largely a result of dietary inadequacy and unhealthy lifestyles. The great advantages of looking at malnutrition as a problem in human ecology is that it allows for variety of approaches towards its prevention.

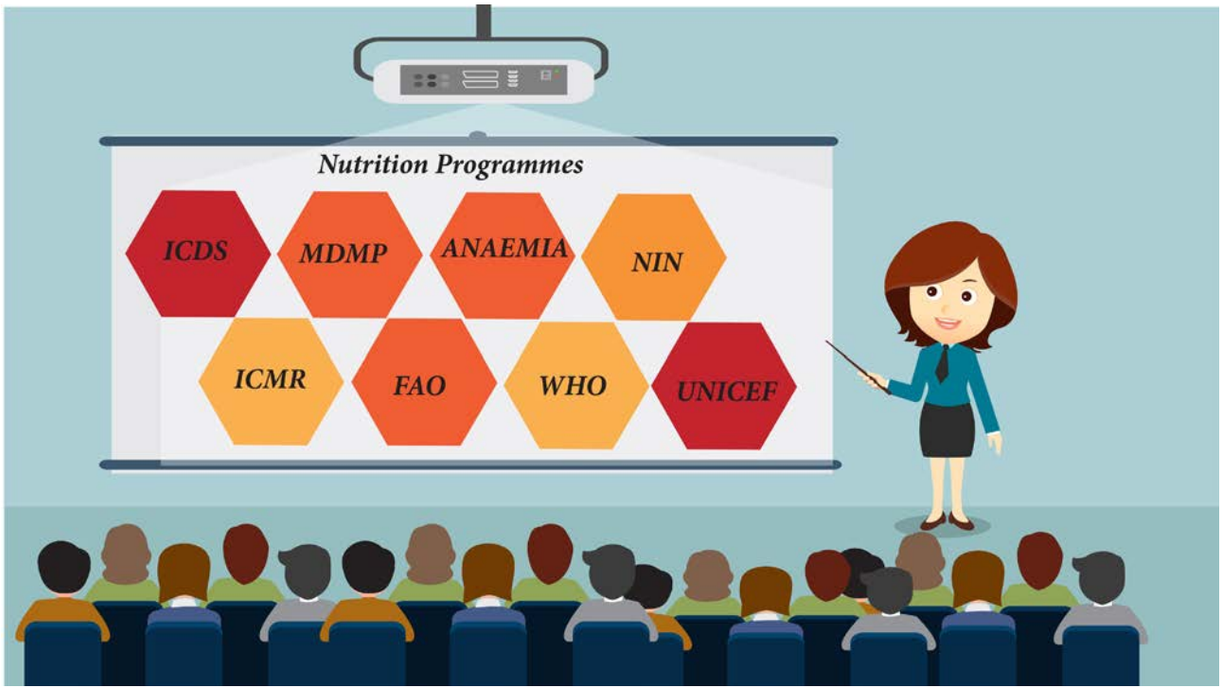
In this lesson, the students will be able to know about:

- the ongoing intervention programmes by the Government to overcome malnutrition.
- National and International agencies that fight against malnutrition.
- the various components of noon meal programmes which helps in the overall development of children.

12.1. Nutrition intervention programmes

12.1.1. Integrated Child Development Services (ICDS)

ICDS was initiated in 1975 with the twin objective of ensuring nutrition of preschool children through



Nutrition Intervention Programmes

supplementary feeding and psychosocial development through early stimulation and education. The objectives also include supplementary feeding for pregnant and lactating women and nutrition education to ensure better child care and nutrition.

The nutrition components of ICDS aims to provide the following services:

- nutrition education to mothers for improving dietary intake and dietary diversity.
- nutrition education regarding appropriate infant and young child feeding practices.
- growth monitoring and detection of growth faltering.
- assist in providing massive doses of vitamin A, ORS and iron tablets.
- food supplementation to preschool children between the age of six months and six years, pregnant and lactating mothers and adolescent girls.

The Anganwadi workers are expected to survey all families in the community and identify pregnant, lactating women and preschool children, monitor the growth of children and provide food supplement to the three groups for 300 days in a year. ICDS guidelines specify that monthly weighing of children should be done in the crucial 0-24 months age group.

