

A.S.D.GOVERNMENT DEGREE COLLEGE FOR WOMEN (A)

**Affiliated to Adikavi Nannaya University
Jagannaickpur, Kakinada.**

DEPARTMENT OF HOME SCIENCE



CERTIFICATE COURSE

on

COMMUNITY NUTRITION


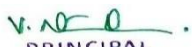
2023-2024

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DEPARTMENT OF HOME SCIENCE

Activity Register 2023-2024

Date	11-03-2024 to 30-04-2024
Conducted through (DRC/JKC/ELF/NCC/NSS/Department etc.,)	Department of Home Science
Nature of Activity (seminar/workshop/exten Lecture etc)	Certificate Course
Title of the Activity	Community Nutrition
Name of the Department/ Committee	Department of Home Science
Details of Resource persons (Name, Designation etc.,)	Department Staff
No. of students participated	20
Brief Report on the activity	To get the students acquainted with the Nutritional Methods used in the community
Name of the Lecturers who planned & conducted the activity	Department Staff
Signature of the Department In-charge/ Convener of the Committee	 (M.SUVARCHALA) Lecturer in Home Science A.S.D. Govt. DEGREE COLLEGE (W) KAKINADA
Signature of the Principal	 PRINCIPAL A.S.D.GOV.T.DEGREE COLLEGE (W) AUTONOMOUS KAKINADA
Remarks	

Kakinada,

Date: 04-03-2024.

To,

Dr. V.Anantha Lakshmi,
Principal,
A.S.D. Govt. Degree College for Women (A),
Kakinada.

From,

Ms.M.Suvarchala,
Incharge of Department of Home Science,
A.S.D. Govt. Degree College for Women (A),
Kakinada.

Sub: Request to conduct the Certificate Course on “*Community Nutrition*” for I Year
Botany and Zoology Students from 11-03-2024 to 30-04-2024 -Reg.

Respected Madam,

The Department of Home Science wishes to organize the Certificate course on “*Community Nutrition*” with a duration of 45 days from 11-03-2024 to 30-04-2024 for I Year Botany and Zoology Students (20members). This course aims to make the students to get acquainted with the Nutrition methods used in the community and programmes implemented by the state and central government. Please consider the request to conduct the Certificate course for the students.

Thanking you, Madam.

Yours faithfully,

M. Suvarchala

(M.SUVARCHALA)

Lecturer in Home Science

A.S.D. Govt. DEGREE COLLEGE (W)
KAKINADA

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Jagannaickpur, Kakinada.

DEPARTMENT OF HOME SCIENCE

CIRCULAR



Date: 05-03-2024

The Department of Home Science wishes to organize the Certificate Course on “*Community Nutrition*” with the duration from 11-03-2024 to 30-04-2024 for I Year Botany and Zoology students to enhance their Nutritional assessment Skills.

Note:

- Interested students can give their names to Ms. L.Malleswari, C Lecturer, Department of Home Science on or before 08-03-2024.
- Timings : 3.00 PM to 4.00 PM

H. Suvarchala
(M.SUVARCHALA)
Lecturer in Home Science
A.S.D. GOVT. DEGREE COLLEGE (W)
KAKINADA

V. N. D.
PRINCIPAL
A.S.D. GOVT. DEGREE COLLEGE (W)
AUTONOMOUS
KAKINADA

In-charge of the Department

A.S.D.GOVERNMENT DEGREE COLLEGE FOR WOMEN (A)

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DEPARTMENT OF HOME SCIENCE

Certificate Course on “Community Nutrition”

Course Duration: 45 Hours

Eligibility: Any I Year B.Sc. students.

Students Intake: 20

Objectives

1. The course deals with the assessment of the nutritional status and common nutrition related problems of the community.
2. To understand the dietary assessment techniques and health statistics
3. To know the National nutritional programmes, prophylaxis programmes in India and importance of nutrition education.

Unit - I	:	Assessment of nutritional status of the community 15 Hours Introduction, definition of Nutritional status, need of nutritional assessment. a) Anthropometry- Age, Body weight, Height, MUAC, Head Circumference, Chest Circumference, WHR b) Clinical Assessment – Nutritional deficiency symptoms c) Biochemical Methods – for assessing nutritional status need for biochemical tests (Urine, Blood and stools)
Unit - II	:	15 Hours (a) Dietary Assessment - Food Balance sheet, Inventory or log book method, food weighing method, Expenditure pattern method, Oral Question method (24Hours Recall method). (b) General guide lines for carrying out Diet surveys in the community. (c) Vital Statistics: Birth rate, Crude death rate, Infant mortality rate, Maternal Mortality Rate, Population ratio
Unit- III	:	15 Hours a. National Nutritional Programmes - Direct Nutrition programmes ○ Vit A prophylaxis programme ○ Iron prophylaxis programme ○ Universal Iodisation of salt Indirect nutritional programmes ○ ICDS ○ Mid day meal programme b. Role of National and international organizations in alleviating Malnutrition c. Importance of Nutrition Education

REFERENCES

1. Bamji MS, Krishnaswamy K, Brahmam GNV (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd.
2. Wardlaw MG, Insel PM (2004). Perspectives in Nutrition, Sixth Edition, Mosby
3. Khanna K, Gupta S, Seth R, Mahna R, Rekhi T (2004). The Art and Science of Cooking: A Practical Manual, Revised Edition. Elite Publishing House Pvt Ltd.
4. 4.NIN, ICMR (1990). Nutritive Value of Indian Foods.
5. 5.Raina U, Kashyap S, Narula V, Thomas S, Suvira, Vir S, Chopra S (2010). Basic Food Preparation: A Complete Manual, Fourth Edition. Orient Black Swan Ltd.
6. Seth V, Singh K (2005). Diet planning through the Life Cycle: Part 1. Normal Nutrition. A Practical Manual, Fourth edition, Elite Publishing House Pvt Ltd.
7. Srilakahsmi, B., Dietetics, New Age International (P) Ltd., 2000.
8. Swaminadhan, M., 1988, Essentials of Food and Nutrition, Volume I and II, The Bangalore Printing and Publishing Co. Ltd., Bangalore.

