

Master's Degree curriculum in Global Health Nutrition

Overview, structure, syllabus, evaluation

Key information

- **Duration: 18 months**
- **Language: English**
- **Credits: 25**

Title: Global Health Nutrition

**Teaching Institution: National Nutrition and Food Technology Research institute
(NNFTRI)**

Degree: M.Sc.

Definition:

Nutrition is an axially important determinant of health status. Along with socio-economic, political, climatic and environmental changes in the world, the profile of nutritional problems also changes. On one side, many developing countries still encounter undernutrition including protein-energy malnutrition as well as micronutrient deficiencies, overnutrition and related disorders such as obesity, cardiovascular disease and diabetes are the main cause of morbidity and mortality in prosperous countries, on the other side. There are some countries between two that are experiencing “nutrition transition” facing both undernutrition and over-nutrition at the same time. “Food insecurity” and, above all, “nutrition insecurity” in certain subgroups in all countries are a major challenge for health policy makers. Considering the crucial impact of nutrition on the immune function and general health, addressing nutrition

problems will better work on a global setting and in the context of health equity. Malnutrition-induced immunosuppression can speed up the spread and augment the severity of infectious diseases which in turn can be threat for all countries globally. The acquired immunodeficiency syndrome (AIDS) and newly emerged coronavirus disease (Covid-19) are such examples. These challenges have led to growing political resources to address nutrition. Meanwhile, there is a growing need for trained nutritionists who not only know nutrition and diet at individual level but they can understand and analyze nutrition problems and contribute to tackle these problems at the global setting, as well.

Objectives

The aim of the MSc. in global health nutrition is health equity and to improve health worldwide via providing comprehensive training in nutrition for global health. Students can specialize in a number of topics and in a range of contexts. To do this, an integrated program covers epidemiological, dietary, public health, social and biological aspects of nutritional science. Though the main focus of the program is on nutritional problems in low and middle-income countries, skills and learning outcomes are widely applicable to populations globally.

Program learning outcomes

By the end of the program, students will be expected to achieve the following learning outcomes – drawing on material taught across different elements and assessed in a variety of ways.

- i) Demonstrate an advanced knowledge of public health nutrition at biological, social & policy levels.

- ii) Assess critically, select and apply a range of appropriate research skills and techniques, including: anthropometry, dietary analysis, statistics, epidemiology, qualitative methods, research, computing & information retrieval.
- iii) Interpret and synthesize different types of data used to analyze and assess nutritional problems at population and sub-population levels
- iv) Evaluate critically the findings of scientific studies on public health nutrition.
- v) Disseminate and present research findings in a range of formats and contexts
- vi) Identify and formulate appropriate responses and intervention strategies to address nutritional issues, taking into account the public health and social policy contexts
- vii) Apply knowledge of effective teamwork and communication skills to solve problems and achieve goals

Admission requirement

The applicants must hold at least B.Sc. in nutrition. Higher education degrees will be given preference. Applicants with other backgrounds than nutrition including public health, medicine, dentistry, veterinary, pharmacy, nursing and midwifery are also welcomed. However, they will have to cover the prerequisite credits accordingly upon acceptance. Applications with an appropriate technical or other equivalent qualification and experience from overseas are also welcomed.

Applicants with work experience in relevant nutrition, health or other global-nutrition related activities will be given preference.

Employment Status of Graduates

Students in the program plan to pursue careers in management of nutrition and health programs, or in the technical content of health promotion and disease prevention programs as a researcher, technical advisor, consultant or instructor, or they may go on to doctoral degrees (Ph.D. or DrPh) in nutrition or related fields

Duration

MSc – Full time = 18 months

Language

The program language is English so all students have a good command of the English language to benefit from their studies at the NNFTRI.

As part of the application process, applicants are required to demonstrate how they meet the NNFTRI's minimum English language requirements. Additionally, the NNFTRI asks applicants to have minimum English language proficiency levels that are necessary for our academic programs.

Core modules

Topic	Term	Credits		Hours	
		Theoretical	Practical	Theoretical	practical
Public Health Nutrition	1	2	---	34	
Biostatistics	1	2	---	34	
Global Challenges for Food and Health	1	2	---	34	
Nutrition Interventions and Program Planning	1	2	34	
Nutrition-related chronic disease	1	2	---	34	---
Research Methodology	1	2		34	
Seminar	2		1		
Research Project (Thesis)	2	---	6	--	
Research Project (Thesis)	3	---	6		

Non-core module

Non-core modules will be provided based on the topic of students' thesis.