Mother and Child Protection card (MCP card) was introduced for

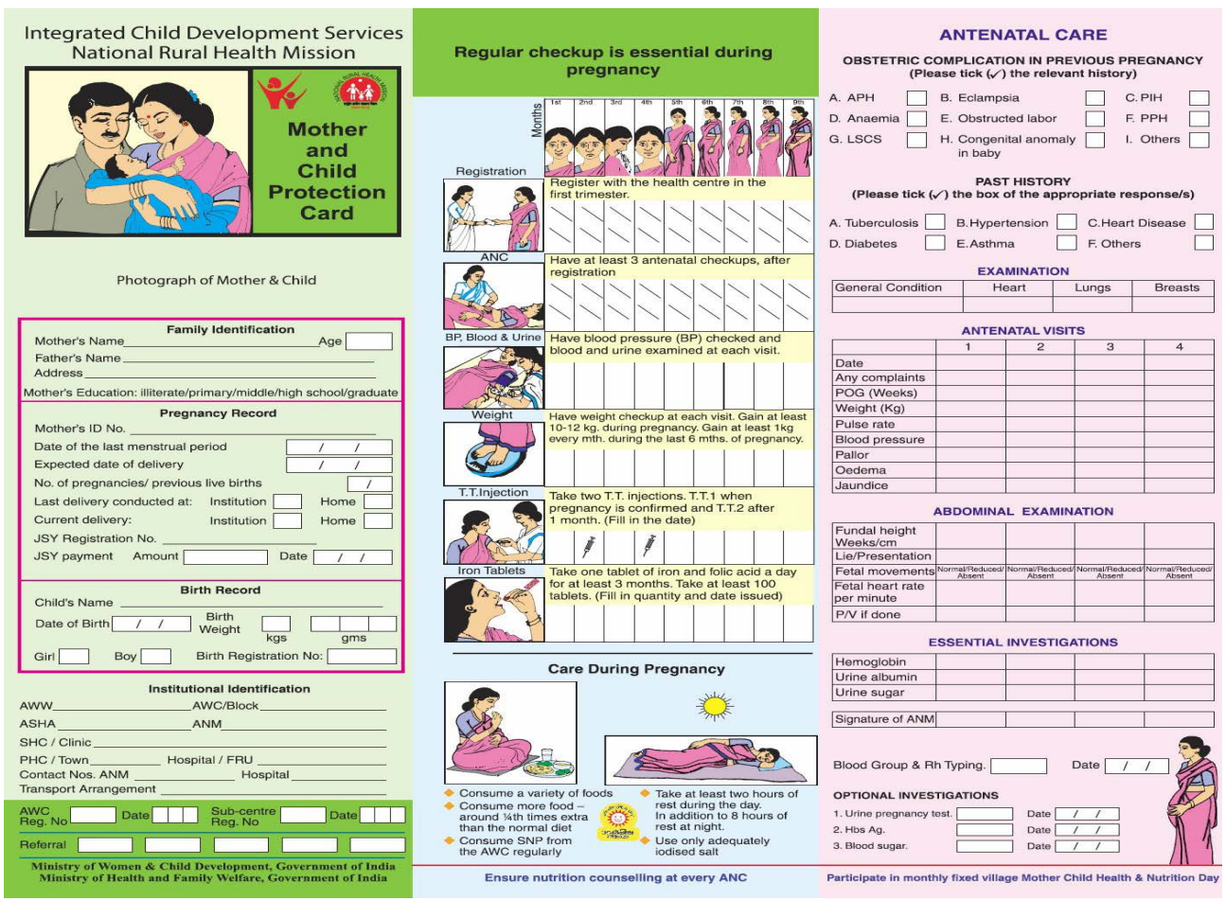


Fig 12.1: Mother and Child Protection card (MCP card)

functionaries of National Rural Health Mission (NRHM) and ICDS from 1st April 2010 to progressively replace the earlier **JacchhaBacchha card**. The new MCP card is increasingly viewed as a critical tool for upkeeping maternal and child health in the updated coverage of both ICDS and NRHM.

12.1.2 Midday meal programme (MDMP)

The midday meal programme (MDMP) is also known as school lunch programme. This programme has been in operation since 1961 throughout the country. In formulating midday meals for school children, the following broad principles should be kept in mind:

- The meal should be a supplement and not a substitute to the home diet.
- The meal should supply atleast one third of the total energy requirement and half of the protein need.
- Cost of the meal should be reasonably low.
- Meal should be such that it can be prepared easily in schools. No complicated cooking process should be involved.
- As far as possible, locally available foods should be used. This will reduce the cost of the meal.
- Meal should be frequently changed to avoid monotony.

ACTIVITY

1. Download the MCP card from the website icds_wcd.nic.in. Use the card to find out the health and nutritional status of pregnant mothers, infants and preschool children in your neighbourhood.
2. Case study: 3 year old Ram weighs 13 kgs and his height is 90 cms. Find out his nutritional status in the ICDS card.
3. Visit an Anganwadi centre near your house and find out what are the benefits offered to the beneficiaries.
   (i) Food only: Yes/No
   (ii) Education only: Yes/No
   (iii) Food and Education: Yes/No

Objectives of the school feeding programme are to :

- provide food for undernourished children and to improve the nutritional status and monitor it.

Fig 12.2: Mid-Day meal programme (MDMP)

- increase school enrolment and attendance of children
- reorient good eating habits.
- incorporate nutrition education into curriculum.
- improve literacy and educational performance of pupils.
- encourage the use of local commodities.
- encourage community participation in the feeding programme.

The Mid-Day Meal Programme for school children comes under the Ministry of Human Development. The Government of India pays 40 percent of the expenditure and 60 percent is borne by the States. It covers all children upto the age of 15 years.

The Mid-Day Meal Programme was introduced in a large scale in 1960's by K.Kamarajar, former chief minister of Tamilnadu. But the first major thrust came in 1st july 1982 when the then chief minister of Tamilnadu DR.M.G.Ramachandran decided to implement the scheme for all children in goverment schools in primary classes. In this programme, students from classes I to V in Corporation, Government and Government aided schools are given free mid-day meal for 200 days in a year. Under this programme, the Government of India provides 100 grams of rice, 15 grams of dhal, 1 grams of oil and 20 paise worth of vegetables per indiviual. The meal given are based on a combination of cereals, pulses and leafy vegetables. Eggs are given thrice a week. Such a diet would increase the amount of vitamins and minerals and results in weight gain and clearance of deficiency symptoms.

What do children eat today in their midday meal :

- Upto 5th standard, 100 grams of rice per child per day
- Upto 10th standard, 150 grams of rice per child per day
- Egg on all working days. Banana alternative for vegetarians.
- First and third week of month, pulav made of black Bengal gram given for protein
- Second and fourth week, green gram sundal
- Fridays, chilli fried potato for carbohydrates
- Use of double fortified salt
- Sweet pongal is served on occasions

ACTIVITY

4. Visit the nearest noon meal centre in your area and find out the following details:
5. How many eggs are given per week for the beneficiaries? What are the benefits of giving eggs to the children?
6. Write the weekly menu given in the noon meal centre in your school.

Mid-Day meal programme has resulted in the following:

- Reduction in severe malnutrition in children.
- Increased enrolment rate at primary level.

- Reduction in drop-out rate at school level.
- Developed attentiveness in them and thereby improved their power of comprehension.
- Improved their performance in examinations.
- Decreased the incidence of various diseases and physical disorders caused by starvation or intake of less nutritious food.
- Enabled parents to attend to their routine bread earning tasks.
- The gender difference in feeding the children reduced at home.
- A favourable attitude in parents in educating the children, specifically female children.

