



## **Focus area: Food and Nutrition security**

### **1. Introduction**

The major objective of this focus area is to contribute new knowledge to the scientific body of available evidence. Based on the preliminary survey of the literature, there is convincing evidence that this research focus area is likely to be unique to evaluate the cross-sectional effect of food security on malnutrition in vulnerable population groups in the greater Durban area, addressing both undernutrition and overnutrition.

In 2009, due to economic recessions and food price increases, the number of people hungry and malnourished in the world exceeded the 1 billion mark. According to the Food and Agriculture Organisation (FAO) and Global hunger Index (2010), there were 264 million hungry people in sub Saharan Africa resulting in hunger remaining at a serious level (International Food Policy research Institute 2010).

The rise of global food prices over recent years is directly related to food insecurity and increased poverty. Also, food insecurity is associated with malnutrition as people eat less and cheaper staples. Coping strategies in time of food insecurity include cutting portion sizes, skipping meals and eating less preferred food (World Bank 2010). In South Africa, 35.7% of the population live below the poverty line of >\$2 a day (World Bank 2011).

Hunger and malnutrition remain amongst the most devastating problems facing the majority of the world's poor and needy, and will continue to dominate the health of the world's poorest nations. Nearly 30% of humanity, including infants, children, adolescents, adults and the elderly in the developing world, are currently suffering from one or more of the multiple forms of malnutrition. The tragic consequences of malnutrition include death, disability, stunted mental and physical growth and as a result, retarded national socio-economic development. (WHO 2000). It is estimated that the loss of productivity due to undernutrition is directly related to a 10% loss of income over an individual's lifetime. Countries lose 2-3 of their gross domestic product due to the loss of productivity caused by undernutrition (World Bank 2010).

In South Africa, the collection and cultivation of indigenous food crops declined over the years as western influences have changed food consumption patterns of population groups. Moreover, the nutritional value of indigenous foods could contribute in a major way to food security and a balanced diet in rural and possibly urban households (Jansen van Rensburg, van Averbek, Slabbert, Faber, van Jaarsveld, van Heerden, Wenhold and Oelofse 2007).

Various studies on food security in South Africa indicated that addressing food production at a household level is important to address household food security in rural areas. However, current agriculture practises in communities needs to be acknowledged and support should be based on these practises and how they can be supplemented to address household food insecurity (Hart 2010).

## **2. Focus of the focus area**

The main focus of this focus area is to evaluate the cross-sectional effect of food security on malnutrition in vulnerable population groups in the greater Durban area. To plan, develop and implement interventions to address needs identified in various communities. Figure 1 illustrates the various phases of community projects to identify and address food security. The objectives of the focus area are in line with National and International policies addressing food security and malnutrition.

### **National strategies**

**The National Development Plan (NDP)** aims to eliminate poverty and reduce inequality by 2030. South Africa has an urbanising, youthful population. The Commission recognised that young people endure the impact of unemployment and focused on the youth in its proposals, which include amongst others:

- A nutrition intervention for pregnant women and young children.
- Strengthen youth service programmes and introduce new, community-based programmes to offer young people life-skills training, entrepreneurship training and opportunities to participate in community development programmes.
- Ensure household food and nutrition security
- The state must actively support and incentivize citizen engagement and citizens should actively seek opportunities for advancement, learning, experience and opportunity. Work together with others in the community to advance development and resolve problems.

In line with the National Development Plan (NDP) the focus area also aims to address skills development of youth in various communities.

Given the relatively high prevalence of malnutrition in South Africa a series of strategies to improve nutrition were implemented by the South African Government, specifically the Department of Health. These strategies are grouped together as the Health Sector Strategic Framework (HSSF). **The Integrated Nutrition Programme (INP)** forms one of the key strategic programmes.

The INP was developed from the recommendations of the Nutrition Committee appointed in 1994 by the Minister of Health, to develop a nutrition strategy for South Africa. Based on the United Nations Children's Fund's (UNICEF) conceptual framework for malnutrition and includes the following objectives:

- Disease-specific nutrition support, treatment and counseling (2001 South African National Guidelines on Nutrition for People Living with TB, HIV/AIDS and other Chronic Debilitating Conditions).
- Growth Monitoring and Promotion (Road to Health Chart (RtHC)).
- Nutrition Promotion, education and advocacy (Food Based Dietary Guidelines).
- Micronutrient malnutrition control (Supplementation, fortification and dietary diversification).
- Food Service Management (Catering, planning, control, implementation and evaluation for the provision of balanced nutrition).
- Promotion, protection and the support of breastfeeding (Baby friendly Hospital Initiative).
- Contribution to Household Food security (School feeding (PSNP), Vegetable gardens and Poverty alleviation Programme).

