HPS 560 INTERNATIONAL NUTRITION
Spring 2019

Course Instructor: Douglas L. Taren, PhD
Halimatou Alaofè, PhD

Location: Drachman Hall A118

Course Time: Wednesday
9:00am – 11:50am

Office Hours: By appointment
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taren@email.arizona.edu halaofe@email.arizona.edu
Phone: 626-8375 Phone: 626-5614

Course Description

This course will focus on current nutrition knowledge affecting health in underserved populations and in
low-income countries. The impact of various nutrient inadequacies at different stages of the life cycle and
their functional outcomes in terms of morbidity, psychological well-being, reproduction and growth will
be highlighted. Students will become acquainted with the epidemiology of nutritional disease in the
world. Programs and resources available to combat malnutrition will be evaluated. The role of world food
production, food availability and supply in relation to nutrition and health will be discussed in the context
of socioeconomic development and current political/economic policies and realities.

Course Prerequisites

Graduate student in a health-related field including biological or social sciences.

Objectives of the Course

At the end of the course, students will be able to:

1. Analyze the causes and effects of the major nutritional deficiencies that are present in the world.
2. Analyze the impact of biological and sociological factors that modify nutrition - infection
   interactions.
3. Describe the nutrition transition and factors affecting it.
4. The role of women in nutrition and how nutrition affects women
5. Determine the effect of governmental policies on nutritional status in low-income countries.
6. Prioritize factors that need to be considered when developing public health programs to combat
   malnutrition in low-income countries.
MPH Public Health Competencies Addressed by This Course

- Select methods to evaluate public health programs
- Interpret results of data analysis for public health research, policy and practice
- Apply monitoring and evaluation techniques to global health programs, policies, and outcomes
- Analyze the strengths and weaknesses of interventions that address the major global health issues for women and children.
- Describe how nutrition sensitive and nutrition specific nutrition interventions improve global nutrition.
- Describe how nutrition sensitive and nutrition specific nutrition interventions improve global nutrition.

How to Succeed in this Class

1. Read the assignments.
2. Class participation is essential. Be prepared for class discussions. You will need to support your opinions, programs, and statements with facts from the readings and lectures.
3. You are welcome to email the instructor regarding class issues. Place “Student in CPH 560” in the subject line of your email. This will ensure that I read your email in a timely fashion.
4. Do not leave class early and attend every class.

Course Requirements and Evaluations

<table>
<thead>
<tr>
<th>Graduate Students</th>
<th>Points</th>
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<tbody>
<tr>
<td>Evaluation</td>
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<tr>
<td>Term Paper</td>
<td>200</td>
</tr>
<tr>
<td>Paper Presentations</td>
<td>50</td>
</tr>
<tr>
<td>Mid Term</td>
<td>100</td>
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<tr>
<td>Final Exam</td>
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<td>80-89%</td>
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<td>70-79%</td>
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<td>60-69%</td>
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<td>&lt; 60%</td>
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Term Paper

You will work in teams of two to write what a systematic review on a strategy for improving the nutritional status of a population within low and middle-income countries following PRISMA Guidelines. Each paper will be 15-20 double spaced pages with a 12 pt Arial font without references, tables or charts.

The paper needs to demonstrate how a nutrition strategy can change the nutritional status of a community, nation, region or world. It needs to use empirical data to support what has worked and what has not worked. Your paper should include a variety of data to develop final process and outcome statements along with recommendations regarding the strategy. The data may come from experimental studies, demographic data, ethnographic studies, epidemiological studies and program evaluations. You will need to provide specific examples across the various nutrition topics that are part of this course. Your outcomes for determining success need to be nutritional outcomes (anthropometry and indicators of nutritional status). You need to conclude with making statements based on the evidence regarding what works and what does not work.

You are expected to meet with both professors throughout the semester. The minimum should be at least twice for 30 minutes to go over the paper.