12.1.3. Prevention and control of anaemia

Prevention of anaemia requires approaches that address all the potential causative factors. These include:

1. **Dietary approach:** The following points need to be considered for the promotion of this strategy:
   - Promotion of consumption of pulses, green leafy vegetables, other vegetables which are rich in iron and folic acid and meat products rich in iron particularly for pregnant and lactating mothers and preschool children. Media can also be involved for creation of awareness.
   - Creation of awareness in mothers attending antenatal clinics and immunization sessions in anganwadi centres and crèches about the prevalence of anaemia, ill effects of anaemia and that it is preventable.
   - Addition of iron rich foods to the weaning foods of infants.
   - Regular consumption of foods rich in vitamin C to promote iron absorption such as orange, guava, amla, etc.
   - Promotion of home gardening to increase the availability of common iron rich foods such as green leafy vegetables.
   - Discouraging the consumption of foods and beverages like tea and tamarind that inhibit iron absorption, immediately after food especially by the vulnerable groups like pregnant women and children.
   - Promotion of iron fortified iodised salt.
2. **Supplementation:** Food based approaches through food fortification and dietary diversification are sustainable strategies for preventing iron deficiency and (Iodine Deficiency Disorder(IDD). As availability is low and dietary animal sources (haem -iron) are expensive, the key step towards addressing iron deficiency and IDD would be the implementation and scaling up of the IFA supplementation programme.

For preventing anaemia, low dosage iron is adequate. The National Anaemia Prophylaxis Programme (NAPP) in India, pregnant and lactating women receive 60 mg elemental iron+ 500 mcg folic acid (IFA tablet) daily for atleast 100 days during

pregnancy and preschool children receive 20 mg elemental iron+ 100 mcg folic acid daily. To improve compliance, ensuring availability to all beneficiaries, follow up of pregnant women through ante natal care (ANC) for completion of therapy, counseling on common side effects, risks associated with anaemia, provision of incentives to frontline workforce, frequent evaluation to assess the programme, weekly or biweekly administration of iron and folate and inclusion of adolescent as beneficiaries are needed.

3. **National Iron$^+$ Initiative:** Taking cognizance of ground realities in the operation of the programme, Ministry of Health and Family Welfare took a policy decision to develop the National Iron$^+$ Initiative. This initiative will bring together existing programmes (IFA supplementation for pregnant and lactating women and children in the age group of 6-60 months). Thus National Iron$^+$ Initiative will reach the following age groups for supplementation :

Fig 12.2: National Iron$^+$ Initiative

- Biweekly iron supplementation for preschool children of 6 months to 5 years.
- Weekly supplementation for children from 1st to 5th grade in Government and Government aided schools.
- Weekly supplementation for school children (5-10 years) at anganwadi centres.
- Pregnant and lactating women, daily for 100 days.
- Weekly supplementation for women in reproductive age group.

In addition to increased iron and folate intake, improvement in environmental sanitation and personal hygiene are also needed to control worm infestations and infections. Deworming done regularly would help in reducing the incidence of anaemia and improve the efficacy of iron supplements. An improvement in food intake results in improvement in haemoglobin levels.

ACTIVITY

7. Find out the name of the medicine given for deworming in your school every 6 months.
8. How frequently are iron tablets given? Find out its composition.

12.1.4 Prevention and control of vitamin A deficiency

1. Nutrition education
2. Dietary modification: The most rational and sustainable long term solution to control of vitamin A deficiency is to ensure that the community includes foods rich in vitamin A or its precursor regularly in their daily diets.
3. Periodic supplementation of vitamin A: Currently the massive vitamin A supplementation programme aims at providing the first dose of 1,00,000 IU at 9 months (at the time of measles immunization) to be followed by bi annual administration of 2,00,000 IU for children between the ages of 18 months and 59 months. The coverage under massive dose vitamin A administration has improved substantially after the initiation of biannual administration.
4. Fortification of commonly and widely consumed foods with vitamin A: Fortification or enrichment of widely consumed foods with vitamin A is another strategy to prevent and control vitamin A deficiency. Foods which are consumed daily by all sections of the community with little variation in the intake are generally utilized for the fortification. Fortified foods are integrated into the conventional food system as value added products to reach a large segment of population.

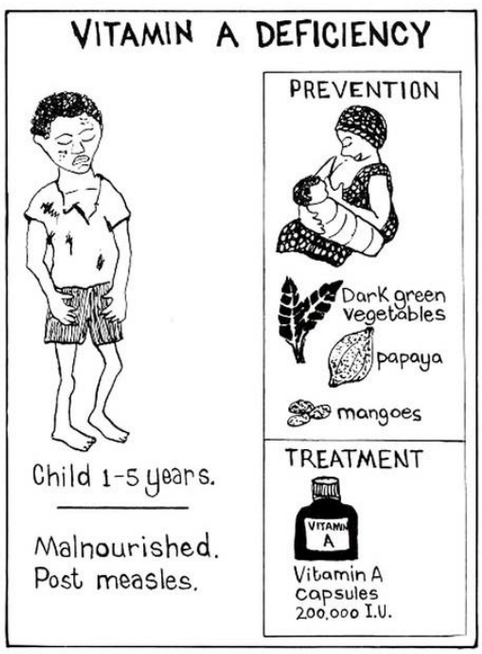


Fig 12.3: Vitamin a dose

12.2 Food Fortification Programme

Fortification of food items such as wheat flour, bread, milk, sugar, drinking water and common salt are in practice in different parts of the world.

Iodised salt: Common salt has been selected as a suitable vehicle for fortification of iodine to control IDD(Iodine Deficiency Disorder). The technology involved in fortification of salt with iodine involves either dry mixing or spray mixing of salt with iodine source mainly with potassium iodate. It is an economical, convenient

Fig 12.4: Iodised salt

ACTIVITY

9. Selvi is a 3 year old suffering from vitamin A deficiency. Suggest to her mother what are the foods that can be included in Selvi's diet.
10. What are the nutrients fortified in salt available in ration shops?
11. What are the nutrients that are fortified in milk?

and effective means of mass prophylaxis in endemic areas.

Double fortified salt: Iodine deficiency disorders and iron deficiency anaemia are widely prevalent and often coexist in the country. Fortification of food with iodine and iron is recommended as one of the strategies to prevent and control these two deficiency disorders. NIN has developed a suitable technology for dual fortification of common salt with iodine and iron. The stability of iodine is satisfactory in double fortified salt with very little loss of iodine in six months.

12.3 National agencies

12.3.1 National Institute of Nutrition (NIN)

The National Institute of Nutrition (NIN) is one of the permanent research institutes of the Indian Council of Medical Research under the Ministry of Health and Family Welfare, Government of India. It was found in 1918 as part of Coonoor Pasteur Institute.

