Background

There has been increasing attention given to the role of nutrition in brain and cognitive development and functioning. ILSI SEA Region held a Symposium on Nutrition and Cognition - Towards Research and Application for Different Life Stages in October 2010 to review the influence of diet and nutrition on the cognitive development in early life, and on cognitive decline in later life. At the symposium, it was recognized that the assessment of cognitive functioning is central to the study of such topics. In nutrition intervention or assessment studies, frequently there has been a failure to demonstrate a beneficial influence of changes in diet or nutrition status. A possible reason is that studies have failed to acknowledge the time scale over which diet has an impact. For example, in infant and young children, one needs to consider the stages of brain and cognitive development and critical ages when diet is particularly influential for the particular cognitive domains. Diet may also have a slow and progressive influence making it difficult for short-term studies to show an improvement.

The appropriate use of cognitive assessment that can measure subtle changes due to nutritional influences is very crucial. There is no “one size fits all” cognitive battery that can be used in nutrition intervention studies, rather assessment tools need to be tailored to the target groups and research needs. Advances in technology have brought forth neurological assessment tools such as brain imaging, electrophysiology, etc, capable of monitoring brain development process. These tools, coupled with psychological cognitive assessment, have been successfully used to measure the effect of some nutrients on the development of specific cognitive domains. As cognition and nutrition are complex subjects in themselves, let alone combined together, collaboration and sharing of expertise between nutritionists, psychologists and cognition scientists are very important for research in this area.

The Seminar on Nutrition and Early Cognitive Development and Workshop on Assessment of Cognitive Development in Infants and Young Children are organized as a follow-up and recommendation from the previous Symposium on Nutrition and Cognition. It is hoped that the seminar and workshop could provide better understanding on the stages of brain and cognitive development in early life, the potential nutrients that could make an impact at these critical period of development, and how to assess these effects, as well as provide a forum for sharing of experience and expertise between the different groups of scientists in the region, so as to facilitate research and collaboration in this important area.
Seminar Objectives:

- To outline the role of nutrition in brain development and in different domains of cognitive functions of the fetus, infant and young child, at their specific developmental periods
- To share the application of neurocognitive assessment techniques in identifying domain-specific developmental periods in the Southeast Asian setting

Seminar Program:

April 16, 2012

0800 - 0850 hr  Registration
0850 - 0900 hr  Welcome and opening remarks
   Mrs. Boon Yee Yeong
   ILSI Southeast Asia Region, Singapore

Session 1: Nutrition and Early Cognition: Evidence at Different Phases
   Co-chairs: Singapore Institute for Clinical Sciences, Singapore (TBC), and
   Dr. Corazon Barba, University of the Philippines Los Baños, Philippines (TBC)

0900 - 0930 hr  Role of Nutrition in Early Cognitive Development: An Overview
   Dr. Carol Cheatham
   University of North Carolina at Chapel Hill, USA

0930 - 1000 hr  Child Brain Growth: Impact of Maternal Nutrition
   Dr. Robert Gibson (TBC)
   The University of Adelaide, Australia

1000 - 1020 hr  Maternal Nutrition Status during Pregnancy and Later Cognitive
   Outcomes in Children
   Dr. Krishnamachari Srinivasan
   St. John’s Medical College, India

1020 - 1040 hr  Break

1040 - 1110 hr  Postnatal Nutritional Intake and Cognitive Development in Infancy
   Dr. Stewart Forsyth
   University of Dundee, United Kingdom

1110 - 1130 hr  Nutrition Interventions and Cognitive Outcomes in Schoolchildren
   Dr. Tippawan Pongcharoen
   Institute of Nutrition - Mahidol University, Thailand

1130 - 1140 hr  Q&A
Session 2: Measuring Neurocognition: Challenges and Opportunities in Southeast Asia
Co-chairs: Dr. Francisco Rosales, Abbott Nutrition R&D (Pacific Asia), Singapore (TBC), and Prof. Khor Geok Lin, International Medical University, Malaysia (TBC)

1140 - 1200 hr Methods for Assessing Cognitive Development in Young Children (Video-talk)
Dr. Steven Reznick
University of North Carolina at Chapel Hill, USA

1200 - 1230 hr Tailoring Neurocognitive Assessment Methods for Singaporean Children
Dr. Anne Rifkin-Graboi
Singapore Institute for Clinical Sciences, Singapore

1230 - 1300 hr Cognitive and Language Development in Multilingual Children
Dr. Leher Singh
National University of Singapore, Singapore

1300 - 1310 hr Q&A

1310 hr Closing and Lunch

Workshop Objectives:

- To share and discuss the application of psychological and neurological cognitive assessments for measuring the impact of nutrition on cognitive development in infants and young children
- To provide a platform for sharing of experiences and addressing challenges faced among psychologists, as well as nutrition and cognition researchers currently working or interested to work in the area of nutrition and cognition in infants and young children in the Southeast Asia region

Workshop Program:

Session 1: Methodologies for assessing cognitive development in infants and young children
Half-day afternoon session (April 16), half-day morning session (April 17)

Proposed coverage:

- Global test of cognitive development versus assessment of specific cognitive functions
- Global tests of cognitive development: what are they, when to use, and how to use
- Assessment of specific cognitive functions - memory, attention, language, perception, executive function: what are they, when to use, and how to use
• Neurological assessment of brain development - brain imaging, electrophysiology, etc: what are they, when to use, how to use and the psychological correlation

Proposed discussion outline:
• Guidance on factors to consider when selecting or designing cognitive assessments appropriate and relevant for the study population, in order to test the study hypothesis

Session 2: Research on the role of nutrition in cognitive development in infants and young children

*Half-day afternoon session (April 17)*

Proposed coverage:
• Research considerations in the area of nutrition and cognition for infant and young children
• Study design considerations: study aim, hypothesis, target population, method selection, etc
• Administration of cognitive assessments and result interpretation
• Case studies - Researches on the role of specific nutrients on brain growth and cognitive development: study design and assessment methodologies
• Review of nutrition and cognition researches in the region - discussion on what has been done, what can be done, and the priority areas and research gaps
• Case examples of appropriate nutrition and cognition researches in the region - discussion on results of several studies, the challenges faced and learning points

Proposed discussion outline:
• Factors to consider when designing and conducting research in the area of nutrition and cognition for infant and young children: study design, specific nutrients of interest, relevant cognitive domain-brain region, critical period of development to be targeted, appropriate neurological and psychological cognitive assessment, etc