The topics for the papers will be on the following strategies and how they are used to improve nutritional status of a community, nation or region:

Delivering Nutritional Programs in Low and Middle Income Countries

1. Nutrient Supplementation Programs
2. Fortification Programs
3. Food Based Interventions
4. Primary Care Programs
5. Nutrition Education Programs
6. Microfinance Programs
7. Community Development Programs
8. Economic Restructure
9. Agricultural Policies
10. Water Programs
11. Sanitation Programs
12. Local Food Production
13. Humanitarian Assistance in Crises Situations
14. Plant Production
15. Medical Interventions
16. School Based Programs
You must include the following sections in your papers using the headings that are provided:

1. Introduction
2. Methods
   a. Search Strategy
   b. Inclusion Criteria
   c. Exclusion Criteria
   d. Data Extraction
   e. Quality Assessment
   f. Search Summary
3. Results
4. Conclusions
5. Recommendations
6. References
7. Tables and Figures

Your reference format must be in the format for the journal *Nutrition Reviews*. You can get the complete information on this format at the following site: [www.academic.oup.com/nutritionreviews](http://www.academic.oup.com/nutritionreviews). Place your graphs and tables after your references on separate pages. Number the pages and lines for each page. Place in the header, the last names of the authors and the title for the paper as printed above. Your own title can be longer and catchier.

You will sign up for the topics or a different topic with approval of the professor. There will only be one paper per topic. There are several deadlines to meet this assignment and feedback will be provided after each deadline. The deadlines are the following days before we meet for class:

Jan 23: Report on computer search regarding your proposed topic
Jan 30: Submit search criteria, inclusion and exclusion criteria for your search
Feb 13: Complete search and discard duplicates
Feb 27: Review papers and determine which papers not to review
Mar 13: Finalize papers to be used
Mar 20: Complete Summary Tables
Apr 03: Draft Paper
Apr 24: Final paper

Once all the papers are written, you will be asked to sign a release to be an author for a group publication. You will then remain in contact with the professors on the outcome of the publication.

**Paper Presentations**

Present the paper that you wrote to your classmates and professors. This will be a 15-minute presentation and also allow for 5-10 minutes for questions and discussion.
Helpful Websites:

http://datatopics.worldbank.org/hnp/
http://www.worldhunger.org/articles/Learn/world%20hunger%20facts%202002.htm
http://www.unicef.org/sowc2013/
http://www.unicef.org/nutritioncluster/
http://www.usaid.gov
http://www.who.int/nutrition/en/
www.feedthefuture.gov/
https://www.securenutritionplatform.org/Pages/Home.aspx
http://blog.usaid.gov/
http://agrilinks.org/ftflearningagenda
http://www.sphereproject.org/blog/game-reportreaching-resilience
http://www.fao.org
http://www.wfp.org
http://www.bioversityinternational.org
http://www.cgiar.org
http://gainhealth.org
http://www.iUNS.org

http://www.unhcr/nutrition
http://www.unscn.org
http://scalingupnutrition.org
http://thousanddays.org
http://www.un.org/ millenniumgoals
http://unjobs.com
http://developmentaid.org
http://www.jobspublichealth.org
http://un-foodsecurity.org
http://www.sightandlife.org
http://bread.org
http://www.cdc.gov
http://www.savethechildren.org
http://www.care-international.org
http://www.worldvision.org
http://ajws.org
http://charitynavigator.org
http://counterpart.org
http://fantaproject.org
http://www.urc-chs.com
http://www.jsi.com
### GRADING RUBRIC FOR PAPER:

<table>
<thead>
<tr>
<th>Domain</th>
<th>Met Expectations</th>
<th>Partially Met Expectations</th>
<th>Did not Meet Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarity</td>
<td>Provides appropriate examples and information that support the answer. There was a consistent flow of information. Written clearly, correct grammar, spelling, paragraph structure.</td>
<td>Provided some examples that support the answer. However, examples were not consistent and at some were not ideal or appropriate. The answer was written clearly, but had excessive problems with grammar, spelling, paragraph structure.</td>
<td>The answer was not clear. It did not make sense. There were no supportive examples or information. The answer was poorly organized and unorganized. Multiple problems with grammar, spelling and/or paragraph structure and overall structure for the answer.</td>
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<td>Clarity Evaluation</td>
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<tr>
<td>Precision</td>
<td>Provided multiple data, facts, models, frameworks, and theories that appropriately supported the answers.</td>
<td>Appropriate data, facts, models, frameworks and/or theories were present but not complete and some significant information was missing.</td>
<td>There were no data, facts, models, frameworks or theories presented to support the answer. The response was vague.</td>
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<tr>
<td>Precision Evaluation</td>
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<tr>
<td>Breadth</td>
<td>The response illustrated the complexity of the issue and the answer presented multiple and appropriate points that needed to be addressed to provide a comprehensive response to the question. The response identified what factors make the answer difficult to provide.</td>
<td>The response took a minimal approach to answering the question. It was too limited in the number of points that were addressed to provide a comprehensive answer. It only partially identified the main points that needed to be addressed.</td>
<td>The answer used on a single piece of evidence and one point of view with answering the question. It id not show the complexity of the issue and took a simplistic approach to answering the question.</td>
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<tr>
<td>Breadth Evaluation</td>
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<tr>
<td>Relevance</td>
<td>The answer related to the question and provided information that helped solve the issue at hand.</td>
<td>The answer had to many tangents that did not relate to the question.</td>
<td>The answer did not address the question. It brought up information that was not needed.</td>
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<td>Relevance Evaluation</td>
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<tr>
<td>Logic</td>
<td>The overall answer makes sense together. The answer appropriately linked information from one section to the next. The answer fits together from start to finish. The conclusions followed the evidence that was presented.</td>
<td>In general the answer linked the appropriate information together but there were one or more disconnects. The conclusion did use the evidence that was presented even if there was a lack of appropriate evidence.</td>
<td>The answer jumped from topic to topic in no logical order. The conclusion did was not based on the information presented.</td>
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<td>Logic Evaluation</td>
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<td>Logic Evaluation</td>
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<td><strong>Significance</strong></td>
<td>The answer identified the most important problem to consider. The answer focused on one or more central idea. The answer was able to provide an order of importance for the issues when needed.</td>
<td>The answer identified the most important factor(s) but lacked other significant factors for an appropriate response. It was not clear what factors were the most important.</td>
<td>The answer did not have a central idea. It did not provide a response that identified the significant factors required and lacked information that would make a difference.</td>
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<td>Significance Evaluation</td>
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<td><strong>Fairness</strong></td>
<td>The answer approached the issue objectively. It identified positives/negatives, strengths/weaknesses, or pros/cons to the issue when appropriate. It did not completely dismiss potentially opposing or alternative views and responses.</td>
<td>The answer identified the most important pros/cons to the answer. It did not address why an opposing view was not appropriate.</td>
<td>The answer only considered one side of an answer. It used inappropriate terms that indicated a strong and unsupported bias.</td>
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<tr>
<td>Fairness Evaluation</td>
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Schedule of Class Topics

Jan 09: Introduction, Issues Associated with Nutrition in Low-income countries (Dr. Alaofè)

Jan 16: Spectrum of Malnutrition and Nutritional Requirements (Dr. Taren)

Jan 23: Food Security: Measurements and Implications for Policy Development (Dr. Taren)

Jan 30: Child Growth and Development (Dr. Taren)

Feb 06: Vitamin A Deficiency and Child Health, Survival, and Vision (Dr. Taren)
Iodine, Iodine Deficiency, and Iodine Deficiency Disorders (Dr. Alaofè)

Feb 13: Iron Deficiency and Anemia: Causes, Consequences, and Solutions (Dr. Alaofè)

