

**CENTRE OF SOCIAL MEDICINE AND COMMUNITY HEALTH, SSS, JNU**  
**2017**

**Nutrition and Maternal and Child Health (SM-613)**

<b>Course No.</b>	<b>SM 613</b>
<b>Title of the Course</b>	<b>Nutrition and Maternal and Child Health</b>
<b>Credits</b>	<b>3 (Three)</b>
<b>Course In-charge</b>	<b>Dr. Vikas Bajpai</b>
<b>Instruction Method</b>	<b>Lectures, Group Discussions and Presentations</b>
<b>Evaluation Methods</b>	<b>2 Credits – Written Assignments and Presentations</b> <b>1 Credit - Participation in class discussions</b> <b>and End Semester Viva</b>

**Course Outline**

The objective of this course is to expose the students to various dimensions of the study of nutritional status and its linkages with health from a public health perspective. It attempts to build a critical understanding of (i) the epidemiology of measurement of nutritional status of populations, (ii) the methods of nutrition science that set the officially accepted requirements for various nutrients, and (iii) policy approaches to the problem of malnutrition in its various forms. It introduces the various determinants influencing access to food and adequate nutrition so as to contextualise the main issues dealt with but does not deal with them in detail. The linkages of nutrition with health are most clearly documented in the case of maternal and child health. In this course, all the dimensions of nutrition are studied with a focus on problems of maternal and child health.

## **Structure of the Course**

### ***I. The Epidemiology of Nutrition***

#### [A]. Overview

- Major nutritional problems
- Policy approaches, programmes and debates
- The contribution of nutrition science
- Monitoring nutritional status of populations

#### [B]. Epidemiological Issues Relevant to Nutrition Science

- Epidemiological Perspective on Nutrients
- Protein Energy malnutrition
- Iron Deficiency Anaemia
- Vitamin-A Deficiency

### ***II. Links between Nutrition and Health***

#### [A]. Overview

- Does nutrition affect health or *vice versa*?
- The complex interaction
- Acute and chronic malnutrition
  - In children / adult males / adult females

#### [B]. Evidence on the Impact of Nutritional Status on:

- Physical Growth and Development
- Infectious Disease
- Non-communicable Diseases

### ***III. Analysing Current Trends in Dominant Approaches to the Nutrition Problem***

- Research and Policy
- International
- National

## **Essential Readings**

### **I. The Epidemiology of Nutrition**

#### **[A]. Overview**

1. Arnold D. (1994), "The 'discovery' of malnutrition and diet in colonial India", *The Indian Economic and Social History Review*, 31, 1 (1994), Sage, New Delhi. (SM-613/F-1)
2. PGK Panikkar (1980): Inter regional variation in Calorie intake. CDS, Trivandrum. (SM-613/F-2)
3. Ramachandran P (2008). Dietary Intake, Physical Activity, and Nutritional Status of Indian Adults. *NFI Bulletin*, 29(3) pp, 4-8. (SM-613/F-3)
4. Gopalan C (2007): From 'Farms to Pharmacies': Beginnings of a Sad Decline. *Economic and Political Weekly*, September 1, 2007, pp. 3535-3536. (SM-613/F-4)
5. Emile A. Frison, Ifeyironwa Francisca Smith, Timothy Johns, Jeremy Cherfas and Pablo B. Eyzaguirre (2004) "Agricultural biodiversity, nutrition and health: making a difference to hunger and nutrition in the developing world", The International Plant Genetic Resources Institute (IPGRI) & Convention on Biological Diversity (CBD). (SM-613/F-5)
6. Baroni L., Cenci L, Tettamanti M. and Berati M. (2006): "Evaluating the environmental impact of various dietary patterns combined with different food production systems" *European Journal of Clinical Nutrition*, pp: 1-8. (SM-613/F-6)

#### **[B]. Epidemiological Issues Relevant to Nutrition Science**

##### **Measurement of Malnutrition**

7. Sachdev H P S (1994): *Assessment of Nutritional Status Nutrition in Children-Developing Country Concerns*, New Delhi, Maulana Azad Medical College, pp. 171-196. (SM-613/F-7)
8. Bhandari N and Mercedes OD (2007): The Current Status of International Standards for Child Growth. (SM-613/F-8)

9. Subramanyam M A, Kawachi I, Berkman L F, Subramanian S V (2010). Socioeconomic Inequalities in Childhood Undernutrition in India: Analyzing Trends between 1992 and 2005. *PLoS ONE*, 5(6): e11392. (SM-613/F-9)
10. Subramanian S V, Leland K A, Davey Smith G (2010). Parental BMI and Childhood Undernutrition in India: An Assessment of Intrauterine Influence. *Pediatrics*, 126(3): e663. (SM-613/F-10)

