

## UNIT NINE Growth and Development

### Learning objectives

At the end of this unit, the students will be able to:

- Understand components of weight during pregnancy
- Risk factors, which have an influence on a child's nutritional state
- Describe low birth weight and its causes
- Explain the nutrition of the mothers
- Assess the nutritional status
- Tell uses of nutritional assessment.

It is worth remembering that the fetus development in 40 weeks from the two cells joined at conception into an independent infant with a functioning nervous system, lungs, heart, stomach, and kidneys. To support this rapid growth and development major changes takes place in the mother's body. Under normal conditions the mother's weight increases by 20 per cent during pregnancy.

### Components of weight gain during pregnancy.

Fetus, placenta, amniotic fluid	4750 gms
Uterus and breasts	1300 gms
Blood	1250 gms
Water	1200 gms
Fat	4000 gms
<b>Total</b>	<b>12500 gms</b>

### Causes for low weight gain during pregnancy

- Low food intake,
- Many women continue to do hard physical activities like carrying

wood and water, and do other strenuous jobs until childbirth. Many factors cause variation in weight at birth, but in developing countries the mothers' health and nutritional status and her diet during pregnancy are probably most important. Low birth weight (LBW) is defined as being below 2.5kg.

### There are two main reasons for L.B.W:

- Premature or early delivery
- Retarded fetal growth

### Causes of premature delivery

- Poor maternal nutrition,
- High maternal blood pressure
- Acute infections
- Hard physical work
- Multiple pregnancies
- In many cases the cause is unknown

#### **Causes of retarded fetal growth**

- Fetus, due to infections such as Rubella and syphilis
- Placenta, if it is abnormally small or with blockage
- Mother, maternal nutrition and health
- Anemia
- Acute or chronic infections such as TB

Mothers are often the key care takers for the children in the household. They have to be healthy and need the time, the knowledge and the right environment to carry out their duties.

#### **Proper care of children**

- Appropriate hygiene and sanitation
- Safe food preparation and storage
- Successful breast feeding and adequate weaning practice
- Psychosocial care such as attention, affection and encouragement
- Equitable health services and a healthy environment,
- Spacing of child birth.

#### **Children at risk**

High risk factors which often have influences on a child's nutritional states are the followings:

- Low birth weight
- Twins or multiple births
- Many children in the family
- Short intervals between births
- Poor growth in early life
- Early stopping of breast milk < 6 months
- Introduction of complementary feeding either too early or too late
- Many episodes of infections
- Illiterate mothers,

- Resources scarcity,
- Recent migration of mother to the area,
- Children with single parent.

### **Assessment of nutritional status**

Nutritional assessment is the process of estimating the nutritional position of an individual or groups, at a given point in time, by using proxy measurement of nutritional adequacy. It provides an indication of the adequacy of the balance between dietary intake and metabolic requirement.

### **Uses of Nutritional Assessment**

It should aim at discovering facts to guide actions intended to improve nutrition and health.

- ❖ Diagnostic tool; (individual and group)
  - Does a problem exist – identify
  - Type of problems
  - Magnitude of the problem
  - Who are affected by the problem
- ❖ Monitoring tool (individuals and group)
  - Requires repeated assessment over time
  - Has the situation changed?
  - Direction and magnitude of change
- ❖ Evaluation tool (individual or group). To what extent has the intervention, treatment, or programme had the intended effect (impact)

### **Anthropometrics assessment**

It is the measurement of the variation of physical dimensions and the gross composition of the human body at different age levels and degrees of nutrition.

### **Anthropometrics assessment of growth**

- ❖ Common measurements include;
  - Stature (height)
  - Body weight
  - Skin fold
  - Mid Upper Arm Circumference (MUAC)
- ❖ Indices derived from growth measurements;
  - Weight-for-height,
  - Height-for-age,
  - Body Mass Index (BMI) = Weight in Kg divided by Height in metre square that is  $Wt/(Ht)^2$

### **Identification malnutrition superficially**

Changes in the superficial tissues or in organs near the surface of the body, which are readily seen or felt upon examination. These include changes in:

- Eyes
- Skin
- Hair
- Thyroid gland

### **Common indicators**

- Edema
- Dyspigmentation of the hair
- Angular Stomatitis
- Corneal lesions
- Swelling (enlargement) of glands

### **Discussion questions**

1. Why do women increase during pregnancy?
2. State causes for low weight gain during pregnancy.
3. What are the two main reasons for low birth weight?
4. What are the nutritional risk factors which have an influence on a child's nutritional state?

## UNIT TEN Nutritional Surveillance

### Learning objectives

At the end of this unit, students will be able to:

- Understand the objectives of nutritional surveillance
- Describe the uses and users of Nutritional Surveillance
- Explain the nutritional outcome indicators
- Understand timely warning and coping mechanisms.

**Nutritional surveillance:** is defined as the measurement of the frequency and distribution of nutrition related diseases or problems using regularly collected and available information. It comprises the analysis of nutrition information for decision making relative to national or regional policies or program planning. Nutritional surveillance could be concerned with everything that affects nutrition, from food production, distribution, and intake to health status itself.

### Objectives of nutritional surveillance

- To provide information so that decision can be more favourable to nutrition
- To increase the allocation of resources to improve the nutrition of the malnourished in drought and famine condition.

### Potential users of Nutritional Surveillance Information (N.S.I)

- Ministry of health
- Ministry of agriculture,
- Government and nongovernmental organizations.

### Nutritional outcome indicators

- Prevalence of malnutrition among preschool children (<80% WFH)
- Prevalence of birth weight infants (<2.5kg)
- Prevalence of stunting in school entrants (<90% HFA)
- Estimate of infant and/or child mortality rate.
- Quality of housing
- Water supply
- Sanitation and literacy rate.

