

Tufts University, Friedman School of Nutrition Science and Policy
NUTR 227—INTERNATIONAL NUTRITION PROGRAMS
Fall 2023

Class Meetings: **Wednesdays 3:15-6:15 September 6-December 6, 2023**
 Jaharis Room 156

Instructor(s): **Dr. Erin Boyd, PhD**
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Office hours: By appointment

Graduate Credits: **3 credits**

Prerequisites: Nutr 203 (or instructor permission)

Course Description:

The goal of this course is to expose students to major global nutrition programs and strategies designed to lessen the global burden of nutrition related morbidity and mortality. Both prevention and treatment options for major nutrition related disorders that dominate contemporary populations will be discussed. This course will cover: a) current debates in the cause, prevention and treatment of global nutrition issues, b) the range of options for interventions that exist, and those actually used, c) approaches to problem assessment, (including the process of considering alternatives according to context), d) examples of successful nutrition interventions, e) constraints to success (what makes or breaks major program successes), and f) key global institutions and organizations involved in nutrition policy and programming.

Each session will seek to cover: a) main problems still needing to be resolved; b) priority/target populations; c) interventions used/not used. Students will examine solutions at the local, national, and international level, including policy impact on nutrition programs, interventions, and public health practices.

Texts or Materials:

All materials will be posted on Canvas.

Course Objectives

On completion of the course, students will be able to use their understanding of global nutrition issues to:

1. Analyze the conceptual framework of malnutrition and its relation to global nutrition issues.
2. Identify populations at risk of malnutrition and understand options for interventions and multiple layers to reach these groups.

3. Evaluate approaches for preventing and treating undernutrition; and formulate feasible and effective nutrition interventions strategies for various situations of nutrition related morbidity or mortality
4. Be familiar with global agencies' role and responsibilities in setting the nutrition agenda normatively and programmatically.

Academic Conduct: Each student is responsible for upholding the highest standards of academic integrity, as specified in the Friedman School's Policies and Procedures manual (<http://nutrition.tufts.edu/student/documents>) and Tufts University policies ([http://uss.tufts.edu/studentaffairs/judicialaffairs/Academic Integrity.pdf](http://uss.tufts.edu/studentaffairs/judicialaffairs/Academic%20Integrity.pdf)). It is the responsibility of each student to understand and comply with these standards, as violations will be sanctioned by penalties ranging from failure on an assignment and the course to dismissal from the school.

Classroom Conduct: Participation in class is expected and contributes to the course grade. No electronic devices are to be used during the lectures, and students are expected to actively engage in small group work during the lectures.

Assessment and Grading:

Grading: Semester requirements include, a) 2 short memo-style papers (2 X 20%); b) active class participation in discussions (10%); c) a term paper framed in terms of a proposed project or program design (using a template provided) (50%).

A passing grade in the course is B- or better. Course grades will be based on the below (subject to revision during the course):

A > 94%

A- 90-<94%

B+ 87-<90%

B 84-<87%

B- 80-<84%

Assignment 1: You are the Nutrition Technical Advisor for a private foundation and you have been asked what are the main nutrition issues that should be addressed in country X. You must prepare a 1500 word memo for the Director of Child Survival suggesting the top three nutrition priorities with supporting rationale for your foundation to support in country XX for the next five years. You should use external resources to support your argument. **Due October 4th by 11:59 EST.**

Assignment 2: You are a technical advisor working in country X, and you are asked by your colleagues to develop guidance on a particular type of nutrition intervention in order to better harmonize the approach. Your assignment is to develop a guidance document on the implementation of an intervention of your choice.

Topics may relate to: how to address the needs of non-breastfed infants, how to include wash programming in a community based nutrition interventions, how to implement a nutrition counseling program, how to implement a peer to peer support program, how to implement a micronutrient prevention intervention, how to implement a community baby friendly hospital initiative, etc.

You should write the guidance with information about when the intervention is appropriate, who to target, duration, supplies needed, monitoring, and exit strategy (if appropriate).