### **International strategies**

Millennium development goals

The eight Millennium Development Goals (MDGs) range from halving extreme poverty to halting the spread of HIV and AIDS, and providing universal primary education, all by the target date of 2015. This forms a blueprint agreed to by all the world's countries and the entire world's leading development institutions. The following goals were agreed upon:

#### **Goal 1: Eradicate extreme poverty and hunger**

- *Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than US\$1 a day*
- *Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger*
  - Prevalence of underweight children (under five years)
  - Proportion of the population below minimum level of dietary consumption

#### **Goal 2: Achieve universal primary education**

- *Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling*

#### **Goal 3: Promote gender equality and empower women**

- *Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015*

#### **Goal 4: Reduce child mortality**

- *Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate*

#### **Goal 5: Improve maternal health**

- *Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality rate*

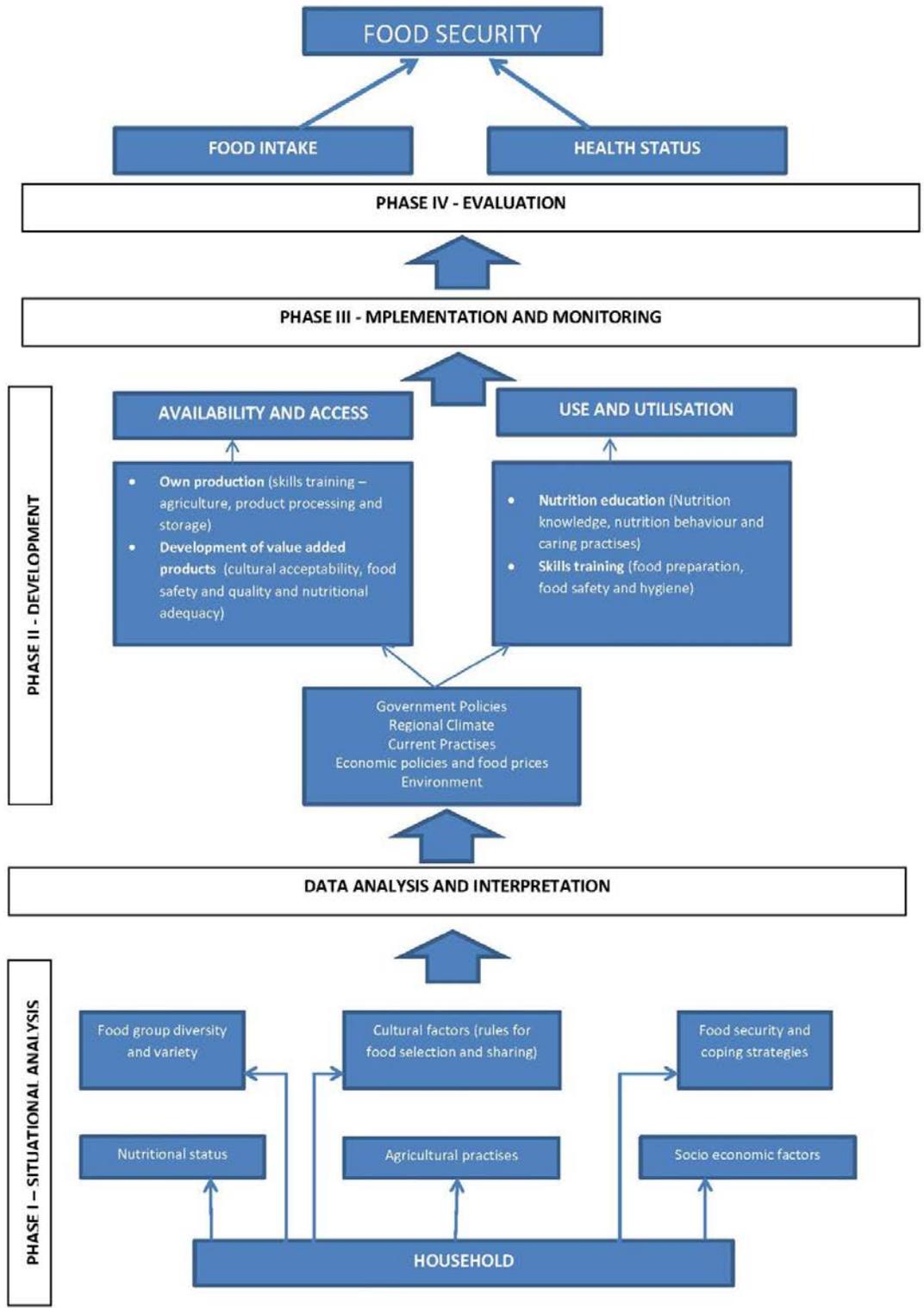
#### **Goal 6: Combat HIV and AIDS, malaria and other diseases**

