

# ***Growth , Development and Nutrition Module***

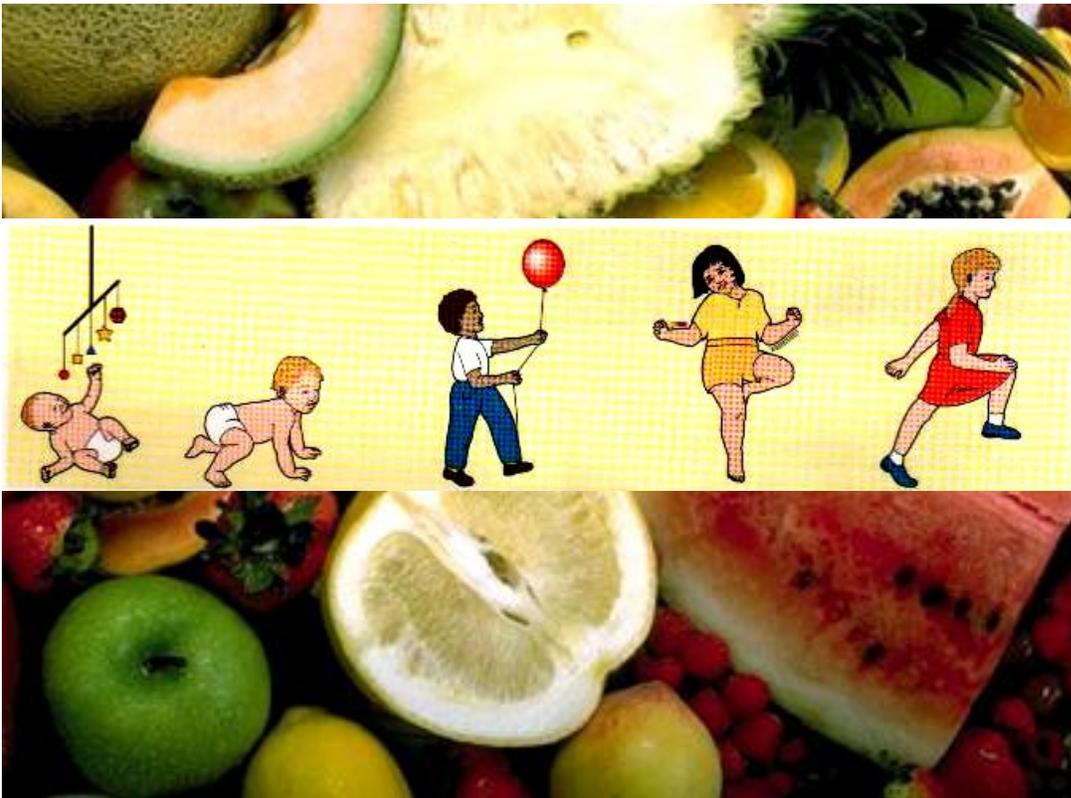
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## ***PHASE 2***



***Faculty of Medical Sciences  
University of Sri Jayewardenepura***

# GROWTH , DEVELOPMENT & NUTRITION MODULE



Faculty of Medical Sciences  
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**Phase 2**

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## MEMBERS OF THE MODULE COMMITTEE

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## INTRODUCTION

Nutrition, growth and development are such integral and integrated components of human life and hence addressed together in this module.

A clear understanding of the concepts of nutritional requirements in health and disease, assessment and monitoring of nutritional status, growth and development and planning effective nutritional interventions is vital in managing many stages of our life cycle.

The module is organized in two sections , the first part on Growth and Development and the second on Nutrition.

The growth and development section of this module aims to develop knowledge and skills necessary to monitor children's physical growth and cognitive, motor, emotional and social development, to identify delays or abnormalities in development, and to counsel parents and prescribe treatment.

The section on nutrition will mainly focus on the nutritional requirements in health and disease states, nutritional disorders of public health importance in Sri Lanka and the importance of culture and life style in determining our diets and food habits. At the end of the module students will have the necessary skills to perform a nutritional assessment of an individual and community and plan an appropriate intervention programme. A sound understating of the underlying concepts covered in this section will facilitate students to discuss the importance of nutrition in all clinical scenarios and in promotion of health and well being.