Program Structure and features, modules, credit assignment and award requirements:

Full-Time M.Sc.	Semester 1	Semester 2	Semester 3	Total credits
Core modules	12	1	---	13
Dissertation	---	6	6	12

Evaluations:

The students will be evaluated through individual module assessments (which may include essays, other written coursework, short written exams, practical exams, group-work, presentations or other methods), formal summer exams, and a project report. Such tasks are designed to assess, via the most appropriate method, whether learning objectives have been met.

Modules:

Public Health Nutrition Syllabus

Course title: Public Health Nutrition

Prerequisite or co-requisite: Basic nutrition, public health, Nutrition assessment, lifespan nutrition

Credits: 2

Module type: Theoretical

Instructor(s)/Department(s): Faculty members of Department of Nutrition Research; Research Department of Food and Nutrition Policy and Planning, National Nutrition and Food Technology Research Institute, Faculty of Nutrition Sciences and Food Technology, Shahid Beheshti University of Medical Sciences

Description:

This course develops students' understanding of public health nutrition with a focus placed on the importance of building a sustainable, nutritious and healthy food supply for all. The overall goal of this course is to consolidate and extend knowledge and skills in public health nutrition. It will introduce the most current societal issues around public health nutrition and health promotion. It will focus on recognizing determinants of health, health disparities and availability and accessibility of resources influence the nutrition status of communities and state, country and regional programs. Program planning and population needs assessments are addressed.

Learning objectives:

By the end of this unit, student will be able to:

- Understand the unifying concepts of public health nutrition, particularly with relevance to health promotion and disease prevention efforts
- Identify current issues and areas of research in public health nutrition and health promotion
- Describe the most important public health nutrition problems in high- income and low-income countries respectively, and discuss long term and short term countermeasures
- Conduct food and nutritional assessment of the community.
- Identify the determinants for dietary habits and relate these to individual, social, cultural and economic factors
- Critically analyze factors which impact on food choices and eating patterns
- Formulate and design an innovative food and nutrition intervention project
- Identify and discuss the role and impact of different policy documents, international agreements and regulations of importance for public health nutrition activities on a national and international level
- Analyze population health and ensure effective decision-making for larger groups of people

Outlines:

Session	Title	Reference/ chapter	Hours
1	Defining Health & Introducing Public Health Nutrition The role of nutrition in health promotion.	1.Chapter 1,2 5. chapter 1	2
2	Objectives of, and services provided by the community nutrition programs	1.Chapter 2 5. chapter 11	2
3	Current initiatives in public health nutrition The most current and controversial issues in the field	3. chapter 14, 17	2
4	Food Systems, Building a Healthy Sustainable Food Supply	3. chapter 5, 6	2
5	Social Determinants of Health & Impact on Nutritional Status	3. chapter 4	2
6	Food choices, Food, Culture, Behavior & Health	3. chapter 4 4. chapter 8	2
7	Goals of a community needs assessment Nutritional needs assessment	2. Chapter 4, 15 3. chapter 11	2
8	Different methods for assessing nutritional status and health in the community	1.Chapter 3 5. chapter 3	2
9, 10	Nutrition Intervention Programs – Designing and implementing	2. Chapter 15 3. chapter 12 4. chapter 5	2
11, 12	Evaluation of a community nutrition program	2. Chapter 15 3. chapter 13	2
13, 14	Nutrition Interventions in Low- and Middle-Income Countries	3. chapter 14	2
15	Process of policy-making and developing legislative and regulatory	1.chapter 8 5. chapter 7	2
16	Current food and nutrition policies and initiatives to real- world contexts	1.chapter 8 3. chapter 5	2

References

1. Arlene Spark, Lauren M. Dinour, Janel Obenchain. Nutrition in Public Health Principles, Policies, and Practice, Second Edition. 2021. CRC Press
2. Boyle MA. Community nutrition in action: an entrepreneurial approach: Cengage Learning; 2016
3. Barth M, Bell RA, Grimmer K. Public Health Nutrition: Rural, Urban, and Global Community-based Practice: Springer Publishing Company; 2020
4. M Gibney; M Barrie. Public Health Nutrition. Margetts and John M. Kearney (ed.) 2004
5. M Kaufman. Nutrition in Promoting the Public's Health; Strategies, Principles, and Practices. 2007.