1500 words or less; exclusive of references. Due November 8th by 11:59 EST.

Article Review Lead:

You will lead the in-class discussion on an article related to the week's topic. You can use the reading listed under discussions for that week, or you can choose a reading a circulate at least 5 days before class. The discussion leading is **informal**, but you will be asked (about 15-20 minutes after I start class) to come in front of the class prepared with 2-3 summary points from the reading and 2-3 prompts related to the article. The structure might be:

- 1) 2 minutes summary of the article (speaking from your notes is fine)
- 2) 10-12 minutes class discussion related to your prompts. Some examples:
 - What did the class take away (main findings)?
 - Did the class find something controversial?
 - Implications of the research/article

You can structure the conversation however you want, and you will have between 10-15 minutes for this conversation.

Your grade is dependent on your demonstrated understanding of the article and ability to generate some interest from your classmates. The best preparation is to read carefully and consider reading 1-2 articles from the bibliography cited in the reading.

Final Project: Proposal for funding. Text (**excluding annexes**) not to exceed 3000 words. Must include 3 annexes (annexes 1 and 2 from the template and the logframe provided). **Due December 13th by 11:59 EST.**

Accommodation of Disabilities:

Students with documented disabilities are entitled to academic accommodation appropriate to their needs. If you require accommodations for this course, please contact me confidentially prior to the end of the second week of classes.

PLEASE USE CANVAS AS A GUIDE TO READINGS
(Canvas is updated more frequently than this syllabus)

Week 1:

Conceptual Framework of Malnutrition and the Global Nutrition Narrative

Objectives:

- Summarize global trends in nutrition programming
- Compare conceptual models explaining nutrition causality
- Debate current global recommendations for programming

Required Readings:

- Cesar et al., Revisiting Maternal and child undernutrition in low-income and middle-income countries: variable progress towards an unfinished agenda, *Lancet*, 2021.
- Global Nutrition Report (2020)
- Joint Malnutrition Estimates (2021)

Week 2:

Statistics and analytics

- Examine data trends related to malnutrition
- Discuss data quality and different groups consolidating data

Instructional Objectives: This lecture introduces concepts regarding consolidating and analyzing nutritional data. The many definitions and metrics of malnutrition, hunger and obesity will be discussed. Why and what do we need to measure to ensure a successful nutrition program, will be covered.

Required Readings:

- Briend et al. 2015, Wasting and stunting—similarities and differences: Policy and programmatic implications, *Food and Nutrition Bulletin*, vol. 36, no. 1 © 2015
- Heidkamp RA, Piwoz E, Gillespie S, Keats EC, D'Alimonte MR, Menon P, Das JK, Flory A, Clift JW, Ruel MT, Vosti S, Akuoku JK, Bhutta ZA. Mobilising evidence, data, and resources to achieve global maternal and child undernutrition targets and the Sustainable Development Goals: an agenda for action. *Lancet*. 2021 Apr 10;397(10282):1400-1418. doi: 10.1016/S0140-6736(21)00568-7. Epub 2021 Mar 7. PMID: 33691095.
- WHO-UNICEF Technical Expert Advisory group on nutrition Monitoring (TEAM), Use of Nutrition Data in Decision Making: A Review, July 2020.

Class 3:

Measurement and Assessment

Defining malnutrition: Measurement and Assessment

Objectives:

- Determine the best ways to conduct measurement of individual and population level nutritional status
- Explain methodologies to ensure that measurements are conducted and analyzed properly

Instructional Objectives: This lecture introduces concepts regarding the nutritional assessment of individuals and populations. Optimal measurement of individual and population nutritional status to best identify individuals targeted for prevention and treatment strategies and indicators most appropriate for program evaluation will be debated.