The objectives of National Institute of Nutrition are to :

- identify various dietary and nutrition problems prevalent among different segments of the population and continuously monitor diet and nutrition situation of the country.
- evolve suitable methods of prevention and control of nutrition problems through research, keeping the existing economic, social and administrative set up in view.
- investigate nutritional deficiencies, nutrient interactions and food toxicities at basic level for understanding the biochemical mechanism involved.
- provide training and orientation in nutrition to key health professionals.
- advise Government and other organizations on problems of nutrition.

12.3.2 Indian Council of Medical Research (ICMR)

The Indian Council of Medical Research (ICMR) is the apex body in India for the formulation, coordination and promotion of biomedical research. Intra mural research is carried out currently through the Council's 21 permanent research institutes. They do research on specific areas such as tuberculosis, leprosy, cholera and diarrhoeal diseases and viral diseases including AIDS. They also do

DO YOU KNOW...?

The headquarters of NIN is in Hyderabad. The headquarters of ICMR is in New Delhi

research on malaria, kalaazar, nutrition and food and drug toxicology, reproduction, immunohaematology, oncology and medical statistics. Research is also done on major metabolic diseases, occupational health and non communicable diseases.

In recent years, the ICMR is also intensifying research in non communicable diseases such as cardiovascular diseases, metabolic disorders, mental health problems, neurological disorders, blindness, liver diseases and cancer. Medical information is strengthened to meet the growing needs and demands of the community.

12.4 International Organisations

12.4.1 Food and Agricultural Organisation (FAO)

The Food and Agricultural Organisation came into existence in October 1945 with a mandate to raise levels of nutrition and standards of living, to improve agricultural productivity, and to better the conditions of rural population. By seeking to improve nutrition through nutrition-sensitive agriculture and food based approaches.

The Nutrition Division aims to:

- Create sustainable improvements in nutrition, especially among nutritionally vulnerable households and population groups.
- Provide information, assessments and analysis to combat hunger and reduce all forms of malnutrition.
- Assist countries in identifying people who are insecure and vulnerable to nutritional problems.

Besides promoting food production and food security, one of the aims of FAO is to create a world, in which all children can grow, learn and flourish, developing into healthy, active and caring members of society.

12.4.2 World Health Organisation (WHO)

World Health Organisation is an agency of the United Nations. The organization came into function on 7th April 1948 which is celebrated as World Health Day. The most important objective that WHO seeks is the attainment of the most optimum level of the health of the people which would enable them to lead a socially, economically and mentally productive life.

WHO seeks to:

- Act as a directing and coordinating authority on international health activities.
- Collobarate the member states and other agencies in planning and carrying out health programmes.
- Prompt medical research and improve the under developed countries.
- Bring the health status to international level.
- Keep communicable diseases under constant surveillance, to give knowledge about health.
- Set certain standards for the quality control of drugs, vaccines and other detrimental substances to health.

DO YOU KNOW...?

Dr.Henk Bekedam is the WHO representative of India. He took up his role on 27 November 2015. He is a Dutch National and a medical Doctor by training.

The WHO guidelines on Nutrition are as follows:

- Baby friendly Hospital initiative.
- Calcium supplementation in pregnant women.
- Consultation on the Dietary management of moderate malnutrition in under 5 children.
- Daily iron and folic acid supplementation in pregnant women.
- Interventions on diet and physical activity.
- Use of multiple micronutrient powders for home fortification of foods consumed by infants and children 6-23 months of age.
- Vitamin A supplementation for infants 1-5 months of age.
- Vitamin A supplementation for infants and children 6-59 months of age.
- Vitamin A supplementation for postpartum women.
- Vitamin A supplementation in pregnant women.
- Weekly Iron- Folic acid Supplementation (WIFS) in women of reproductive age.

12.4.3. United Nations International Children's Fund (UNICEF)

United Nations Children's Fund (UNICEF) was created at the end of World War II in 1946 to relieve the suffering of children in war torn Europe and for the past 70 years UNICEF has strived to improve the lives of children and their families throughout the world. UNICEF's nutritional priorities include:

- Infant and Child feeding.
- Delivering vital micro-nutrients.
- Promoting maternal nutrition/ preventing low birth weight.
- Monitoring infant growth rates.
- Providing nutrition in emergencies.
- Preventing death from starvation and disease.
- Supporting community based programmes.

Education is the key to opportunities and UNICEF believes that quality education is a right for all children, whether in the developing world or amidst conflict and crisis. UNICEF believes that all children have a right to survive, thrive and fulfill their potential for the benefit of a better world.

Summary

- The ICDS was initiated in 1975 with the twin objective of ensuring nutrition of preschool children through supplementary feeding and psychosocial development through early stimulation and education.

- The major objective of the midday meal programme is to attract more children for admission to schools and retain them so that literacy improvement of children could be brought about.
- Prevention of anaemia includes dietary approach and supplementation.
- Vitamin A deficiency can be controlled by nutrition education, dietary modification, periodic supplementation and fortification.
- Common salt has been selected as a suitable vehicle for fortification of iodine to control IDD.
- The national agencies which work in the field of nutrition are NIN and ICMR.
- The international agencies in the field of nutrition include FAO, WHO and UNICEF.

Glossary

Terms	Meaning
FAO	Food and Agricultural Organisation
ICDS	Integrated Child Development Services
ICMR	Indian Council of Medical Research
IDD	Iodine Deficiency Disorders
MDMP	Midday Meal Programme
NIN	National Institute of Nutrition
NNAPP	National Anaemia Prophylaxis Programme
UNICEF	United Nations International Children's Fund
WHO	World Health Organisation

Questions

Part - A

Choose the correct answer (1 mark)

1. ICDS was initiated in the year _____.

   (a) 1965 (b) 1975

   (c) 1985 (d) 1984

GTEF1F

2. In Tamil Nadu, the Chief Minister's noon meal programme was launched on _____.

   (a) 1st July 1982 (b) 2nd October 1976

   (c) 15th July 1966 (d) 14th June 1996

3. The headquarters of WHO is in _____.

   (a) Rome (b) Geneva

   (c) New York (d) Delhi

4. World Health Day is celebrated on _____.

   (a) 15th May (b) 7th April

   (c) 10th December (d) 12th may

5. Iodine is fortified in _____.

   (a) sugar (b) rice

   (c) salt (d) honey

6. NIN is located in _____ .

   (a) Hydrebad

   (b) Mumbai

   (c) Chennai

   (c) New York

7. Common salt is fortified with _____ and _____.

   (a) iron and iodine

   (b) vitamin A and vitamin D

   (c) iron and protein

   (d) iron and protein

8. In Chief Minister's noon meal programme, eggs are given _____ a week.

   (a) once (b) thrice

   (c) four (d) all days.