Blue Print

(Community Nutrition)

Unit	Short Questions (5 Marks)	Essay Questions (2 marks)	Marks Allotted
I	2	4	18
II	2	4	18
III	2	4	18
Total Marks	6	12	54

**Certificate Course on
COMMUNITY NUTRITION
Question Paper**

Time: 2 hrs.

Max. Marks: 40

Section – A

Answer any Ten Questions. Each Question carries 10 marks (10x2 = 20 marks)

1. Need for Nutritional Status Assessment
2. Biochemical Assessment
3. BMI
4. Age Assessment
5. ICDS Services
6. Vision of Mid day meal programme
7. NIN
8. WHO
9. Inventory method
10. Any 2 guidelines to carry out diet survey
11. Dietary Assessment importance
12. Infant Mortality Rate

Section – B

Answer any five Questions not exceeding 10 sentences

Each question carries 5 Marks

(4x5 = 20 marks)

- 13) Prophylaxis programmes
- 14) Importance of Nutrition education
- 15) Clinical Assessment
- 16) Vital Statistics
- 17) Anthropometric Assessment
- 18) Give any 2 diet survey methods

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DEPARTMENT OF HOME SCIENCE

CERTIFICATE COURSE on "Community Nutrition"

2023 - 2024

Signature Sheet

Home Science Certificate Course (2023-24)				
List of Students Enrolled for Certificate Course				
S. No	Regd. No	Name of the Student	Programme	Signature of the student
1	2375001	CHEDALA LOVA KUMARI	Botany Honours	Ch. Lova Kumari
2	2375003	KOTA SUPRIYA	Botany Honours	K. Supriya
3	2375004	NUNNA SURAJAKSHI	Botany Honours	N. Surajakshi
4	2375005	POTHULA DAAKSHAYANI	Botany Honours	P. Daakshayani
5	2375006	RAMULAKONDA RAMA LAKSHMI	Botany Honours	R. Ramalakshmi
6	2375007	SHAIK ABEDU	Botany Honours	SK. Abedu
7	2375009	PALLI PAVANI LAKSHMI PRASANNA	Botany Honours	P.P.L. Prasanna
8	2375010	TAMARANA SAHITHI	Botany Honours	T. Sahithi
9	2375011	VASAMSETTI BHAVANI	Botany Honours	V. Bhavani
10	2375017	GODUGU RAMA DURGA	Botany Honours	G. Rama durga
11	2375018	KADALA VISISTA SAI SREE MEGHANA	Botany Honours	KVSS Meghana
12	2375019	KADIYALA NAVYA	Botany Honours	K. Navya
13	2375021	MALLADI LAXMI	Botany Honours	M. Laxmi
14	2375026	SOYAM SRAVANTHI	Botany Honours	S. Sravanthi
15	2375027	SURADA LOHITHA	Botany Honours	S. Lohitha
16	2376006	BARANGI MAITHILI	Zoology Honours	B. Maithili
17	2376012	MAILAPILLI SOUNDARYAVATHI	Zoology Honours	M. Soundaryavathi
18	2376018	VASUPILLI SATYAVENI	Zoology Honours	V. Satyaveni
19	2376032	MAKIREDDY BHAVANI	Zoology Honours	M. Bhavani
20	2376034	PARAMATA SATYA PRIYA	Zoology Honours	P. Satya Priya

ATTENDANCE

COURSE MATERIAL

1) Need for Nutritional Status Assessment

o For individuals

It helps them know their state of nutrition/ malnutrition and take appropriate measures to improve it. It helps them decide what to eat, and what to avoid etc.

It helps them identify their health problem - whether it is due to a deficiency, excess or imbalance of nutrients.

o For communities

It helps to identify groups in the community who are malnourished or who are 'at risk' of becoming malnourished.

It helps to determine the various factors in the community that contribute to malnutrition. These may be factors such as state of poverty, religious beliefs and cultural practices, availability of health and education related services, geographical and climatic conditions prevailing in the area that affect food availability etc.

It helps to know the state of food and nutrition security in the community. This is indicated by how much food is available to the community members, whether it is being distributed properly among all members in required amounts, and whether people are suffering from diseases that can affect the effective utilization of the food consumed.

It helps to estimate the nutritional problems of the community – whether the entire community or different genders or age groups are suffering from some specific nutrition related problems. For example, one can know whether the prevalence of iron-deficiency anaemia is higher among adolescent females and pregnant women or it is the same in females and males of all age groups.

It helps the government and other agencies to allocate their resources properly and plan suitable nutrition programmes for the communities to improve their nutrition situation and reduce mortality and morbidity related to malnutrition.

It helps to evaluate the effectiveness of the nutrition programmes and interventions initiated for combating malnutrition in the communities.