# **PART 1 – GROWTH AND DEVELOPMENT**

## General Objectives

At the conclusion of this module, the student should be competent to:

1. describe normal growth and physical, intellectual, emotional, behavioural and social development from birth to adulthood.
2. know and understand the range of biological, psychological and social factors that influence normal growth and development.
3. assess / monitor growth and development of children using appropriate methods (anthropometry and developmental assessment).
4. understand the principles, use and interpretation of data related to growth monitoring (growth charts).
5. recognize deviations from normal and identify disorders of growth and development.
6. know the common and important conditions causing disorders of growth and development.
7. initiate diagnostic tests and outline the management of disorders of growth and development.
8. understand the emotional and behavioural development aspects associated with adolescence.
9. understand the functions of parents/caregivers to identify and manage development related problems.
10. appreciate the impact of a child with developmental disorder on his/her the family and society, and discuss the management of these problems.
11. communicate effectively and counsel parents of children with disorders of growth and development.

(A) – Must know content area

(B) – good to know content area

## Normal Growth

Intermediate objectives	Main content area	Learning strategy	Duration	Department
<ul style="list-style-type: none"> <li>- Discuss normal physical growth, factors affecting growth and assessment.</li> </ul>	<ul style="list-style-type: none"> <li>(A) Definition of physical growth.</li> <li>(A) Growth of organs, tissues and bones.</li> <li>(A) Different factors that affect growth.</li> <li>(A) Methods of growth assessment and parameters used to assess growth.</li> <li>(A) Different types of growth data, their interpretation and statistical concepts.</li> <li>(A) Deviations from normal physical growth.</li> </ul>	Lecture	45 minutes	Paediatrics
<ul style="list-style-type: none"> <li>- Assess and monitor physical growth.</li> </ul>	<ul style="list-style-type: none"> <li>(A) Technique of measuring weight, length/height, occipito-frontal circumference, midarm circumference, skin fold thickness.</li> <li>(A) Calculate Body Mass Index (BMI), body surface area.</li> <li>(A) Instruments used in anthropometric measurements.</li> <li>(A) Child Health Development Record (CHDR) it's components, uses and limitations.</li> <li>(A) Different types of growth charts (distance, velocity) used in clinical practice.</li> </ul>	<ul style="list-style-type: none"> <li>Practical (Skills laboratory)</li> <li>Ward work</li> </ul>	45 minutes	Paediatrics

## Disordered Growth

Intermediate objectives	Main content area	Learning strategy	Duration	Department
- Discuss disorders of growth in relation to definition, aetiology, pathophysiology, clinical features, investigations, management, follow up and counselling.	(A) Short stature, tall stature, constitutional growth delay,	Lecture	45 minutes	Paediatrics
	(A) Diseases of bones, Syndromes/ Chromosomal abnormalities with disordered growth, (A) Microcephaly, Macrocephaly.	PBL	45 minutes x 4	Paediatrics

## Development

Intermediate objectives	Main content area	Learning strategy	Duration	Department
- Discuss normal development.	(A) Normal development from birth to 5 years, including developmental milestones.	Lecture / Video	45 minutes	Paediatrics
	(A) Factors which influence healthy physical, emotional, social and intellectual development. (A) Principles of screening and monitoring of development.			
- Assess and monitor development using appropriate tools.	(A) Perform a Denver Developmental Screening Test (DDST).	Ward work	final year appointment	Paediatrics



### **Recommended reading material**

1. Illustrated Textbook of Paediatrics - Tom Lissauer, Graham Clayden
2. Essential Paediatrics - David Hull, Derek Johnston
3. From Birth to Five Years - Mary Sheridan
4. Illustrated Textbook of Paediatrics - Tom Lissauer, Graham Clayden
5. Essential Paediatrics - David Hull, Derek Johnston
6. From Birth to Five Years - Mary Sheridan

## **PART 2 – NUTRITION**

### General Objectives

At the conclusion of this module, the student should be able to:

1. Describe nutritional requirements of different target groups with an understanding of the basic principles of nutrition in different physiological states.
2. Describe the presentations, investigations, assessment and management of a defined range of nutritional disorders with emphasis on disorders of public health importance in Sri Lanka.
3. Assess the nutritional status of individuals and communities with an understanding of the basic principles and plan an intervention programme.

(A) – Must know content area

(B) – Good to know content area

Intermediate objectives	Content area	Activity	Duration	Department
<ul style="list-style-type: none"> <li>- Describe and calculate nutritional requirements in different physiological states and in disease and recovery.</li> </ul>	<p>(A) Functions of nutrients (macro and micro nutrients)</p> <p>(A) Basal metabolism and nutritional requirements</p> <p>Nutritional requirements in pregnancy, lactation, infancy, childhood, adolescence, elderly</p> <p>(A) Nutritional requirements in disease and recovery states.</p> <p>(A) Balanced diets, food pyramid and guidelines</p>	<p>Recall from phase I</p> <p>Quiz</p>	<p>45 minutes</p> <p>X 2</p>	<p>Community Medicine</p> <p>Paediatrics</p>
<ul style="list-style-type: none"> <li>- Advice individuals/families/communities on the appropriate diet at different stages of the life cycle.</li> </ul>	<p>(A) Nutritional requirements and diets in special circumstances</p> <ul style="list-style-type: none"> <li>-pregnancy</li> <li>-lactation</li> <li>-breast feeding</li> <li>-weaning</li> <li>-infant feeding</li> <li>-preschool child</li> </ul> <p>(A) Explain the importance of Growth Monitoring and the charts used for this purpose.</p>	<p>Lecture</p>	<p>45 minutes</p> <p>X 2</p>	<p>Community Medicine</p>