#### Epidemiological Perspective on Nutrients

11. Achaya, KT (1983): RDAs, Their Limitation and Application, *Economic and Political Weekly*, Vol. 18. No. 15, April 9 pp. 587-590. (SM-613/F-11)
12. Sukhatme, P.V. (1972): India and the Protein Problem, *Ecology of Food and Nutrition*, Vol. 1, pp. 268. (SM-602/F-16)

#### Protein Energy Malnutrition

13. Recommendations of the National Workshop on 'Development of Guidelines for Effective Home Based Care and Treatment of Children Suffering from Severe Acute Malnutrition'. *Indian Pediatrics*, Vol. 43, February 17, 2006 pp. 131-139. (SM-613/F-12)
14. Consensus Statement of the Indian Academy of Pediatrics on Integrated Management of Severe Acute Malnutrition. *Indian Pediatrics*, Vol. 50, April 16, 2013, pp. 399-404. (SM-613/F-13)
15. Government of India (2011). Operational Guidelines on Facility Based Management of Children with Severe Acute Malnutrition. National Rural health Mission, Ministry of Health and Family Welfare, New Delhi. (SM-613/F-14)
16. WHO and UNICEF (2012). WHO child growth standards and the identification of severe acute malnutrition in infants and children. A Joint Statement by the World Health Organization and the United Nations Children's Fund. (SM-613/F-15)
17. Dasgupta R, Sinha D, Jain SK and Prasad V (2013). Screening for SAM in the Community: Is MUAC a 'Simple Tool'? *Indian Pediatrics*, Vol. 50, January 16, pp. 154-5. (SM-613/F-16)

18. Dasgupta R, Ahuja S and Yumnam V (2014). Can Nutrition Rehabilitation Centers Address Severe Malnutrition in India? *Indian Pediatrics*, Vol. 51, February 15, pp. 1-5. (SM-613/F-17)
19. Dasgupta R, Sinha D and Yumnam V (2014). Programmatic Response to Malnutrition in India: Room for More Than One Elephant? *Indian Pediatrics*, Vol. 51, November 5, pp. 863-8. (SM-613/F-18)

#### Iron Deficiency Anaemia

20. Sood, S.K. et al (1978): WHO Collaborative Studies of Nutritional Anaemias in India, *Quart. J. Med.*, 44, 241-258. (SM-613/F-19)
21. Rajaratnam, Jolly et al (2000): Maternal Anaemia: A Persistent Problem in Rural Tamil Nadu, *National Medical Journal of India*, Vol. 13, No. 5, pp. 242-245. (SM-613/F-20)

#### Vitamin-A Deficiency

22. Swaminathan, M. C. et al (1978): Field Prophylactic Trial with a single annual full massive dose of vitamin A, *American Journal of Clinical Nutrition*, 23 (1,1191). (SM-613/F-21)
23. Beaton, G.H. et al (1993): Effectiveness of Vitamin A Supplementation in the Control of Young Child Morbidity and Mortality in Developing Countries, *SCN News* No. 9, mid 1993, pp. 17-23. (SM-613/F-22)
24. Vajayaraghavan K (2006). Randomized study of effect of different doses of vitamin A on childhood morbidity & mortality - claiming benefit when there is none! *Indian Journal of Medical Research*, 123, 583-586. (SM-613/F-23)

## **II. Links between Nutrition and Health**

### **[A]. Overview**

25. Office of the Registrar General (2009). Report on Causes of Death in India, 2001-2003. New Delhi, Ministry of Home Affairs. (Prof. Ramila Bisht)/ (Soft Copy)
26. Zurbrigg, S. (1994): The Hungry Rarely Write History and Historians are Rarely Hungry-Reclaiming Hunger in the History of Health, Paper presented at the Centre for Health Studies, York University, Canada. (SM-613/F-24)

## **[B]. Evidence on the Impact of Nutritional Status**

### Links between Nutrition and Physical Growth and Development

27. Satyanarayana, K. (1979): Nutrition and Work Output, *Indian Journal of Nutrition Dietetics*, 16, pp. 170. (SM-613/F-25)
28. Gopalan C. & Naidu N. (1972): Nutrition and Fertility, *Lancet*, November 18. (SM-613/F-26)
29. Stein CE et al (1996): Fetal Growth and Coronary Heart Disease in South India. *Lancet*, Vol. 348, pp. 1269-1272. (SM-613/F-29)

