

GROW NUT -Growing partnership for higher education and research in nutritional epidemiology in DR Congo

Introduction

The GROWNUT project falls within the 'Health' sub-programme of NORHED, with links to the sub-programmes of Natural resource management, climate change and environment

This 5 year project will develop institutional capacity at the School of Public Health in Kinshasa through collaboration for implementation and maintenance of a nutritional epidemiological education and research programme. The programme will have three major components including: 1) The creation of a 2-year Master and 3-year PhD program in nutritional epidemiology for students of DR Congo, 2) training staff members to PhD level and to 3) conducting high-level relevant research in the rural research site of Bwamanda and in other areas, for practical training and research. In this way it is envisioned that the project will create capacity among government, NGOs and private role players especially in sectors working with food production, nutrition and health.

In this project the targeted capacities are in the field of **nutritional epidemiology**, which concerns the patterns, causes and solutions to nutrition problems, focusing in particular on the relation between diet and disease. Education in nutritional epidemiology increases capacities that are central to the large burden of nutrition problems (food insecurity, general malnutrition, micronutrient deficiencies) across the lifespan and the nutrition transition faced by DR Congo. Capacities are in particular important in the following three areas, and accordingly the teachings and research in this project will emphasize these areas: nutrition surveillance, causes of malnutrition and consequences, experimental and observational nutritional epidemiology. The included topics of food production, environment including natural resource management, food security, gender and nutrition have special contextual relevance. The project will also include longer term development of distant learning platforms. Since the project emphasises the importance of linking higher education and research in nutritional epidemiology to policy making and policy implementation it will establish a strategic partnership with PRONANUT (Programme National de Nutrition; National Program of Nutrition) under the Ministry of Health. PRONANUT will in particular play an important role in the following areas: (I) Translation of research findings into national policy, (II) Integrating the policies into routine services of health zones and other governmental sectors. CDI Bwamanda is the NGO partner on GROW NUT in the DRC; responsible for the Health Zone of Bwamanda and is therefore in a particularly good position to help with policy implementation research.

The curriculum

University of Kinshasa School of Public Health has an existing MPH course. The nutrition epidemiology Masters is planned to be a special track within the MPH programme. These students will be expected to take the core components of the existing MPH programme, however the core has been reduced in terms of content and module hours. The core includes a shortened modules in management for example. The programme is envisaged to commence in October 2014. Thus far the 3 institutions have developed an overview of the modules that will be offered, and the initial documentation has been

submitted to the academic committees at UniKin for approval. The summary is provided below. Kindly request details on proposed content and assessment strategy for individual or all modules.

Currently we have a module co-ordinator confirmed for many modules, where possible we have a group of people contributing to the module (a module team). The plan is to have a team that consists of at least one faculty member from UniKin and one from either UiB or UKZN. The request has been for staff from UiB and UKZN to play a reading role in developing the teaching materials, with onsite delivery and supervision as feasible within resources (budget, schedules for visiting faculty)

The project budget accommodates salary support for staff from CIH and UKZN for curriculum development, and separate support (salary, travel, accommodation, stipend) for onsite supervision and teaching, both at Masters and PhD level.

The Masters in Nutritional Epidemiology is a full time program divided into four semesters. The courses are organized in 16 modules. Each module has a theoretical component and a practical component. The theoretical component will be held at the University of Kinshasa. For the practical component, partners like CDI Bwamanda could be a host site. A coordinator of practical training and a field supervisor will guide learners to achieve their training objectives.

Structure par trimestre des Modules

Table 1: Heures par Module

Modules	Nombre d'heures	Trimestres
Anglais	30	Trimestre 1
Informatique appliquée	60	
Biostatistiques 1	90	
Principes de Nutrition	60	
Problèmes Nutritionnels	60	
Considérations éthiques	30	
Mesures de l'état nutritionnel	120	
Epidémiologie 1	90	Trimestre 2
Sécurité alimentaire et nutritionnelle	30	
Nutrition et Grands Enjeux Mondiaux	30	Trimestre 3
Hygiène et Nutrition	30	
Principes de Management	30	
Biostatistiques 2	75	
Epidémiologie 2	120	
Méthodologie de la recherche	120	
Changement climatique et Nutrition	30	Trimestre 4
Genre et Nutrition	30	
Total des heures	1035	

Outline of each module

Module 1: Scientific English

Module 2: Computer Applications Duration : 60 hours= 2 weeks

Module 3: Basic Biostatistics (1) Course Coordinator: Mutombo Paulin, Lusamba Dikasa

Duration: 90 hours= 3 weeks.