- *Target 7: Have halted by 2015, and begin to reverse the spread of HIV and AIDS*

**Goal 7: Ensure environmental sustainability**

- *Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources*
- *Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water*
- *Target 11: Have achieved, by 2020, a significant improvement in the lives of at least 100 million slum dwellers*

**Goal 8: Develop a global partnership for development**



**Figure 1: Focus area of Food and Nutrition Security conceptual framework**

### **3. Objectives**

The objectives of the focus area are:

- To determine the socio-demographic profile of communities by administering a socio-demographic questionnaire in order to understand and identify variables that impact on food consumption, food security and nutritional status.
- To determine the nutritional status of the community by using anthropometric measurements (weight, height, waist circumference, hip circumference, arm circumference).
- To determine the actual food intake of a community in order to determine the nutrient adequacy of the diet by comparing it to the DRIs and requirements per age and gender category.
- To determine food variety and food group diversity in communities by using a Food Frequency questionnaire this data assist in identifying food security.
- To determine the coping strategies of a community in time of hunger by administering the coping strategy index.
- To determine menu adequacy in institutions caring for various population groups in order to make recommendations to these facilities in improving the health of the residents.
- To plan, implement, and assess interventions to address food and nutrition related problems in order to address food security.

Some or all of the above objectives can be included in the various studies depending on the specific aim of each study.

### **4. Team members**

Prof Carin Napier -  
Dr Ashika Naicker  
Miss Heleen Grobbelaar  
Miss Onwaba Makanjana

### **National collaborator:**

Prof Wilna Oldewage-Theron (VUT)

### **5. Relevance and outcomes**

This focus area will provide information regarding cross-sectional effect of food security on malnutrition in vulnerable population groups in the greater Durban area. It will be a unique focus area planned to address food and nutrition security and involve a large part of the KZN community. The results should therefore have an impact on the public health policy by establishing food and nutrition security in various communities.

### **Scientific outcomes**

Various Masters and Doctoral qualification and publications in accredited Journals will be forthcoming from this focus area. All the individual research projects will be measured scientifically and presented at conferences and published as scientific papers.

### **Capacity building**

Consumer Sciences: Food and Nutrition and Food Technology third year and B Tech students will act as fieldworkers. M tech students will be involved in all the above studies. Various staff members from the Department of Food and Nutrition Consumer Sciences and Food Technology will be team members in this focus area.

### **Community capacity building**

The outcome of the results will be used to develop food and nutrition interventions that will benefit the individual communities. Feedback to community leaders and organisations can provide information to plan further interventions.

### **Impact on health, nutrition and food policy**

The information gathered through the socio-demographic questionnaire could be used to indicate other problem areas as well as give more insight into households in the Durban with regards to income, education levels, room density and poverty. Food security can contribute to higher economic growth and returns, poverty reduction and improved food and nutrition security status.

## **6. Departmental research**

### **Masters program**

The Masters program in line with this Focus area started in 2008 under the Supervision of Prof C. Napier. The numbers of Masters students grew every year and currently there are 30 Masters students doing various Food and Nutrition projects.

### **Current Masters studies – all part time except for where indicated:**

- Development of nutrition education tools to increase the legume, soya and nut intake of university students in KZN
- The nutritional status and dietary intake of ladies (18-30 years old) attending a FET College in Durban
- The effect of poor dietary choices on malnutrition in a group of Hotel school students in Durban
- The nutritional status and dietary intake of rural adolescents in Port Shepstone
- Nutritional knowledge of caregivers compared to the fruit and vegetable intake in children 6-13 years old in Phoenix
- Level of fortification in commercially prepared bread in KZN
- Determining the relationship between the socio-demographic indicators, nutritional status and dietary intake of primary school children in Chesterville
- The effect of seasonal food variety and dietary diversity on the nutritional status of a rural community in KZN