### Links between Nutrition and Infection

30. Taylor, C.E., et al (1979): The Narangwal Experiment on Interaction of Nutrition and Infection, Project Design and Effects upon Growth, *Indian Journal Med. Res.* Vol. 68, Supplement pp. 1-20. (SM-613/F-27)
31. Kielman, et al (1978): The Narangwal Experiment on Interactions of Nutrition and Infection: Morbidity and Mortality Effects, *Indian Journal of Med. Res.* Vol. 68, Supplement December, pp. 21-41. (SM-613/F-27)
32. Lincoln, C. Chen et al (1981): "A Perspective Study of the Risk of Diarrheal Diseases According to the Nutritional Status of Children, *American Journal of Epidemiology*, 14, 2, 284. (SM-613/F-28)

## **III. Analysing Current Policy Trends**

33. Government of India (1994): National Nutrition Policy. New Delhi, Ministry of Health and Family Welfare. (SM-613/F-30)
34. Qadeer I and Priyadarshi A P (2005): Nutrition Policy – Shifts and Logical Fallacies. *Economic and Political Weekly*. January 29, 2005, Vol. XL, No. 5, pp. 358-364. (SM-613/F-31)
35. Mohmand S K (2012). Policies Without Politics: Analysing Nutrition Governance in India. India Country Report, IIDS. (SM-613/F-32)
36. Planning Commission (2010). Addressing India's Nutrition Challenges. Report of the Multistakeholder Retreat. (SM-613/F-33)

## **Suggested Readings**

### **Section I**

37. Shah D, Gupta P and Ghai OP (2007). Nutrition and Health in Gupta P and Ghai OP (eds.) Textbook of Preventive and Social Medicine, 3<sup>rd</sup> Edition, New Delhi, CBS Publishers and Distributors, pp. 100-155. (SM-613/F-34)
38. Krishnaji N and Krishnan TN (2000): 'Introduction', in 'Public Support for Food Security', Sage, New Delhi. (SM-613/F-35)
39. NNMB (2002). Report on Diet and Nutritional Status of Adolescents, NIN, ICMR. (Book Shelf/Key No-59)
40. [www.nfhsindia.org/nfhs3](http://www.nfhsindia.org/nfhs3)
41. Planning Commission. Tenth Five Year Plan (2002-07), Vol. II, Chapters 3.3-3.4, pp. 315-379.
42. ICMR (1989): Evaluation of the National Nutrition Anaemia Prophylaxis Programme, New Delhi, ICMR. (Book Shelf/Key No-59)
43. ICMR (1990): Report on Iron Deficiency Anaemias, New Delhi, ICMR. (Book Shelf/Key No-59)
44. Banerji D. (1988): Knowledge of Human Nutrition and the People of the World, *World Review of Nutrition and Dietetics*, Basel, Karger. (SM-613/F-36)
45. Sen A. (1994), "Population and Reasoned Agency: Food, Fertility, and Economic Development", in K.L. Kiesling and H. Landberg (Eds), *Population, Economic Development and Environment*, OUP, Oxford, 1994. (SM-613/F-37)
46. Schuftan C. (1998): 'Malnutrition and Income: Are We Being Misled?', *Ecology of Food and Nutrition*, Vol. 37, pp. 101-121. (SM-613/F-38)
47. Gopalan, C. (1973): Effect of Calorie Supplementation on the Growth of Under-nourished Children, *American Journal of Clinical Nutrition*, Vol. 26, pp. 253. (SM-613/F-39)
48. WHO (1978): Nutritional Anaemias - A Major Controllable Problem, *WHO Bulletin*, 56 (5), 659-75. (SM-613/F-40)
49. Pattwardhan, V.N. (1969): Hypovitaminosis A and Epidemiology of Xerophthalmia, *American Journal of Clinical Nutrition*, 22, 1107. (SM-613/F-41)

50. Bang, A. (1991): Vitamin A and Childhood Mortality- The New magic Pill? *Economic and Political Weekly*, Sept. 21, pp. 2187-89. (SM-613/F-42)
51. NFI (1996): Use of Carotene Rich Foods to Combat Vitamin A Deficiency in India - A Multicentric Study, New Delhi, NFI. (SM-613/F-43)
52. WHO (1975): Control of Nutritional Anaemias with Special Reference to Iron Deficiency, Technical Report Series No. 280, Geneva, WHO. (SM-613/F-44)
53. NFI (1996): 'The Uttar Pradesh-Haryana Study on Impact of Rural Development Programmes on Health and Nutrition of Rural Communities', *Profiles of Under-nutrition and Underdevelopment*. NFI, New Delhi, pp. 1-36. (SM-613/F-45)
54. Qadeer, I. (1978): India's Feeding Programme, *Social Science and Medicine*, Vol. 12, No. 3. (SM-601/F-50)
55. George, Susan (1979): *How the Other Half Dies: The Real Reasons for World Hunger*, Penguin, Harmondsworth.  
(SM-603/607/608)& (Book Shelf 14, Key No-59, XB-252/CHG-1131)
56. Gopalan C. (1992): Food Production and Consumption Trends in Nutrition in Developmental Transition in South-East Asia-WHO, SEARO, N.D. pp. 7-8. (SM-613/F-46)
57. Gupta P (2008). Do We Need Universal Neonatal Vitamin Supplementation? Editorial in *Indian Pediatrics*, Vol. 45, June 17, pp. 439-441. . (SM-613/F-47)