Required Readings:

- IASC, 2009, WHO Fact sheet on the implementation of 2006 WHO Child Growth Standards for emergency nutrition programmes for children aged 6-59 months
- FANTA, 2018, Anthropometry Guide, **Module 1**
- Alima article- Mothers Understand MUAC and Can Do It Well

Class 4:

Improving Infant and Young Child Feeding Practices

Objectives:

- Synthesize evidence on the importance of exclusive and continued breastfeeding, as well as good complementary feeding
- Demonstrate the different modalities through which to support infant and young child feeding
- Critique different Infant and Young Child Feeding programs

Instructional Objectives: Children between 0-23 months are the most vulnerable for becoming undernourished- both chronically and acutely. In order to prevent undernutrition and to ensure optimal growth, the importance of exclusive and continued breastfeeding, as well as good complementary feeding is explored. Infant and young child feeding programs are analyzed in order to understand the different modalities through which to support infant and young child feeding.

Required Readings:

- Victora, Cesar G et al. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect (2016), The Lancet, Volume 387, Issue 10017, 475 – 490
- UNICEF, 2016, From the First Hour of Life
- UNICEF, 2021, Fed to Fail

Class 5:

Maternal nutrition

- Keats EC, Das JK, Salam RA, Lassi ZS, Imdad A, Black RE, Bhutta ZA. Effective interventions to address maternal and child malnutrition: an update of the evidence.

- Lancet Child Adolesc Health. 2021 May;5(5):367-384. doi: 10.1016/S2352-4642(20)30274-1. Epub 2021 Mar 7. PMID: 33691083.
- Christian P, Smith ER, Zaidi A. Addressing inequities in the global burden of maternal undernutrition: the role of targeting. *BMJ Glob Health*. 2020;5(3):e002186. Published 2020 Mar 18. doi:10.1136/bmjgh-2019-002186
 - Hambidge KM, Westcott JE, Garcés A, Figueroa L, Goudar SS, Dhaded SM, Pasha O, Ali SA, Tshetu A, Lokangaka A, Derman RJ, Goldenberg RL, Bose CL, Bauserman M, Koso-Thomas M, Thorsten VR, Sridhar A, Stolka K, Das A, McClure EM, Krebs NF; Women First Preconception Trial Study Group. A multicountry randomized controlled trial of comprehensive maternal nutrition supplementation initiated before conception: the Women First trial. *Am J Clin Nutr*. 2019 Feb 1;109(2):457-469. doi: 10.1093/ajcn/nqy228. PMID: 30721941; PMCID: PMC6367966.
 - Zulfiqar A Bhutta, Balancing the benefits of maternal nutritional interventions; time to put women first!, *The American Journal of Clinical Nutrition*, Volume 109, Issue 2, February 2019, Pages 249–250

Class 6:

Micronutrient Deficiency Prevention and Control

Objectives:

- Explain micronutrient intervention policies and programs
- Plan different types of micronutrient interventions : Multiple Micronutrient Powders (MNP)- Sprinkles, RUFs, lozenges, syrups, candies, *atta* flour, etc.
- Compare approaches to improving micronutrient status: Dietary diversity, supplementation, fortification, biofortification

Required Readings:

- UNICEF. *Coverage at a crossroads: new directions for vitamin A supplementation programmes*. New York, 2018. (Chapters 1,2,4)
- Keats et al., 2019, Improved micronutrient status and health outcomes in low- and middle-income countries following large-scale fortification: evidence from a systematic review and meta-analysis
- Tam E, Keats EC, Rind F, Das JK, Bhutta AZA. Micronutrient Supplementation and Fortification Interventions on Health and Development Outcomes among Children Under-Five in Low- and Middle-Income Countries: A Systematic Review and Meta-Analysis. *Nutrients*. 2020 Jan 21;12(2):289. doi: 10.3390/nu12020289. PMID: 31973225; PMCID: PMC7071447.