2) Biochemical Assessment

This method of assessing nutritional status involves laboratory tests that measure the levels of nutrients and their metabolites in body tissues and fluids as these are a consequence of the variations in quantity and nutrient composition of food consumed and utilized by the body. Biochemical tests are sensitive to even small changes in nutritional intake and therefore, provide the earliest indication to malnutrition. Biochemical assessment also confirms clinical diagnosis of nutritional status and/ or risk for a disease. There are several biochemical tests that can be done on bones, hair, nails, subcutaneous fat, liver etc., however, in community settings most commonly, these tests are conducted on blood, urine and stool samples. For example, measuring haemoglobin (Hb) level in blood indicates iron deficiency anaemia. In adult males Hb level below 13g/100ml of blood and in adult females (non-pregnant and non-lactating) below 12g/ 100ml blood indicates anaemia. Similarly, severity of iodine deficiency in individuals can be assessed from the iodine concentration in their urine. The presence of worms such as round worm, hook worm etc. can be determined from the stool specimens of individuals. Selection of biochemical test depends on the purpose and the availability of resources such as trained personnel, laboratory facilities and money etc. Proper collection, storage and transportation of blood/urine samples are extremely important for the accuracy of assessment. Moreover, reference values and cut-off points for levels of nutrients in body fluids/ tissues should be available for comparison and diagnostic purposes.

3) BMI

Body mass index: Obesity is expressed in terms of BMI-Body Mass Index, and can be represented as

$$\text{BMI} = \text{Weight (Kg)} / \text{Height (m)}^2 = W/H^2$$

Normal - 20 – 24.9

Overweight - 25 – 29.9

Obese - 30 – 39

4) Age Assessment

Age Assessment: Age should be calculated from the date of birth which could be obtained from the birth certificate, school or other records of the child. If it is not known, as may be the case in some disadvantaged families, a local calendar of events depicting festivals, cropping patterns etc. can be prepared to estimate the child's age. For example, if the mother informs that her child was born two days after the festival of *Basant Panchami* in the year 2015, and if the date of this festival (24th January, 2015) is marked in the local calendar for that year, the child's current age can be easily computed. Sometimes, attainment of milestones such as eruption of teeth; start of crawling, sitting, walking etc. may be used to estimate the age of the child.

5) ICDS Services

Integrated Child Development Services is Centrally-Sponsored and will provide the following six services to the beneficiaries:

1. Supplementary Nutrition (SNP)
2. Health & Nutrition Check-Up
3. Immunization
4. Non-Formal Education for Children in Pre-School
5. Health and Nutrition Education
6. Referral services

These services are provided from **Anganwadi centres** established mainly in rural areas and staffed with frontline workers.

6) Vision of Mid day meal 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. In Tamil Nadu, the noon meal programme was launched on July 1st 1982 by the then Chief Minister M.G.Ramachandran in rural areas and then extended to the urban areas. 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 gram of dhal, 1 grams of oil and 20 paise worth of vegetables per individual. 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.

7) NIN

1. NATIONAL INSTITUTE OF NUTRITION (NIN)

The National Institute of Nutrition located at Hyderabad is one of the esteemed research institute of the Indian Council of Medical Research.

Objectives:

1. To identify various dietary and nutrition problems prevalent among different segments of the population and continuously monitor diet and nutrition situation of the country.
2. To evolve suitable methods of prevention and control of nutrition problems through research, keeping the existing economic, social and administration set up in view.

3. To conduct operational research to pave the way for planning and implementation of national nutrition programmes.
4. To investigate nutritional deficiencies, nutrient interactions and food toxicities at basic level for understanding the biochemical mechanism involved.
5. To provide training and orientation in nutrition to key health professionals.
6. To disseminate authentic health and nutrition information through appropriate extension activities.
7. To integrate the institutes research programmes with other health agricultural and economic programmes as envisaged by the Government.
8. To advise governments and other organizations on problems of nutrition.

The Institutes activities can be broadly categorized under four major heads.

I. Clinical Studies: Conducting clinical studies. The clinical aspects of the Institutes work are carried out mostly in the three major teaching hospitals in the twin cities of Hyderabad and Secunderbad.

II. Laboratory Studies: The institute has excellent facilities for undertaking of studies in biochemistry, food chemistry, pathology, immunology, hematology, microbiology, endocrinology, physiology and toxicology. Excellent facilities exist for laboratory animal breeding and experimentation.

III. Community Studies

Investigations in community nutrition and operational research are carried out in many state. The Institute collaborates with the state and central Governments and international agencies in planning and conducting diet and nutrition surveys evaluating ongoing nutrition programmes and conducting studies on socio-cultural aspects of nutrition.

- Along with research work, teaching and training activities are also given priority. The institute has been recognized as a centre for research lending to Ph.D and M.D degrees by many Indian Universities. The Institute has been recognized by WHO as a center for advanced training in health and nutrition. Publications are brought out on specific themes of importance to major target groups like auxiliary health workers, teachers, woman and children.

8) WHO

The World Health Organization is a specialized agency of the United Nations (UN) that acts as a coordinating authority on international public health. It was established on 7 April 1948 and headquarters is in Geneva. WHO promotes technical co-operation for health programmes to control and eradicate disease and strives to improve the quality of human life. It has a single agenda of improving the health of the people all over the world. It monitors disease outbreaks, plans preventive measures, provides cost effective medications and combats correctively to eradicate infectious disease.

Objectives

To give worldwide guidance in the field of health.

1. To set global standards for health.
2. To cooperate with governments in strengthening national health programmes.
3. To encourage research and to develop methods to combat disease and make available their study and technology for all.

WHO works with UNICEF, UNESCO, World bank and other organizations.

Health & nutrition related functions:

- Feeding special food: WHO has recently increased nutrition work to develop the cheap foods for babies and infants, which are rich in protein.

- It educates the people about the importance of nutritious foods specifically mothers.
- It conducts medical research programme, which includes human reproduction, drug evaluation, pollution and to improve sanitary conditions. The WHO is studying the different types of medical disorders and their treatment. The main function of WHO is to sponsor the training and research for the medical practitioners of different countries.
- WHO continuously stresses on the importance of National Health Planning and the need for each country to make best utilization of the social resources.
- The WHO is always ready to serve in case of major natural calamities like floods, famines and Quakes.
- WHO acts as a source of information regarding various health problems. A wide variety of morbidity and mortality statistics relating to health problems are published by WHO.