- Nutritional adequacy of menus offered to children 2 to 5 years old at registered child care facilities in Inanda
- Barriers affecting the nutritional status of children with special needs at a school in Reservoir Hills
- Nutritional knowledge of Health Care workers in Durban
- Nutritional knowledge of caregivers in Umlazi pre-schools caring for children 1-5 years of age
- Comparison of packed school lunches between boys and girls in primary schools in East London
- Impact of a Nutrition education programme on the Nutrition knowledge of Grade R learners in Durban
- Coping strategies of food insecure households in a rural community within the Valley of a Thousand Hills in KwaZulu Natal
- Energy and fat contribution of fast food to the dietary intake of adolescents in Durban
- Evaluation of the nutrition content of the grade eight to twelve school curriculum in Kwazulu-Natal
- Central fatness of children in Isipingo as a measure of risk for the development of Cardiovascular Disease
- Development of a wellness programme for staff at a FET college
- The impact of socio economic indicators and food intake patterns on the nutritional situation of HIV and AIDS orphans (10-17 years) at the Enduduzweni Drop in Focus area in Kwa-Dukuza
- Development of nutrition education material to address nutritional needs of a rural community in Inanda
- Impact of a Westernised Diet on a Middle Income Community of Umlaz
- The socio- economic profile and nutritional status of women of child- bearing age ( 18- 35 years) in the North and South of KwaNdengezi Township
- Food insecurity and coping strategies of women asylum seeker and refugees in the city of Durban
- Food security status and coping strategies in an urban community in Durban.
- Food security, health and nutritional status of elderly caregivers within the rural households of Mpharane in Lesotho
- Relationship between the nutritional status and school assessment results of primary school children aged 9-13 years in Umlazi
- School feeding management and practices in high schools participating in the government school feeding programme in Ixopo Food Hygiene and Safety Practices
- in Eshowe tuck shops.
- 29. Food hygiene, safety and food handling practices of food handlers in a retail company
- in Durban
- Hygiene, safety and food practices of informal food vendors at a University of
- Technology in Durban

### **Doctor of Food and Nutrition program**

The Doctor of Food and Nutrition program was developed, SAQA accredited and implemented in 2010. Currently two students are registered for the program.

### **Current Doctoral studies:**

- The development and evaluation of an orange-fleshed sweet potato yoghurt on Vitamin A and iron status of pre-school children
- Development of a Food and nutrition operational manual for child care workers in children's residential care facilities
- Development of theoretical framework to guide student social responsibility through community engagement

### **Departmental research projects**

- The Nutritional status and dietary intake of children living in children's homes in Durban.
- Situational analysis and nutritional status of an inner-city community in Durban.
- Development of South African Food Based Dietary Guidelines for the Elderly, this is a country wide study.
- The development and effectiveness of Moringa Oleifera supplemented food product for maternal and infant health.

### **Research outputs since 2008**

- Napier, C.E., Oldewage-Theron, W.H. & Kearney, J. 2009. Comparison of three school feeding strategies for primary school children in an informal settlement in Gauteng, South Africa. *Health SA Gesondheid*, 14. ISSN: 1025-9848 (print) ISSN: 2071-9736 (online).
- Oldewage-Theron, W.H., Samuel, F.O., Egal, A.A., Napier, C.E. and Venter, C.S. 2010. Prevalence of zinc deficiency among primary school children in a poor peri-urban informal settlement in South Africa. *Health SA Gesondheid*, 15. ISSN: 1025-9848 (print) ISSN: 2071-9736 (online).
- Grobbelaar, H. and Napier, C. 2010. "Refugee women giving hope to children in the Durban City Centre", in F. Khan and N. Ramlutchman (2010). (eds). *(Re) searching Durban*. Breeze Publishing: Durban, pp. 58-61.
- Napier, C.E. and Oldewage-Theron, W.H. 2011. Development of nutrition education tools for primary school children in the Vaal Region. *Development Southern Africa Journal*. ISSN: 0376-835X.
- Oosthuisen, D., Oldewage-Theron, W.H. and Napier, C. 2011. Impact of a nutrition education programme on the nutrition knowledge of primary school children. *African journal for physical, health education, recreation & dance*, 17(1):141-155
- Oldewage-Theron, W., Napier, C. and Egal, A. 2011. Dietary fat intake and nutritional status indicators of primary school children in a low-income informal settlement in the Vaal region. *South African Journal of Clinical Nutrition*. 24(2):99-104. ISSN: 1607-0658

