Growth, Development, Nutrition & Ageing Module – Year 1 Semester 2

Credits - 4

Duration: 3 weeks (15 days)

Concept	Objectives	Time	Dept. in - Charge	T / L Activity
	At the end of the module, the students should be able to:			
2008-1/SBM-6/01				
What is growth		1h	Paediatrics	Lecture
a. Definition	1. explain what is meant by the terms 'growth' & 'development'			
b. Factors affecting growth and development	2. list the factors that affect growth and development			
	3. describe the factors affecting growth and development. i.e. genetic, hormonal,nutritional, immunological and metabolic factors	1h	Biochemistry	Lecture
2008-1/SBM-6/02				
Cell Growth	1. recall the function of somatic cell division in cell replacement and growth	2h	Biochemistry	Lecture
a) DNA replication	2. recall the basic events of DNA replication and DNA repair			
b) Cell Cycle	3. recall the phases of the cell cycle			
c) Protein synthesis	4. briefly state how the cell cycle is regulated and the consequences of deranged cell cycle			
	5. recall the basic events of protein synthesis (done in 2004 –2/SBM-8/5)			
2008-1/SBM-6/03				
Prenatal growth	1. describe the factors affecting and regulating fetal growth 2. state the significance of healthy prenatal growth	2h	Obs.& Gynaecology	Lecture
2008-1/SBM-6/04				
Prenatal Growth				
Clinical, Anthropological, and Laboratory (Imaging, biochemical and Haematological) assessment of	1. describe common mechanisms resulting in congenital abnormalities and intra utrine growth retardation	1h	Gyn& Obs	Lecture demonstration

Congenital abnormalities and IUGR	2. importance of the biochemical identification of the fetal defects 3. Importance of early identification of fetal defects based on biochemical investigations	1h	Biochemistry	Lecture demonstration
	4. describe the role of imaging in monitoring prenatal growth and its variations	1h	Radiology	Lecture demonstration
	5. explain the rationale for providing special nutritional requirements during pregnancy and lactation	1h	Biochemistry	Lecture
	6. outline the methods used in the assessment of abnormal growth & development	2h	Paediatrics	Film/ Lecture Demonstration
2008-1/SBM-6/05				
Postnatal growth and development	1. explain the pattern of postnatal growth (growth patterns and periods, hormonal effects, catch-up growth)	1h	Paediatrics	Lecture demonstration 1h Growth charts in skills lab during SGLA time
i. height, weight, growth charting **ii. head circumference** **iii. adipose tissue**	2. describe the patterns of growth in different organ systems			
iv. skeletal growth **v. dentition** **vi. age estimation using teeth and bone**	1. describe the microscopic structure of bone 2. describe the macroscopic structure of a long bone a. Comments – Will be done along with the locomotion module, if it is done prior to this module	1h	Anatomy	Lecture (6h) + PD (2h x 3 groups sessions) - Total (12hrs.)
	3. describe the process of membranous and endochondral ossification giving examples 4. describe what is meant by an epiphysial plate and synchondrosis explaining the microscopic structure and giving examples and relevance 5. estimate the age using ossific centres especially in radiographs 6. describe the post natal growth of a long bone	2h		
	7. describe the post natal growth of skull and mandible.	1h		
	8. explain the term ‘fontanelle’ and state the age at which fontanelles disappear 9. explain the clinical importance of fontanelles 10. state the changes of bone due to ageing	1h		
	11. explain the terms ‘chronological age’ and ‘bone age’ giving it’s importance			