9. FAO came into existence in _____.

   (a) October 1945

   (b) December 1953

   (c) November 1971

   (d) November 1972

10. Children 18 months to 59 months are given _____ IU of vitamin A every 6 months

    (a) 1, 00,000

    (b) 2,00,000

    (c) 3,00,000

    (d) 4,0000

Part - B

write short answers (2 marks)

1. Expand: (a)WHO (b) FAO.
2. What are the objectives of FAO
3. What are the reaserach areas of ICMR ?
4. Write a note on double fortified salt.
5. Write on Vitamin A prophylaxis programme.

Part- C

Answer in brief (3 marks)

1. Write on new Mother and child Protection card.
2. What are the objectives of school feeding programmes?
3. What are the foods given under midday meal programme?
4. What are the objectives of NIN?
5. Write on National Iron^{+} initiative.
6. Write on National anaemia prophylaxis programme.

Part- D

Answer in detail (5 marks)

1. Write on the WHO guidelines on nutrition.
2. What are the nutritional priorities of UNICEF?
3. How will you control vitamin A deficiency?
4. How will you control anaemia?
5. What are the broad principles in formulating midday meals for school children?

NUTRITION AND DIETETICS PRACTICAL

MEASURING TECHNIQUES

EX.NO.1

Aim:

To Understand the relationship of weight and volume

Materials needed:

Weighing Machine, Measuring Cups, Measuring Spoons, Knife and Vessels.

Measuring techniques of liquids and solids:

1. Dry ingredients, such as sugar and flour are measured in plastic and metal measuring cups.
2. Scoop the flour into the dry measuring cup, filling to overflowing. Level the flour off by dragging the straight edged utensil across the top of the measuring cup.
3. When small amounts of dry ingredients such as flour, sugar and baking powder, baking soda, salt and spices are to be measured – measuring spoons can be used.
4. Measuring cups for liquid ingredients must be placed on a level surface when measuring. Avoid lifting the cup to read the measure as it will probably tilt causing you to read inaccurate amount.
5. Read the level of the liquid by bending down so that the measuring cup is at eye level. Read the liquid level at the bottoms of meniscus.
6. Small amounts of liquid ingredient can be measured using measuring spoons.

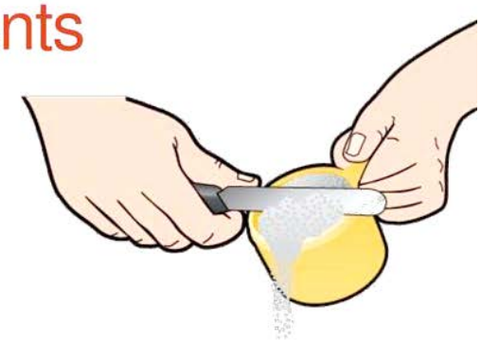
Give the capacity of the following

1. One tea cup ----- gms
2. One teaspoon -----gms
3. One tablespoon -----gms
4. ¼ cup -----tsp
5. 2 table spoon -----tsp

Measuring Dry Ingredients

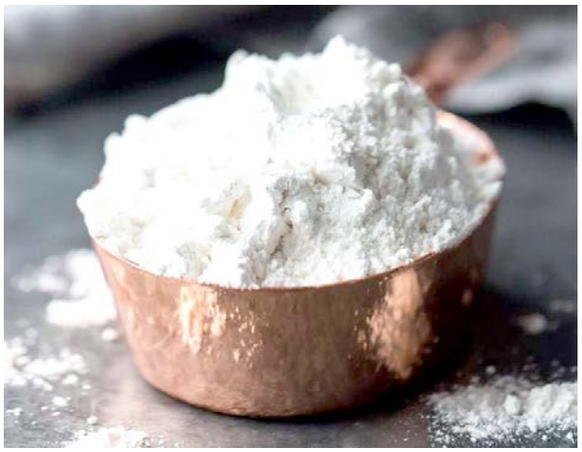
For dry ingredients including flour, sugar, and salt, use dry measuring cups & spoons.

- Heap
- Level
- Empty



dry measuring cups

measuring spoons



Measuring liquids

Weighing Machine

Cooking Methods

EX.NO.2

Aim:

To learn about different cooking methods

Procedure

The process of subjecting food to the action of heat is termed as cooking. Cooking takes place by moist and dry heat methods. Moist heat involves method water and steam. Air or fat are used in dry heat methods.

Moist heat methods are :

- Boiling
- Stewing
- Steaming
- Pressure cooking
- Poaching
- Blanching

Dry heat methods of cooking are

- Roasting
- Grilling
- Toasting
- Baking
- Sauteing
- Frying

Combination method of cooking is

- Braising

Preparation of food using boiling method

Rice Kheer

Ingredients

Full cream milk	-	1 litre
Soaked basmati rice	-	2 tsp
Sugar	-	7 tbsp
Cardamom powder	-	1/2 tsp
Chopped almonds	-	2 tsp
Saffron dissolved in rose water	-	5-6 strands in 1 tbsp of rosewater

Method

1. Pour the milk in a heated deep pan
2. Once it starts boiling add the soaked rice and stir well to prevent burning
3. After one boil, turn the stove to low flame and allow the milk to reduce to quarter. Keep stirring in between so that the rice does not stick to the bottom of the pan.

4. Once the milk is reduced add sugar and let it dissolve for about 2 minutes.
5. Add cardamom powder, chopped almonds and the soaked saffron strands.

Results and discussions

By boiling method the food quantity increases and gets easily digested The prepared food tastes good and nutritious.