Biostatistics Syllabus

Module title: Biostatistics

Prerequisite or co-requisite: None

Credits: 2

Module type: theoretical

Instructor(s)/Department(s): Biostatistics department, School of Allied Medical Sciences, Shahid Beheshti University of Medical Sciences; Nutrition Research department, National Nutrition and Food Technology Research Institute

Description: This course introduces the basic principles and methods of biostatistics, providing students a sound methodological foundation for public health and clinical practice.

Learning objectives:

By the end of this unit, student will be able to:

- Describe the fundamental concepts and techniques of descriptive and inferential statistics with applications in health care, medicine, public health, and epidemiology.
- Describe basic statistics, including probability, descriptive statistics, and inference for means and proportions, and hypothesis testing
- Apply and link the analytic methods to topics including health promotion, epidemiology, and program evaluation.

Outlines

Sessions	Topic	Reference/ chapter	Hours
1	Appropriately utilize qualitative and quantitative data in order to effectively address public health and clinical problems,	1.chapter 1 2. chapter 38	2
2	Introduction to Data / Study Designs	2. chapter 3, 4	2
3	Introduction to statistics, Data collection, Introduction to software,	1.chapter 1	2
4	Types of Data, Organizing and Summarizing Data,	1.chapter 1	2
5, 6	Descriptive Statistics, Central tendency & dispersion, Categorical Data	1.chapter 2, 3 2.chapter 4	4
7, 8	Normal distribution, Statistical inference: Samples and populations, Power, Confidence intervals, p-values, Type I & II error	1.chapter 3, 5	4
9	Inference for Numerical Data: One sample t-tests	2. chapter 7, 8 1.chapter 5	2
10	Inference for Numerical Data: Paired sample t-test	2. chapter 7, 8 1.chapter 5	2
11	Inference for Numerical Data: Independent samples t-test	2. chapter 7, 8 1.chapter 5	2
12, 13	Inference for Numerical Data: Comparing Three or More Means Analysis of Variance (ANOVA)	2. chapter 9 1.chapter 6	4
14	Non-parametric Tests: Sign test, Wilcoxon test	1.chapter 4	2
15	Non-parametric Tests: Kruskal-Wallis test	1.chapter 4	2
16	Non-parametric Tests: Rank correlation	1.chapter 4	2

References:

- 1- Barbara Hazard Munro, Statistical Methods for Health Care Research, Lippincott Williams & Wilkins, 2005
- 2- Betty R. Kirkwood, Jonathan A. C. Sterne, Essential Medical Statistics, Wiley, 2010

Global Challenges for Food and Health Syllabus

Module Title: Global Challenges for Food and Health

Number of credits: 2

Prerequisite or co-requisite: Basic nutrition, public health

Credits: 2

Module type: theoretical

Instructor(s)/Department(s): Faculty members of the Department of Nutrition Research, National Nutrition and Food Technology Research Institute, Shahid Beheshti University of Medical Sciences.

Description:

This course discusses many challenges to food and nutrition security as well as sustainable nutrition. Besides, food security assessment tools are introduced. Various global challenges of nutrition-related diseases including obesity and cardiovascular disease and also new IT-based tools in nutrition programs including telehealth and telemedicine are discussed. The student is expected to have an active contribution to the class through participation in discussions and presenting lectures.

Learning objectives:

At the end of this unit, the student is expected to:

1. Define biomarkers commonly used in nutritional assessment at both clinical setting and community-based research.
2. Interpret results of nutritional biomarker determinations.