Feb 20: Zinc, Vitamin D, Essential Fatty Acids (Dr. Alaofè)

Feb 27: **Mid Term Exam**
Water, Sanitation, Infection and Nutritional Status (Guest lecturer: Dr. Kilungo)

Mar 06: **Spring break**

Mar 13: Breastfeeding and Infant Feeding (Dr. Taren)

Mar 20: Reproductive Health and Nutrition and Birth Outcomes (Dr. Alaofè)

Mar 27: Nutrition and HIV/AIDS (Dr. Alaofè)

Apr 03: Urbanization and Nutrition Transition (Dr. Alaofè)

Apr 10: Nutrition-specific and nutrition sensitive interventions (Dr. Alaofè)

Apr 17: Economics of Interventions, Growing Capacity and Program Evaluation (Dr. Taren)

Apr 24: Class Paper Presentations

May 01: Class Paper Presentations

May 9: **Final Exam (10:30 am – 12.30 pm)**
Communications: You are responsible for reading emails sent to your UA account from your instructor and the announcements that are placed on the course web site. Information about readings, news events, your grades, assignments and other course related topics will be communicated to you with these electronic methods. The official policy can be found at: https://www.registrar.arizona.edu/personal-information/official-student-email-policy-use-email-official-correspondence-students

University Course Policies: (please see the following URL):
https://academicaffairs.arizona.edu/syllabus-policies

Plagiarism: What counts as plagiarism?
• Copying and pasting information from a web site or another source, and then revising it so that it sounds like your original idea.
• Doing an assignment/essay/take home test with a friend and then handing in separate assignments that contain the same ideas, language, phrases, etc.
• Quoting a passage without quotation marks or citations, so that it looks like your own.
• Paraphrasing a passage without citing it, so that it looks like your own.
• Hiring another person to do your work for you, or purchasing a paper through any of the on- or off-line sources.

Please Note: URLs change frequently. You will need to test the URLs in the syllabus you produce each semester, to ensure the links are correct.
READING ASSIGNMENTS


Jan 09: Introduction, Issues Associated with Nutrition in Low-income countries

Learning Objectives
1. Understand the perspective that will be presented in this class regarding international nutrition is a combination of biological and social sciences.
2. Be able to identify the primary differences for the nutritional problems that exist between developed and low-income countries.
3. Know the assignments that will be given during the semester.
4. Know the grading system that will be used for this class.
5. Identify the major nutritional issues that are currently present in the world.

Required Reading

Textbook: Chapter 1 Nutrition and Development: A Historical Perspective.

Executive Summary and the Introduction (pages 1-27) of the 2018 *Global Nutrition Report: Shining a light to spur action on nutrition*. Bristol, UK: Development Initiatives

Optional Readings


Jan 16: Spectrum of Malnutrition and Nutritional Requirements

Learning Objectives
1. Explain how stages of nutritional status affect estimates of malnutrition.
2. Compare regional differences for the indicators of malnutrition.
3. Understand how nutrient intake recommendations have been established and how they are applied.
4. Understand energy density and nutrient density, how they can be increased and for which subgroups of the population they are most important.
5. Be able to explain the different level of risk associated with an intake below the estimated average requirement (EAR) and at or above the tolerable upper intake level (UL).
6. Be able to distinguish different strategies for improving nutrient intake and understand their roles, limitations, and complementarity.
Required Reading

Textbook: Chapter 5 The Spectrum of Malnutrition
Chapter 8 Nutritional Needs and Approaches to Meeting Them

Jan 23: Food Security: Measurements and Implications for Policy Development

Learning Objectives
1. Explain the difference between issues of food security and nutrition surveillance activities.
2. Compare how various intrahousehold factors affect food security.
3. Critic cultural and economic strategies for developing programs to decrease food insecurity within poor households.