2.PREPARATION OF FOOD USING PRESSURE COOKING

Channa Masala

Ingredients

Kabuli channa	-	1 cup
Onion	-	100 gms
Tomato	-	200 gms
Oil	-	as needed
Ginger garlic paste	-	1 tsp
Coriander leaves	-	few
Channa masala	-	to taste
Salt	-	to taste

Method

- Soak Channa overnight and cook in pressure cooker
- Fry onion, ginger garlic paste and tomatoes in oil and cook till the oil comes out of it.
- Add Channa, salt, Channa Masala and coriander.
- Serve hot with fresh Onions and Coriander.

Result and Discussion

Pressure cooking method helps to cook the food to soft consistency and helps to retain the nutrients. It saves time and energy.

3.DRY HEAT METHOD OF COOKING

Preparation of food using frying method

Greens Masala Vada

Ingredients

Bengal gram dhal	-	100 gms
Greens	-	100 gms
Onion	-	50 gms
Chillies,	-	2
oil and salt	-	as needed

Method

- Soak Bengal gram dhal for 2 hours, grind ¾ of the dhal coarsely.
- Wash Greens and drain the water thoroughly
- Cut onions and Chillies finely
- Mix all the ingredients Make Vadas and fry in oil.

Results and Discussions:

Frying method is the best method to prepare crispy foods. Oil enhances the flavour and taste of the food.

4.PREPARATION OF FOOD USING ROASTING METHOD

Kesari

Ingredients

Bombay Rava	-	1 cup
Sugar	-	1 cup
Ghee	-	½ cup
Water	-	2 cup
Cashew nuts	-	as required
Raisins	-	as required
Beetroot natural color		

Method

- Fry Cashew nuts, Raisins in one tbsp of Ghee, and keep aside
- Fry Rava in Ghee till it becomes golden brown and cook in water
- Add Sugar and continue to cook
- Add Ghee, Cashew nuts and Raisins before removing from fire.

Results and Discussions:

Roasting methods brings out the flavor and makes the food partially cooked. Roasting method is easiest method of cooking without oil. Food items like roasted Bengal gram, Dhal varieties can be prepared by this method to enhance the taste of food and thus removes moisture from food.

NUTRIENTS IN CEREALS AND PULSES

EX.NO. **3**

Aim: To identify the nutrients present in cereals and pulses.

Various Cereals, Pulses and their products were displayed. The students were asked to identify them and note the Nutritive value.

S.No	Name of the Product	Nutrients Present in the Food
1.	Corn (Makka Cholam)	
2.	Ragi (Kezhvaragu)	
3.	Jowar (Cholam)	
4.	Kuttirai Vali (Sanwa Millet)	
5.	Thinai (Italian Millet)	
6.	Moong Dhal	
7.	Cow Pea (Karamani)	
8.	Channa	
9.	Green Gram	
10.	Black Gram	

CEREAL COOKERY

EX.NO. 4

Aim:

To prepare a cereal based weaning food

Role of cereal in cookery

- Cereals are used as thickening agent, e.g., corn flour in custards, corn flour in white sauce and macaroni in soups.
- Cereals are used as coating agent, e.g., Maida paste in Cutlets or bread Crumbs in cutlets.
- Cereals are used in sweet preparations, e.g., Rice Payasam and Wheat Halwa.
- Malted cereals are used in the preparation of beverages and weaning mixes.

Weaning is the gradual introduction of solid foods until the child is able to eat the food as the rest of the family. It is a replacement of breast feeding with other foods. Some of the weaning foods are well mashed cooked vegetables such as Potato, Sweet Potato, Carrot, Fruit Puree such as cooked Apple, Pear, Mango, Papaya, Banana etc. Well cooked cereal can be given to fulfill their appetite.

Formulation of recipe

Malted cereals

Washed Rice	-	½ cup
Washed Ragi	-	½ cup
Green Gram	-	½ cup

Method

- Soak the above ingredients overnight in separate containers.
- Drain the water and tie the ingredients in separate clean moist muslin cloth.
- Keep in a warm place and allow to sprout.
- Once the sprouts appear, dry roast each cereal separately in a pan to remove excess moisture.
- Combine all the ingredients. Grind this mixture into a find powder and store in an air tight container.
- Take 15 gms of powder add enough water make a thin paste. Cook in slow flame till it gets cooked add salt or sugar to taste.

Results and Conclusion

Cereal based weaning food provides required calories and proteins to supplement the needs of an infant.

PULSE COOKERY

EX.NO. 5

Aim: To prepare a recepe using germinated pulses

Role of Pulse in cookery

- Pulses are rich in protein and B vitamins and improve the quality of cereal proteins.
- Pulses give satiety due to high protein and fibre content.
- Pulses improve flavor and consistency of dhal sambhar and rasam.
- They contribute to fermentation in Idli and Dosai batter.
- They are used in snacks like sundal, bajji, etc.

Sprouting of Green Grams

Germination is a process in which the nutritive value of the grams is improved. During sprouting minerals like calcium, zinc, and iron are released from bound form vitamin C is synthesized during germination. Thickening power in starch is reduced due to conversion of starch to sugars. Germination improves taste and texture. Germinated pulses add variety to the diet.

Formulation of recipe

Germinated green gram salad

Soak the green grams for at least 8 hours in fresh cool water in a wide mouth vessel.

Drain and rinse the green gram. Tie it in muslin cloth sprinkle water whenever the cloth gets dried. In a day or two days germination takes place.

Ingredients

Green grams	-	50 gms
Coconut scrapings	-	10 gms
Carrot scrapings	-	0 gms
Onion chopped	-	10 gms
Green chillies	-	2
Lemon juice	-	to taste
Cumin powder	-	to taste
Salt	-	to taste

Method

Add coconut, carrot and onion to the sprouted green grams. Mix well, to the above ingredients, add chopped chillies, salt, cumin powder and lemon juice. Serve it by garnishing coriander leaves.

Conclusion

Sprouted green grams are rich in amylase, vitamin B and C. It gets digested easily and provides lot of fibre to the diet.