9) **Inventory method**

To assess the food intake at institutional level, there are two methods.

a) **Inventory Method:** (Food list Method): This method is often employed in institutions like hostels, army barracks, homes for the aged etc, where homogenous group of people take their meals from a common kitchen.

In this method, the quantity of food stuff issued to the kitchen as per the records maintained by the warden, are taken in to account for computation of consumption and there is no direct measurement.

The average intake per person per day is calculated as follows

$$= \frac{\text{Stocks at the beginning of the week} - \text{stocks at the end of the week}}{\text{Total number of inmates per taking the meal} \times \text{No. of days of survey}}$$

It is ideal to conduct the survey for 7 consecutive days to know the true picture of diet. This method though takes less time, not very accurate, compared to actual weighment method.

10) **Any 2 guidelines to carry out diet survey**

11) **Dietary Assessment importance**

Diet determines the nutritional status of people and is a vital indicator of health. Hence, dietary assessment is conducted with the help of diet surveys which are systematic inquiries into the food supplies and food consumption of individuals and population groups. Information obtained from diet surveys helps not only in assessment of nutritional status but also helps in determining the relationship between nutrient intakes and deficiency diseases. However, accuracy and completeness of information gathered through diet surveys and availability of food composition database are of utmost importance and may pose as limitations of this method. Therefore, results of this method should be correlated with other methods of nutritional assessment to get a clearer picture of the nutritional status.

12) **Infant Mortality Rate**

Infant mortality rate is the number of deaths under 1 year of age in a given year to the total number of live births in the same year. This is expressed as per 1000 live births.

19) Prophylaxis programmes

Determination of public health significance of VAD: The WHO /IVACG (International vit A consultative group) recommended the following criteria to decide the public health significance of VAD in any area.

Prevalence rates of xerophthalmia and vitamin A deficiency defining Public health significance

Sign/symptoms/Biochemical indications	% prevalence
Night blindness(XN)	>1.0
Bitot's spots	>0.5
Corneal xerosis	>0.01
Corneal scar related to xerophthalmia (XS)	>0.05
Serum retinol level less than 10µg/dl	>5.0

Treatment:

- Immediately on diagnosis, an oral dose of 200,000 IU of oil miscible vitamin A should be given to children in the age group of 1-6 years.
- In the case of those with persisting vomiting and diarrhea an intra muscular injection of 1,00,000 IU of water miscible vitamin A can be substituted for the oral dose.
- Xerophthalmic children with severe protein energy malnutrition should be closely monitored. They may require additional doses of Vitamin A.
- In case of women in the reproductive age with either night blindness and /or Bitot's spot, a daily oral dose of 10,000 IU of vitamin A in oil is recommended for 2 weeks. Pregnant women unless absolutely essential, should not be given large doses of Vit A because of teratogenic risk to the foetus.

Strategies to combat:

Vitamin A deficiency is one of the simplest preventable nutrition disorders.

- Periodic dosing (supplementation of Vit A)
- Dietary modifications to promote production and consumption of Vit A/ β -carotene rich foods through nutrition education and or horticulture intervention
- Fortification of commonly and widely consumed foods with vit A and are the strategies needed.

a) Periodic dosing of Vitamin A

Oral supplementation of 2 lack I.U of vit A to young children 1-6 years once in 6 months.

b) Dietary modification:

Inclusion of foods rich in Vit A or its precursor, in the daily diets is the most rational and sustainable long term solution to control Vit A deficiency.

- Major inexpensive dietary sources of pro vitamin A are dark green leafy vegetables and deep yellow and orange fruits and vegetables.
- Dark green leafy vegetables like spinach, amaranth, spinach, drum stick leaves, agasthi etc which are affordable by the rural or urban poor are ubiquitous in India.
- Vit A is found only in animal foods such as egg yolk, fish liver, animal liver and dairy products.
- Promotion of home gardening along with appropriate food promotion technology.
- Promotion of production of β -carotene rich fruits and vegetables.
- Nutrition education, through appropriate communication procedures, is an important tool to increase awareness and improve consumption of Vit A foods.
- Social marketing strategies i.e adopting marketing methods to promote social goals like nutrition, are increasingly being used for nutrition and health education

- Multidisciplinary approach with expertise from the fields of agronomy, horticulture, education, communication and health improve availability and consumption of vit A rich foods.
- UN agencies like FAO and UNICEF, SAUS, ICAR and FNB of GOI are making efforts in the direction of horticulture intervention for promotion of Vit A nutrition.

c) **Food fortification:**

Fortification or enrichment of widely consumed foods with Vit A is another strategy to prevent and control Vit A deficiency.

In India , foods like vanaspathi (hydrogenated oil) bread salt and milk are fortified with Vit A in limited scale and are quite expensive and out of reach for poor.

Prevention

1) Dietary improvement

- Promoting the consumption of iron rich foods (whole grain cereals and pulses, whole grains, nuts, dates, jiggery and foods of animal origin.
- Promoting the consumption of Vit C rich foods (amla, all citrus fruits, guava, green leafy vegetables, salads and seasonal fruits), which help in the absorption of non-haem iron.
- Discouraging the consumption of tea or coffee, this reduces the absorption of non-haem iron.
- Promoting the consumption of sprouted pulses regularly after giving some heat treatment which increases bioavailability of iron and it increases amount of Vitamin C and B complex vitamins in the grains and heating destroys the inhibiting factors.
- Incorporating green leafy vegetables, seasonal vegetables and fruits in the diet of infants and preschool children, once or twice daily.

2. Supplementation

In reproductive and child health programme, young children and adolescent girls are given iron and folic acid.

Children and Children <5 years are given 20 mg of elemental iron and 100 mg folic acid. Adolescent girls & pregnant women -1 IFA tablet (100mg of elemental iron +500 µg of folic acid.