## **Section II**

58. Office of the Registrar General (1996): Survey of Causes of Death-1995, New Delhi, Ministry of Home Affairs.
59. Waterlow, J.C. (1974): Some Aspects of Childhood Malnutrition as a Public Health Problem, *British Medical Journal*, October, pp. 88. . (SM-613/F-48)
60. Soman, Krishna (1994): Trends in Maternal Mortality, *Economic and Political Weekly*, Vol. 29, No. 44, pp. 2859-60. (SM-626/F-26)
61. Gopalan C. (1985): Infant Nutrition in West Bengal-Insights from Recent Studies, NFI Bulletin, Vol. 7. (SM-613/F-49)
62. Gopalan C. (1972): Stunting - Significance and Implications for Public Health Policy pp. 49-68, New Delhi, NFI. (SM-613/F-50)

- 63.Chandra, R.K. (1979): Nutritional Deficiency and Susceptibility to Infection" WHO Bull 57:Vol. 2, pp: 167-177. (Soft Copy)/(SM-613/F-83)
- 64.Stock, V.B. and Smytla, P.M. (1963): Does under-nutrition during infancy inhibit brain growth and subsequent intellectual development, *Archive of Diseases of Childhood*, 28, 546-53. (Soft Copy)/ (SM-613/F-84)
- 65.Pek Hien Liang, M.S. et al (1967): "Evaluation of mental development in relation to early Malnutrition, *American Journal of Clin Nut.* 20; 290; 67. (Soft Copy)/(SM-613/F-85)
- 66.The Impact of Malnutrition on Intelligence" *Ind. Paed.* 17 (2) 100, 1980.
- 67.Agarwal K.R. (1993): Influence of Nutritional Deprivation on Intelligence, cognition, fine motor coordination and electro physiological pattern in *Recent Trends in Nutrition* edited by C. Gopalan, OUP, New Delhi, pp. 208-220. (SM-613/F-51)
- 68.Gordon, J.E. et al (1962): "Weanling Diarrhoea" *American. J. Med.*, March, pp. 345. (SM-613/F-52)
- 69.Reddy V (1993): Interactions of Malnutrition, Immunity and Infection, *Recent Trends in Nutrition* (Ed. Gopalan, C.) OUP, New Delhi, pp. 106-117. (SM-613/F-53)

### **Section III**

- 70.World Bank (1993): World Development Report 1993-Investing in Health. New York, OUP, pp. 75-82. (SM-613/F-54)
- 71.Govt. of India and UN World Food Programme (2000): *Proceedings of the National Conference on Opportunities and Challenges for Preventing Micronutrient Malnutrition through ICDS*, pp. 7-13, 59-62, 93-98. (SM-613/F-55)
- 72.Priya, R. (1997): Health and Nutrition-People, Policies and Politics, *Lokayan Bulletin*, Vol. 14, No.1, pp. 63-83. (SM-613/F-56)
- 73.Harriss, B. (1991): *Child Nutrition and Poverty in South India*, Concept Pub., New Delhi. (DDC. Call. No-363.8095482 H2488 Ch/ Acc. No-210)
- 74.Edmundson, W.C., Sukhatme, P.V. and Edmundson S. (1992): *Diet, Disease and Development*. Macmillan, New Delhi. (CHG-477)

- 75.Schuftan C. (1994): 'The Cutting Edge of Conventional Thinking', *Ecology of Food and Nutrition*, Vol. 32, pp. 51-55. (SM-613/F-57)
- 76.George, Susan (1996): *A Fate Worse Than Debt*, PIRG, New Delhi. (Prof. Ritu Priya)
77. Haddad (2009): The special issue of the IDS Bulletin "Lifting the Curse: Overcoming Persistent Undernutrition in India", Vol. 40, Issue No. 4, Institute of Development Studies at the University of Sussex Brighton, UK. (Soft Copy)/ (SM-613/F-86)
- 78.Right to Food Campaign- <http://www.righttofoodindia.org>
- 79.Hafner Tamara and Shiffman Jeremy (2013): "The emergence of global attention to health systems strengthening", *Health Policy and Planning*, 28, pp: 41-50. (SM-613/F-58)(Soft Copy)