FRUITS AND VEGETABLES COOKERY

EX.NO. **6**

Introduction

Fruits and vegetables are very important commodities in our daily diet. They are life-enhancing medicines packed with vitamins, minerals, antioxidants and many phytonutrients (Plant-derived micronutrients).

List the fruits and vegetables that are rich in the following nutrients.

S.No	Iron	Vitamin A	Vitamin B	Calcium	Fibre
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

PREPARATION OF FRUIT SALAD

EX.NO. 7

Aim:

To prepare a recepe based on fruits.

Role of fruits in cookery

- Raw, whole or cut fruits can be served as an appetiser, or as a salad or for dessert.
- Fruits can be served in the form of juices or milk shakes.
- Apples are served as stewed apples.
- Fresh fruits can be preserved as jams, marmalades, preserves and dried fruits

Preparation of fruit salad

Ingredients

Apple	-	20gms
Pineapple	-	20gms
Orange	-	20gms
Banana	-	20gms
Papaya	-	20gms
Milk	-	100 ml
Sugar	-	20gms
Custard powder	-	10 gms

Method

- Cut fruits into cubes
- Mix custard powder in little milk
- Stir continuously till it thickness, cool and add to the fruits
- Garnish with cherries and serve cool

Conclusion

Fruit salad is rich in glucose, vitamin A & C, and minerals. It gives good quality protein. It is a colourful desert..

PREPARATION OF VEGETABLE SALAD

EX.NO. **8**

Aim:

To prepare a vegetable based recepe

Role of vegetables in cookery

Vegetables are used universally in all recipes

- used in curries, salads and in sambar
- used as garnishing agents e.g., shredded carrot and coriander leaves
- used in chutneys (onion) and pickles (tomato, onion)
- used as part of recipes like pulao, avial and non-vegetarian dishes

Ingredients

Onion	- 1
Carrot	- 1
Baby corn	- 1
Cucumber	- 1
Cabbage	- few
Lemon	- 1 small
Pepper	- little
Coriander leaves	- to garnish

Method

- Cut or chop all vegetables finely
- Mix all the vegetables in a bowl
- Add little lemon juice and pepper

Conclusion

Vegetables Salad is rich in Vitamin C, A, Minerals and Fibre. It is a good diet for obese patients.

MILK COOKERY

EX.NO.9

Aim

To prepare a milk based recepe.

Role of milk and milk products in cookery

- It contributes to the nutritive value of the diet, e.g., milkshakes, plain milk, flavoured milk, cheese toast.
- Milk adds taste and flavour to the product e.g., payasam,tea, coffee.
- It acts as a thickening agent along with starch e.g., whitesauce or cream soups.
- Milk is also used in desserts, e.g. Ice-cream, Puddings

Preparation of Basandi

Ingredients

Buffalo milk	- 500 ml
Sugar	- 1 tsp
Ghee	- 1 tsp
Almonds, Cashew nuts, Pista	- 2 tsp

Method

- Heat milk on low fire in heavy based kadai, stirring, constantly till it becomes thick.
- Add sugar, ghee and mixed nuts.
- Serve chill

Conclusion

The above milk cookery is rich in proteins, calcium, phosphorus and fat soluble vitamins. It provides fats and glucose.It is a very tasty desert.

EGG COOKERY

EX.NO.10

Aim

To prepare an egg based recepe.

Role of Egg in cookery

- Eggs can be used as boiled, scrambled, fried (omelettes) or poached for table use.
- Eggs can be used as thickening agents for making stirred and baked custards, soups and puddings.
- They can be used for making cutlets, French toast or Bombay toast and banana fritters.

Egg curry

Ingredients

Hard boiled eggs	-	03
Ginger	-	1 piece
Oil	-	1 tbsp
Onion	-	1
Garlic	-	4 pods
Lime juice	-	1 tsp
Tomato	-	1
Salt	-	to taste
Coriander leaves		
Green chillies		

Method

- Remove shell of egg and cut into halves.
- Grind onion, ginger, garlic and green chillies
- Heat oil and fry the masala and add tomatoes and cook. When the gravy becomes thick, add lime juice and boiled eggs.

Conclusion

Egg curry is a good side dish for briyani and fried rice. It contains complete protein. Vitamin A, Fats and trace of iron.

JAGGERY COOKERY

EX.NO. **11**

Introduction

Jaggery is a concentrated product of a cane juice and can vary from golden brown to dark brown in colour. It contains upto 50% sucrose,20% invert sugars and 20% moisture. It is used to make several indian deserts.It is a substitute for sugar.

Aim: To prepare a sugar based recepe.

Sweet Paniyaram

Ingredients:

Raw rice	-	1 cup
Urad dal	-	1 tbsp
Jaggery	-	1 + ¼ cup (grated or powdered)
Banana	-	1 (small one)
Green Cardamom	-	2 (powdered)
Finely chopped Coconut	-	1 tbsp
Ghee	-	for frying

Method

1. Clean and soak rice with urad dal for 2 hours. Now grind it to a smooth batter.
2. Leave it outside for 3-4 hours for fermentation. Just before making appams, add jaggery,banana,greated coconut to the batter.
3. Now heat the paniyaram pan add 2 tsp ghee to each partition.
4. Pour the batter in each partition and cook it on low flame.
5. Cook for few minutes and then turn it with a stick to cook the other side till it turns to golden brown.and serve hot

Conclusion

Sweet paniyaram is a delecious evening snack. It provides high energy and iron.

EX.NO. **12**

TEST FOR ADULTERANTS

Aim

To test for common adulterants present in food at home level

S.No.	Food item	Adulterant	Test
1.	Sugar	Chalk powder	Dissolve in a glass of water. Chalk will settle down at bottom indicates adulterant present.
2.	Chilli powder	Saw dust and colour	Sprinkle on the surface of water, saw dust floats. Added colour will make the water coloured.
3.	Rawa	Iron filling to add weight	Pass magnet through the rawa. Iron fillings get attracted to magnet.
4.	Milk	water	Pour few drops of milk on a polished surface. Pure milk leaves a white trail while flowing and the adulterated milk will flow without leaving a mark
5.	Honey	Sugar plus water	A cotton wick dipped in honey is burnt. If adulterated with water cotton wick will not burn or burns with a cracking sound.
6.	Tea dust	Used tea leaves dried, powdered and artificially coloured	Sprinkle the dust on the wet white filter paper. Spots of yellow, pink and red appearing on the paper indicates that the tea is artificially coloured.
7.	Black pepper	Papaya seeds	Papaya seeds are shrunken and greenish brown in colour. It has repulsive flavor while black pepper has pungent and hot flavor.
8.	Coconut oil	Any other oil	Keep the bottle of coconut oil in refrigerator. It solidifies while the adulterant does not.
9.	Common salt	Chalk powder	Dissolve in water. The water turns white and indicates presence of chalk powder.
10.	Coriander powder	Powdered Horse dung	Soak in water. Horse dung will float which can be easily detected.