Required Readings

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Jan 30: Child Growth and Obesity

Learning Objectives
1. Describe the epidemiology of childhood malnutrition.
2. Explain the uses and limitations of growth charts.
3. Discriminate between the social and biological effects of malnutrition on child development.
4. Describe appropriate prevention and treatment programs for malnourished children under various social and economic situations.

Required Reading

Textbook: Chapter 6 Child Growth and Development

Optional Readings


Feb 06: Vitamin A Deficiency and Child Health, Survival, and Vision Iodine, Iodine Deficiency, and Iodine Deficiency Disorders

Learning Objectives
1. Describe the two major functions of vitamin A that underscore the nutrient’s public health importance.
2. Identify dietary sources of preformed vitamin A and provitamin A carotenoids.
3. Describe how vitamin A is absorbed and metabolized.
4. Describe the consequences of vitamin A deficiency for ocular health and survival.
5. Describe the epidemiology and the clinico-pathologic features of vitamin A deficiency in childhood and during the reproductive years.
6. Evaluate the current approaches for the prevention of vitamin A deficiency.
7. Describe the epidemiology of iodine nutrition on the global and regional level.
8. Compare the methods that can be used to determine the prevalence of iodine deficiency and how they may be best utilized during different stages of the life cycle.
9. Justify a strategy that can be used to prevent and treat childhood iodine deficiency in low-income countries.
10. Explain three strategies that can be used to prevent and treat iodine deficiency during pregnancy.

Required Reading

Textbook: Chapter 9 Vitamin A Deficiency
Chapter 12 Iodine

Optional Reading


Feb 13: Iron Deficiency and Anemia: Causes, Consequences, and Solutions

Learning Objectives
1. Explain the regulation of iron metabolism
2. Define iron deficiency and explain at least three methods of assessment
3. Describe the epidemiology and main causes of iron deficiency in developing countries
4. Explain and substantiate the functional outcomes of iron deficiency
5. Explain key strategies to combat iron deficiency

Required Reading
Textbook: Chapter 10 Iron

Optional Reading

Feb 21 Zinc, Vitamin D, Essential Fatty Acids

Learning Objectives: Zinc
1. Identify the causes of zinc deficiency.
2. Describe the health consequences of zinc deficiency.
3. Understand the assessment of zinc deficiency.
4. Analyze intervention strategies to prevent zinc deficiency.

Learning Objectives: Vitamin D
1. Explain why rickets remains a major cause of infant and young child morbidity.
2. Define what the determinants of rickets are.
3. Evaluate why recommendations for vitamin D intake over the lifespan are unique compared with other nutrients.
4. Describe the clinical and subclinical effects of vitamin D deficiency.

Learning Objectives: Essential Fatty Acids
1. Review the role that essential fatty acids should have as part of nutrition interventions for low- and middle-income countries
2. Identify the dietary sources for essential fatty acids and their conversion to other n-3 and n-6 fatty acids
3. Describe how essential fatty acids are associated with birth outcomes
4. Explain the mechanisms for how essential fatty acids are associated with chronic diseases
5. Describe how dietary requirements for essential fatty acids can be determined.
Required Reading

Textbook: Chapter 11 Zinc Deficiency  
Chapter 13 Nutritional Rickets and Vitamin D Deficiency  
Chapter 14 Essential Fatty Acides

Feb 27 Water, Sanitation, Infection and Nutritional Status

Learning Objectives
1. Define WASH  
2. Describe the links between WASH and undernutrition  
3. Identify recent global WASH and nutrition commitments that provide an important platform and the momentum to drive effective action.  
4. Describes nutrition-sensitive WASH interventions that can be integrated into nutrition programs.  
5. Identify useful indicators relevant to integrated WASH and nutrition efforts.

Required Reading


Optional Reading

UNICEF, World Health Organization. Improving nutrition outcomes with better water, sanitation and hygiene: practical solutions for policies and programs. 2015.  