3. Fortification

Fortification of foods with iron would act as a long term measure to improve the iron status of the entire population.

Salt fortification with iron has been considered as one of the practical approaches for the prevention and control of iron deficiency anemia.

Fortification with iron has been successfully tried for wheat flour, salt, rice, sugar, milk, fish, sauce and curry powder

4. Nutrition Education

Nutrition education related to iron and anemia prevention is a must.

- Promotion of consumption of pulses, green leafy vegetables, other vegetables (which are rich in iron and folic acid) and animal foods rich in bioavailable iron, particularly by pregnant and lactating mothers.
- Creation of awareness in mothers attending antenatal clinics, immunization services, anganwadi centers and crèches about the prevalence of anemia, ill effects of anemia and its preventable nature.
- Addition of iron rich foods to the weaning foods of infants.
- Regular consumption of foods rich in vitamin C such as oranges, guava, amla etc need to be encouraged to promote iron absorption.
- 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 inhibits iron absorption essentially by the vulnerable groups like pregnant women and children
- Control of parasitic worms and malaria.

Strategies to combat

There are two important ways in controlling the disease.

1. To provide Iodine to the community by fortification or by direct iodine supplementation.

The only way to combat the problem of IDD is to provide iodine to the community. 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. Salt is fortified with potassium iodate. In India the level of iodization is fixed under the prevention of food Adulteration Act and is not less than 30 ppm at the production point and not less than 15 ppm of iodine at the consumer level on dry weight basis.

Iodized oil: Oil fortification with iodine is available for oral or intra muscular injections.

2. Discouraging people from consuming foods known to contain high levels of goitrogens.

Importance of Nutrition education

Nutrition education is defined as the process by which beliefs, attitudes, environmental influences and knowledge about food and health are channelized in to practices which are sound and consistent with an individual needs, purchasing power, available food sources, health and sanitary facilities and socio cultural background.

Nutrition is a discipline , which is closely connected with many other areas related to human existence, such as agriculture, economics, medicine, food technology, engineering, biological sciences, sociology, anthropology etc. Several factors such as low agricultural production, poverty, population explosion, ignorance and poor environmental sanitation causes and aggravates malnutrition. Ignorance is perhaps the most important single factor underlying malnutrition and malnutrition could be prevented to a considerable extent if available foods are better utilized. Hence, nutrition education is necessary at all stages.

Objective of nutrition education

To impart knowledge that enable people to gain the understanding, knowledge , skill and attitudes necessary to act rationally in the selection, production, organization, storage, preparation, distribution, consumption and safe handling of food consistent with individual needs and available food and economic resources.

Hence, the nutrition educator should have thorough understanding of principles of good nutrition, locally available foods and their nutritive value, their purchasing capacity, customs, superstitions, food habits and values with regard to food etc.

Nutrition Education methods

1. **I**
ndividual contacts

These include what are known as home and farm visits. Since each persons problems are different, the personal approach through such visits result in greater understanding. They help in guessing first hand information, developing good will, establishing confidence and stimulating interest. Individual contact method has its own limitations. It consumes more time, money and labour than the other methods. However, this is the best method for establishing rapport with people and to impart nutrition education.

2. **Group contacts**

These are the commonly used forms of nutrition education and are quite effective. They include the following

1. **General meeting**-A heterogeneous group is collected and certain information is passed on to the group. A large number of people can be reached by this method but proper discussion is not possible.
2. **Method and result demonstrations**-Demonstration is the oldest and most effective form of education which makes two impressions one on the sense of vision and the other on the sense of hearing. Method demonstrations are useful for teaching skill. In nutrition education this can be used to teach new

and better methods of cooking. Result demonstration is a method of teaching designed to show by example, the practical application of an established fact or a group of facts.

3. **Balwadi feeding programmes**-These can be effectively used for educating both mother and child about good nutrition. Good food habits when inculcated in the childhood influences them all their life. A good method of teaching nutrition to the mother is to make her prepare the supplement by herself and feed the child.
4. **School feeding programmes and school gardens**-Teaching nutrition in the school years will leave significant mark on the minds of the children and influence them throughout their life. Children can be educated and helped to grow the nutrition vegetable and fruits in their garden so that along with nutrition education it improves their health status also.
5. **Nutrition Rehabilitation centers and nutrition wards**-The primary objective of these rehabilitation centers is the improvement of the nutritional status of the affected groups. So , nutrition education to such groups has very important role.

Training to village level workers and other extension personnel -These personnel can have a definite impact on the thinking of people. Auxillary nurse /midwives are a group who when trained can pass on the knowledge of nutrition to the women , especially pregnant and lactating mothers. Hence these personel who are trainers should be trained well by group approach.

3. Mass contacts

Various studies have shown that the cost of nutrition education is comparatively cheaper, if mass media are used. A larger number of people can be reached in leisure time. The proper use and combination of several media at the same time, on the same subject matter, within a given area has been found to be very effective in stimulating people. Today mass media is the most commonly used media to educate both literate and illiterate population. Mass media include

1. **Print material:** This includes booklets, leaflets, folders, circulars, news papers, magazines and any other printed material. While these are powerful media in the literature world, their use is limited in an illiterate population group. They involve much effort and money.
2. **Radio** -Radio is a powerful medium of communication both in the rural and urban societies. Nutrition education can be effectively carried out through this media. Here, one should plan the programme in attractive way by considering the background and their way of life.
3. **Exhibition**-An exhibition is a systematic display of modules, specimens, charts, and posters etc, which are more or less self explanatory. This is a method of reaching even the illiterate population. It is very appealing to be public but requires much planning and preparation in advance.
4. **Dramatizations, puppet shows**-One can educate public more effectively by using traditional methods of communication, since public have sentimental appeal. These are more effective in teaching illiterate groups also. Puppet shows, folk songs and dances, dramatizations proved to be verify effective for nutrition education.
5. **Films**-Films are a powerful media, through which education can be given, to both literate and illiterate groups.
6. **T.V (Television)**-is also one of the strongest and effective media in educating the public. Popular talks and discussions on important nutritional problems of the region will form effective means of nutrition education
7. **Advertisements**-The latest trend in nutrition education is to use advertising techniques to 'sell' nutrition to the masses. If information is disseminated in terms of lessons, people don't accept it easily. But by using social marketing strategies, nutrition messages can be imparted effectively. Advertising through posters, wall paintings, hoardings and films, can be effectively used. Both positive approach, where the benefits of eating a particular food and negative approach, where the dangers of not eating the food can be emphasized, in this approach.