	12. list the different teeth in the deciduous and permanent dentitions 13. state the initial calcification times and eruption times of the deciduous and permanent dentitions 14. estimate age using teeth and jaws by direct observation and radiological methods	1h		
2008-1/SBM-6/06				
Imaging	Radiological assessment of skeletal and dental development and assessment of age	1h	Radiology	Lecture
2008-1/SBM-6/07				
Postnatal Growth				
Clinical, Anthropological, and Laboratory (Imaging,biochemical and Haematological) assessment of (normal & abnormal) variations of postnatal growth & Development (Physical, sexual, nervous, osteological and dental)				
	1. assess using reference charts abnormal variations of physical, sexual and neuro developmental variations of growth and development	6h	Paediatrics	Lecture (2h)+ PD (3h)+ Film (1h)
	2. identify laboratory and clinical features associated with malnutrition including kwashiorkor, marasmus,mineral and vitamin deficiencies	3h	Paediatrics/ Biochemistry	Lecture
	3. identification of clinical problems based on biochemically test 4. identification of deficient nutrients in food defects	8h	Biochemistry	PD (4hx2)
2008-1/SBM-6/08	1. explain the concept of growth charting	5h	Paediatrics	CCR on a growth retarded child
Growth chart	2. interpret a growth chart			
2008-1/SBM-6/09				
The normal child (from newborn to adolescent)	1. describe the changes that occur in the physical growth from birth to adolescent. i. Length or height ii. Height velocities iii. Upper segment to lower segment ratio iv. Weight v. OFC vi. Distribution of fat	2h	Paediatrics	Lecture - 2h
2008-1/SBM-6/10				

Sexual development **a. Normal sexual maturation**	1. describe the development of secondary sexual characteristics in a normal child in puberty 2. be aware of the psychological changes that occur during puberty	1h	Paediatrics	Lecture - 1h
2007-1/SBM-6/11				
Ageing **a. Structural and functional changes** **b. Menopause**	1. describe the structural and functional changes in the Ageing process 2. state the factors affecting Ageing 3. explain the terms "menopause" 4. describe the hormonal and metabolic changes in menopause	2h	Physiology	Lecture - 2h
	5. describe the changes in the tissue composition in ageing (general & specific) 6. describe the general changes in the cell, apoptosis and nutritional problem in ageing.	2h	Biochemistry	Lecture - 2h
2008-1/SBM-6/12				
Ageing	1. describe the factors affecting the process of ageing and the consequences of ageing on the individual family and community	2h	Medicine/ Biochemistry/Com. Med.	Staff Seminar
	2. describe the special nutrition requirements of elderly	1h	Biochemistry	Lecture
	3. outline the Physical neurological, sexual and psychological changes that occur with aging. 4 assessment of abnormalities: clinical, anthropological, imaging and laboratory assessment	2h	Gyn. & Obs., /Paediatrics	Lecture Demonstration
2008-1/SBM-6/13				
Why living beings have to eat **a. Balanced diet** **b. Nutrients and how they are used in the body – fate of nutrients**	1. state the characteristics of a balanced diet. 2. describe the functions of different nutrients absorbed from the alimentary tract (with special reference to glucose, lipids, amino acids, vitamins and minerals). 3. state the fate of nutrients absorbed.	7h	Biochemistry	Lectures: 3 h SGD: 2 h Seminar on dietary fibre: 2h

2008-1/SBM-6/14				
Do you eat enough **a. Energy requirement** **b. Protein requirement**	1. explain why energy is required. 2. list the sources of energy. 3. explain what is BMR. 4. state the methods available to assess energy requirement. 5. explain how energy requirement could be calculated using BMR and type of physical activity. 1. explain why protein is essential in the diet. 2. list the indicators available to define quality of proteins: - BV, NPU, amino acid score). 3. compare the quality of proteins in commonly used foods in Sri Lanka. 4. explain zero, negative and positive nitrogen balance giving examples. 5. explain how protein requirement is derived from nitrogen balance studies. 6. state the recommended allowance of protein for adult male and female, pregnant and lactating women and pre school child.	5h	Biochemistry	Lectures: 3h SGD: 2h
2008-1/CLM-10/1				
Psychosocial factors in food selection	1. describe the (bio) psychosocial factors that determine people's diets. 2. describe the learning process through which children develop food preferences. 3. explain how a person's mood can have an effect on a person's eating habits, (I.e. worry, to be concerned about an exam (anxiety), sadness, gloominess (depression), stress and effect on eating). 4. describe recent research findings regarding the potential addictive qualities of certain food types (e.g. sugar, additives) and also there relationship to hyper activity disorders in children. 5. describe the psychological manipulations of fast food advertisements.	2h	Psychiatry	Lecture plus small group discussion (the batch divided in to 4 groups with one supervisor each).