### Discussion questions

1. Define nutritional surveillance
2. What are the objectives of nutritional surveillance?

3. What are the uses and who are the users of nutritional surveillance information?

4. What are the nutritional outcome indicators used in nutritional surveillance?

## UNIT ELEVEN Nutrition Intervention

### Learning objectives

At the end of this unit, students will be able to:

- Understand methods of intervention
- Mechanisms of intervention
- Describe the criteria for successful intervention

When there is a nutritional problem in a community, if the magnitude and the causes of the problem are known, we will plan to do intervention.

### Methods of nutrition intervention

- Food fortification
- Food for work
- Price subsidization
- Supplementation
- Family planning
- Integration of nutrition with health
- Price policy

### Mechanisms of nutrition interventions

There are five principal mechanisms through which all interventions work.

- ❖ Availability of food at local or regional level. Making the required foods more available with the respect to place and time.
- ❖ Accessibility to food and availability of foodstuff at the household level. Making the required foods more accessible and available to the households
- ❖ Food utilization at household level. Making better use of available foods. Food processing such as fermentation, preparing weaning food.
- ❖ Distribution within the household.
- ❖ Physiological utilization

### Criteria used for successful interventions

- Relevance of the intervention to solve the problem at hand
- Feasibility
- Integrability

- Effectiveness
- Ease in targeting
- Cost effectiveness
- Ease in evaluation
- Long-term continuation

**Discussion questions**

1. What are the five principal mechanisms through which all nutrition interventions work?
2. Mention the criteria for successful intervention.

## UNIT TWELVE Essential Nutrition Actions Approach

An action oriented approach to nutrition.

If we use ENA approach to nutrition, estimated decrease of child mortality is 25%. The **seven essential actions** and the **six contact points** should be included in the curricula of all health science students.

**There are seven action areas:**

### **1. Promotion of Breastfeeding**

**Key messages**

- Timely initiation of breastfeeding (1 hour of birth)
- Exclusive breastfeeding until six months
- Breastfeed day and night at least 10 times
- Correct positioning & attachment
- Empty one breast before switching to the other

Estimated decrease of child mortality is 13% if the child is optimally breastfed

### **2. Appropriate Complementary Feeding**

**Key messages:**

- Introduce appropriate complementary foods at 6 months
- Continue breastfeeding until 24 months & more
- Increase the number of feeding with age
- Increase density, quantity and variety with age
- Responsive feeding
- Ensure good hygiene (use clean water, food and utensils)

### **3. Feeding of the sick child**

**Key messages:**

- Increase breastfeeding and complementary feeding during and after illness
- Appropriate Therapeutic Feeding.

### **4. Women's nutrition:**

**Key messages:**

- During pregnancy and lactation
  - Increase feeding
  - Iron/folic Acid Supplementations
  - Treatment and prevention of malaria

- De-worming during pregnancy
- Vitamin A Capsule after delivery

#### 5. Control of Vitamin A Deficiency:

Estimated decrease of child mortality is 2%

##### Key messages:

- Promote breastfeeding: source of vitamin A
- Vitamin A rich foods
- Maternal supplementation
- Child supplementation
- Food fortification

#### 6. Control of Anaemia

##### Key messages:

- Supplementation of women and children
- De-worming for pregnant women and children (Twice/year)
- Malaria control
- Iron rich foods
- Fortifications

#### 7. Control of Iodine Deficiency Disorders:

##### Key messages

Access and consumption by all families of iodized salt

**How the Essential Nutrition Actions expands coverage of nutrition support in the health sector?**

**There are six critical contact points in the lifecycle**

#### 1. During Antenatal Care

- Pregnancy: Tetanus Toxoid vaccine (TT)
- Antenatal visit, Iron/Folic Acid
- De-worming
- Maternal diet
- Exclusive Breastfeeding (EBF)
- Family planning (FP), Sexually transmitted infections (STIS) prevention
- Safe delivery, iodized salt

#### 2. Delivery;

- Safe delivery,
- (EBF)

- Vitamin A, Iron/Folic Acid
- Diet, FP and STI, Referral

### **3. Postnatal and Family Planning:**

- EBF, Diet, Iron/Folic Acid
- FP, STI prevention
- Child's vaccination

### **4. Immunizations:**

- Vaccination, Vitamin A
- De-worming
- Assess and treat infant's anemia
- FP, STI, Referral

### **5. Well child and Growth monitoring and promotion (GMP):**

- Monitor growth
- Assess and counsel on feeding
- Iodized salt
- Check and complete vaccination
- Vitamin A/de-worming

### **6. Sick child:**

- Monitor Growth
- Assess and treat per Integrated Management of Childhood Illness (IMCI)
- Counsel on feeding
- Assess and treat for anemia,
- Check and complete vitamin A
- Immunization/de-worming

### **Need to integrate ENA into other health program**

- Expanded Program on Immunization (EPI)
- Reproductive Health
- National immunization Days Polio and Measles
- Nutrition programme positive deviance community GMP
- Infectious Diseases, Control of Malaria, Tuberculosis HIV/AIDS, prevention of mother-to-child transmission (PMTCT)

### **How the Essential Nutrition Actions expand coverage outside the health sector?**

#### **Need to integrate ENA into other sectors**

- Schools, Adolescent nutrition
- Food security
- Clean water & sanitation
- public health education
- Micro-credit, income generation
- Nutrition education

**The most visible evidence of good nutrition is:**

- Taller, stronger, healthier child who learns more in school and become productive
- Happy adults who participate in society

Malnutrition does not need to be severe to pose a threat to survival. Worldwide, **fewer than 20% of deaths** associated with childhood malnutrition involve **severe malnutrition**; **more than 80%** involve only **mild or moderate malnutrition**.