Clinical Assessment

Clinical examination is the simplest and most practical method of ascertaining the nutritional status. It involves identification of signs that can be seen or felt in the superficial epithelial tissues, especially skin, eyes, hair and mouth; or in organs near the surface of the body such as thyroid and skull. These signs are indicative of inadequate or excessive nutrient intake.

Following are some clinical signs of common nutritional problems:

Nutritional Problem (Deficiency/ Excess)	Clinical Signs
Kwashiorkor	Oedema, dyspigmentation of skin and hair, easy pluckability of hair, sparse hair, moon face, etc.
Marasmus	Extreme muscle wasting, loose and hanging skin folds, monkey face etc.
Vitamin A deficiency	Dry, foamy triangular spots on the conjunctiva, dryness of conjunctiva and skin, dryness and ulceration of cornea etc.
Vitamin D deficiency	Bow legs, knock knees, beading of ribs, pigeon chest, enlargement of ends of long bones, etc.
Iron deficiency	Pale conjunctiva, tongue and skin; spoon shaped, paper thin, brittle nails; swelling in feet etc.
Iodine deficiency	Enlarged thyroid gland etc.
Fluorosis (Excess of fluorine)	Mottled (discoloured) and pitted dental enamel etc.

Advantages:

- It is a quick method.
- It is an inexpensive method as elaborate equipment and laboratory facilities are not required.
- If appropriate training is given to junior personnel, village health workers (such as Anganwadi and ASHA workers), older children and parents; they can also identify some crucial clinical signs of malnutrition.
- This method gives an indication of the spread of malnutrition in an area/ selected population.

Limitations:

- Malnutrition is not detected in early stages as most of these clinical signs appear when the problem has become moderate to severe.
- Clinical signs alone often do not give a true picture of the problem and need to be correlated with the results of other methods of nutritional assessment because of the following reasons:
 - Sometimes non-nutritional environmental influences may be responsible for a clinical symptom but the symptom may be mistaken for a nutritional problem, e.g. cracking and bleeding from the angles of the mouth (angular stomatitis) which is a clinical sign of riboflavin (vitamin B2) deficiency may occur due to excessive consumption of 'Paan' which contains lime (*chuna*). Similarly, dryness of skin which is a clinical sign of vitamin A deficiency may also occur because of dry, windy climatic conditions. These may create a confusion about the actual cause of the clinical sign.
 - Almost all clinical signs that are observed also lack specificity. The same signs may be observed for different nutritional problems. For example, symptoms such as cracking at angles of mouth (angular stomatitis), cracking of lips (cheilosis), swollen red tongue (glossitis) may occur due to riboflavin as well as niacin deficiency.
 - A few clinical signs may be bidirectional, i.e. they may be seen in deficiency as well as excessive intake of nutrients. e.g. Dry rough skin may be observed both in case of deficient as well as excessive intake of vitamin A.

Vital Statistics

Vital and other health statistics: Morbidity refers to illness while mortality refers to death. Morbidity rates of many diseases, maternal and child mortality rates, life expectancy and other health statistics are affected by malnutrition. High mortality and morbidity rates indicate low levels of health and nutrition among the population. Hence, the study of these indirect indicators provides valuable information in nutritional assessment.

Some of the vital and other health indicators have been enumerated as follows:

i. Crude death rate is the number of deaths per 1000 population per year in a given community. A high death rate would indicate poor health status of individuals in the community.

ii. Infant mortality rate is the number of deaths under 1 year of age in a given year to the total number of live births in the same year. This is expressed as per 1000 live births.

iii. Maternal mortality ratio is the number of maternal deaths to per 100,000 live births in the same period.

Other health statistics such as attendance rates at out-patient departments of hospitals, duration of stay in hospitals, number of beds available in hospitals, prevalence of low birth weight (less than 2.5kg at birth) children; prevalence data for nutritional deficiencies such as anaemia, vitamin A deficiency, iodine deficiency etc. among the population; underweight, stunting, wasting among children; non-communicable diseases etc. – all provide information which is extremely useful for determining the nutritional status of people. This information can be obtained from the periodic surveys carried out by the government and International agencies such as WHO, UNICEF etc.

Anthropometric Assessment or Nutritional Anthropometry

Nutritional Anthropometry

Definition: Nutritional Anthropometry is concerned with the measurement of the variations of the physical dimensions and the gross composition of the human body at different age levels and degrees of nutrition (Jelliffe, 1966).

It involves measurement of the physical dimensions, proportions and gross composition of the body at various ages and levels of nutritional status and comparing them with age and sex appropriate standards. In simple words, it is the measurement of body size and includes measurements such as weight; height; arm, chest and head circumferences; and skinfold thickness etc., all of which are valuable indicators of nutritional status.