Mar 06: Spring break

Mar 13 Breastfeeding and Infant Feeding

Learning Objectives:
1. Compare the advantages and disadvantages of extended breastfeeding.  
2. Describe factors affecting, and related to exclusive breastfeeding and the start of the weaning period.  
3. Compare the advantages and disadvantages of breastfeeding when a mother is infected with HIV.
Required Reading

Textbook: Chapter 15 The Role of Human and Other Milks in Preventing and Treating Undernutrition
Chapter 16 The Role of Breastfeeding Protection, Promotion and Support in a Developing World

Optional Reading


Mar 20: Reproductive Health and Nutrition, Birth Outcomes and Developmental Disabilities

Learning Objectives
1. Define maternal nutrition
2. Explain the role of nutrition during pregnancy on birth outcomes: Preterm birth, Birth size, Neural tube defects and other congenital anomalies, Still birth and perinatal mortality.
3. Explain the importance of maternal nutrition before and during the peri-conceptional period

Required Reading

Textbook: Chapter 21 Reproductive Health and Nutrition
Chapter 22 Maternal Nutrition and Birth Outcomes
Chapter 23 Small for Gestational Age: Scale and Consequences for Mortality

Optional Reading


Mar 28: Nutrition and HIV/AIDS

Learning Objectives
1. Describe the salient issues with Nutrition and the HIV management.
2. Analyze the Infant Feeding issues associated with the HIV epidemic in Africa.
3. Critic nutrition intervention studies that have targeted people with HIV/AIDS.
4. Appropriately debate the role that women have on the nutrition status of people with HIV and those at risk for HIV.

Required Reading

Textbook: Chapter 17 Tuberculosis
Chapter 18 HIV – Medical Perspective
Chapter 19 Tuberculosis Infection and Nutrition
Chapter 20 HIV and HIV/TB Co-infection in Relation to Health

Optional Readings


**Apr 04: Urbanization and Nutrition Transition**

Learning Objectives
1. Review urban development history and its relationship with agriculture and food system development.
2. Explain how recent urbanization trends differ from the past and their implications for food and nutrition security.
3. Analyze how city size affects urban food systems, nutrition and poverty.
4. Identify what factors besides rural food production can affect urban nutrition.

Required Reading

Chapter 32 Urbanization, Food Security and Nutrition
Chapter 33 The Impact of Supermarkets on Nutrition and Nutrition Knowledge

**Apr 11: Nutrition-specific and nutrition sensitive interventions**

Learning Objectives
1. Explain the concept of SUN movement
2. Define nutrition-specific and nutrition sensitive interventions
3. Explain the importance of nutrition-specific and nutrition sensitive interventions

Required Reading

Textbook: Chapter 27 Evaluation of Nutrition-sensitive Programs
Chapter 28 Integrated Approaches to Health and Nutrition: Role of Communities
Optional Reading


Apr 18: Economics of Interventions, Growing Capacity and Program Evaluation

Learning Objectives

1. Know which factors affect the external validity of RCTs in nutrition
2. Understand why context plays such an important role in the impact of most nutrition-specific interventions
3. Be able to propose a design for assessing how a specific intervention, implemented under real-life circumstances, contributes to improving nutritional status of a specific target group
4. Describe the costs of nutritional interventions
5. Prioritize nutritional interventions in terms of cost-effectiveness, and benefit-cost.
6. Explain the key challenges in evaluating nutrition-sensitive programs and ways to address them.
7. Identify the three components of a comprehensive evaluation (impact, process and cost), describe the primary uses of each of these components, and explain how to design these three components to evaluate a nutrition-sensitive program.
8. Illustrate how to use a program theory framework and associated program impact pathways in the design and evaluation of nutrition-sensitive interventions.
9. Analyze the types of challenges that program evaluators and implementers face when working together and explain how to address them in designing and carrying out the evaluation of complex nutrition-sensitive programs.

Required Reading

Textbook: Chapter 2 Economics of Nutritional Interventions
Chapter 3 Nutrition Evidence in Context
Chapter 4 Developing Capacity in Nutrition