Outlines

Session	Title	Reference/ chapter	Hours
1	Public health inequalities: the global context	1/1; 2/1	2
2	The food environment and prepared foods	1/4; 2/23-24	2
3-4	Formative research approaches to develop undernutrition interventions	1/6	4
5	Public health nutrition strategies for intervention at the ecological level	3/5	2
6	Global perspectives on promotion, protection and support of breastfeeding	1/9	2
7	Food security and special diets: meeting children's nutritional needs	1/14	2
8	Meeting adult nutritional needs through public health nutrition programs	1/17	2
9	Pneumonia in severely malnourished children in developing countries: Public health approaches to prevention and early treatment	1/12	2
10	Childhood diarrhea and severe malnutrition	1/13	2
11-12	Global changes in diet and physical activity: the nutrition transition	1/22	4
13-14	Obesity: an ecological perspectives on challenges and solutions	1/18; 2/14; 3/9	4
15-16	Nutrition and cardiovascular disease: a global public health concern	1/19; 2/16; 3/19	4
17	Telehealth, Telemedicine, eHealth and mHealth in nutrition programs	1/24	2

References

1. Stein N. Public health nutrition, principles and practice in community and global health. Jones & Bartlett Learning, 2015.
2. Buttriss JL, Welch AA, Kearney JM, Lanham-New Wiley SA. Public health nutrition. Wiley, 2017.

3. Gibney MJ, Margetts BM, Kearney JM, Arab L, editors. Public health nutrition. John Wiley & Sons; 2013 Mar 19.

Nutrition Interventions and Program Planning Syllabus

Module Title: Nutrition Interventions and Program Planning

Credits: 2

Prerequisite or co-requisite: Public health, Biostatistics, Nutrition Epidemiology, Research methodology

Module type: Theoretical

Instructor(s)/Department(s): Faculty members of Department of Nutrition Research; Research Department of Food and Nutrition Policy and Planning, National Nutrition and Food Technology Research Institute, Faculty of Nutrition Sciences and Food Technology, Shahid Beheshti University of Medical Sciences

Description:

This course will provide an overview of the role of nutritionists in planning, and evaluating community nutrition programs with the aim of improving population health and wellbeing and food security. This course combines theory, understanding and critical appraisal of community nutrition issues with approaches for implementing community nutrition interventions. The students will be introduced to identification and assessment of community needs, development program to meet those needs, and evaluation.

Learning objectives:

By the end of this unit, student will be able to:

- Conduct a community nutrition needs assessment and prioritize the nutritional needs of community
- Develop a nutritional program plan that includes a needs assessment.

- Understand theory driving public health nutrition interventions
- Demonstrate an understanding of cultural competence in the development of nutrition intervention
- Prepare a budget for the development and evaluation of a nutrition intervention.
- Evaluate the process and impact of a nutrition intervention
- Understand the different types of study design commonly used in community nutrition.

Outlines:

Session	Title	Reference/ chapter	Hours
1.	Introduction to public health and community nutrition	4.Chapter 1	2
2.	Community nutrition needs assessment	2.Chapter 14	2
3.	Prioritizing needs and writing clear goals and objectives	2. Chapter 14	2
4.	Stakeholder analysis	2.Chapter 14	2
5.	Individual and environmental models explaining health behavior	1.Part 1, 2 4. chapter 2	2
6.	Implication of gender relations on women's nutrition	4.Chapter 3	2
7.	Strategies for nutrition intervention	2.Chapter 15	2
8.	Cultural competence in the development of nutritional programs	4.Chapter 2, 3	2
9.	Designing community nutrition intervention/program	3. Part 2 2. Chapter	2
10.	Budget development and Management of nutrition intervention/program	4.chapter 3 2. chapter 19	2
11.	The component parts of a program theory of change/logic model	1.Part 1, 2	2
12.	Definition of Evaluation and different type of evaluation	2.Chapter 15	2
13.	Evaluation of a community nutrition program	2.Chapter 15	2
14.	Evaluation framework	2.Chapter 15	2
15.	Developing evaluation design	2.Chapter 15	2
16.	Data collection and analysis of evaluation data	2.Chapter 15	2

References:

1. Glanz K, Rimer BK. Theory at a glance: A guide for health promotion practice. NIH, National Cancer Institute. 2nd ed. 2005.
2. Boyle, M.A. Community Nutrition in Action. 2017 (7th edition). Boston, MA: Centgage Learning.
3. Nnakwe N. Community Nutrition, planning health promotion and disease prevention. 2015 (3rd edition). Published by Jones & Bartlett.
4. Merson MH, Black RE, Mills AJ. Global Health. Burlington. 2011. (3rd edition). MA: Jones & Bartlett Learning.