- Oosthuisen, D., Oldewage-Theron, W. and Napier, C. 2011. The impact of a nutrition programme on the dietary intake patterns of primary school children. *South African Journal of Clinical Nutrition*. 24(2):75-81. ISSN: 1607-0658
- Kearney, J., Oldewage-Theron, W. and Napier, C. 2011. Development and processing of a novel food product for a school feeding project in South Africa. *African Journal of Hospitality, Tourism and Leisure*. 1(4). ISSN: 2223-814X
- Grobbelaar, H.H., Napier, C.E. and Oldewage-Theron, W.H. 2013. Nutritional status and food intake data on children and adolescents in residential care facilities in Durban. *South African Journal of Clinical Nutrition*. 26(1): 29-36. ISSN: 1607-0658
- Napier, C. and Hlambelo, N. 2014. Contribution of school lunch boxes to the daily food intake of adolescent girls in Durban. *South African Journal of Child Health*. 8(2):59-63. Online ISSN: 1999-7671 | Print ISSN: 1994-3032
- Grobbelaar, H.H. and Napier, C.E. 2014. Child and youth care workers: Profile, nutrition knowledge and food safety and hygiene practices. *Health SA Gesondheid*. 19(1). ISSN: 1025-9848 (print) | ISSN: 2071-9736 (online)

### **Conference participation by staff and students since 2008**

#### **Prof C Napier**

- Evaluation of a school feeding programme in addressing malnutrition in a primary school. Invited speaker. 15<sup>th</sup> International Congress of Dietetics (ICD 2008) Global Dietetic Linkage and Cooperation for Human Health. Japan, 8-11 September 2008.
- The effect of 3 school feeding strategies on the nutritional status of a group of primary school children in Gauteng. Poster Presentation. 22<sup>nd</sup> Biennial Congress of the Nutrition Society of SA and the 10<sup>th</sup> Biennial Congress of the Association for Dietetics in SA: Evidence based nutrition: leading the way in innovation, Pretoria - 29 September -1 October 2008.
- Food intake and nutritional status of children residing in children's homes in Durban, South Africa. 19<sup>th</sup> International Congress of nutrition (ICN), Bangkok – Thailand, 4-9 October 2009.
- Development of nutrition education tools as part of a nutrition education programme for pre- and primary school children. SANPAD Nutrition Education Symposium, Institute for Sustainable Livelihoods, Vaal University of Technology, Vanderbijlpark, 4 November 2009. Keynote address.
- Food intake and nutritional status of children (0-19 years of age) residing in Children's homes in Durban, South Africa. Nutrition Congress 2010. Durban, South Africa. September.
- Nutritional status of street children in a formal care facility in Durban, South Africa. 4<sup>th</sup> Africa Nutritional Epidemiology Conference, Nairobi, Kenya October 2010.
- Comparison of the food intake and nutritional status of school girls (13-19 years of age) and female students (19-27 years of age) in Durban, South Africa. World Nutrition congress, Rio April 2012.
- Chair and Adjudicator: Nutrition Congress Africa 2012, Bloemfontein - October 2012.
- Nutritional status and food consumption patterns of elderly living in Verulam, Kwazulu- Natal, South Africa. Africa Ageing Beyond Madrid +10 in Cape Town, October 2012.

- Ethical misconduct in community and nutrition research. Research Ethics Integrity and Quality Insurance Conference 2013. Johannesburg May 2013
- Food security and coping strategies of rural communities in Durban, South Africa. VIII. International Science Conference. Oral presentation and Chair. Zurich 30-31 July 2014

**Miss H Grobbelaar**

- Presented. 19<sup>th</sup> International Congress of nutrition (ICN), Bangkok – Thailand, 4-9 October 2009.
- Oral Presentation. Nutrition Congress 2010. Durban, South Africa. September.

**Mrs T Govender**

- Poster presentation. Nutrition Congress 2010. Durban, South Africa. September.

**Miss O Mankanjana**

- Oral Presentation. 19<sup>th</sup> International Congress of nutrition (ICN), Bangkok – Thailand, 4-9 October 2009.

**Miss X Mkhize**

- Poster Presentation. Nutrition Congress 2010. Durban, South Africa. September.
- Oral presentation- State pension brings social stability in Umlazi-township (Durban) homes of elderly who are bread winners. Africa ageing beyond Madrid +10 in Cape Town, October 2012.
- Oral presentation - Obesity levels among free living elderly women in Kwazulu-Natal Umlazi. Africa ageing beyond Madrid +10 in Cape Town, October 2012.