Class 7:

Prevention and Treatment of acute malnutrition: Community Management of Acute Malnutrition (CMAM)

Objectives:

- Explain the basic concepts and rationale of preventing and treating acute malnutrition

- Summarize the protocols of CMAM and its implementation
- Justify the role of community mobilization in the successful implementation of CMAM

Required Readings:

- Bhutta ZA, Berkley JA, Bandsma RHJ, Kerac M, Trehan I, Briend A. Severe childhood malnutrition. *Nat Rev Dis Primers*. 2017 Sep 21;3:17067. doi: 10.1038/nrdp.2017.67. PMID: 28933421; PMCID: PMC7004825.
- Trehan I, Bassat Q. The Unbearable Lightness of Being Malnourished: Severe Acute Malnutrition Remains a Neglected Tropical Disease. *J Trop Pediatr*. 2018 Jun 1;64(3):169-173. doi: 10.1093/tropej/fmx103. PMID: 29315432.
- Aguayo VM, Badgaiyan N, Qadir SS, Bugti AN, Alam MM, Nishtar N, Galvin M. Community management of acute malnutrition (CMAM) programme in Pakistan effectively treats children with uncomplicated severe wasting. *Matern Child Nutr*. 2018 Nov;14 Suppl 4(Suppl 4):e12623. doi: 10.1111/mcn.12623. PMID: 30499254; PMCID: PMC6866122.
- Cost-effectiveness of community-based screening and treatment of moderate acute malnutrition in Mali Isanaka S, *et al. BMJ Glob Health* 2019;4:e001227. doi:10.1136/bmjgh-2018-001227
- ENN, Wasting Reset Synthesis (August 2021)
- Das JK, Salam RA, Saeed M, Kazmi FA, Bhutta ZA. Effectiveness of Interventions for Managing Acute Malnutrition in Children under Five Years of Age in Low-Income and Middle-Income Countries: A Systematic Review and Meta-Analysis. *Nutrients*. 2020 Jan 1;12(1):116. doi: 10.3390/nu12010116. PMID: 31906272; PMCID: PMC7019612.

Class 8:

Overweight and obesity programming

Objectives:

- Examine models that include improvement in both undernutrition and overnutrition as outcomes
- Analyze different behavior change communication techniques and packages that work for addressing overnutrition

Required Readings:

- Popkin, B. M. Nutrition, agriculture and the global food system in low and middle income countries. *Food Policy* 47, 91–96 (2014).
- Jaacks et al., Rising rural body-mass index is the main driver of the global obesity epidemic in adults
- Slining et al., 2015, Recent underweight and overweight trends by rural–urban residence among women in low- and middle-income countries. *J. Nutr.* 145, 352–357 (2015).
- Jacobs, A. & Richtel, M. How big business got Brazil hooked on junk food. *The New York Times*. <https://www.nytimes.com/interactive/2017/09/16/health/brazil-obesity-nestle.html> (2017).

- Thorndike, AN, Sonnenberg, L, Riis, J, Barraclough, S, Levy, DE. A 2-phase labeling and choice architecture intervention to improve healthy food and beverage choices. *Am J Public Health* 2011
- UNICEF, 2018, Prevention of Overweight and Obesity in Children and Adolescents.

Class 9:

Agriculture Interventions for Nutrition Sensitive Programming

Objectives:

- Argue the role of food security and agriculture interventions in promoting nutrition
- Assess the effects of combined agriculture and nutrition education on child growth
- Compare current activities involving food security, nutrition and agriculture interventions

Required Readings:

- Masters (2016), Economic Causes of Malnutrition (Chapter 2.2), *Good Nutrition: Perspectives for the 21st Century*, edited by Manfred Eggersdorfer, Klaus Kraemer et al. for Sight & Life, forthcoming 2016.
- Masters et al. (2014) Agriculture, Nutrition and Health in Global Development: Typology and Metrics for Integrated Interventions and Research Forthcoming 2014 in *Annals of the New York Academy of Sciences*, issue on “Paths of Convergence for Agriculture, Health, and Wealth”
- USAID/FFP, Malawi CSI and BEST analysis (Skim)
- Orange Fleshy Sweet Potatoes

Optional Readings:

- ACF (2011), Maximising the Nutritional Impact of Food Security and Livelihoods Interventions: A Manual for Field Workers, pgs. 46-61.
- AVDRC (November 2012), The World Vegetable Center, Promoting Best Post Harvest Practices: Skim success stories
- Dunn, E (2013), FIELD Report No. 18: Smallholders and Inclusive Growth in Agricultural Value Chains

Class 10:

Water sanitation and hygiene Interventions

Objectives:

- Assess how the water, sanitation and hygiene context can affect nutritional status
- Explain the impact of water, sanitation and hygiene interventions on nutritional status
- Compare innovative programs that address the sanitation and hygiene situation of under 2s

Required Readings:

- Spears, D. (2013). The nutritional value of toilets: How much international variation in child height can sanitation explain? Informally published manuscript, Centre for Development Economics, Retrieved from <http://riceinstitute.org/wordpress/wp-content/uploads/downloads/2013/07/Spears-height-and-sanitation-6-2013.pdf>
- Chambers, R. Sanitation and Stunting in India Undernutrition's Blind Spot. Economic and Political Weekly.
- Humphrey, J. Child undernutrition, tropical enteropathy, toilets, and handwashing. Lancet, 374.
- Wash benefits trial

Class 11:

Cash and Vouchers for Nutritional Outcomes

- Explain the principles of cash transfer programs in relation to nutrition outcomes
- Assess of large-scale national level cash transfer programs
- Compare constraints associated with cash transfers in influencing nutrition

Required Readings:

- Adato, M. and Hoddinott, J. (2010), Conditional Cash Transfer Programs: A “Magic Bullet” for Reducing Poverty?
- Lia C H Fernald, Paul J Gertler, Lynnette M Neufeld, Role of cash in conditional cash transfer programmes for child health, growth, and development: an analysis of Mexico's Oportunidades Lancet 2008; 371: 828–37
- Davide Rasella, Rosana Aquino, Carlos A T Santos, Rômulo Paes-Sousa, Mauricio L Barreto. Effect of a conditional cash transfer programme on childhood mortality: a nationwide analysis of Brazilian municipalities Lancet 2013; 382: 57–6
- Where are we with Cash and Nutrition (2017)

Class 12:

School-based programs

Objectives:

- Assess how early childhood development impacts nutritional status
- Justify the objectives of school-based programs, with particular emphasis on the design of successful school-based programs
- Summarize the concepts of food for education
- Explain issues and constraints in the wide scale implementation of school programs

Required Readings:

- Bhowmick, N. Postcard from Vrindaban: In India, the World's Largest School Lunch Program Friday, Nov. 05, 2010; Read more:

- <http://www.time.com/time/world/article/0,8599,2029625,00.html#ixzz161G9w4> Bd
USDA.
- McGovern–Dole International Food for Education and Child Nutrition Program February 2009 <http://www.fas.usda.gov/excredits/foodaid/ffe/mcdfactsheet.asp>
 - School Feeding in El Salvador: Preliminary Findings of a Case Study of the Transition
 - Kuhn A. Nutrition Program Boosts Poor Students In China
<http://www.npr.org/templates/story/story.php?storyId=104753329>
 - Galloway, R. (2009), School feeding: Outcomes and costs, Food and Nutrition Bulletin, vol. 30, no. 2

Class 13: Price Tag?

Objectives:

- To examine different measures of cost-effectiveness
- To talk through costing

Required Readings:

- Gillespie S, *et al.* *BMJ Glob Health* 2019;4:i133–i142. doi:10.1136/bmjgh-2018-001290
Measuring the coverage of nutrition interventions along the continuum of care: time to act at scale
- Menon P, McDonald CM, Chakrabarti S. Estimating the cost of delivering direct nutrition interventions at scale: national and subnational level insights from India. *Matern Child Nutr* 2016;12(Suppl 1):169–85.
- Bhutta ZA, Das JK, Rizvi A, *et al.* Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *Lancet* 2013;382:452–77.