Measurement of changes in body size over a period of time helps us to know whether there is appropriate growth occurring or not, especially in infants and children. In adults too, loss of body weight or gain in fat or muscle mass will indicate their food intake and nutrient utilization. For making use of simple body measurements such as height, weight, and body circumferences it is essential to know the correct age, especially in case of children. If the correct age is not known, it will not be possible to assess their nutritional status accurately. **Age Assessment:** Age should be calculated from the date of birth which could be obtained from the birth certificate, school or other records of the child. If it is not known, as may be the case in some disadvantaged families, a local calendar of events depicting festivals, cropping patterns etc. can be prepared to estimate the child's age. For example, if the mother informs that her child was born two days after the festival of *Basant Panchami* in the year 2015, and if the date of this festival (24th January, 2015) is marked in the local calendar for that year, the child's current age can be easily computed. Sometimes, attainment of milestones such as eruption of teeth; start of crawling, sitting, walking etc. may be used to estimate the age of the child.

Some of the commonly used anthropometric measurements are discussed as follows:

a. Weight:

Body components such as body water, fat, muscle, bone etc. together constitute the body weight. Weight is simple to measure and is easily understood by all people alike, even if they are uneducated or illiterate. Compared to other body measurements such as height, it reflects a more recent status of nutrition and is

sensitive to even small changes in nutritional status. Weight may be measured at one time; or several measurements may be done over a period of time as is done for monitoring the growth of infants and young children. Weighing instruments are of two types, i.e. spring balance and beam balance; and the accuracy of measurement depends on the type chosen. Though beam balance type weighing scales are more accurate, the spring balance type is used more frequently in the field due to easy portability. However, both types of balances should be periodically tested for accuracy using known standard weights. The zero error of the weighing scale should be checked and the reading should be adjusted to zero before measuring body weight. The individual while being weighed should be wearing minimal clothing, and be without shoes and any other accessories.

b. Height:

The skeletal size of individuals is referred to as their height. It is influenced by both genetic and environmental factors. Though the maximum height attained by individuals is dependent on their genes, the environmental factors such as good nutrition help in achievement of their maximum genetic potential. Therefore, height is a useful measure of nutritional status as optimum nutrition and healthcare help individuals to attain their maximum height and lack of it may result in growth retardation or stunting. Several equipment such as non-stretchable flexible tape, anthropometric rod, wall mounted staturimeter, stadiometer etc. can be used to measure the height of individuals. It should be measured with the individual standing barefoot and erect on a flat surface with the arms hanging naturally at the sides. The feet should be together and the heels, buttocks, shoulders and back of the head should be touching the wall or the measuring board. The individual should look straight ahead and then a horizontal bar, or a rectangular block of wood or the headpiece of anthropometric rod or stadiometer etc. should be made to rest on top of the head without applying pressure. The height is measured at this point to the nearest 0.1cm. In case of infants and young children who cannot stand, infantometers are used to measure their length in reclining position.

c. Body circumferences:

Circumference measurements of mid upper arm, head and chest are useful measures of undernutrition in infants and young children. All these measurements can be made using non-stretchable flexible measuring tapes.

Mid Upper Arm circumference:

Arm circumference comprises bone, muscle and fat; of which fat and muscle are respectively the energy and protein reserves of the body. In case of under nutrition, especially deficient intakes of energy and protein, these reserves are reduced thereby, decreasing the arm circumference. Between 1 to 5 years of age, the arm circumference remains constant as during this time, the baby fat is replaced with the muscle. Measuring mid upper arm circumference (MUAC) is useful for assessing thinness or muscle wasting in the age group of 1 to 5 years and a value less than 13.5cm indicates that the child is suffering from Protein Energy Malnutrition (PEM).

Head circumference is mainly related to the brain size which increases rapidly during the first year of life and thereafter, decreases slowly. It is measured at the broadest circumference of the head and in case of Protein Energy Malnutrition, the increase in its size is compromised.

Chest circumference also reflects growth failure and along with head circumference, it is useful to detect PEM in children. If the child is well nourished, the chest circumference becomes larger than the head circumference at around six months of age. Thereafter, the skull grows slowly while the chest grows more rapidly. Therefore, a head circumference to chest circumference ratio of more than one is indicative of PEM in children between the ages of six months to five years.

Measurement of Waist and Hip circumferences is useful for assessing the extent of obesity and therefore, the risk of cardiovascular and other lifestyle diseases. Adult men with waist circumference ≥ 102 cms and adult women with ≥ 88 cms are considered as having abdominal obesity. For Asian adult men and women, these values are 90 cms and 80 cms respectively. Waist hip ratio (WHR) can be calculated by dividing the waist circumference by hip circumference values. Adult men with WHR of ≥ 0.95 and women with ≥ 0.80

are considered as having central obesity.

d. Skinfold thickness:

It is a measure of subcutaneous fat, i.e. fat under the skin, and reflects the fat reserves in the body. Insufficient intake of food over a long period of time reduces the thickness of fat layer under the skin, and is thus indicative of undernutrition. Skinfold measurements are made at different sites of the body such as biceps and triceps etc., using skinfold calipers. This method, however, requires well-trained expert personnel, and is not a very commonly used anthropometric method.

For getting reliable results through anthropometric assessment, the following is extremely important:

- Selection of appropriate equipment
- Use of appropriate techniques
- Standardization and accuracy in taking measurements
- Selection of appropriate reference data for interpretation of results.

Give any 2 diet survey methods

I. National level:

Food Balance Sheet (FBS):

This method is employed, when information regarding the availability of food is needed at macro level i.e. country or region.

The FBS are computed on the basis of total food supplies available for human consumption at retail level for a given country/region from different sources during a reference period of one year. The computation takes into account the amount of the purpose of food used for animal feeds, exports, seeds and wastages.

The availability of any specific food is estimated using the following formula

Per caput availability per day (g) =

Stocks at the beginning		Stocks at the end of the
of the year + total food	(-)	year + exports + seeds+
produced + imports		cattle/poultry feeds+ wastages

Mid year population X 365 days.