2008-1/SBM-6/15				
General				
Food, Food intake and factors affecting growth and development during life	1. describe the variations in the basic nutritional requirements in the various phases of life (fetal, infancy, child hood, adolasants, adulthood, pregnancy, lactation, and elderly)	1h	Biochemistry	Lecture
	2. describe external factors – nutritional, infection, social, cultural, emotional and other factors affecting growth and development in the various phases of life (Including prenancy and lactation)	2h	Paediatrics/ Gyn. & Obs.	Lecture
	3. describes the methods used to minimize losses of nutrients during processing and increase the bio-availability of nutrients	2h	Biochemistry	Student Seminar
2008-1/SBM-6/16				
Nutrition	1. describe the epidemiology of nutrition in Sri Lanka and world. 2. describe the role of health visitor in monitoring nutritional status of members in the community 3. describe the strategies available to improve the nutritional status of a community 4. describe how monitoring of the nutritional status of a community is carried out (children, pregnant lactating mothers and old age) 5. describe the special needs in physiological status in sports	4h	Com. Medicine	Lecture
2008-1/SBM-6/17				
Diet and nutrient intake	1. describe the nutritional value of breast milk,cow milk, and milk products	2h	Biochemistry	Lecture
	2. describe the special requirements of nutrition for the young and growing child.	1h	Biochemistry	Lecture
	3. the importance of trace minerals in nutrition	1h	Biochemistry	Lecture
2008-1/SBM-6/18				
Principles of causation of Malnutrition	1. workout the principles involved in causation of malnutrition a. problems of nutrient intake, disorders of mastication, deglutition, digestion, absorption, utilisation, increased demand and loss	1h	Paediatrics	Lecture

Growth, development, nutrition & ageing module – (Year 1 Semester 2)
Module Summary

Department	Lectures (hrs)	PD (hrs)	SGD (hrs)	Student Seminar (hrs)	Staff Seminar (hrs)	CCR (hrs)	Total (hrs)
Paediatrics	13	**3**					16
Gyn. & Obs.	3						3
Psychiatry	2						2
Anatomy	6	6					12
Biochemistry	23	8	4	2	4	5	46
Medicine					2		2
Community Medicine	4				2		6
Physiology	2						2
Radiology	2						2
Total	**55**	**17**	**4**	**2**	**8**	**5**	**91**

Names and the departments of the teachers involved in the teaching programme:

Dept. of Paediatrics
Prof. A.S.B. Wijekoon

Dept. of Gyn. & Obs.
Dr. C. Ratnayake
Dr. K.I.C. Kandauda

Dept. of Biochemistry
Dr. S.B.P. Athauda
Dr. H.K.I. Perera
Dr. P.H.P.Fernando
Dr. J.G.S. Ranasinghe
Dr. W.I.T. Fernando

Dept. of Community Medicine
Dr. K. Pethiyagoda
Dr. J.P. Suraweera

Dept. of Physiology
Dr. S.A. Rajaratne

Dept. of Medicine
Dr. C. Jayasinghe

Dept. of Psychiatry
Dr. T. Rajapakse

Radiology
Dr. S. Rosairo

Examination Format

Module	Credits	Total duration of examination	MCQ	SAQ	OSPE
Growth, development, nutrition & ageing	4	3 Hrs.	1 Hrs.	1 ½ Hrs.	½ Hrs.