Learning Objectives : to design the sampling and data collection plan, manage and analyse data for research studies in Nutrition / Public Health. Use common statistical software. Summarize data. Test hypotheses using univariate and multivariable statistical analyses. Present the results of a research study.

Module 4 : Principles of Nutrition. Course coordinator: Professor Ali Mala Mapatano.

Duration : 60 hours= 2 weeks

Learning objectives: to • Explain the metabolism of macronutrients and micronutrients • Illustrate the role of macronutrients and micronutrients by examples • Determine the nutrition for each stage of the life cycle • Use the concepts of free radicals and antioxidants to explain certain health conditions • Establish the link between behavioral factors and nutrition

Module 5: Nutritional Problems. Course coordinator : Professor Jean Pierre Banea, Meera Chhagan.

Duration : 60 hours= 2 weeks

Learning objectives: Describe major nutritional problems in the DRC and the world. Describe the criteria for defining each nutritional problems. Describe the epidemiological characteristics of each problem. Describe the major strategies to supported nutritional problems. Describe the essential elements of the National Nutrition Policy and global policies. Develop nutritional and nutrition -sensitive interventions for each problem.

Module 6 : Research and Ethical Considerations. Course coordinator : Professor Didine Mala Ali Kaba and Mapatano

Duration: 30 hours= 1 week .

Learning objectives: • Discuss ethical considerations in the development of a research protocol (confidentiality, informed consent , etc.). • Apply the proper conduct ethically in the conduct of research (plagiarism , manipulation, forgery data) • Consider the role of writers in writing a scientific article • Consider the role of a reviewer of a scientific article , a submission of a grant • Discuss the issue of ownership of scientific data.

Module 7 : Measurement of Nutritional Status. Course coordinator : Professor Jean Pierre Banea and Frederick Veldman.

Duration 120 hours= 4 weeks

Learning Objectives : familiarity with the systematic process of obtaining , verifying and interpreting the data for decision making about the nature and causes of problems related to nutrition-diet, anthropometry, biomarkers, food security

Module 8 : Epidemiology 1 Course Coordinator Professor Meera Chhagan , Professor Patrick Kayembe .

Duration 90 hours= 3 weeks .

Learning objectives:• epidemiology concepts/ Definition and scope of epidemiology/ occurrence of diseases •Causal inference •Types of studies and basic Study designs• Application of basic statistical methods

Module 9: Food and Nutrition Security. Course coordinator : Patrick Mobambo Kitume Ngongo .

Duration 30 hours= 1 week

Learning objectives : introduce the concepts of food security as they are currently understood and the main dimensions they raise. At the end of the course, the learner will be able to demonstrate the relationship between households , individuals , the governance of food security , managing price volatility , agricultural production and food security.

Module 10 : Nutrition and Global Issues Worldwide. Course coordinator : Professor Mapatano , Hallgeir Kismul.

Duration 30 hours= 1 week .

Learning objectives : Overview of global nutritional challenges; the double burden of malnutrition in children and mother in countries with low and middle incomes.Nutrition and Human Development , learners should be able to show how diet influences human development point of view cognitive, social -emotional -behavioral , language .Food production and distribution , learners should be able to compare food production and distribution systems in countries with low and middle income and explain how the production and distribution are related to food and nutrition security , human nutrition and health . This includes the ability to describe the evolution of food production and its impact on human nutrition and health.

Module 11: Hygiene and Nutrition. Course coordinator : Professor Kiyombo Mbela.

Duration 30 hours= 1 week.

Learning objectives : principles of management of health risks due to food (eg. HACCP) from production to consumption. Main sources of food contamination in developing countries. Topic of GMO foods . • Management of health risks due to food (general principles of food hygiene , HACCP team , process flow diagram , potential hazards)• Main sources of contamination (scale , sources)• genetic modified organisms (genetic concept , advantages and disadvantages , methods of modification)• Food Adulteration.

Module 12 : Principles of Management. Course coordinator : Professor Nappa Kwilu.

Duration 30 hours= 1 week.

Learning objectives: Explain the main functions of Management• Develop an operational action plan• Explain the main stages of development of a project intervention• Describe the main pillars of organizing a Health System• Understand the Strategy of Strengthening Health System in the DRC and

the organization Health System DRC• Explain the pulse function in relation to motivation and leadership• Explain the elements of Coordination : Plan implementation , monitoring , supervision and evaluation.

Module 13: Biostatistics (Biostatistics Intermediate). Course coordinator : Professor Lusamba Dikasa.

Duration: 2.5 weeks=75 hours

Learning Objectives : • Analyze data using statistical bivariate and multivariate categorical and modeling techniques with regression• Interpret the results of studies using the techniques above

Module 14 : Epidemiology 2(Epidemiology Intermediate). Course Coordinator Professor Patrick Kayembe.