Merits:

1. It gives a comprehensive picture of pattern of country's food supply.
2. Trends in food supply in a country is known, if compiled over different years.
3. Dietary pattern of the population can be known
4. The availability of food supplies per person relative to other countries can be known.
5. Administrators and planners can have a broad idea about the availability and deficit of food in the country and to take proper steps to remedy them.
6. Useful for food programme formulation/ for rationing of food/for exceptional conditions.

Demerits:

1. The allowance is made for inedible portion also. No allowance is made for the wastage of edible portion between the retail level and consumption level.
2. Since the distribution and other things are not taken care of, and only the average is calculated, the actual dietary consumption will not be known through the food balance sheets.
3. Accuracy depends on reliability of statistics of population/ supply/ non food supply/ wastage etc.

Oral Questionnaire (24 hour recall)

In the 24 hour recall method, subjects, their parents or care takers are asked by the nutritionists, who have been trained in interviewing techniques, to recall the subjects exact food intake during the previous 24 hours period. Detailed description of all food and beverages consumed, including cooking methods and brand names are recorded by the interviewer. In this method quantities of food consumed are usually estimated

in household measures.

A set of standardized cups suited to local conditions are used.

The steps involved are

1. The respondent is asked to list the food preparations made from morning to night i.e., at breakfast, lunch, teatime, dinner etc.
2. An account of the weights of all raw ingredients used for each of the preparations is obtained.
3. Information on the total cooked volume of each preparation is noted in terms of standardized volumetric measures.
4. The intake of each food item by the specific individual in the family is assessed using standardized volumetric measures. The measures are used mainly to aid the respondent to recall the quantities prepared and fed to the individual member.

The success of the 24 hour recall depends on

1. Interviewer's skill and training received.
2. Physical setting of the interview
3. Presence of neighbors
4. Social class difference between interviewer and respondent
5. Degree of interviewer's familiarity with respondent.
6. Rapport, the interviewer establishes with the respondent.
7. Ability of the interviewer
 - a. To ask right questions
 - b. To probe for details of consumption
 - c. To converse freely with the respondent without the need for interpreter.
 - d. To identify whether the respondent is providing reliable data or not.

Measuring food consumption of individuals

1. 24 hour recall method.
2. Weighment method
3. Records of food intake
4. Chemical analysis
5. Telephone Survey
6. Photographic method
7. Food frequency questionnaire
8. Dietary score
9. Diet history

1&2 methods are the same as described at household level.

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Certificate Course on "Community Nutrition"

Duration: **11-03-2024 to 30-04-2024**

MARKS LIST

Home Science Certificate Course (2023-24)				
List of Students attended for Exam				
S. No	Regd. No	Name of the Student	Programme	Marks Obtained
1	2375001	CHEDALA LOVA KUMARI	Botany Honours	29
2	2375003	KOTA SUPRIYA	Botany Honours	26
3	2375004	NUNNA SURAJAKSHI	Botany Honours	38
4	2375005	POTHULA DAAKSHAYANI	Botany Honours	39
5	2375006	RAMULAKONDA RAMA LAKSHMI	Botany Honours	27
6	2375007	SHAIK ABEDU	Botany Honours	35
7	2375009	PALLI PAVANI LAKSHMI PRASANNA	Botany Honours	38
8	2375010	TAMARANA SAHITHI	Botany Honours	28
9	2375011	VASAMSETTI BHAVANI	Botany Honours	27
10	2375017	GODUGU RAMA DURGA	Botany Honours	24
11	2375018	KADALA VISISTA SAI SREE MEGHANA	Botany Honours	26
12	2375019	KADIYALA NAVYA	Botany Honours	32
13	2375021	MALLADI LAXMI	Botany Honours	37
14	2375026	SOYAM SRAVANTHI	Botany Honours	27
15	2375027	SURADA LOHITHA	Botany Honours	29
16	2376006	BARANGI MAITHILI	Zoology Honours	25
17	2376012	MAILAPILLI SOUNDARYAVATHI	Zoology Honours	29
18	2376018	VASUPILLI SATYAVENI	Zoology Honours	34
19	2376032	MAKIREDDY BHAVANI	Zoology Honours	30
20	2376034	PARAMATA SATYA PRIYA	Zoology Honours	27

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A.S.D.GOVERNMENT DEGREE COLLEGE FOR WOMEN
AUTONOMOUS
DEPARTMENT OF HOME SCIENCE



CERTIFICATE
OF APPRECIATION

This is to certify that

Ms. B. Maithili

of Zoology Honours has completed a 45Day certificate course on
“**Community Nutrition**” organized by the Department of Home
Science, A.S.D.Government Degree College For Women Autonomous,
Jagannaickpur, Kakinada, from 11th March 2024 to 30th April, 2024.

H. Suvarchala

(M.SUVARCHALA)

Lecturer in H. Science
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CERTIFICATE
OF APPRECIATION

This is to certify that

Ms. M. Soundaryavathi

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“**Community Nutrition**” organized by the Department of Home
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DEPARTMENT OF HOME SCIENCE



CERTIFICATE
OF APPRECIATION

This is to certify that

Ms. V. Satya Veni

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“**Community Nutrition**” organized by the Department of Home
Science, A.S.D.Government Degree College For Women Autonomous,
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CERTIFICATE
OF APPRECIATION

This is to certify that

Ms. M. Bhavani

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“**Community Nutrition**” organized by the Department of Home
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DEPARTMENT OF HOME SCIENCE



CERTIFICATE
OF APPRECIATION

This is to certify that

Ms. P. Satya Priya

of Zoology Honours has completed a 45Day certificate course on
“**Community Nutrition**” organized by the Department of Home
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