Nutrition-related chronic disease Syllabus

Module Title: Nutrition-related chronic disease

Prerequisite or co-requisite: None

Credits: 2

Module type: theoretical

Instructor(s)/Department(s): Faculty members of Department of Nutrition Research; Department of Community Nutrition, National Nutrition and Food Technology Research Institute, Faculty of Nutrition Sciences and Food Technology, Shahid Beheshti University of Medical Sciences.

Description:

This unit covers issues in nutrition and public health, with an emphasis on how nutrition research is translated into dietary recommendations for chronic disease prevention. The process of effectively and efficiently identifying, reading, and synthesizing existing sources of reliable information on particular diet disease associations will be covered extensively as will applying this knowledge in a public health context. We will focus on the relation of nutrition to obesity, diabetes, coronary heart disease, hypertension, and selected additional health outcomes of public health significance in the world.

Learning objectives:

By the end of this unit, student will be able to:

- Justify why all ages are part of the continuum of opportunities for the prevention and control of chronic disease.

- Differentiate between the leading chronic diseases, their risk factors and recommended diets.
- Examine the relationship obesity, diet, excess weight gain, and physical activity have on chronic disease.
- Examine food consumption patterns and trends as they pertain to chronic disease development.
- List the risk factors of chronic diseases.

Finally, the student will be able to:

- Apply principles of nutrition to health promotion and disease prevention.
- Translate nutrition principles and research findings into intervention strategies for specific populations.
- Identify the influence of eating behaviors on disease development and prevention.
- Explain the role of macro and micronutrients for nutritional health and well-being.

Outlines

Sessions	Topics	Reference/ chapter	Hours
1.	An overview of nutrition epidemiology	Ref 1 (1)	2
2.	An overview of leading chronic diseases and their risk factors	Ref 2 (2) Ref 3 (4)	2
3.	An overview of nutrition epidemiology of obesity, diabetes, coronary heart disease, hypertension	Ref 2 (3) Ref 5 (2, 3)	2
4.	Global burden of chronic diseases	Ref 2 (1) Ref 6 (2)	2
5.	Role of macro and micronutrients for nutritional health and well-being	Ref 6 (3)	2
6.	Food, Nutrition and Health in a Global Perspective	Ref 6 (4)	2
7.	Food consumption patterns	Ref 6 (4)	2
8.	Role of eating behaviors in disease development and prevention	Ref 6 (3)	2
9.	Trend of food pattern alteration and its relationship with the pattern of diseases in the population	Ref 6 (3)	2
10.	Nutrition-health policy issues in relation to NCDs (1)	Ref 5 (12)	2
11.	Nutrition-health policy issues in relation to NCDs (2)	Ref 5 (12)	2
12.	Health Promotion and Applied Research Methods in Global Health (1)	Ref 9 (1-3)	2
13.	Health Promotion and Applied Research Methods in Global Health (2)	Ref 9 (1-3)	2
14.	Policy making	Ref 4 (14, 15)	2
15.	Introduction to public health	Ref 7 (1) Ref 8 (2)	2
16.	Public Health, Nutrition & Wellbeing in a Global Perspective	Ref 7 (3)	2

Reference:

1. Willett, W. Nutritional Epidemiology. United Kingdom: OUP USA. Last edition.
2. Mathers, C., Fat, D. M., Boerma, J. T. The Global Burden of Disease: Last Update. Philippines: World Health Organization.
3. Global Burden of Disease and Risk Factors. Ukraine: World Bank Publications. Last edition.
4. Global Handbook on Non communicable Diseases and Health Promotion. Germany: Springer New York. Last edition.
5. An Introduction to Population-Level Prevention of Non-Communicable Diseases. United Kingdom: Oxford University Press. Last edition.
6. Diet Nutrition and the Prevention of Chronic Diseases: Report of a Joint WHO/FAO Expert Consultation. Switzerland: World Health Organization. Last edition.
7. Public Health Nutrition: From Principles to Practice. United Kingdom: Taylor & Francis. Last edition.
8. Hughes, R., Margetts, B. M. Practical Public Health Nutrition. United Kingdom: Wiley. Last edition.
9. Principles of Applied Research Methods. United States: Sage. . Last edition.