- Describe common food beliefs and practices in Sri Lanka and their influence on nutritional status of individuals and the community.	(B) Common food taboos and myths food preparation practices during pregnancy, lactation and disease states			
Intermediate objectives	Content area	Activity	Duration	Department
- List and describe the nutritional assessment methods	A) Explain different methods/tools of nutritional assessment at individual & community level, their uses, advantages and disadvantages Clinical examination , Anthropometry Biochemical assessment , Biophysical assessment (A) Dietary survey methods food frequency questionnaires , rapid survey methods	Lecture	45 minutes	Community Medicine Paediatrics
- List and describe nutritional disorders of public health importance in Sri Lanka : under nutrition and over nutrition states  - Epidemiology - Clinical presentations and their pathophysiological basis - Laboratory assessment methods - principles of dietary management and prevention	Under nutrition (A) Failure to thrive (A) PEM (A) Nutritional anemia (A) Iodine deficiency disorders (A) Vit A deficiency (A) Calcium deficiency (A) Vitamin D deficiency  Over nutrition (A) Obesity (A) Flurosis	Lecture & Student Seminar	45 minutes X 3	Community Medicine

Intermediate objectives	Content area	Activity	Duration	Department
- Appreciate the importance of culture, environment and life style in relation to nutrition such as the life cycle approach, conceptual framework of under nutrition and the nutritional transition	(A) Understand the conceptual framework of under nutrition. - Proximate causes , Intermediate causes, Underlying causes (A) Life cycle approach (A) Nutritional transition	Directed Self learning	45 minutes	Community Medicine
- Advice individuals/families/communities on the appropriate diet for a range of Non-Communicable Diseases (NCD's) and chronic disability .	Planning diets and guidelines in (A) Diabetes, Hyper cholestoleamia , obesity (A) Chronic disability, Cancers, Chronic renal failure	Lecture	45 minutes	Dietician / Medicine
- Describe the principles and methods of nutrition in clinical settings (hospitals), including enteral and parenteral nutrition.	(A) Nutrition in hospitalized patients (A) Calculation of protein and calorie requirements for enteral and parenteral nutrition (A) Methods of nutritional supplements in disease forced feeding, enteral nutrition, total parenteral nutrition, long term home enteral /parenteral nutrition (A) Indications, advantages and disadvantages for different types	Lecture	45 minutes	Surgery

	(A)Routes of access for enteral and parenteral nutrition methods -naso gastric, gastro-jejunal, percutaneous endoscopic gastrostomy (peg), parenteral (subclavian , int. Jugular (A) Types of nutritional supplements available for enteral and parenteral nutrition			
Intermediate objectives	Content area	Activity	Duration	Department
<ul style="list-style-type: none"> <li>- Describe the steps in planning and evaluating nutritional intervention programmes</li> <li>- List and describe the present nutritional interventions in Sri Lanka</li> </ul>	<p>(A) Steps in planning different types of nutritional interventions programmes</p> <p>(A)Describe interventions involving sectors other than health in improving the nutritional status of the population. Irrigation , Fisheries, Dairy industry, Paddy cultivation</p> <p>(A) interventions in special situations – disasters, war, displacement</p> <p>(A) Evaluation methods</p> <p>(A) List and describe the present nutritional interventions in Sri Lanka</p>	Lecture	45 minutes	Community Medicine
<ul style="list-style-type: none"> <li>- Describe and plan a nutritional education programme for different target groups.</li> </ul>	<p>A) Explain effective approaches to nutrition education Methods , tools Target groups Evaluate effectiveness</p>	Lecture & Small group Activity	45 minutes X 3	Community Medicine /Paediatrics
Total			16 slots	

### **Recommended reading material**

1. Nutrition throughout the Life Cycle. TW Wickramanayake, 2007.
2. Nutrition for developing countries. Felicity Savage King, Ann Burgess. Oxford Medical Publications.
3. Nutrition guide. Nutrition division, Department of Health Services, Ministry of health.
4. Human nutrition in the developing world. Available from : [www.fao.org](http://www.fao.org)
5. Pre-reading material, Department of community Medicine.