Duration : 4 weeks=120 hours.

Learning Objectives:• Test the validity and reliability of measures of health conditions• Understand the methods and analyzes used in observational and intervention analyses• Evaluate research plans from the perspective of the validity , effectiveness, and ethical point of view• Describe the strategies that could be used to assess or control other related to diet and lifestyle factors that may explain or influence the relationship between diet and other risk factors and disease. • Describe the principles explaining the gene - nutrient interaction.

Module 15: Research Methodology. Course coordinator : Professor Didine Kaba.

Duration : 4 weeks=120 hours.

Learning Objectives : conducting applied research to solving health problems in the community by respecting the scientific research process. 1 . Identify health problems for which research is essential 2. Develop the research protocol 3. Collect data 4. Analyze the data 5. Write a report, article / science communication

Module 16: Nutrition and Climate Change : Past and future. Course coordinator: Professor Torkild , Torlief, Hallgeir Kismul .

Duration 30 hours=1 week.

Learning objectives : 1)Overview on climate and climate change in DR Congo :• Learners should be able to describe the main features of the climate in DR Congo. This includes the average values of the past, present and those of projection and variability and the mechanisms that might influence this variability. 2)Sources of climate data :• Learners will know what sources could be used to assess climate variability , including the limitations of observed data and those produced by models. 3)How to read , using the data on climate and its links with nutrition :• Learners will be able to read the usual data formats containing past and future climate information , retrieve data from specific locations and to link with observations on land related to agricultural production and nutrition. Impact of climate change on harvesting, fishing, hunting , livestock :• Learners will understand how climate and climate variability along with the changes in society affect food availability.

Module 17: Gender and Nutrition. Course coordinator: Professor Lina Piripiri.

Duration : 1 week = 30 hours.

Learning objectives• Discuss the role of gender in agricultural production• Explain the role and importance of breastfeeding• Determine the role of gender in the nutrition for each stage of the life

cycle• Discuss gender issues in food processing, preparation and distribution of food .10 . content:The module includes Gender and Nutrition• The role of gender in agricultural production• Women and Breastfeeding• Women in the food processing• Women and food distribution• Women and food preparation• Women and nutrition for each stage of the life cycle (children , pregnant woman , adult, elderly)

Modules available to PhD students either at UniKin, UiB or UKZN

Module 1 : Analysis of categorical Course Coordinator Professor and Professor Patrick Kayembe Lusamba Dikasa. Duration 30 hours6 .

Module 2: Advanced Methods Epidemiological. Course Coordinator Professor Patrick Kayembe.

Module 3: Teaching Methods. Course Coordinator Professor Mapatano Mala Ali. Duration 60 hours6 .

Module 4 : Experimental studies and quasi-experimental . Course Coordinator Professor Lusamba Dikasa / Professor Patrick Kayembe4. Duration 60 hours6 .

Module 5: Multivariate Analysis. Course Coordinator Professor Patrick Kayembe. Duration 75 hours .

Module 6 : Statistical principles in the planning of an experiment (Design of Experiment) Course Coordinator Professor Lusamba Dikasa / Professor Patrick Kayembe.

Module 7 : Sustainability and Nutrition. Course Coordinator Professor Lusamba Dikasa / Professor Patrick Kayembe. Duration 30 hours

Module 8: Bayesian Inference. Course Coordinator Professor Lusamba Dikasa / Professor Patrick Kayembe. Duration 60 hours

Module 9: Qualitative Research Methods. Course Coordinator Professor Lusamba Dikasa / Hallgeir Kismul. Duration 30 hours

Module 10: Geographic Information System. Course Coordinator Professor Lusamba Dikasa / Professor Patrick Kayembe. Duration 60 hours.

Module 11:Non -parametric statistical inference. Course Coordinator Professor Lusamba Dikasa / Professor Patrick Kayembe. Duration 60 hours

Module 12 : Distance Education. Course Coordinator Professor Meera Chhagan. Duration 60 hours.

Outputs for 2014:

A Master's programme in nutritional epidemiology is established

- Development of modules and learning platforms, and exchange of staff
- Recruitment of Congolese students
- Recruitment staff/ preparing faculty
- Teaching of modules, including supervision, examination, field visits
- Planning of activities across teaching and research e.g. student affairs, visiting faculty
- Formation of steering committee / Comité de Pilotage with representation from all partner

A satellite research site in Bwamanda linked to the Master's and PhD projects is established

- Preparation of logistics and infrastructure for field work and placements
- Preparation for field work and placements
- Management of resources, logistics and infrastructure for the programme