Research Methodology Syllabus

Module Title: Research Methodology

Prerequisite or co-requisite: None

Credits: 2

Module type: theoretical

Instructor(s)/Department(s): Faculty members of Epidemiology department, School of Public health and safety, Shahid Beheshti University of Medical Sciences; Nutrition Research department, National Nutrition and Food Technology Research Institute, Shahid Beheshti University of Medical Sciences.

Description:

This course is designed to introduce new M.S. students to a selection of research topics and tools commonly used in the fields of nutrition and food sciences. Topics to be covered include methods of literature review, data analysis and presentation, and research ethics. In addition, the course will include an introduction to various types of food and nutrition research, including behavioral research, qualitative research, and clinical trials research.

Learning objectives:

By the end of this course, student will be able to:

- Select research topics and tools used in the fields of nutrition and food sciences
- Describe methods of literature review, data analysis and presentation, and research ethics.
- Identify and use various types of food and nutrition research

Outlines:

sessions	Topics	Reference/ chapter	Hours
1.	Introduction: Foundations of Research, Meaning, Objectives, Motivation, Utility.	1.chapter 1	2
2.	Characteristics of scientific method – Understanding the language of research – Concept, Construct, Definition, Variable. Research Process	1.chapter 1	2
3.	Problem Identification & Formulation – Research Question – Investigation Question –Measurement Issues –	1.chapter 1	2
4.	Hypothesis – Qualities of a good Hypothesis –Null Hypothesis & Alternative Hypothesis.	1.chapter 1	2
5.	Research Design: Concept and Importance in Research – Features of a good research design –1	1.chapter 4, 5	2
6.	Research Design: Concept and Importance in Research – Features of a good research design –2	1.chapter 4, 5	2
7.	Exploratory Research Design – concept, types and uses, Descriptive Research Designs – concept, types and uses. Experimental Design: Concept of Independent & Dependent variables-1	1.chapter 4, 5	2
8.	Exploratory Research Design – concept, types and uses, Descriptive Research Designs – concept, types and uses. Experimental Design: Concept of Independent & Dependent variables-2	1.chapter 4, 5	2
9.	Sampling: Concepts of Statistical Population, Sample, Sampling Frame, Sampling Error, Sample Size, Non Response. Characteristics of a good sample.	1.chapter 6	2
10.	Probability Sample – Simple Random Sample, Systematic Sample, Stratified Random Sample & Multi-stage sampling-1	1.chapter 6	2
11.	Determining size of the sample – Practical considerations in sampling and sample size.	1.chapter 6	2

12.	Data Analysis: Data Preparation – Univariate analysis (frequency tables, bar charts, pie charts, percentages), Bivariate analysis – Cross tabulations and Chi-square test including testing hypothesis of association-1	1.chapter 6	2
13.	Data Analysis: Data Preparation – Univariate analysis (frequency tables, bar charts, pie charts, percentages), Bivariate analysis – Cross tabulations and Chi-square test including testing hypothesis of association-2	1.chapter 6	2
14.	Interpretation of Data and Paper Writing – Layout of a Research Paper, Impact factor of Journals, When and where to publish? Plagiarism and Self-Plagiarism.	1.chapter 7	2
15, 16	Ethics in Research: What is Ethics in Research & Why is it Important? Ethical issues with Human subjects; ethical issues with animal studies. Codes and policies for research ethics; ethical decision making in research	3.chapter 3	2

References:

1. C. George Thomas, Research Methodology and Scientific Writing, Springer International Publishing, 2021
2. Walter Willett, Nutritional Epidemiology, OUP USA, 2013
3. Hilla Brink, Christa Van der Walt, Gisela Van Rensburg, Fundamentals of Research Methodology for Health Care Professionals, Juta, 2006

Seminar Syllabus

Module title: Seminar

Credits: 6

Module type: Practical

Instructor(s)/Department(s): Faculty members of Department of Nutrition Research, National Nutrition and Food Technology Research Institute, Shahid Beheshti University of Medical Sciences.

Description

In this course, students will have to present a lecture on a current problem of clinical or public health nutrition using critical search and data analysis under the supervision of the instructor(s).

Research Project Syllabus

Module title: Research Project (Thesis)

Credits: 6

Module type: Practical

Description

The students will conduct an original research on a hot topic in clinical or public health nutrition under the supervision of the instructor(s). Multidisciplinary project are specifically encouraged.