QUESTION BANK FOR XI STANDARD PRACTICALS

Nutrition and dietetics — 20 Marks

PART - A

1. Write the importance of cereals in cookery and formulate a recipe using boiling method Prepare and serve it. Calculate the energy and protein content of the preparation.

2. Write the importance of pulses in cookery. Formulate a recipe using pressure cooking. Prepare and serve it. Calculate the energy and protein content of the recipe.

3. Write the importance of vegetables in cookery. Formulate a recipe. Using frying method of cooking. Prepare and Display it. Calculate energy and carotene content of the recipe.

4. Write the importance of cereal in cookery. Formulate a recipe. Using roasting method. Prepare and serve it. Calculate the Energy and Protein content of the preparation.

5. Write on weaning. Formulate a weaning food. Prepare and serve it. Calculate the energy and protein content.

6. Write the importance of germination in cookery. Formulate a recipe. Prepare and serve it. Calculate the protein and vitamin B,C content.

7. Explain the benefits of fruits. Formulate a recipe. Prepare and serve it. Calculate the Energy and Vitamin C content of the recipe.

8. Explain the benefits of vegetables. Formulate a recipe. Prepare and serve it. Calculate the fiber and calcium content of the recipe.

9. Explain the importance and benefits of milk products. Formulate a recipe. Prepare and serve it. Calculate energy and protein content of the recipe.

10. Explain the importance of egg in cookery. Formulate a recipe. Prepare and serve it. Calculate the energy and protein content of the recipe.

11. Write the importance of jaggery in cookery. Formulate a recipe. Prepare and display it. Calculate the energy and iron content of the recipe.

PART - B

II. Find the adultrants present in the given sample.

GLOSSARY

Angstroms	ஒளி அலைகளின் நீளத்தை அளந்து மதிப்பிடுவதற்குரிய நுண்ணளவைக்கூறு
Coagulation	உறைதல்
Charring	உணவு தீய்ந்து போதல்
Conduction	கடத்துதல்
Convection	வெப்பச்சலனம்
Radiation	கதிர்வீச்சு
Saturated	செறிவூட்டு
Amylase Rich Food	அமைலேஸ் செறிந்த உணவு
Bran	தவிடு
Distillation	வடித்தல்
Gelatinization	ஊன்பசையாக்கல்
Germination	முளைத்தல்
Gluten	கோதுமை புரதம்
Kilns	செங்கல் சூலை
Malting	மாவாக்கம்
Cling Wrap	பற்றக்கொள்ளுதல்
Pectin	பெக்டின் (கூட்டு சர்க்கரையின் ஓர் வகை)
Anti oxidants	எதிர் ஆக்ஸிஜனேற்றி
Phyto nutrients	தாவர நுண்ணூட்டங்கள்
Dietary Fibre	நார்சத்து உள்ள உணவு
Blanching	உணவு சமையல் முறை
Flavanoids	தாவர வேதிப்பொருளின் ஓர் வகை
Satiety	நிறை உணர்வு
Biological Value	உயிரியல் மதிப்பு
Scalding	சுடுநீரில் அமிழ்த்தித் தோலுரித்தல்
Eicosapentaenoic Acid	மீன்களில் காணக்கூடிய கொழுப்பு
Mono Unsaturated Fatty Acids	ஒற்றை செறிவுறா கொழுப்பு அமிலம்
Poly Unsaturated Fatty Acids	கூட்டு செறிவுறா கொழுப்பு அமிலம்

High Density Lipoprotein	உயர் அடர்த்தி கொழுப்புகள்
Low Density Lipoprotein	குறை அடர்த்தி கொழுப்புகள்
Viscosity	பிசுபிசுப்புத் தன்மை
Restorative	மறுசீரமைப்பு
Rancidity	கெட்டுப்போதல்
Oxidation	ஆக்ஸிகரணமடைதல்
Chromic	நீடித்த நோய்
Aromatics	நறுமணப் பொருள் சார்
Flavouring agent	சுவையூட்டும் காரணிகள்
Colouring agent	நிறமேற்றும் காரணிகள்
Thickening agent	அடர்வூட்டும் காரணிகள்
Curing agent	பதப்படுத்தும் காரணிகள்
Souring agent	புளிக்கவைக்கும் காரணிகள்
Stimulant	தூண்டு பொருள்
Anti flatulence	வாயுக்கோளாறு நீக்கி
Carminative	வாய்வு நீக்கி
Anorexia nervosa	பசியிழப்பு நோய்
Anti spasmodic	தசைவலிக் குறைப்பு மருந்து
Galactogogue	பால்சுரப்பி ஊக்கி
Anti pyretic	உடல் வெப்பம் தணிப்பு
Carcinogenic	புற்று நோயாக்கும்
Lathyrism	முடக்குவாதம்
Flatulence	வாயுக்கோளாறு
Gastropathy	இரப்பை நோய்
Precursors	முன்னோடி
Calalyst	வினையூக்கி
Metabolism	வளர்சிதை மாற்றம்
Coenzymes	துணைநொதி
Fibrinogen	குருதிப்புரத இழையாக்கி
Fibrin	நார்புரதம்
Haemorrhage	இரத்தப்போக்கு
Intrinsic factor	அகக்காரணி
Exudating	கசிவு

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QC
Gopu Rasuvel
Ragu
Tamil Kumaran
Kamatchi Balan

Layout

Rajesh Thangappan

Co-ordination

Ramesh Munisamy

This book has been printed on 80 G.S.M.
Elegant Maplitho paper.

Printed by offset at: