

A policy perspective on promoting healthy diets to consumers through product information

by

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Thesis

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DECLARATION

I, Zani du Plooy, declare that the thesis, which I hereby submit for the degree MSc Nutrition at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

SIGNATURE:

DATE:

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ABSTRACT

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Faculty: Natural and Agricultural Sciences

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Governments play an essential role in creating a healthy food environment and regulating the information available to consumers on which they can base their food choices. Over the past few decades, the policy environment has encouraged the production of high-energy, nutrient-poor foods. This may have been caused by the focus since the 1970s on the production of sufficient energy, because food insecurity is still a reality in the world today. Diets developed into monotonous food choices, devoid of diversity and with an increased intake of energy-dense foods, which are high fat, salt and sugar. Over time these diets have led to a high incidence of obesity and related non-communicable diseases (NCDs). The impact of obesity and NCDs has caught the attention of policy makers because it puts pressure on the health care system and has a serious economic impact. Research has shown that nutrition-sensitive policies may be a key tool to improve the healthiness of the food environment.

The World Health Organization's (WHO) Global Strategy on Diet, Physical Activity and Health (2004) compelled governments to subscribe to actions to decrease the high rates of obesity and related NCDs. South Africa (SA) became a signatory of this document. However, so far SA is not yet part of the Scaling Up Nutrition (SUN) movement which aims to unite governments, civil society, the United Nations (UN), private sector and academia in an effort to improve nutrition for all people.

This study aimed to evaluate the state of nutrition-sensitive policy in SA by determining and evaluating the broader nutrition policy framework and investigating two of the identified policies (labelling and food-based dietary guidelines (FBDGs)) in more detail, focusing particularly on dairy products.

The study found that some nutrition-sensitive policies have been introduced in SA, which include the implementation of FBDGs in 2001, food labelling regulations (2012), some degree of food composition policy since 2012, the tax exemption of some healthy foods (2010) and a national NCD policy (2013). The revised FBDGs were published in 2012 and include a separate guideline for milk, maas and yoghurt, thus encouraging the consumption of these dairy products as part of a prudent diet.

The publication of new labelling regulations in 2010 caused a change in the availability of product information on yoghurt labels between 2009 and 2013, namely a significant decrease in health benefit claims. The decrease in health benefit claims now limits health and nutrition-related information available to consumers to base food choices on.

The cultural role of maas in the South African diet and the change in the nutritional profile of maas over time was also determined in this study. The study found that maas, a traditional South African food product, forms part of the heritage of many South Africans. It was also found that the nutritional profile of maas has changed significantly over the past 20 years. However, it is still a good source of protein, fat and calcium in the diet. The study concluded that maas remains a culturally relevant and nutritious product which is rightly included in the FBDGs.

Even though these policy tools have been implemented, gaps in nutrition-sensitive policies and infrastructure remain, including the promotion of and education relating to healthy foods, governance, leadership and monitoring of policy. These gaps must be addressed urgently by means of a multi-sectorial approach towards creating a healthier food environment and increasing the availability of product information to consumers, to ensure that the incidences of undernutrition, obesity and NCDs are addressed and if possible, eliminated.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

1.1 Background	1
1.2 The South African Context	3
1.3 Motivation for the study	3
1.4 Aims and Objectives	4
1.5 Structure of thesis	5
1.6 References	6

CHAPTER 2: A REVIEW OF NUTRITION POLICY IN SOUTH AFRICA

2.1 The role of policy in the food environment	8
2.2 Purpose of the study	10
2.3 Methods	10
2.4 Policy environment of South Africa	11
2.5 Evaluation of implantation of nutrition-related policies in South Africa	20
2.6 Discussion	25
2.7 Conclusion and recommendations	30
2.8 References	31

CHAPTER 3: REGULATORY PROGRAMMES AND POLICIES TO SUPPORT HEALTHY EATING

3.1 Introduction	35
3.1.1 The consumer within the food system	38
3.1.2 Non-communicable diseases	39
3.1.3 Programmes to encourage healthy eating	40

3.2 South African case study	40
3.2.1 Food-based dietary guidelines	41
3.2.2 Food labels	42
3.2.3 South African food system	43
3.3 Method	44
3.4 Results and discussion	45
3.5 Conclusions and recommendations	46
3.6 References	48

CHAPTER 4: THE ROLE OF TRADITIONAL FOODS IN FOOD-BASED DIETARY GUIDELINES

4.1 Introduction	52
4.2 Focus of the current food environment	52
4.2.1 Traditional food products in the diet	52
4.3 Policy, public health and the food environment	53
4.3.1 Policy aimed at addressing health and nutrition	54
4.3.1.1 Food-based dietary guidelines as a policy tool	54
4.3.1.2 The inclusion of dairy products in the South African food-based dietary guidelines	55
4.3.1.3 Food composition and foods included in the food-based dietary guidelines	57
4.4 South African case study	58
4.4.1 Objectives	57
4.4.2 Overview of maas	58
4.4.3 Materials and methods	59
4.4.3.1 Consumer information	59
4.4.3.2 Focus groups	60

4.4.3.3 Nutritional analysis	60
4.4.3.4 Statistical analysis	61
4.5 Results and discussion	62
4.5.1 The role of maas	62
4.5.2 Nutritional profile of maas	64
4.6 Conclusions and recommendations	70
4.7 Acknowledgements	70
4.8 References	71

CHAPTER 5: SIGNIFICANCE OF THE STUDY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction	76
5.2 Significance of the study	77
5.2.1 Review of nutrition policy in South Africa	77
5.2.2 Regulatory programmes and policies aimed at promoting healthy food choices in South Africa	78
5.2.3 Inclusion of traditional food products in the revised food-based dietary guidelines of South Africa	79
5.3 Concluding remarks and recommendations	80
5.4 References	82

LIST OF TABLES

Table 2.1	State of food security in South Africa since 1999	9
Table 2.2	Evaluation of pro-nutrition policies in South Africa	22
Table 3.1	Revised South African Food-Based Dietary Guidelines	42
Table 4.1	First set of FBDGs as published in 2001 by the Department of Health in South Africa	56
Table 4.2	Revised South African Food-Based Dietary Guidelines	57
Table 4.3	Proximate analysis of maas (per 100g)	66
Table 4.4	Fatty acid analyses of maas (per 100g)	66
Table 4.5	Summary of fatty acid groups for maas (per 100g)	68
Table 4.6	Mineral analysis of maas (per 100g)	69
Table 4.7	Comparison of data from 1995 (Smit, 1995. Unpublished data) and 2014	69

LIST OF FIGURES

Figure 2.1	Organogram of national level of policies, programmes and interventions relevant to nutrition	14
Figure 2.2	Components and domains of the Government Healthy Food Environment Policy Index (Food-EPI)	21
Figure 3.1	Overview of the INFORMAS framework and the respective societal levels at which public health nutrition must be monitored	37
Figure 3.2	Claims observed between 2009 and 2013 on yoghurt products	45
Figure 4.1	Distribution of dairy products in the SA dairy market	63

CHAPTER 1: INTRODUCTION

To put the study in perspective, the thesis is not presented according to the traditional thesis structure, but rather as a series of papers. There is currently limited research available in this field of study and it is envisioned that this format will stimulate further research on the topic in South Africa (SA). The submission of papers in peer-reviewed journals during the completion of the thesis ensures that the research is timeously available. The thesis comprises of three papers, each paper is regarded as a chapter with its own introduction, discussion and results. Each paper is included in the format in which it was submitted for publication. In addition to these chapters, an introductory chapter as well as a literature review chapter were included and provide background to the field of study. The two papers are followed by a final chapter that provides a summary of all findings and observations made in this study.

1.1. BACKGROUND

Worldwide food environments have become increasingly unhealthy and this promotes the consumption of energy-dense nutrient-poor cheap foods (Swinburn *et al.*, 2013¹). Current food and nutrition policies are designed to support the production of energy-dense food products rather than nutrient-dense foods as part of a balanced and sustainable diet (Mozaffarian, 2013). The synergy between human rights and public health nutrition must be utilised by governments to shape policy as well as behaviour change in terms of the food environment and ultimately dietary choices (FAO, 2013). Governments are not only responsible for developing balanced policies for agriculture and trade but also for food security, health and nutrition.

The high intake of low cost energy-dense foods has contributed to the development of obesity and micronutrient malnutrition. Obesity increases the risk for the development of non-communicable diseases (NCDs) such as cardiovascular disease, hypertension and type 2 diabetes mellitus (Swinburn *et al.*, 2011²; Grundy *et al.*, 2004).

It is estimated that 63% of global deaths in 2008 occurred due to obesity and related NCDs of which 80% occurred in low to middle income countries. The high incidence of obesity and related NCDs have also had a great economic impact. The Harvard School of Public Medicine together with the World Economic Forum (WEF) estimate that in 2010 a loss of 75% of global Gross Domestic Product (GDP) occurred due to NCDs.

The significant economic burden of NCDs was brought to the attention of governments with the publication of the Global Strategy on Diet, Physical Activity and Health by the World Health Organization (WHO) in 2004. The economic impact became too costly and compelled

governments to start taking action in the fight against obesity and related NCDs. In the light of this the WEF further also encourages governments to focus on developing policy that concentrate on well-being, health and the development of NCDs to reduce poverty and income equality, and to achieve sustainable income growth (Bloom *et al.*, 2011).

Government as policy-maker and the private sector are two key stakeholders instrumental in improving the healthiness of the food system of a country. Governments must ensure that the food environment is healthy and must encourage citizens to make healthier dietary choices which will lead to an improved public health status (Swinburn *et al.*, 2013¹; Swinburn *et al.*, 2013²).

The Global Nutrition Report (International Food Policy Research Institute, 2014) states that policies, laws and institutions can play a vital role in scaling up nutrition. Governments can take action and intervene where the food industry fails to deliver healthy food products for the population. Examples of government policies on food products and information include regulations on the product information available on food labels e.g. R146, Regulations Relating to Labelling and Advertising of Foodstuffs in South Africa and 1924/2006 on Nutrition and Health Claims on Food of the European Union. However, it has been noted that governments often fail to intervene due to high pressure from the food industry and the growing commercial interests in public policy development (Swinburn *et al.*, 2013¹).

Nutrition-sensitive policy must be based upon accurate and good quality food composition data and consumption data (Greenfield & Southgate, 2003). Various policy tools such as food guidelines, food labelling and advertising, health and nutrition claims and nutrition education are dependent on food composition data (EUROFIR, 2013). The quality of the food composition data will determine the accuracy of the nutrition messages through product information aimed at consumers to promote healthier food choices.

Health and nutrition-sensitive policies for both the food system and economy may improve nutrition and health knowledge as well as the availability of healthy food products. This in turn may lead to better food choices and a healthier food environment that can improve the nutritional status, as well as the public health of a population.

1.2. THE SOUTH AFRICAN CONTEXT

The food environment of SA, as a middle-income country, is currently dominated by cheap, palatable, energy-dense, nutrient-poor food products. Consumption data available for SA is very limited. The first national consumption survey was completed in 1999 and included only children aged one to nine years. The survey reported on household food insecurity as well as micronutrient deficiencies prevalent amongst children aged one to nine years.

This was the first national consumption survey that provided the government with key insights regarding nutritional intakes to help develop accurate and nutrition-sensitive policies (Labadarios *et al.*, 2005). The 1999 survey was followed by a follow-up study in 2004. The results of the follow-up survey were published in 2006 and included data on women and children. SA is in need of more research on dietary intakes that includes all demographic groups (Schönfeldt *et al.*, 2012). However, the existing consumption data, from 2006, indicates that diets are energy-dense but not nutrient-dense, with high intakes of maize meal porridge and bread (Labadarios *et al.*, 2011).

Together with the high incidence of the intake of energy-dense foods, the incidence of NCDs has increased greatly. Shisana *et al.* (2014) estimate that the incidence of overweight and obesity are about 24.8% and 39.2% compared to 20.1% and 10.6% for women and men respectively. Hypertension and diabetes rates have also increased dramatically amongst adults over the past few years. Reasons attributed to this occurrence include the nutrition transition observed in SA. Due to rapid economic growth as a middle-income country, South Africa is undergoing a demographic and nutritional transition. Studies have shown that the transition reflects lifestyle changes that lead to a higher incidence of overweight and obesity.

In contrast to the overconsumption of high-energy foods, and the development of obesity and NCDs, consumption surveys indicate that the diets of children are low in variety and nutrient-rich foods, leading to the development of wasting and stunting (Labadarios *et al.*, 2005). The latest national health and nutrition survey estimated that 15.4% of all children are stunted and 2.9% are wasted (Shisana *et al.*, 2014). At the same time 11.5% and 4.7% of boys and 16.5% and 7.1% of girls are respectively overweight and obese. The high obesity and NCD rates accompanied by the occurrence of malnutrition places SA under a complex doubleburden of disease. (Steyn *et al.*, 2005).

1.3. MOTIVATION FOR THE STUDY

Against the backdrop of high energy consumption and increased NCD rates, the South African government has introduced some policies and programmes aimed at improving public health and decreasing the rising incidence of NCD's. These strategies include, amongst others, the

National Development Plan (NPD) vision 2030, Medium Term Strategic Framework (MTSF) of the current government, and the strategic plans of the various government departments (UN, 2013). Activities included in the strategic plans include a (NCD) strategy, labelling and advertising regulations, Food-Based Dietary Guidelines (FBDGs) and labelling and advertising of food for young children and infants.

For the purpose of this study the following two government policies were considered:

1. The Directorate of Food Control published new regulations for the Advertising and Labelling of Foodstuffs (R146) (DOH, 2010). These regulations aim to regulate the information provided to consumers by the private sector on food labels as well as any other form of advertising or consumer communication. In 2014 a revised draft of R146, R429, was published. The draft regulation makes provision for more product, health and nutrition-related claims. At the time of completion of the thesis, R429 had not been gazetted.
2. The Directorate of Food Control/Nutrition published the first set of Food-Based Dietary Guidelines specific to SA in 2001 (Vorster *et al.*, 2001). The guidelines take into account dietary needs, consumption patterns, local food systems and diversity of food sources (FAO, 2013). The FBDGs aim to provide a prudent diet by including a variety of food groups (Vorster *et al.*, 2013). This was followed by an update on the FBDGs in 2013.

1.4. AIMS AND OBJECTIVES

The aim of this study was to determine the effect of food policy and legislation on product information that is provided to consumers to make healthier food choices. The study focuses specifically on dairy products. To achieve this aim a clear understanding of policies governing food product information is required, as well as knowledge of how the policies compares to international guidelines. A better understanding of the type and format of product information currently available to consumers is also needed to be able to link the available information to legislation in SA.

The aims of the research can be translated into the following objectives:

1. Determine the broader policy framework that government has put in place to address nutrition in SA.
2. Evaluate the implementation of policies aimed at addressing nutrition, pertaining specifically to malnutrition and NCDs.
3. Determine the effects of new food labelling legislation on South African dairy products and product information in 2013.

4. Compare available product information on dairy product labels in 2013 with data from a 2009 survey.
5. Compare the current South African food labelling legislation with international standards and guidelines.
6. Determine the relevance of maas as a traditional food product in the South African diet.
7. Determine the changes in nutrient composition of traditional dairy products included in the South African FBDGs since 1995.
8. Evaluate the inclusion of traditional dairy products in the South African FBDGs.

1.5. STRUCTURE OF THESIS

The structure and outline of the thesis are as follows:

- **CHAPTER 1: INTRODUCTION**

An overview of the study is provided in this chapter.

- **CHAPTER 2: A REVIEW OF SOUTH AFRICAN NUTRITION POLICY**

This paper is a review on all policies pertaining to nutrition in SA is presented and addresses objectives 1 and 2.

- **CHAPTER 3: REGULATORY PROGRAMMES AND POLICIES TO SUPPORT HEALTHY FOOD CHOICES**

This paper explores the publication of revised FBDGs in 2012 for SA and changes in the use of labelling claims relating to South African dairy products and addresses objectives 3, 4 and 5.

- **CHAPTER 4: THE ROLE OF TRADITIONAL FOODS IN FOOD-BASED DIETARY GUIDELINES**

This paper explores the composition and inclusion of traditional dairy products in the South African FBDGs and addresses objectives 6, 7 and 8.

- **CHAPTER 5: CONCLUSION AND RECOMMENDATIONS**

The main findings and conclusions of the research are discussed. Recommendations for further research are presented and discussed.

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¹Swinburn, B., Sacks, G., Vandevijvere, S., Kumanyika, S., Lobstein, T., Neal, B., Barquera, S., Friel, S., Hawkes, C., L'Abbe, M., Ma, J., Macmullan, J., Mohan, S., Monteiro., Rauner., M., Sanders, D., Snowden, W. & Walker. C. (2013). INFORMAS (International Network for Food and Obesity/non-communicable diseases research, Monitoring and Action Support): overview and key principles. *Obesity Reviews*, 1-12.

²Swinburn, B., Sacks, G., Vandevijvere, S., Kumanyika, S., Lobstein, T., Neal, B., Barquera, S., Friel, S., Hawkes, C., L'Abbe, M., Ma, J., Macmullan, J., Mohan, S., Monteiro., Rauner., M., Sanders, D., Snowden, W. & Walker, C. (2013). Monitoring and benchmarking government policies and actions to improve the healthiness of food environments: a proposed Government Healthy Food Environment Policy Index. *Obesity Reviews*, 14, 24-37.

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Vorster, H. W., Wenhold, F.A.M., Wright, H.H., Wentzel-Viljoen, E., Venter. C.S. & Vermaak, M. (2013). Have milk, maas or yoghurt every day. *South African Journal of Clinical Nutrition*. 26(3)(Supplement).

CHAPTER 2: A REVIEW OF SOUTH AFRICAN NUTRITION POLICY

This paper was submitted to the Journal of Food and Agriculture. This paper is a review of all policies pertaining to nutrition in South Africa. The paper is currently under review.

2.1 THE ROLE OF POLICY AND THE FOOD ENVIRONMENT

Globally, food systems, including the South African food system, are producing large amounts of cheap energy-dense foods that are readily available and accessible, leading to increased consumption of high-energy foods, which in turn lead to the increased incidence of obesity and non-communicable diseases (NCDs) worldwide (Mozaffarain, 2013; Swinburn *et al.*, 2013¹). Food systems generally consist of three major components: (1) production, (2) post-harvest supply chain and (3) the consumer (FAO, 2013¹). The private sector, as a key role player in the food system, is responsible for production of food and, therefore, plays a major role in determining the availability and accessibility of nutritionally-dense food products which impact food security (FAO, 2013¹). Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. (WHO, 2014). Governments rely on policy as a way of regulating the food system and ensuring food security (Swinburn *et al.*, 2013¹). This includes the landscape that shapes the food environment, such as resources (land, water), services (electricity, sanitation), food production, safety, infrastructure, taxation and transport.

The World Economic Forum (2011) and the Food and Agricultural Organization (FAO) (2013²) of the United Nations (UN), are currently promoting and encouraging policies aimed at the development of wellness, health and nutrition with a specific focus on nutrient-density rather than the production of energy-dense food products. The major economic impact, together with the increased mortality rates due to NCDs have brought the regulation of the food industry, and with other sectors, to the attention of governments (Bloom *et al.*, 2011; Swinburn *et al.*, 2013¹). Globally governments started taking action when world leaders gathered at the UN Millennium Summit in 2000 and signed the UN Millennium Declaration which was the foundation of the Millennium Development Goals (MDGs). The eight development goals for 2015 aimed to improve the human condition globally and provided a focal point for governments to base policies on that aim to alleviate poverty and improve the lives of the poor. The MDGs were followed by the Sustainable Development Goals (SDGs) for 2030, which were decided on at the Rio+20 UN Conference on Sustainable Development in 2012. The SDGs aim to improve poverty, food, health, education, gender equality and unemployment by 2030. Some shifts in the type of policy within the food environment have been noticed in recent

years because of initiatives like the MDGs and SDGs, with the focus shifting to multi-sectorial, nutrition-sensitive approaches (Hawkes, *et al.*, 2013). These changes have, however, been slow and inadequate (Swinburn *et al.*, 2013¹).

It is important to note that research has shown that policy can play an instrumental role in improving the health and nutritional status of the larger food environment and ultimately of the consumer (Hawkes, 2012; FAO, 2013¹). A food policy aimed at improving nutrition and health is identified as a nutrition-sensitive policy (Ruel & Alderman, 2013). Nutrition-sensitive policies within the food environment must be multi-sectorial and contribute to a long-term sustainable nutrition-sensitive development (FAO, 2013¹; Contento, 2008).

Table 2.1: State of food security in South Africa since 1999 (Labadarios *et al.*, 2011; SASA, 2013 & Sishana *et al.*, 2014)

	NFCS 1999	NFCS 2005	SASAS	SASAS	SANHANES
	%	%	2008	2012	2014
			%	%	%
Problem					
Food Security	25	19.8	48	45.6	45.6

Overweight and obesity rates in South Africa (SA) have increased dramatically over the past decade. It is estimated that 24.8% of South African females are overweight and 39.2% are obese (Sishana *et al.*, 2014). Obesity is also identified as one of the main risk factors associated with the development of NCDs (Grundy *et al.*, 2004). Globally, it is estimated that NCDs were responsible for 65% of deaths in 2008 (WHO, 2008). The increase in obesity rates in SA is also closely linked to the sharp increase in NCDs. At the same time, food security has been a serious problem plaguing SA. Ad hoc nutritional surveys have been done since 1999 to determine the state of food security in SA (Table 2.1). Since the first democratic elections in 1994 the South African government has set some policies in place to address the double burden of disease and undernutrition as well as increasing rates of obesity and NCDs that threaten the health of the SA population (Steyn *et al.*, 2005). In this paper, examples of multi-sectorial pro-nutrition policies, within the South African context, will be explored and the implementation of these policies will be evaluated in this paper.

2.2 PURPOSE OF THE STUDY

The purpose of the study is to determine the progress the South African government has made towards improving nutrition, by studying the implementation of policies, at a national level, to create a healthier food environment for the prevention of obesity, diet-related NCDs and undernutrition.

2.3 METHODS

The assessment of the state of implementation of current policies and strategies (Figure 2.1) by government was based on the Food Environment Policy Index (Food-EPI) developed by the International Network for Food and Obesity/NCDs Research, Monitoring and Action Support (INFORMAS) (Swinburn *et al.*, 2013²).

The following six steps were followed based on the Food-EPI model to assess the different types of policies:

1. The current context was analysed: this included demographic information, available infrastructure, political system, structure and sustainability and the availability and accessibility of government documents.
2. The relevant information pertaining to policies, strategies and programmes aiming to address obesity, NCDs and undernutrition was collected using government websites (Presidency, Department of Agriculture, Forestry and Fisheries (DAFF); Department of Health (DOH); Department of Basic Education (DBE); Department of Social Development (DSD); South African Revenue Service (SARS) and National Agriculture Marketing Council (NAMC)), as well as libraries and interviews with government officials.
3. The identified policies were assessed to determine whether implementation of these actions, including policies and strategies, has commenced.
4. Government officials were contacted and asked to assess the evidence gathered in steps 2 and 3. They were asked to assess the completeness and accuracy of the evidence collected.
5. Government policies, strategies and interventions were assessed for implementation according to the international benchmarks identified by INFORMAS in the Food-EPI (2013) study. The assessment consisted of two sets of good practice indicators: policy indicators and infrastructure support indicators. The policy indicators include criteria for having policies for food composition, food labelling, food promotion, food prices, food provision, food retail, food trade and investment. The infrastructure support

indicators include leadership, governance, monitoring and intelligence, funding and resources and platforms for interaction.

6. According to the assessment of implementation the current policy system was scored and recommendations on possible gaps in policy were identified and commentary was provided.

2.4 POLICY ENVIRONMENT OF SOUTH AFRICA

The Constitution of South Africa

The Bill of Rights in the Constitution of SA (Constitution of the Republic of South Africa, Act 108 of 1996) stipulates that every individual has the right to sufficient food and water and that every child has the right to basic nutrition, shelter, basic healthcare services and social services. The constitution provides principles by which the country must be governed. In honouring the spirit of the Constitution the South African President has appointed the National Planning Commission (NPC) to address all challenges and opportunities facing SA in creating a country where all South Africans have access to their basic rights, as described by the Bill of Rights, and including access to sufficient food and water and basic nutrition (Constitution of the Republic of South Africa, Act 108 of 1996) (UN, 2013). The NPC developed a vision of what the country should look like by 2030 together with a plan, the National Development Plan (NDP), to achieve that vision.

Medium Term Strategic Framework (MTSF) 2014-2019

The MTSF is the strategic plan for the fifth democratically elected government of SA for the term 2014-2019. The MTSF reflects the electoral commitments by the governing party, including the commitment to implement the NDP. The strategy aims to improve the conditions of life for South Africans. The document serves as the guideline for the development of their own strategies by all national and provincial departments (Presidency, 2014). The following eight priorities were identified for 2014-2019:

1. Radical economic transformation, rapid economic growth and job creation
2. Rural development, land and agrarian reform and food security
3. Ensuring access to adequate human settlements and quality basic services
4. Improving the quality of, and expanding access to, education and training
5. Ensuring quality healthcare and social security for all citizens
6. Fighting corruption and crime
7. Contributing to a better Africa and a better world
8. Social cohesion and nation building.

There are two over-arching strategic themes – radical economic transformation and improving service delivery (Presidency, 2014). Priority two and five may contribute to the improvement of nutrition in SA.

Based on the priority areas identified by the MTSF, a set of 14 national outcomes were developed. The 14 outcomes are made up of the 12 outcomes identified by the MTSF for 2009-2014 with the addition of two new outcomes (social protection, nation-building and social cohesion) (Presidency, 2014). In 2010 the President and all the Cabinet Ministers signed Negotiated Service Delivery Agreements (NSDA) requesting all ministers to establish and participate in Implementation Forums for each of the identified outcomes (UN, 2013). The NSDA must ensure the commitment of key sectorial as well as inter-sectorial partners linked to the delivery of the outcomes.

The 14 outcomes agreed to by the President and the Cabinet for 2014-2019 are:

- Quality basic education
- **A long and healthy life for all South Africans**
- All people in South Africa are and feel safe
- Decent employment through inclusive growth
- A skilled and capable workforce to support an inclusive growth path
- An efficient, competitive and responsive economic infrastructure network
- **Vibrant, equitable, sustainable rural communities contributing towards food security for all**
- Sustainable human settlements and improved quality of household life
- Responsive, accountable, effective and efficient local government
- Protect and enhance our environmental assets and natural resources
- Create a better SA and contribute to a better Africa and a better world
- An efficient, effective and development-orientated public service
- A comprehensive, responsive and sustainable social protection system
- A diverse, socially cohesive society with a common national identity.

Two of the 14 outcomes, a long and healthy life for all South Africans and vibrant and equitable, sustainable rural communities contributing towards food security for all, can be linked to the improvement of nutrition in SA. However, nutrition is not named as a direct outcome. This is worrying as it shows a lack of insight into the role played by nutrition/diet/healthy eating in sustaining the health of the nation. Each governmental department developed its own strategic plan including policies, strategies and interventions based on the priorities and outcomes identified in the MTSF. For the purpose of this article all

government departments with strategic plans that include policies, programmes and interventions pertaining to nutrition were identified and explored. Figure 2.1 is a visual representation of all policies pertaining to nutrition.

A brief description, by governmental department, of all strategies, policies, programmes and intervention aiming to improve nutrition and reaching the outcomes set in the MTSF and NDP will follow. Government departments that specifically include nutrition in their strategic plan as part of various strategies and programmes for the next five years include DAFF, DOH, DBE, DSD and SARS.

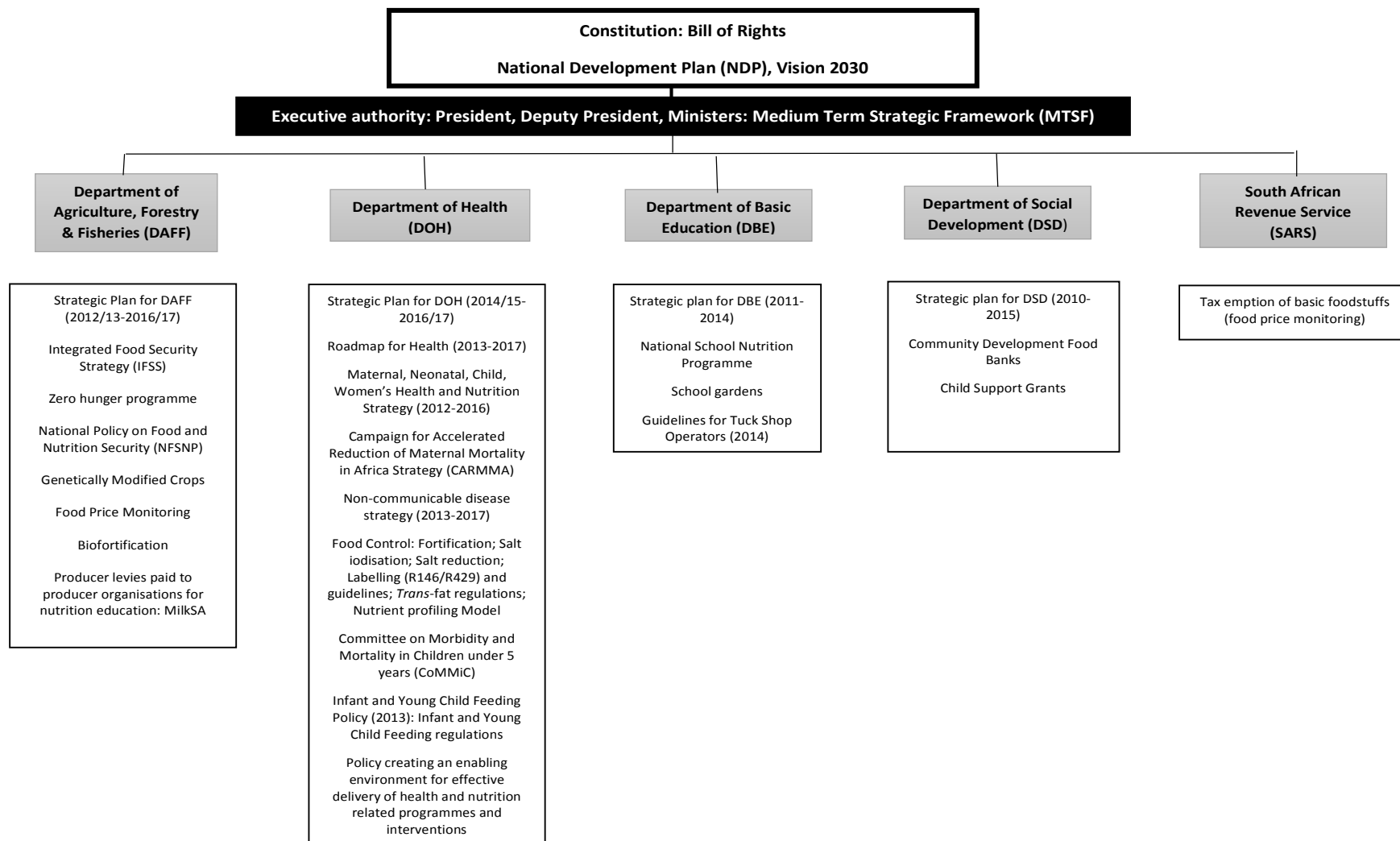


Figure 2.1: Organogram of national level of policies, programmes and interventions relevant to nutrition

Department of Agriculture Forestry and Fisheries (DAFF)

The Strategic Plan identified by DAFF for the period of 2013/14-2018/19 is aimed at addressing the challenges facing the agricultural, forestry and fisheries sectors. Furthermore the improvement of service delivery for the next five years is in line with the priorities identified by the Medium Term Expenditure Framework (MTEF) by the presidency for this period (Treasury, 2014). The government identified key policies for the development of such programmes over the next five years. These policies include the NDP vision 2030, the New Growth Path (NGP) (EDD, 2011), the Industrial Policy Action Plan 2 (IPAP2) (2013/13-2015/16) (DTI, 2013) and the work of the Presidential Infrastructure Coordinating Commission (PICC) (DAFF, 2013). Six programmes were identified by DAFF to address government's key priorities. The six programmes include: 1) Administration; 2) Agricultural Production, Health and Food Safety; 3) Food Security and Agrarian Reform; 4) Economic Development, Trade and Marketing; 5) Forestry and Natural Resources Management; and 6) Fisheries Management.

Programme 3 is specifically relevant to the improvement of nutrition in SA by addressing food security and agrarian reform. One of the main sub-programmes within programme 3 focuses specifically on household food security by providing a national framework promoting the *Sustainable Household Food Security Programme* (DAFF, 2013). The latter includes the following governmental actions: the development of the Zero Hunger Programme together with the Integrated Food Security Strategy (IFFS) (2002) and the National Policy on Food and Nutrition Security (NPFNS) (2013) (UN, 2013; DAFF, 2013).

Policies and interventions put in place by DAFF to improve the nutritional status of South Africa include:

- Zero Hunger Programme: The Zero Hunger Programme aims to address the nutritional need of low income individuals and households by means of a multi-sectorial approach by focusing on the food produced by smallholders. It also aims to link subsistence producers and smallholder producers to government institutions such as government schools (by supplying food to the School Nutrition Programme), public hospitals and prisons (UN, 2013). The Zero Hunger Programme includes the following programmes and interventions:
 - Comprehensive Agricultural Support Programme (CASP) implemented in 2004/5 by DAFF
 - Strategic Plan for Smallholder Producers (2011-2014/15)
 - Ilima Letsema
 - The Landcare Programme

- Mafisa
- Sustainable Household Food Production, Food Security and starter packs (PMG, 2012).
- Integrated Food Security Strategy (IFSS): IFSS, introduced in 2002, aims to address food security by integrating all current food security programmes in SA to achieve its goal of improved food security and nutrition throughout SA. The vision of the IFSS is aligned with the South African constitutional right that all South Africans must have access to minimum daily, safe, nutritious food. The main goal of the IFSS is to eradicate hunger, malnutrition and food insecurity by 2015. It aims to achieve this goal by focusing on the following objectives: increase household food production and trading; improve income generation and job creation opportunities; improve nutrition and food safety; increase safety nets and food emergency management systems; improve analysis and information management systems; provide capacity building and engage in stakeholder dialogue.
- National Policy on Food and Nutrition Security (NPFNS): The IFSS will be coming to an end in 2015 and with the problem of food and nutrition insecurity still looming, the South African government introduced the NPFNS in 2013. DAFF and the DSD, supported by other line function ministries, was mandated to lead the implementation of this policy. The strategic goal of the NPFNS is to ensure the availability, accessibility and affordability of safe and nutritious food at national and household levels. 13.8 million individuals still experience inadequate access to food. The strategy aims to reduce this number and thereby contribute to the eradication of overall poverty.
- Other initiatives by DAFF to address the availability, accessibility and affordability of nutritious food include Genetically Modified (GM) crops, biofortification and food price monitoring. GM produce poses the potential for improved nutrition if nutrients are increased in critical foods (UN, 2013). Biofortification focuses on the selective breeding and manipulation of horticulture to improve the nutritional quality of crops. In SA under the ARC and the FAO of the UN a project aiming to improve the vitamin A and iron content of sweet potato has been undertaken (UN, 2013). Lastly, food price monitoring as a result of a series of food price increases since 1991 led to monitoring of food prices by the National Agricultural Marketing Council (NAMC). NAMC publishes a quarterly review of all food prices. NAMC also reviews farm-retail price margins and explores other cost drivers in the food supply chain (UN, 2013; NAMC, 2013).

Department of Health (DOH)

The Strategic Plan for the DOH for the period 2014/15-2016/17 aims to improve the health status of South Africans through the prevention of illness and disease and the promotion of healthy lifestyles and the consistent improvement of the health and delivery system by focusing on five key areas: access, equity, efficiency, quality and sustainability (DOH, 2014). The DOH intends to achieve this by implementing various programmes including: good administration; implementation of National Health Insurance, Health Planning and system enablement; HIV/AIDS and TB and maternal child health amongst others. Policies and interventions put in place by the DOH to improve the nutritional status of all South Africans include:

- Roadmap for Nutrition (2013-2017): The Roadmap for Nutrition provides a framework for the repositioning of nutrition and nutrition-related issues in the South African policy arena. The roadmap envisions optimal nutrition for all South Africans with a specific focus on women, infants and children. Five strategic approaches were identified for the implementation of the Roadmap for Nutrition that will contribute to achieving the Millennium Development Goals (MDGs) that relate to poverty. These MDGs include:
 - Poverty and hunger (MDG 1: Eradicate extreme poverty and hunger),
 - Education (MDG 2: Achieve universal primary education)
 - Child mortality (MDG 4: Reduce child mortality)
 - Maternal health (MDG 5: Improve maternal health) (DOH, 2013)

The strategies will be implemented over a period of time from 2013 to 2017.

The five strategies include: Advocate and provide technical support for multi-sectorial action on nutrition; 2) Positioning of nutrition strategically in the health sector; 3) Strengthen the implementation of key nutrition interventions at all levels in the health sector; 4) Strengthen the human resource capacity for the delivery of nutrition services; 5) Strengthen the information base for effective nutrition services (DOH, 2013). Programmes included in the strategies include the implementation of Food-Based Dietary Guidelines (FBDGs), Infant and Young Child feeding, fortification programmes and the treatment of acute malnutrition.

- Strategic Plan for Maternal, Neonatal, Child, Women's Health and Nutrition (MNCWHN) (2012-2016): The main aim of the MNCWHN is to reduce mortality and morbidity rates in both women and children (DOH, 2012). The strategy aims align with the following MDGs: 1,3,4,5, and 6. MDGs: 1) Eradicate extreme poverty and hunger; 3) Promote gender equality and empower women; 4) Reduce child mortality; 5)

Improve maternal health; 6) Combat HIV/AIDS, malaria, and other diseases. The delivery of the MNCWHN services is closely linked to a well-functioning health system. The strategy is therefore closely aligned with other strategies and efforts to strengthen the health system.

- Strategic Plan for the Campaign for Accelerated Reduction of Maternal Mortality in Africa (CARMMA) Strategy: CARMMA is an initiative by the African Union for the reduction in mother and child morbidity and mortality rates (CARMMA, 2009). The strategic plan aligns with the strategy for MNCWHN as well as the 5th MDG i.e. improve maternal health. CARMMA is a renewed, intensified implementation plan for the attainment of the African Union's Maputo Plan of Action for Reduction of Maternal Mortality in Africa (UN, 2013).
- Non-communicable diseases (NCD) Strategy: The vision of the NCD strategy, aligned with one of the 14 outcomes of the MTSF of the Presidency for the period 2014-2019, is a long and healthy life for all, through the prevention and control of NCDs. The NCD prevention strategy has three main sub-strategies: 1) the prevention of NCDs and the promotion of health and wellness at population, community and individual level; 2) the improvement of the control of NCDs through the strengthening of health systems and reform; 3) the monitoring of NCDs as the main risk factors and conduct innovative research in this area (DOH, 2014).
- Regulation of the food industry implemented by the Directorate of Food Control: The Directorate of Food Control is responsible for ensuring consumer protection in the different sections of the food system, including production, handling, storage, processing, distribution, food safety, food quality and accuracy of all food labels (UN, 2013).

Regulations that aim to achieve this goal and improve nutrition include:

- Salt iodisation: The implementation of the iodisation of salt in SA was introduced in 1995. The National Food Consumption Survey Fortification Baseline (Labadarios, 2007) showed that Iodine Deficiency Disorder (IDD) has been virtually eradicated since the implementation of this regulation.
- Salt reduction: Regulations (R214/20 March 2013) aiming to lower the salt intake and address the high hypertension levels of South Africans were introduced in 2013. Targets for the salt content of specific foods were set for 2016 and 2019 respectively. The South African food industry is hard at work trying to meet the first set of targets for 2016.
- Labelling (R146/01 March 2010/R429 (draft)): Revised food and advertising regulations were introduced in 2010 (R146/01 March 2010). The purpose of these regulations is to provide consumers with additional information to make

more informed food choices. A new, stricter draft (R429) was published in 2014. The proposed nutrient profiling model was also included as criteria for health, ingredient and function claims on food products. The model ensures that claims do not mask the overall nutrient quality of food products.

- *Trans-fat* regulations (R127/17 February 2011): The aim of this regulation that was introduced in 2011 is to lower the consumption of artificially created, man-made trans-fats in food products and thereby lower the risk for the development of cardiovascular diseases and cancer.
- Food fortification (R504/7 April 2003): The main of this regulation is to ensure the fortification of certain staple foods in South Africa. The fortification of maize meal, wheaten flour and bread are addressed by this regulation.
- Committee on Morbidity and Mortality in Children under 5 years (CoMMiC): The committee was established by the DOH in 2008 to evaluate the magnitude of childhood deaths in the country as well as establish the causes of the high child mortality rate. The committee was further tasked to assist in the development of implementation plans to combat the high morbidity rates. The first report released by the committee in 2009 found that the sources of data on the extent of childhood deaths in SA were incomplete from a coverage and information point of view. The report estimated that the under-five mortality rate was at 57.6% and go as high as 94.7% per 1 000 live births. They found that the major causes of childhood death included malnutrition that contributes to both primary and underlying causes of child mortality, diarrhoeal disease, lower respiratory tract infection and perinatal conditions (DOH, 2009). Government officials indicated that the committee is set to release the second report very soon.
- South African Infant and Young child feeding policy (2013): The release of the 2010 WHO guidelines on HIV and Infant Feeding and the adoption thereof by the national DOH prompted the government to reassess its position on infant feeding. The policy was developed in line with numerous policies locally and internationally such as the Convention on Rights of the Child, Global Strategy for Infant and Young Child Feeding, the International Code of Marketing of Breastmilk Substitutes, the Roadmap for Nutrition in SA as well as MNCWHN. The main aim of the policy is to define strategies and actions that could play a role in the promotion, support and protection of appropriate infant and young child feeding practices. Under the policy the Regulation Relating to Foodstuffs for Infants and Young Children (R991/06 Dec 2012) was published and aims to regulate the information available on food product labels as well as marketing practices on products for infants and children below the age of 36 months.

- Other policies creating an enabling environment for effective delivery of health and nutrition-related programmes and interventions include Human Resources for Health Strategy; National Health Insurance; Re-engineering of Primary Healthcare and a Mid-level Workers Policy.

Department of Basic Education (DBE)

- The strategic plan for DBE for the period 2011-2014 identified various programmes to improve basic education services. The fifth programme, Educational Enrichment Services, includes the National School Nutrition Programme (NSNP). The NSNP aims to improve food security at both primary and secondary school communities by providing meals, based on the FBDGs, for children at school. Other aims include improving nutrition education and increasing dietary diversification (DBE, 2011).
- The DBE introduced Guidelines for Tuck Shop Operators aims to ensure that healthy foods and beverages are sold to children at school (DBE, 2014)

Department of Social Development (DSD)

The DSD works to establish sustainable rural communities as well as food security. Programmes and interventions by the DSD aimed at improving nutrition security include the establishment of community food banks and social assistance grants aimed at addressing food security.

South African Revenue Services (SARS)

Certain basic food products in SA are exempt from tax and are known as zero-rated food products. This is another form of food price monitoring by the government. The current list of zero-rated food products include: brown bread, rice, maize meal, brown wheaten meal, samp, dried mealies, mealie rice, vegetables, fruit, vegetable oil, dried beans, lentils, edible legumes and pulses, milk, cultured milk, milk powder, dairy powder blend, pilchards in tins, and eggs (Treasury, 2010).

2.5 EVALUATION OF IMPLEMENTATION OF NUTRITION-RELATED POLICIES IN SOUTH AFRICA

The policies listed in Figure 2.1 were evaluated according to the sub-categories in Food-EPI model of New Zealand (Figure 2.2) in order to better understand the current stance of nutrition-sensitive policy in South Africa and report on possible gaps identified for nutrition policies (Table 2.2). Each policy and infrastructure sub-category was used as a guide to evaluate the policies and strategies identified in Figure 2.1. If it was found that a policy or strategy indicated in Figure 2.1 had been implemented, the sub-category was marked 'Yes', and applicable

policies and strategies were included. If no policies or strategies existed for the specific policy categories according to Figure 2.1, the sub-category was marked 'No'. In the case where policies and strategies indicated in Figure 2.1 pertaining to a specific sub-category had been developed but not implemented, the sub-category was marked as partly implemented and the relevant policies and strategies were identified as per Figure 2.1.

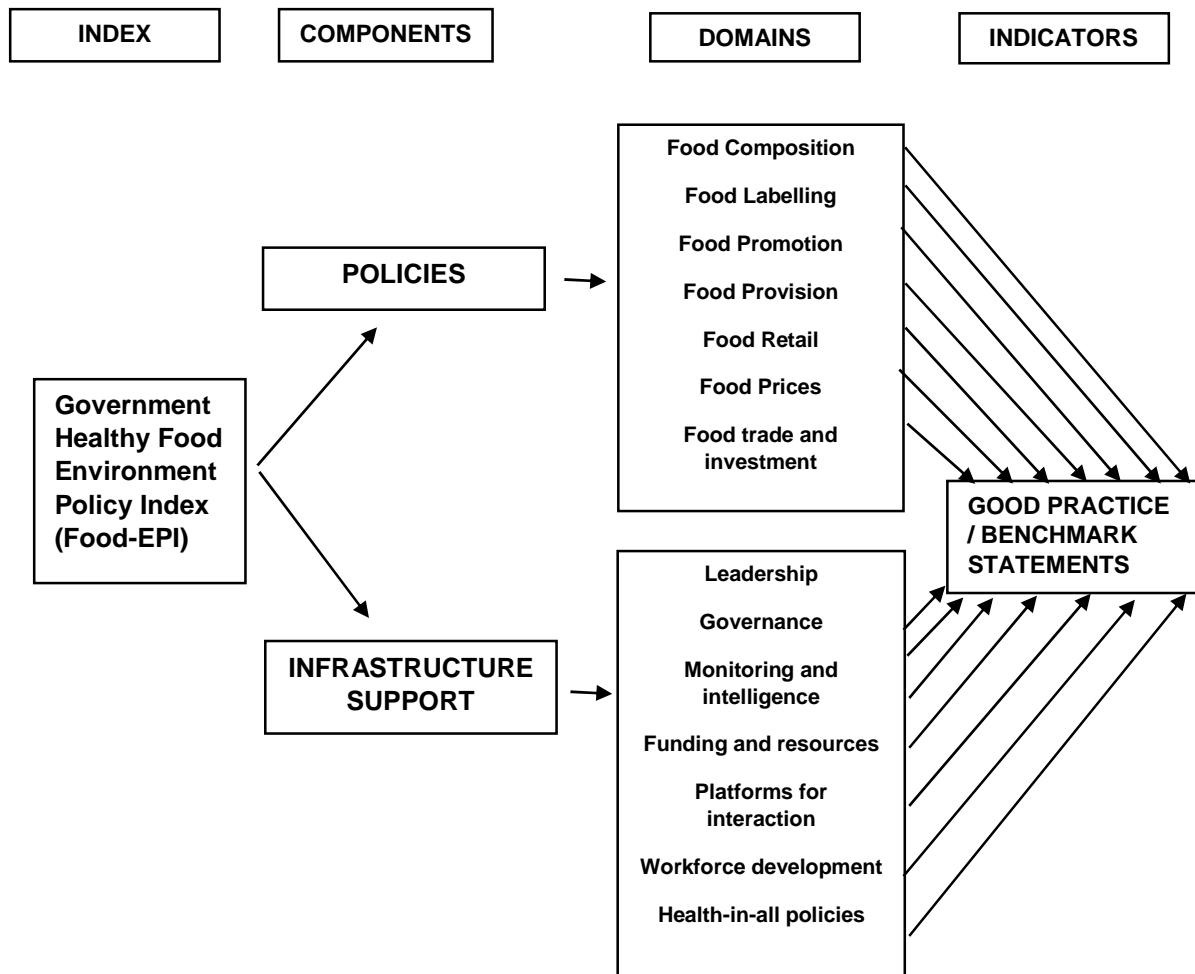


Figure 2.2: Components and domains of the Government Healthy Food Environment Policy Index (Food-EPI) (Swinburn *et.al.*, 2013)

Table 2.2: Evaluation of pro-nutrition policies in South Africa

Policy category	Type of policy	Implemented	Policy
Food composition	Food composition targets	Partly	Food control: food fortification (R504/7 April 2003); salt reduction (R214/20 March 2013); salt iodisation; trans-fat regulations (R127/17 Febr 2011), Nutrient Profiling Model (R429 draft)
Food labelling	Ingredient lists/nutrient declaration	Yes	R146/01 March 2010, R429 (draft)
	Regulatory systems for health and nutrition claims	Yes	R146/01 March 2010; R429 (draft)
	Front of pack labelling	No	
	Menu board labelling	No	
Food promotion	Restrict promotion of unhealthy foods to children (media)	No	
	Restrict promotion of unhealthy foods to children (settings)	Yes	Guidelines for Tuck Shop Operators
Food price	Reduce taxes on healthy foods	Yes, partly	NAMC; SARS
	Increase taxes on unhealthy foods	No	
	Existing food subsidies favour healthy foods	Partly	Tax exemption of basic foodstuffs
	Food-related income-support is for healthy foods	No	

Policy category	Type of policy	Implemented	Policy
Food provision	Policies in schools/ECEs promote healthy food choices	Yes, partly	NSNP; School gardens
	Policies in public settings promote healthy food choices	Partly	NCD strategy
	Support and training systems (public sector settings)	No	
Food retail	Support and training systems (private sector settings)	No	
	Robust local government policies and zoning laws	No	
	In-store availability of healthy foods	No	
Food Trade and Investment	Trade agreement Impacts assessed		
	Protect regulatory capacity - nutrition	No	
Leadership	Strong visible political support	Partly	NPFNS
	Population intake targets established	Partly	NCD strategy – targets for salt intake
	Food-based dietary guidelines implemented	Yes	FBDGs (NNW, 2012)
	Comprehensive implementation plan linked to national needs	Yes	Roadmap for Nutrition DOH strategy; Roadmap for Nutrition; NCD strategy, Maternal, Neonatal, Infant, Child, Woman Health and Nutrition Strategy; Zero Hunger Programme

Policy category	Type of policy	Implemented	Policy
	Priorities for reducing inequalities	Yes	IFSS; NSNP; NPFNS; CARMMA; social grants; food banks
Governance	Restricting commercial influence on policy development	No	
	Transparency for the public in the development of food policies	No	
	Access to government information	Yes	Available on government websites.
Monitoring and Intelligence	Monitoring food environments	No	
	Monitoring nutrition status and intakes	Partly	Ad hoc studies
	Monitoring Body Mass Index	No	
	Monitoring NCD risk factors and prevalence	Partly	Ad hoc studies
	Evaluation of major programmes	Partly	
	Monitoring progress on reducing health inequalities	Yes	CoMMiC
Funding and resources	Population nutrition promotion budget	Yes but limited	R5 million given to the Heart and Stroke Foundation to start the Salt Watch campaign
	Research funding for obesity & NCD prevention	Partly	Funding is very limited

Policy category	Type of policy	Implemented	Policy
Platforms for Interaction	Co-ordination mechanisms (national and local government)	Partly	
	Platforms government and food sector	Yes	FLAG – Advisory committee to the Directorate of Food Control (DOH)
	Platforms government and civil society	Partly	Consumer Goods Council of South Africa, numerous other organizations representing the various sectors within the food industry.
	Systems based approach to obesity prevention	No	

2.6 DISCUSSION

Policy indicators

A little less than a quarter (23%) of all good practice indicators were indicated as implemented for SA. Only 16% of policy indicators and about a third (30%) of infrastructure indicators have been implemented (Table 2.2). It must be noted that the nutrition policy environment of SA must address the double burden of disease. Over half the adult population of SA is overweight or obese whilst almost a third of all children are undernourished in some way (DOH, 2013). It is thus vital that the South African nutrition policy environment aims to address these inequalities.

The policy priority of food composition is partly met for South Africa. Regulations controlling the trans-fat (R127/17 Febr 2011) and sodium (R241/20 March 2013) content of certain food products have been put in place as part of the strategy by DOH to address the problem of NCDs in SA. The trans-fat regulations specifically aim to reduce the risk associated with the intake of fat.

The sodium regulations aim to address the high prevalence of hypertension by reducing the salt content of commonly consumed foods high in salt (UN, 2013). The current focus is not on

“good” nutrients such as protein, vitamins and minerals, but rather on “bad” nutrients such as trans-fats and sodium.

The fortification of salt with iodine has been mandatory since 1995, almost eliminating the problem of iodine-deficiency in SA. Furthermore, the fortification of wheat flour for bread baking and maize flour has been made mandatory since 24 October 2003 (R504/07 April 2003).

Thus all bread wheaten flour and maize meal in SA is fortified with a mixture of vitamin A, thiamine, riboflavin, nicotinamide, pyridoxine, folic acid, iron and zinc (R504/07 Feb 2003). Even though this ensures that two of the basic foodstuffs in SA are more nutritious, these regulations are limited in that they only address certain food products.

A nutrient profiling model was included in the new draft regulations (R429, 2014) that were released in 2014. The model aims to address the composition of all food products that will carry any health, nutrient, nutrient function or ingredient claim. Even though SA has come a long way in putting policies in place addressing the composition of certain foods, no formal strategy or policy is in place to set targets for food composition.

SA rated well in policies regulating food labelling, including mandatory ingredient list declarations and regulatory systems for nutrient claims. With the publication of labelling regulation, R146/01 March 2010, in 2010, the declaration of ingredients on food labels became mandatory. However, the declaration of the nutrient table is not mandatory. The use of health claims is also not currently permitted on food products in SA. This in turns leads to less information which is taken into account by consumers when making food choices. Studies have shown that consumers regard nutrient and health claims as a source of information taken into account when food choices are made (Van Trijp and Van der Lans, 2007). However, it is important to note that a revised draft regulation (R429) pertaining to labelling and advertising was published in 2014 and that it proposes mandatory nutrition labelling and health claims. As mentioned above, the draft also proposes a nutrient profiling model that will serve as a guide for any product-related claims (R429, 2014).

Another initiative that has been introduced to promote healthy eating is the *Guidelines for Tuck Shop Operators* that aim to empower school management teams to promote healthy food alternatives in tuck shops, promote nutrition and healthy lifestyles and educate learners, parents/caregivers and the community to distinguish between unhealthy and healthy foods (DBE, 2014). However, the implementation of these guidelines must still commence. Monitoring mechanism have not been clarified for these guidelines.

Other policy priorities that have been indicated as “implemented” are only partly implemented. These policies include tax reduction on healthy foods, the promotion of healthy food choices in schools, in-store availability of healthy foods, strong visible political support for nutrition, monitoring of obesity and NCD prevention programmes, monitoring of programmes aimed at decreasing inequalities, monitoring of nutrition intakes, provision of population nutrition promotion budgets and the provision of funding for research on obesity and NCD prevention.

Food price monitoring is done jointly by the NAMC and SARS. The NAMC monitors food prices and annually embarks on research to determine the factors that are affecting food prices, specifically of agricultural products (NAMC, 2013). Currently no increased taxes for unhealthy food products have been implemented. Current food price strategies and subsidies do not support healthy food choices.

On the other hand, the NCD strategy (DOH, 2013) proposes the use of food price strategies to promote the consumption of healthy foods. The activities included in the strategy include the reduction of tax on healthy food products and the higher taxation of unhealthy food products high in sugar and fat (DOH, 2013). Currently there is a zero rating for tax on 19 food products, including brown bread, rice, maize meal, brown wheaten meal, samp, dried mealies, mealie rice, vegetables, fruit, vegetable oil, dried beans, lentils, edible legumes and pulses, milk, cultured milk, milk powder, dairy powder blend, pilchards in tins, and eggs (Treasury, 2010).

Some healthy foods such as fruit and vegetables, beans, legumes and pulses, as well as milk and maas (cultured milk) are included (Treasury, 2010). Furthermore, it is not only affordability of healthy food that is an issue but also the availability. The large retail shops in cities have a wide variety of healthy foods that are regularly available, however smaller shops, especially in rural areas, have a limited variety of healthy food products available (Temple *et al.*, 2011). Despite the zero rating of fruits and vegetables South Africans are consuming very low levels of these foods due to high prices and limited availability (Naude, 2013).

Vital gaps exist in policies aimed at providing information to consumers to promote healthier food choices. This is reflected in the lack of policy promoting menu board labelling, front of pack labelling and restrictions on the promotion of unhealthy foods to children (Table 2.2). Currently the only manner of restriction on the promotion of unhealthy food to children is done by self-regulation by the food industry by means of a code relating to marketing and advertising to children signed by certain food producers (IFBA, 2009). The new labelling and advertising draft regulation, R429, published in 2014, includes a strict guideline on the promotion and advertising of food products and non-alcoholic beverages to children. Only time will tell whether these strict guidelines will be published and implemented as law.

The public promotion of healthy food choices is to some extent implemented through the newly introduced NCD strategy for the period of 2013-2017 for the prevention and monitoring of NCDs (DOH, 2013). Numerous activities and programmes have been identified to encourage healthier lifestyles and food choices over this 5 year period. It remains to be seen whether all the planned activities will be implemented seeing that the necessary funding is lacking.

One example of a campaign included in the NCD strategy, that has already commenced, is the Salt Watch campaign for the reduction of salt intake by the Heart and Stroke Foundation of SA. The programme is currently funded by the DOH and is designed to reach the majority of South Africans through traditional media channels over a minimum of three years and is envisaged to continue for up to ten years (HSFSA, 2013; DOH, 2013). The monitoring of all programmes and of NCD rates are also suggested in the strategy. However, it remains to be seen what practices and structures will be set in place to monitor NCD rates and programme effectiveness and if this translates into changes in consumer behaviour. In 2014 the DOH made a call on the food industry to take part in the department's efforts. The food industry are still deliberating on what efforts they will take part in.

Infrastructure indicators

The average rating scored by SA against international benchmarks for leadership and governance structures (Table 2.2) included having policies and practices such as the implementation of the FBDGs, a comprehensive implementation plan linked to national needs, policies that prioritise the reduction of inequalities and interaction platforms for government and civil society.

A lack of senior leadership is an obstacle to the effective implementation of nutrition-sensitive policy by government (UN, 2013). A policy analysis done for the UN 2013 indicated that there is lack of governance, policy processes and political economy pertaining to the implementation of policies and programmes in SA.

The lack of governance and leadership leads to the quick unravelling of programmes and ultimately the premature termination of programmes. The Zero Hunger Programme is cited as an example where poor governance led to the extinction of the programme (UN, 2013). Another example is the Scaling Up Nutrition (SUN) initiative that commenced in 2009, which was supported by some DOH employees but not by senior leadership within the DOH. SUN is a movement of the UN to prioritize nutrition in programmes and planning (SUN, 2011). The initiative has thus not yet been adopted and implemented in SA, even though numerous other countries around the world have implemented the SUN initiative as an example of their commitment to eradicate undernutrition.

A success of the SA government is the development of a comprehensive plan to address national nutrition needs - the DOH strategic plan for 2013/14-2017/18. The Roadmap for Nutrition (2013-2017) supplements this strategy together with the NCD strategy (2013-2017). Furthermore, numerous policies and programmes have been implemented to reduce the inequalities in terms of food security in SA. These policies and programmes have been implemented across government departments (DAFF; DOH; DBE; DSD) and include IFSS, NSNP, NPFNS, social grants and food banks.

A lack of transparency relating to the development of policy have been identified. Draft regulations are supposed to be published for public comment and comments should then be considered before final publication. However this has not always occurred. In 2014 the National Policy on Food and Nutrition Security was gazetted without any public consultation prior to publication.

A lack of governance structure and leadership led to the sporadic monitoring of obesity and NCD prevention programmes, monitoring of obesity and NCD incidence, monitoring of Body Mass Index (BMI) and the monitoring of nutrient intakes, food composition and food fortification. Studies assessing these areas are done on an ad hoc basis, based on available funding, and are not carried out regularly according to a planned schedule.

The NCD strategy (2013-2017) does call for the monitoring of NCD rates as well as support for studies (SANHANES, DHIS, MRC surveys) aimed at collecting baseline data for chronic diseases and nutrient intakes (DOH, 2013). A lack of food composition and consumption data that is collected on a regular basis is thus a troublesome reality in South Africa (Van Heerden *et al.*, 2011). This information is vital for creating effective policy to address nutrition and health (EUROFIR, 2013). Since 1994 only two food consumption studies done were, namely one in 1999 included children, and then in 2006 which included only women and children. A major gap in food consumption data specific to South Africa thus exists. A monitoring committee has been implemented to address maternal and child health (CoMMiC) which was identified as a critical outcome of the DOH strategic plan.

The NCD strategy further suggests public health campaigns for the promotion of healthy food choices and healthier lifestyles. The budget for the Salt Watch campaign, aimed at reducing hypertension, has been provided. However, funding is limited for this activity and considering the number of other public activities which are aimed at the prevention of NCD and the promotion of healthy lifestyles, this budget will not be sufficient to facilitate behaviour change. The NCD strategy also encourages research activities aimed at the prevention of NCDs (DOH, 2013). Currently the health budget does not make provision for much-needed research in the field of obesity and NCDs.

2.7 CONCLUSION AND RECOMMENDATIONS

The South African nutrition policy environment is constantly changing and trying to keep pace with an ever changing food and consumer environment. Policies pertaining to labelling of foodstuffs have been improved and contribute to the provision of information to aid consumers in their food choices. Considering the growing obesity and occurrence of NCDs in SA, the lack of nutrition education and public promotion of healthy foods is a matter of concern. The broad framework to address obesity and NCDs as developed by DOH must be sufficiently supported in order to make a significant impact on the NCD occurrence in SA. The successful implementation of policies and programmes is very much dependent on good leadership. The lack of general leadership within the implementation and governance of policies and programmes is still an area that must be urgently addressed. Without proper implementation the development of strategies to address nutrition will become null and void.

Additional steps include the development of policies that set targets for saturated fat and sugar levels in foodstuffs to monitor the food environment and contribute to creating a healthier food environment for SA. The implementation of FOP and menu board labelling goes hand in hand with such initiatives. This will serve as a source of information to inform consumers when making food choices. The promotion and advertising of unhealthy food products to children should be monitored either by policy, or more cost-effectively, through self-regulation by the food industry. The development of long-term consumer education programmes is vital to support policy and behaviour change. It is recommended that the food industry and government become partners in educating consumers in a responsible way. Government departments should collaborate and share strategic objectives in terms of nutrition as part of a multi-sectorial approach that is vital to the alleviation of undernutrition and the decrease of obesity and NCDs.

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CHAPTER 3: REGULATORY PROGRAMMES AND POLICIES TO SUPPORT HEALTHY FOOD CHOICES

The paper was submitted to the Public Health Nutrition Journal. This paper explores the publication of revised Food-Based Dietary Guidelines in 2012 for South Africa and changes in the use of labelling claims relating to South African dairy products. The paper is currently under review.

ABSTRACT

Consumers ultimately choose the foods they eat and these choices send feedback signals into the food system. Consumers must be provided with adequate information to make healthier food choices. Policy makers have started publishing country-specific food-based dietary guidelines (FBDGs) and more stringent food labelling regulations, which aim to decrease the prevalence of non-communicable diseases by providing more dietary information to consumers. This paper explores the publication in 2012 of the revised FBDGs for South Africa (SA) and the effect the changed labelling claims as a source of information has had on South African dairy products. The revised guidelines include a separate guideline for milk, maas (cultured milk) and yoghurt, as part of a prudent diet. According to a South African case study, the use of label claims on dairy products generally decreased significantly from 2009 to 2013, after the publication of new labelling legislation in 2012. This decrease in claims limits the information which is available to the consumer to make informed choices.

3.1 INTRODUCTION

Food systems have developed, evolved and changed significantly over the past few decades with the transformation of agricultural and production practices resulting in major economic development, social transformation and growth in productivity (FAO, 2013). Food systems have many facets, including farming, processing, distribution, consumer education and food labelling (FAO, 2013).

Food systems differ within regions and quite significantly between countries, especially between developed and developing countries. Significant dietary changes are redefining nutrition and health priorities of countries and put a major strain on the environmental sustainability of the natural resources of most countries (Johns & Sthapit, 2004). Food systems consequently have to be redefined. Food systems can be categorised in two dimensions, firstly the supply of different types of food, which is influenced by agricultural production, trade policies and public investment and secondly the demand for different types of food, which in turn is influenced by consumers' tastes and preferences, as well as relative

prices. The second dimension, “the demand”, determines three main stages in food systems, namely 1) production (“up to the farm gate”), 2) post-harvest supply chain (“from the farm gate to the retailer”) and 3) the consumer (“advertising, labelling, education and safety nets”) (FAO, 2013). Food systems must produce affordable, available nutritious foods and information regarding the food products. Consumers on the other hand should ideally choose to follow balanced diets that meet their specific energy requirements to improve public health nutrition (FAO, 2013).

The food system as part of the food environment is responsible for the physical, economic, policy and social-cultural surroundings that influence and determine the dietary choices of consumers (Swinburn *et al.*, 2013¹). The food system inevitably affects nutrition and plays a major role in eradicating malnutrition by ensuring that the required food is available, affordable, acceptable and of satisfactory quality and quantity (Figure 3.1) (Swinburn *et al.*, 2013²; FAO, 2013). The food systems must also ensure that adequate information about food products is available for the consumer through food labelling based on food composition data (Figure 3.1). Sustainability of the food systems can be closely linked to nutrition. The availability and accessibility of foods promoting a healthy diet should be achieved within a context that supports the consumption of a variety of plant and animal foods (Johns & Sthapit, 2004).

ORGANIZATION	PROCESS	Public sector policies and actions				Private sector policies and actions		
		How much progress has (international, national, state and local) governments made towards good practice in improving food environments and implementing obesity/NCDs prevention policies and actions?				How are private sector organizations affecting food environments and influencing obesity/NCDs prevention efforts?		
PROCESS	PROCESS	Food composition	Food labelling	Food promotion	Food provision	Food retail	Food prices	Food Trade & investment
		What is the nutrient composition of foods and non-alcoholic beverages?	What health related labelling is present for foods and non-alcoholic beverages?	What is the exposure and power of promotion of unhealthy foods and non-alcoholic beverages provided in different settings (e.g. schools, hospitals, workplaces etc.?)	What is the nutritional quality of food and non-alcoholic beverages in communities and within retail outlets?	What is the availability of healthy and unhealthy food and non-alcoholic beverages in communities and within retail outlets?	What is the relative price and affordability of ‘less healthy’ compared to ‘healthy’ foods, meals and diets?	What are the impacts of trade and investment agreements on the healthiness of food environments?
POPULATIONS	OUTCOMES	Population diet		Physiological & metabolic risk factors		Health outcomes		
		What is the quality of the diet of different populations?		What are the burdens of obesity and other risk factors?		What are the burdens of NCD morbidity and mortality?		

Figure 3.1: Overview of the INFORMAS framework and the respective societal levels at which public health nutrition must be monitored (Adapted from the INFORMAS modular framework.)(Swinburn *et.al.*, 2013)

One of the major hurdles in addressing malnutrition using the food system as a whole is a lack of understanding of the food system. Economists, nutritionists, food producers, farmers, governments and health officials all focus on their own specific part of the food system, often but they do not work together or towards the same goals.

Food systems primarily start with a single agricultural food, which in 80% of cases is processed further prior to being consumed by the consumer (BFAP, 2013). Processing can range from simple processing i.e. washing of leaves or milling of grain, to more complex processes such as baking. However, the intricate details of the steps executed between the single agricultural commodity, the processing of the food, and consumption and demand by the consumer are largely unexplored and misunderstood due to a lack of knowledge and understanding (Popkin *et al.*, 2012). Lack of understanding thus prevents the effective use of the whole food system in addressing malnutrition worldwide.

The ineffective utilization of the food system inevitably leads to major food losses throughout the food system, from agricultural production through to consumption. Food waste is estimated at around 95-115kg/year per person for Europe and North America and about 9-11kg/year per person for Sub-Saharan Africa and South/Southeast Asia (FAO 2011).

3.1.1 THE CONSUMER WITHIN THE FOOD SYSTEM

The feedback signals sent through the food systems are determined mainly by consumer choice and thus dictate which foods are produced by the food system. However, food policies can control the choices made available to consumers. Consumers must thus have adequate information, knowledge and understanding of healthy food choices and food products to continuously make better nutritional choices (FAO, 2013; WHO, 2010).

For the purpose of this study we will focus on the consumer and the information provided to the consumer to make informed food choices. Food policies and regulations also control, influence and determine the information provided to consumers with regards to the foods they eat. Regulations, such as Regulation 1924/2006 on Nutrition and Health Claims on Foods of the European Union and in terms of the South African case study - Regulations Relating to the Labelling and Advertising of Foodstuffs (R146/01 March 2010) in SA - represent food labelling and advertising policies aimed at providing the consumer with clear, scientifically based information regarding the foods they consume (EFSA, 2006).

Labelling information is the primary source of information which the consumer can utilize to make dietary choices (Van Trijp & Van der Lans, 2007; Van der Merwe & Ellis, 2014). Numerous countries around the world have made the display of nutritional information on labels mandatory, however this is not the case in SA.

Nutrition information for labelling purposes is based on food composition data (Southgate & Greenfield, 2003; EUROFIR, 2013). Regulations also state that all nutrition and health-related claims must be based on good quality food composition data (Codex Alimentarius, 2013). Food labels are thus a reflection of food composition data that is either obtained from a recognised food composition database or actual analysed data.

The use of accurate and good quality food composition is thus imperative to ensure informative labels that can aid consumers in making healthier food choices (Greenfield & Southgate, 2003).

Guidelines provided by policy makers on dietary choices that can lead to intakes closer to the nutrient intake goals, such as the country-specific Food Based Dietary Guidelines (FBDGs), are aimed at guiding the consumer towards better nutritional choices to follow a prudent diet (WHO, 2010; NNW, 2012; FAO, 1993). According to Johns and Sthapit (2004) FBDGs also serve as the basis for public education and sound public policy. FBDGs focus on culturally appropriate foods, traditional cuisines and aim to address undernutrition and the nutrition transition simultaneously (Johns & Sthapit, 2004). Effective food guidelines must be based on accurate food composition and consumption data to ensure the relevance of the guidance in a specific country (Greenfield and Southgate, 2003; EUROFIR, 2013). The ultimate goal of FBDGs is to prevent the development of nutrition-related diseases by improving nutrient intakes (Schönfeldt *et al.*, 2012). However, FBDGs cannot stand alone (Golan & Unnevehr, 2008; Johns & Sthapit, 2004; Schönfeldt, *et al.*, 2013; Love *et al.*, 2009; Vorster, 2010). They must be part of a national set of health-based actions aimed at improving public health (Love *et al.*, 2009).

3.1.2 NON-COMMUNICABLE DISEASES

In 2002 the World Health Organization (WHO), as confirmed by the Oxford Martin School in 2012, identified non-communicable diseases (NCDs) as the leading cause of death worldwide, in the last two decades. Epidemiological factors of great importance to public health are: poor diets, physical inactivity as well as tobacco and alcohol use. Diet has been implicated in both positive and negative outcomes for NCDs (Verhagen *et al.*, 2010). Health risks due to inappropriate dietary behaviour proved greater than health risks posed by food contamination. This indicates that the improvement of public health can largely be accomplished by dietary changes brought forth by changes in nutritional composition and choices of commonly consumed foods (Verhagen *et al.*, 2010; WHO, 2010).

An increased intake of energy-dense foods has been observed and linked to the increased incidence of NCDs globally (Mozaffarian, 2013). The increased prevalence of NCDs has a significant economic impact. The Oxford Martin School (2012) estimates that for every 10%

rise in NCDs annually, a decrease of 0.5% is seen in economic growth. The treatment of NCDs over the next two decades may cost up to USD \$30 trillion. It is further estimated that over the next two decades USD \$47 trillion loss in economic output will be experienced due to decreased productivity linked to the increased prevalence of NCDs. The rising incidence of NCDs can thus significantly affect economic growth (Bloom *et al.*, 2011; Oxford Martin School, 2012).

3.1.3 PROGRAMMES TO ENCOURAGE HEALTHY EATING

As part of encouraging healthy food choices, affordability of those choices to the majority of consumers is essential. Food policy and strategies implemented by government can play a major role in creating a healthier food environment (Swinburn *et al.*, 2013¹). Food policy and strategies can also lead to the increase in the number of healthy food options available to the consumer. Policies and strategies aimed at improving nutrition and health throughout the food system include food composition, labelling, promotion, price, provision, retail and trade and investment. Infrastructure priorities that support policies which promote healthy eating include leadership, governance, monitoring of policies and programmes, availability of funding and resources, and the availability of platforms for interaction with government (Swinburn *et al.*, 2013²).

In 2008 the WHO encouraged the use of food prices “as ways to encourage healthy eating”. Studies have also shown that pricing strategies such as levying higher prices on soft drinks and even better known examples like tobacco and alcohol, can lead to a decrease in the consumption of these products leading to healthier dietary and lifestyle choices (Eyels *et al.*, 2012). Other examples of programmes and policies include the use of “Food Assistance Programs and Policies” (FAPs) to increase the quality and quantity of food consumed, with a long-term purpose of improving public health. FAPs can include various publicly funded food vouchers i.e. cash or food subsidies (Lentz & Barrett, 2013; Eyels *et al.*, 2012) Other methods include use of food stamps (USA system) or zero tax ratings of basic food commodities (in SA 19 foods are exempt from Value-Added Tax (VAT)), encouraging the consumption of these foods (i.e. maas (cultured milk) in South Africa)(Eyels *et al.*, 2012).

Other programmes such as information policies in the form of labelling claim regulations and the mandatory declaration of nutritional information can affect consumer demand for healthier food products. Information policies, such as the disclosure of more nutritional and other product information and improvement of product formulations from a health perspective, can spark competition between manufacturers raising consumer awareness, thus stimulating the demand for new, healthier product attributes. Emphasis must be put on the composition of food products. This can inspire the demand for healthier food products (Golan & Unnevehr,

2008). Information policies must be based on accurate food composition data to ensure that information is relevant to the target population and to achieve the desired outcomes of the policies.

This article will focus on the consumer section of the food system and specifically on the regulatory policies, programmes and labelling of food using South Africa as a case study.

3.2 SOUTH AFRICAN CASE STUDY

SA is considered food secure on a national level but is not nutrition secure (Vorster, 2010). An increase in the incidence of NCDs, especially obesity, has been noted (Shisana *et al.*, 2013). Factors such as urbanization, population growth and inflation have contributed to the persistent rise in food prices and increased difficulty in making healthy dietary choices (Schönfeldt *et al.*, 2013). Food consumption studies for SA are limited, but have shown that the diet is dominated by energy-dense nutrient-poor food products (Labadarios *et al.*, 2011).

Temple *et al.* (2011) found that the availability of healthy food products in SA is limited. They further stated that policy in SA does not promote the accessibility and availability of healthy food products in retail. Studies have shown that many South Africans have been malnourished for years (Vorster, 2010). Poor food choices due to a lack of knowledge, resources and access to food have led to an increased prevalence of malnutrition. The incidence of overweight and obesity in SA has increased significantly in recent years due to various factors including poor diet, insufficient physical activity, lack of knowledge and poor early childhood feeding practices (DOH, 2015). A campaign executed by the Department of Health (DOH), in collaboration with partners such as the FAO, was set in place to address the limited public health information by means of the development of Food Based Dietary Guidelines (FBDGs) in 1998 (Schönfeldt *et al.*, 2013). Another policy that was utilized to regulate the information available about food products includes the “Regulations Relating to Labelling and Advertising of Foodstuffs” (R146/01 March 2010), published in 2010. Recently the draft “Strategy for the Prevention and Control of Obesity (2015-2020) in SA” was published. The latter is aimed at addressing the rising incidence of overweight and obesity using a multi-sectorial and multiple-intervention approach (DOH, 2015).

3.2.1 FOOD BASED DIETARY GUIDELINES

In 2012 the Department of Health in SA revised the FBDGs. The revised FBDGs comprise eleven separate guidelines that if followed will lead to a prudent and healthy lifestyle (Table 3.1). A separate guideline was added for certain dairy products – “have milk, maas and yoghurt every day” (NNW, 2012). For the purpose of this study, the aforementioned guideline, “have

milk, maas and yoghurt every day”, was a motivating factor for the investigation of health benefit claims on dairy product labels.

Table 3.1: Revised South African Food-Based Dietary Guidelines (National Nutrition Week, 2012)

Food-Based Dietary Guidelines for South Africans (aged 6 years and older)
1. Enjoy a variety of food
2. Make starchy food part of most meals
3. Fish, chicken, lean meat or eggs can be eaten daily
4. Eat plenty of vegetables and fruits every day
5. Eat dry beans, split peas, lentils and soya regularly
6. Have milk, maas (fermented milk) or yoghurt every day
7. Use salt and food high in salt sparingly
8. Use fat sparingly; choose vegetable oils rather than hard fats
9. Use sugar and food and drinks high in sugar sparingly
10. Drink lots of clean, safe water
11. Be active!

3.2.2 FOOD LABELS

Food labels are the primary source of information for consumers to obtain health and other information about the foods that they consume (Van Trijp & Van der Lans, 2007). Correct, scientifically based and easy to understand information based on accurate and good quality food composition data on food labels, can thus aid consumers in making better nutritional choices (Van Trijp & Van der Lans, 2007; Lahteenmaki *et al*, 2010; Rowlands & Hoadley, 2006; Greenfield & Southgate, 2003; EUROFIR, 2013). Health benefit claims and nutrition claims are thus a reflection of food composition data. Authorities from different parts of the world made it their mandate to ensure that all health claims and information on food products are clear, applicable and scientifically substantiated (EFSA, 2006; Verhagen *et al.*, 2010; DOH, 2010; Lahteenmaki, 2010).

The revised set of FBDGs serves as an opportunity for the food industry to market dairy products by means of health messages, based on scientifically-substantiated evidence, that are displayed on dairy labels to consumers. The first set of regulations governing nutritional information and health benefit claims in SA was published in 1993 (DOH, 1993). In 2012 these regulations were replaced by the current “Regulations Relating to the Advertising and

Labelling of Foodstuffs”, R146/01 March 2010, under the Foodstuffs, Cosmetics and Disinfectants Acts of 1972. The new labelling regulations had significant consequences for food labelling and advertising in SA. This is in line with international trends on food labelling. Over the past five years, legislation regulating health benefit claims has changed dramatically. This change also altered the face of food labels in SA. Proposed new legislation for health claims (phase two) is foreseen to be in line with the EFSA regulations published in 2006 on different types of claims that regulate health benefit claims for the EU, and is not region specific (Gilsenan, 2011). A possible nutrition profiling system – a system designed to determine if a food product, based on its nutritional composition, is allowed to carry a claim - have been proposed as part of the second phase of labelling regulations for SA (DOH, 2014). The draft “Strategy for the Prevention and Control of Obesity in South Africa (2015-2020),” also identified a lack of knowledge due to 1) limited access to appropriate information, 2) a lack of knowledge on the energy content of foods and 3) the high coverage of advertisements of unhealthy foods as key drivers of the increasing incidence of overweight and obesity in SA. The strategy identifies consumer friendly food labelling as a key educational tool to increase knowledge on food choices to help curb the growing overweight and obesity problem in SA (DOH, 2015).

3.2.3 SOUTH AFRICAN FOOD SYSTEM

Large industry players such as PepsiCo, Nestle and Unilever dominate the food system/food industry in SA. Local food manufacturers exert relatively little influence. The staple food of the nation is maize which is produced in SA. SA does however import many food products, such as sugar and oil, and the best quality local fresh produce is exported to Europe and other parts of the world (BFAP, 2013). SA is a country with many different cultures and therefore different dietary patterns. The consumer demands on the food systems are thus diverse. The revised FBDGs of 2012 were developed to be culturally appropriate to SA, with the inclusion of traditional South African foods such as maas (cultured milk). The South African government also promotes the consumption of primary dairy products such as maas and milk, as these products are VAT free, thus decreasing the cost and making them more accessible to consumers.

The large multinational companies were mainly responsible for the implementation of the prescribed legislative changes that occurred on food labels in an increasingly fast changing environment between 2009 and 2013. To understand the impact of regulations on the food system in an emerging economy, this study focuses on the use of health benefit claims on dairy products, specifically between 2009 and 2013.

The aim of the study was to investigate what the dairy industry communicates to consumers to guide food choice and if this is in line with R146. According to R146/01 March 2010 a claim

is defined similar to the definition Codex Alimentarius as: “in relation to a foodstuff, means any written pictorial, visual, descriptive or verbal statement, communication, representation or reference brought to the attention of the public in any manner including a trade name or brand name and referring to the characteristics of a product, in particular to its nature, identity, nutritional properties, composition, quality, durability, origin or method of manufacture or production.”

The Directorate of Food Control of the DOH governs food labelling legislation in SA. Enforcement of the food and advertising labelling legislation (R146/01 March 2010) was allocated to the Environmental Health Practitioners (EHPs) of the DOH. The EHPs are kept extremely busy by the mammoth task of enforcing numerous DOH regulations under. EHPs are responsible for monitoring health benefit claims on food products, but are unable to perform their duties effectively because as they have to compete with forensic services for the services of analytical laboratories in SA. Enforcement of labelling regulations is thus greatly challenged and, to a certain extent, becomes the responsibility of the food industry in SA. Thus the objective of the study was to determine what effect R146/01 March 2010 had on labelling of dairy products, and specifically the labelling yoghurt.

3.3 METHOD

In 2009 (prior to R146/01 March 2010) and 2013 (two years after implementation of R146/01 March 2010) respectively, a convenience sample of yoghurt products was selected from retail shelves. Samples analysed were representative of international brands. The survey captured the health benefit claims and/or any other product information made available on the label such as packaging type, unit size and number, price per unit, nutritional information, and addition of additives, ingredients and health endorsements. In 2013 additional assessment criteria were added, ranging from organic claims to usage and quality claims. All data was captured by the researcher by means of a detailed questionnaire. The data was statistically analysed using Genstat for Windows 2003. The results from the respective surveys are represented in Figure 2.

3.4 RESULTS AND DISCUSSION

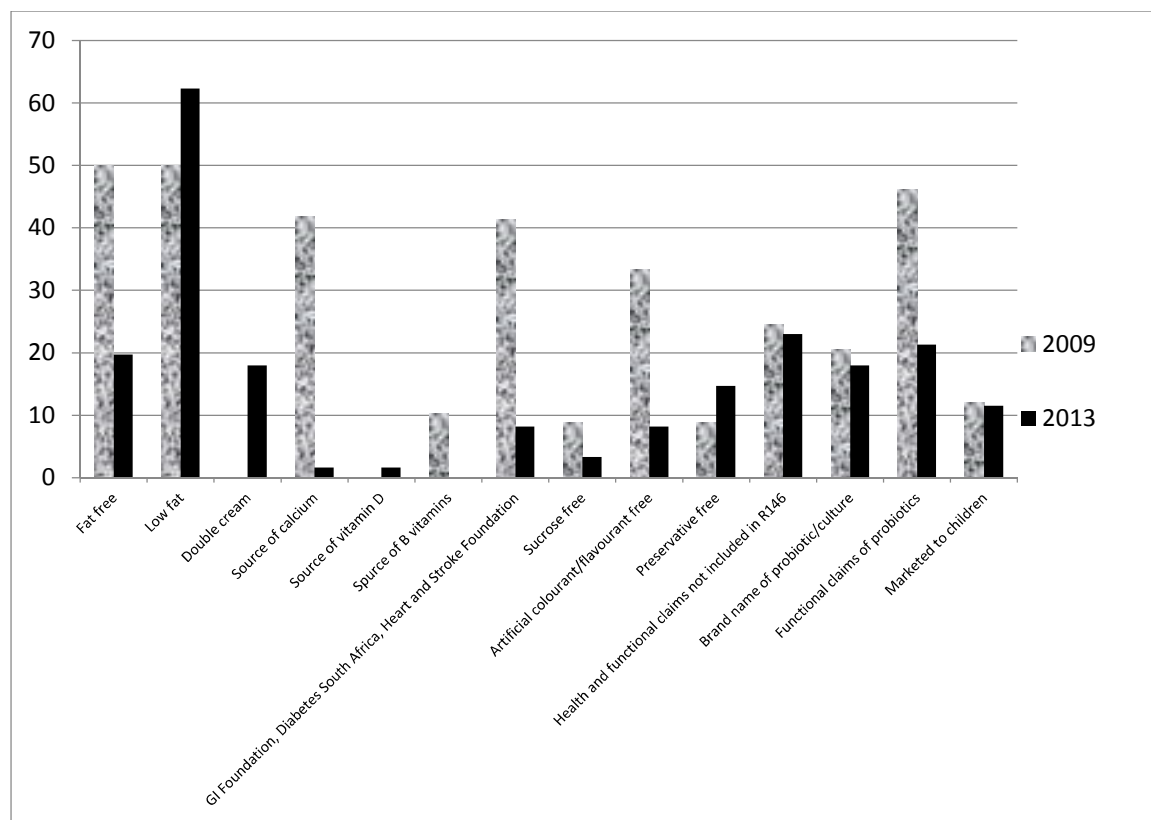


Figure 3.2: Claims observed between 2009 and 2013 on yoghurt products

A difference in the use of claims, as well as the number of claims on yogurt products were observed in the findings (Figure 2) of two retail surveys done between 2009 and 2013. According to the surveys (Figure 2), more claims were observed on yogurt products in 2009 than in 2013. The only exception was low fat claims which had increased in the 2013 survey.

The nutrient content claims such as “source of” and fat content claims changed from 2009 to 2013. “Source of” claims and fat free claims decreased and low fat claims increased according to the findings observed in Figure 2.

Specific and stringent guidelines for the use of fat content claims and the implementation of the Nutrient Reference Values (NRVs) system, in line with Codex (1979) and EFSA (2006), have been included for the regulation of the aforementioned in R146/01 March 2010 and may account for the changes in the use of fat content and “source of” claims. Furthermore, R146/01 March 2010 prescribes the sources of food composition data that may be utilised. In the case where nutrient content claims are made, food composition tables may not be utilized and only values obtained from laboratory analyses may be used. Laboratory analyses in South Africa are expensive and thus increase product cost for the manufacturer. This may also be a contributing factor to the decrease in nutrient content claims from 2009 to 2013.

Under R146/01 March 2010 only certain endorsements have been approved for use on food products. The endorsements currently permitted by R146/01 March 2010 are the 5-a-day campaign, Diabetes SA, Glycemic Index Foundation and the Heart and Stroke Foundation of South Africa. The use of these endorsements is guided by strict criteria and in some cases monetary compensation is mandatory for use of the endorsements, limiting the use of endorsements on yoghurt products in 2013, as shown in Figure 3.2.

Negative claims or otherwise known as “free from” claims decreased from 2009 to 2013. The guidelines for negative claims are much more detailed and strict than in 2009 and therefore appear to have limited the use of negative claims identified in the 2013 survey. The definition of negative claims according to R146/01 March 2010 is in line with the Codex (1979) definition.

The use of functional claims on yoghurt products has stayed very much the same from 2009 to 2013 even though these claims are not permitted by the first phase of R146/01 March 2010 (Figure 2). In addition both Codex (1979) and EFSA (article 13.1; 13.5 and 14) (2006) allow health claims which include functional claims. Both Codex and EFSA have guidelines and approval processes for all health claims used on food products. SA is thus not currently aligned with European labelling regulations in respect to health claims on food labels.

3.5 CONCLUSIONS AND RECOMMENDATIONS

The changes in legislation have affected the claims on yoghurt products in SA. Information on dairy labels and food labels in general is strictly controlled and in some instances limiting (health claims). The consumer is thus given trustworthy, clear information but currently less health information than was previously the case. It must be highlighted that, based on the results of this study, industry has complied relatively well with the new labelling regulations, even in the absence of enforcement due to various reasons by the government.

The second phase of R146/01 March 2010 is regarded as imminent. This phase will cover the regulation of functional, curative and medicinal claims for food products. The food industry must thus once again take the responsibility for self-regulation and adhering to this legislation, given the limitations of the DOH, so that the consumers continue to be protected.

Even in light of the above, a distrustful relationship currently exists between the food industry and the government in terms of the compliance of food labels.

The fact that the revised FBDGs highlight milk, meat and yoghurt as part of a prudent diet, emphasizes the role dairy plays in maintaining healthy food choices. It is thus important that consumers are educated on the importance of the inclusion of these products in their diet. Correct and scientifically based health related information and accurate food composition data in the form of health benefit claims can be reflected on yoghurt products and will assist in

sensible food choices in line with the revised FBDGs, leading to an increase in yogurt consumption.

It is recommended that, because so many South Africans cannot afford the proposed diet as stipulated by the revised FBDGs, additional programmes such as fortification of staple foods must still be considered to address malnutrition.

Attention must be paid to increasing the sustainability of the food system. Consumer education through food labelling is a key policy tool to educate consumers about healthier and more biodiverse choices which are vital to improving sustainability and public health. Good nutrition, environmental sustainability and economic growth are closely related. Healthier food choices and lifestyles are thus the responsibility of all governments and society as a whole. All parts of the food system can contribute to creating a healthier food environment.

This study, showed that the SA government can rely on self-regulation by large corporations as they are generally aligned with Codex, EFSA and local legislation. It is important that DOH take cognisance of the fact that mandatory legislation is not necessarily required to regulate the food industry.

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CHAPTER 4: THE ROLE OF TRADITIONAL FOODS IN FOOD-BASED DIETARY GUIDELINES

This paper was submitted to the Public Health Nutrition journal. This paper explores the composition and inclusion of traditional dairy products in the South African FBDGs. The paper is currently under review.

ABSTRACT

Following the International Congress of Nutrition (ICN) in 1991 and in order that the Millennium Development Goals (MDGs) could be achieved, food-based dietary guidelines (FBDGs) were identified as a method to mobilize governments to guide their population towards attaining better health. In South Africa (SA), FBDGs were introduced in 2001 as a policy tool to promote food and nutrition security by guiding consumers toward healthier food choices and to reduce the high incidence of malnutrition, obesity and related non-communicable diseases (NCDs). In 2012 these guidelines were revised to update and improve communication related to healthy eating to the population. This paper aims to evaluate the relevance of including traditional food products, specifically maas (a cultured milk), in the current set of South African FBDGs against the backdrop of the current nutrition and food security situation in SA.

Although SA is classified as a food-secure country based on the availability of sufficient food energy for all, the incidence of malnutrition in SA (classified as an emerging economy) persists. Stunting rates (underconsumption of essential nutrients) in children are comparable to low income countries, and obesity rates (overconsumption of energy) in adults are comparable to those observed in high income countries.

Research showed that maas is a culturally relevant and traditional food product in SA that is consumed by two-thirds of the population. The nutrient profile of maas has changed significantly over time since the initial nutrient analysis was performed in 1995. Yet it remains a good source of protein, energy and calcium when compared to recommended intakes for these nutrients. Within a population mostly consuming monotonous diets of maize meal porridge and brown bread, the addition of these nutrients in adequate amounts could contribute significantly to nutrient intake. The health benefits of maas, together with its popularity and its cultural relevance as part of the South African diet, make maas a viable food product to be included in the South African FBDGs to contribute to improved food and nutrition security.

4.1 INTRODUCTION

From both a governmental and societal perspective as well as responsibility, the ultimate nutrition goal is to achieve both food and nutrition security to ensure a well-nourished society. The food environment of a country determines the food available for consumption and is defined as the collective physical, economic, policy and sociocultural surroundings, opportunities and conditions that influence people's food and beverage choices and nutritional status (Swinburn *et al.*, 2013). An unhealthy food environment leads to an increased prevalence of unhealthy food choices which in turn result in an increased risk of developing NCDs, which in turn affects both food and nutrition security.

To improve food security and public health, nutrition must be promoted throughout the food environment to prevent the development of nutrition-related non-communicable diseases (NCDs) and other forms of malnutrition in a specific population (FAO, 2013¹).

4.2 FOCUS OF THE CURRENT FOOD ENVIRONMENT

Globally, for many years the focus of the food environment has been on the production of enough energy for consumption. The main reason for this was the reoccurring issue of hunger and food insecurity over the past few decades (Labadarios, *et al.* 2011¹). In 2014 the FAO estimated that 809 million people were food insecure. Since the late 1970s, food policy in general, was aimed at developing food systems that provide inexpensive kilojoules that are safe for human consumption and that can serve as accessible and affordable energy sources. Little emphasis was placed on encouraging variety in the diet, consumption of indigenous, traditional foods or the inclusion of other essential nutrients the diet (Mozaffarian, 2013).

4.2.1 TRADITIONAL FOOD PRODUCTS IN THE DIET

It is estimated that 90% of the world's dietary energy supply is obtained from only 30 species (Burlingame *et al.*, 2009). Toledo and Burlingame (2006) and the Food and Agricultural Organization (FAO) (2013²) point out that food systems tend to focus on only a few species even though numerous, sometimes nutritionally-superior, under-utilised foods are available. The focus has thus been mainly on providing adequate energy sources in the diet, whilst more nutrient-dense traditional foods were ignored. Because the food system focused on only a few foods, people moved away from their more traditional and diverse diets, which threatens food and nutrition security (Stadlmayr *et al.*, 2011). Diets became devoid of diversity and at the same time risked losing their nutritional adequacy (Labadarios *et al.*, 2011²).

More recently, a better understanding and appreciation of local and traditional food cultures has emerged. Foods found in traditional cultural settings are generally more nutritious and sustainable than those of commercial food markets and the food system in general (FAO,

2013²). Studies have found that the inclusion of indigenous and traditional foods in the diet can contribute to public health by addressing the health and well-being of individuals and also the health of the community through the provision of a variety of nutrients in culturally acceptable ways. It also supports sustainability of communities and society as a whole (FAO, 2013¹; Kuhnlein and Receveur, 2007). The promotion of traditional foods could, therefore, serve as a food-based approach to address both macro- and micronutrient deficiencies, without contributing to the excessive promotion of empty energy foods (high in macronutrients and low in micronutrients).

Whilst the promotion of adequate energy intake is very important for maintenance and growth, the promotion of the intake of nutrient-dense foods that are easily accessible (and acceptable), is also very important for reaching both food and nutrition security objectives. Thus, a food system that promotes either the intake of energy-dense foods or the promotion of lesser-known nutrient-rich foods in isolation will not be adequate to address both food and nutrition security simultaneously (FAO, 1993). These interventions cannot be interchangeable and must be implemented in conjunction with one another in order to achieve both food and nutrition security. It is therefore important for policy-makers within the whole food system, from production to procurement, promotion and consumption, to take note of the benefits of the inclusion of indigenous foods in diets when developing policy pertaining to food and nutrition security.

4.3 POLICY, PUBLIC HEALTH AND THE FOOD ENVIRONMENT

The simplification of the food system over time focused on a limited selection of food commodities, often high in energy and lower in cost to adhere to food security objectives. This could be considered a possible cause for the increase in overweight and obesity statistics observed in SA, and in the rest of the western world. This in turn led to an increased incidence of non-communicable disease (Grundy *et al.*, 2004).

SA is a middle-income country with a food environment dominated by cheap, palatable, highly energy-dense, nutrient-poor foods (Labadarios *et al.*, 2011¹). The increased intake of these foods is accompanied by a higher incidence of NCDs. The incidence of obesity amongst men and women is estimated at 24.8% and 20.1% respectively. In contrast to the high obesity rates it is estimated that 15.4% of children are stunted (Shisana *et al.*, 2014). SA is thus plagued by a doubleburden of disease with undernutrition and high NCD rates existing side by side (Steyn *et al.*, 2005).

The World Health Organization estimates that 65% of global deaths in 2008 were NCD-related. The World Economic Forum (WEF) further estimates that the cost of NCDs comprised 75% of global GDP for 2010 (Bloom *et al.*, 2011). The economic cost of NCDs and related

deaths has become noteworthy and thus needs to be addressed (Oxford Martin Commission for Future Generations, 2013). Furthermore, the rising incidence of NCDs also brought the problem of unbalanced diets to the attention of policy makers (Swinburn *et al.*, 2013). The WEF thus encourage policy-makers to work on developing policy that focuses on well-being, health (and nutrition) and reduction of NCDs to reduce poverty, but also to achieve sustainable income growth (Bloom *et al.*, 2011).

As it is the responsibility of the state to ensure human rights for all, it is also the government's responsibility to balance policy for agriculture, trade, industries, food security and nutrition (Swinburn *et al.*, 2013).

4.3.1 POLICY AIMED AT ADDRESSING FOOD AND NUTRITION SECURITY

The FAO and World Vision (2013) jointly created a list of policies that aim to develop long-term sustainable health and nutrition solutions for all, addressing the problem of obesity and the development of related non-communicable diseases (FAO, 2013³). The list includes price and trade food policy, pro-poor policy, infrastructure policy and social policy. For the purpose of this study, the focus will be on a social policy tool, namely FBDGs. FBDGs follow a food-based approach to ensure both food security and also nutrition security, by promoting healthier food choices through the inclusion of a variety of different foods acceptable to the specific population (FAO, 2012).

4.3.1.1 FOOD-BASED DIETARY GUIDELINES AS POLICY TOOL

In 1992 at the FAO/WHO International Conference on Nutrition in Rome, the World Declaration and Plan of Action for Nutrition was adopted by governments across the world. One of the goals adopted with this strategy was the global elimination of, or substantial reduction in, malnutrition, micronutrient malnutrition and diet-related communicable and NCDs by 2015. Nutrient-based guidelines were identified as a strategy to promote appropriate nutritional intakes (FAO/WHO, 1992). However, this initiative had largely failed. Thus in 1996, the FAO/WHO established an initiative that aimed to develop scientifically-based, country-specific FBDGs that would address nutrition practices and public health (FAO/WHO, 1996). The focus of nutrition policy thus shifted from nutrients to whole foods and specifically locally available foods (Vorster *et al.*, 2001). The main goal of FBDGs is to aid in the prevention of the development of nutrition-related diseases using a food-based approach to improve nutrient intakes and food choices of consumers (Schönfeldt *et al.*, 2013).

The FAO provided guidelines for the development of country-specific FBDGs which included the following guidelines: FBDGs must reflect the nutrition situation of a country; FBDG must use ordinary language that is easy to understand; FBDGs must provide practical advice for local customs, dietary patterns, economic conditions and lifestyles; and must be based on

scientific evidence such as accurate and up to date food composition and consumption data (FAO, 2012). Furthermore, foods included in the guidelines must be affordable and accessible (Schönfeldt *et al.*, 2013).

Implied in these guidelines is thus that there is a need to focus on culturally appropriate foods, traditional cuisines and aim to address undernutrition and the nutrition transition simultaneously (WHO, 2010; NNW, 2012; FAO, 1993). FBDGs must be developed in such a way that they are easy for the consumer to apply, at the same time providing a vehicle for sustainable dietary changes that can support food security (FAO, 2013).

FBDGs further serve as the basis for public nutrition education and the continued development of sound public health and nutrition policies (Johns and Sthapit, 2004). FBDGs must be part of a national set of health-based actions, aimed at improving public health and food security because they cannot stand alone (Golan & Unnevehr, 2008; Johns & Sthapit, 2004; Schönfeldt, *et al.*, 2013; Love *et al.*, 2009; Vorster, 2010).

4.3.1.2 THE INCLUSION OF DAIRY IN THE SOUTH AFRICAN FOOD-BASED DIETARY GUIDELINES

The first set of FBDGs for SA, consisting of 10 guidelines, was published in 2001 (Table 4.1) and did not include a specific dairy guideline. Milk was at the time included as part of the protein group (Table 4.1 - Guideline 5) (NNW, 2001). Vorster *et al.* (2013) indicated that the inclusion of milk as part of the protein group was due to the fact that the FBDGs focused on affordability for the largest part of the population. Another concern for the exclusion of a separate dairy guideline was the possible high incidence of lactose intolerance amongst South Africans (Vorster *et al.*, 2013).

Table 4.1: First set of FBDGs as published in 2001 by the Department of Health in South Africa (Vorster *et al.*, 2001)

Food Based Dietary Guidelines for South Africa
1. Enjoy a variety of foods
2. Be active!
3. Eat plenty of vegetables and fruits every day
4. Eat dry beans, peas, lentils and soya regularly
5. Chicken, fish, meat, milk or eggs could be eaten daily
6. Eat fats sparingly
7. Use salt sparingly
8. Eat food and drinks containing sugar sparingly and not between meals
9. Drink lots of clean safe water
10. If you drink alcohol, drink sensibly

The FBDGs were revised and republished in 2012 (NNW, 2012). A guideline focusing on specific dairy products was included (Table 4.2): The guideline reads: “Have milk, **maas** or yoghurt every day” (NNW, 2012; DOH, 2012). A specific guideline for dairy was included due to the consistent reports of low calcium and potassium intakes and the high prevalence of hypertension and NCDs amongst the South African population. Reasons for the inclusion of maas in the dairy guideline include a recognition of the fact that it is a traditional food and widely consumed. Furthermore, the beneficial health effects of the incorporation of probiotics in fermented milk that can play an essential role in improving lipid profiles, the lower pH of fermented milk that can delay gastric emptying which can result in appetite regulation as well as the low sodium-to-potassium ratio which may be beneficial for the prevention of cardiovascular disease and hypertension were recognised (Vorster *et al.*, 2013).

Table 4.2: Revised South African Food-Based Dietary Guidelines (National Nutrition Week, 2012)

Food-Based Dietary Guidelines for South Africans (aged 6 years and older)
1. Enjoy a variety of food
2. Make starchy food part of most meals
3. Fish, chicken, lean meat or eggs can be eaten daily
4. Eat plenty of vegetables and fruits every day
5. Eat dry beans, split peas, lentils and soya regularly
6. Have milk, maas (fermented milk) or yoghurt every day
7. Use salt and food high in salt sparingly
8. Use fat sparingly; choose vegetable oils rather than hard fats
9. Use sugar and food and drinks high in sugar sparingly
10. Drink lots of clean, safe water
11. Be active!

4.3.1.3 FOOD COMPOSITION AND FOODS INCLUDED IN FOOD-BASED DIETARY GUIDELINES

Sound food composition data is essential to determine the relationship between health and nutrient intakes and also the relationship between nutrients and food. Uses of food composition data include the development of food guidelines, application in food labelling advertising, evidence for health and nutrition claims as well as nutrition education interventions (EUROFIR, 2013). High quality food composition data is thus instrumental in the development of country-specific FBDGs (Leclercq *et al.*, 2001).

Issues pertaining to current food composition databases that also influence the development of country-specific FBDGs include the absence of values for food categories as well as the accuracy of both food consumption and food composition data (Greenfield & Southgate, 2003). Foods and food groups considered for inclusion in FBDGs must be assessed according to their nutritional composition. This principle also applies to traditional and indigenous food. A lack of and/or outdated nutrient composition data for traditional foods has been noted as a possible barrier for the inclusion of traditional foods in FBDGs (Leclercq *et al.*, 2001).

For the purpose of this study, the focus was on dietary guidelines as a policy tool that aims to promote food and nutrition security by promoting best food practices for consumers. The inclusion of traditional food products in the diet based on the nutritional profile of traditional

food products will be explored using a South African case study. In particular the FBDG pertaining to dairy – *Have milk, maas or yoghurt every day* – will be discussed.

4.4 SOUTH AFRICAN CASE STUDY: THE ROLE OF MAAS AS PART OF THE SOUTH AFRICAN FBDGs

4.4.1 OBJECTIVES

The objectives of the case study were as follows:

- To determine the perception and acceptability of maas as a traditional food product as part of the South African diet by investigating consumption patterns.
- To determine the microbiological composition of maas and the different production methods used in South Africa (SA).
- To determine an updated nutritional profile of maas and compare it to previously available data.
- To evaluate the relevance of maas as part of the revised FBDGs based on consumption and the nutritional profile to promote food and nutrition security.

4.4.2 OVERVIEW OF MAAS

Maas production is based on the principle of fermentation of full cream cows milk thanks to the activity of naturally occurring or added flora, which perform an important role in preserving this food (Beukes *et al.*, 2001; Panesar, 2011). It is thick in consistency, white in colour and contains lumps once adequate fermentation has taken place (Beukes *et al.*, 2001). Maas is traditionally known as ‘amas’ and is considered a popular type of cultured/fermented milk that is consumed as a supplementary staple food in SA.

Since ancient times the fermentation of foods, including dairy, cereals and vegetables, has been used to preserve and to improve their nutritional quality. For example, the lowered pH and increased availability of protein, are benefits obtained from fermentation (March *et al.*, 2014; Panesar, 2011). Maas is part of the South African heritage and the first scientific record of the traditional production of maas was recorded in 1939 (Beukes *et al.*, 2001). However, maas was part of the indigenous South African diet long before this time. Maas is considered to have therapeutic and social value to local communities. It generates income and improves food security by enabling the preservation of milk (and thus extending the shelf-life) in this fermented form (Beukes *et al.*, 2001).

The traditional preparation of maas consisted of fermenting full cream cows milk in a calabash, clay pot, stone jar or basket (Beukes *et al.*, 2001, Fox, 1939, Quinn, 1959). No starter culture was added and milk as the sole ingredient was allowed to ferment in this traditional container.

Since the 1960s maas is also produced commercially by commercial dairy producers. Maas is regulated by the Regulation for Dairy Products and Imitation Dairy Products (R2581, 1987) under the auspices of the Department of Agriculture, Forestry and Fisheries (DAFF). According to R2581 (1987) maas is defined as cultured milk, maas, sour milk, inkomazi or amazi.

There are two commercial methods used for the production of maas - "in-container fermentation" and "tank fermentation". Both methods are based on the addition of a permitted starter culture to milk. The typical starter cultures used to produce commercial maas are mesophilic and include *Lactococcus lactis* subsp. *lactis*, *Lactococcus lactis* subsp. *cremonis* and *Leuconostoc mesenteroides* subsp. *cremonis* (Beukes *et al.*, 2001).

The Food, Cosmetics and Disinfectants Act (1972) currently prohibits the use of additives in maas preventing contamination of the natural product. The average shelf life of commercially produced maas is up to 21 days at 4°C (McMaster *et al.*, 2005).

4.4.3 MATERIALS AND METHODS

Various techniques were used to gather data for this study. Consumer research, consumer databases and nutritional analysis of maas were utilized to gather information regarding the consumption and nutritional profile of maas.

4.4.3.1 CONSUMER INFORMATION

Consumer and product related databases, Ipsos-Markinor and Target Group Index (TGI), were used to gather data regarding the South African population, specifically focusing on maas consumption patterns and usage. The Ipsos-Markinor study included a random sample of 3500 households from both rural and urban areas. Respondents included in the sample were 16 years and older. All races and geographical areas within South Africa were included. The data was weighted to fit the population profile.

The TGI study is based on consumer insights obtained by interviewing 15 000 adults annually, measuring more than 8 000 brands across 19 sectors in South Africa. The databases were used to determine demographic information including race, age, Living Standards Measure (LSM) and language.

The cross usage of maas with other food products (maize meal porridge and brown bread) reported in the national food consumption survey (Labadarios *et al.*, 1999) was also determined using the TGI database. Furthermore the past use of maas by consumers was also investigated. Data regarding the volumes and number of different brands present in South Africa were also determined using the TGI database.

4.4.3.2 FOCUS GROUPS

Focus groups were held to determine maas consumption patterns, usage patterns and preferences amongst women who act as caregivers in rural South African communities. The study population for the focus groups included middle-aged women from lower to middle socio-economic groups from all nine provinces in South Africa who participated in two focus groups (n=15). Each participant ran a community centre that provide care and food for children and/or the elderly together with skills training for other members of the community. Women were chosen as the source of data for this study as they are responsible for the provision of food and also take care of the needs of the people in the community centres.

A qualitative research approach was used and focus group questions were designed. A semi-structured questioning route was followed to ensure consistency across both focus groups and allow for flexibility in accordance with the different discussion topics raised and the level of participation. Questions were aimed at gaining a better understanding of food consumption patterns in the respective communities and also to understand the perception regarding maas in the community.

To help the participants recall the dietary habits of their communities, each was given a document consisting of seven pages, one page per day with 4 columns. The headings of the respective columns on each page included *breakfast*, *morning snack*, *lunch*, *afternoon snack* and *dinner*. The participants were asked to complete the document, keeping in mind the dietary habits observed in their respective communities over the past month (April/May 2013). Questions regarding the use of maas within the household, the respective consumption habits of maas by the different members of the household, the believed dietary contribution and any health related perspectives on maas were included in the focus group questions.

Transcribed focus group discussions, comments on maas as part of the diet on flip charts, and individual worksheets were all incorporated in the analytical process.

4.4.3.3 NUTRITIONAL ANALYSIS

Maas samples were selected over a period of four weeks directly from the manufacturing line of one of the prominent national maas producers in the country. Each week twelve samples from the beginning, the middle and the end of production were randomly selected and a composite sample was prepared for analysis. Samples were refrigerated after analysis. During week 4 a composite sample of the samples collected over the four weeks was also prepared. Analyses were performed under controlled conditions using standardized AOAC methods.

Proximate, mineral composition and fatty acid profiles were determined. Proximate analysis and fatty acid profiles were determined by the dairy laboratory of the Agricultural Research

Centre (ARC). The mineral composition was determined by the UP Nutralab of the University of Pretoria. In addition, the composite sample was analysed for vitamin A content and sugar profile by SGS laboratory. The proximate analysis of maas was done to determine the percentages of moisture, fat, protein and ash according to the accepted AOAC-methods (2000). The fatty acid profile was determined using the gas chromatography method of Christopherson and Glass (1969). The fat was extracted and trans-methylated with methanol-potassium hydroxide. Fatty acid methyl esters were extracted with n-hexane and analysed by gas liquid chromatography. The mineral composition was determined by preparing the samples using the official AOAC method 935.13 for calcium, magnesium, copper, manganese, potassium, sodium, iron and zinc.

Sample preparation for phosphorus was done using AOAC method 968.08. Ion chromatography was used to determine the mineral content (Giron, 1973).

An additional analysis was done on the composite sample (sample 5) that included analysis of the sugar profile and vitamin A content. The sugar profile which was determined included fructose, glucose, galactose, sucrose, maltose, lactose and trehalose, as well the total sugar. High Performance Liquid Chromatography (HPLC) was used to determine the presence and level of the sugars (Smit & Nel, 1987). The vitamin A level was determined by HPLC and UV detection (Hulshof, 2002).

Results were also compared with results from a study on maas composition done in 1995. The maas data is currently included in the Medical Research Food Composition tables based on the data from 1995. The 1995 study included 100 samples from 5 different geographical regions in SA (20 from each region). Nutrients analysed in 1995 and compared with 2014 data include protein, fat, ash, moisture, calcium, phosphorus, potassium, sodium and fatty acids (C8:0; C10:0; C12:0; C14:0; C14:1; C16:0; C16:1; C18:0 and C20:0).

4.4.3.4 STATISTICAL ANALYSIS

Nutrient data obtained from analysis was entered on a spreadsheet using Microsoft Excel (2013). The data was statistically analysed using Genstat for Windows 2003. The significance of all the variables measured for proximate analysis and fatty acid analysis for each sample was tested using analysis of variance (ANOVA), whereby the effect of seasonal variability on composition was tested at the 5% level of significance ($p \leq 0.05$). Data was also compared with the data previously tabulated for South African maas products by using the original data set.

4.5 RESULTS & DISCUSSION

4.5.1 THE ROLE OF MAAS IN THE TYPICAL SOUTH AFRICAN DIET

The most popular dairy products in the dairy market, as identified by the Ipsos-Markinor (2014) study are fresh full cream milk, maas, regular yoghurt, gouda/cheddar cheese and Long Life (UHT) milk. Maas is part of the dairy category in SA and comprised 5% of the total liquid dairy category for the period of 2013-2014 (Figure 4.1) (LACTODATA, 2014). There were about 80 maas brands available in SA at the time of publication of this study (Aztec, 2014).

Consumer data from the 2014 TGI database indicated that two thirds (67%) of South African households consumed maas. TGI reported that 82.4% of maas consumers in SA were reported to be black and speak indigenous South African languages (TGI, 2014).

The Ipsos-Markinor study (2014) indicated that 90% of maas consumers were black. The average age of maas consumers according to the consumer database of TGI (2014) was between 24 and 35 years of age. The majority of maas consumers (30%) are between the ages of 35-49 years, with only 23% of maas consumers aged between 23-34 years. In terms of Living Standards Measure (LSM) distribution, the majority of maas consumers were between LSM 1 and 5, thus from the lower to the lowest socio-economic groups (Markinor, 2014).

The results indicate that 45.9% of maas consumers have dependent children living with them in the house (TGI, 2014). Almost 50% of the households consumed maas with maize porridge (Ipsos-Markinor, 2014). 91% of respondents in the Ipsos-Markinor (2014) survey indicated that maas is a suitable food product for the whole family. Furthermore, 60% of respondents also indicated that maas is good for growing children.

Focus group participants also indicated that maas is regarded as a healthy food product for children and as a snack for adults. 72% of respondents also indicated that they regard maas as a treat or a reward food (Ipsos-Markinor, 2014). Maas is however regarded as an adequate meal replacement for the household when meat stores are low (Ipsos-Markinor, 2014; Focus group research, 2013). This was confirmed by focus group respondents who reported that maas is given to the children in the household together with maize porridge or brown bread when meat stores are low.

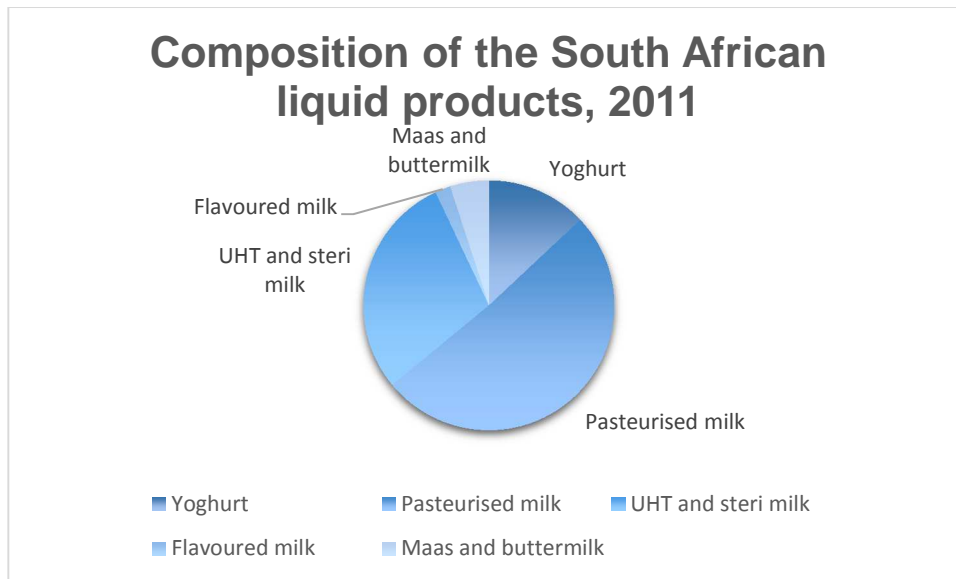


Figure 4.1: Distribution of dairy products in the SA dairy market (LACTODATA, 2014)

The Ipsos-Markinor study indicated that 87% of dairy consumers viewed maas as a product that they grew up with. Focus group respondents confirmed this by indicating that maas had been part of their households for as long as they could remember.

It was also reported that 15% of maas consumers have maas more than once a week and at least 16% have it at least once a week. The incidence of maas consumption as reported by TGI (2014) ranged from 10.3% of households consuming maas at least once a day to 13.8% of households indicating that they consume maas at least once a week (Ipsos-Markinor, 2014). 87% of the maas consumers included in the sample always have maas in the house. Focus group participants indicated that maas was part of the monthly shopping basket. It can be concluded that maas is part of the heritage of the food culture of the majority of South African dairy consumers. The demographic profile of maas consumers and consumption patterns of maas by South African consumers indicated that maas is a culturally relevant food.

4.5.2 NUTRITIONAL PROFILE OF MAAS

Maas is produced from milk which is regarded as a good source of animal protein. The nutritional analysis of maas (Table 4.3) revealed the protein content of maas to be 3.34g/100g. Currently it is similar to that measured in 1995 and remains within the parameters set by the dairy regulations (R2581) (Table 4.7). Maas, as an animal source of protein, adheres to the criteria stipulated in legislation (R146, 2012) to be classified as a good source of protein. Maas contributes to the regular consumption of complete proteins in households where maas is served with brown bread or maize porridge (Vorster *et al.*, 2014). The intake of a complete protein source is essential to the growth and development of children in the household (Vorster *et al.*, 2014).

No significant differences in the fat content of maas were observed in the current data (Table 4.3). There was however a difference observed in the unsaturated and saturated fatty acid content. Saturated fat (2.2g/100g) was significantly higher, ($p \leq 0.05$) than the unsaturated fatty acids (1.03g/100g) (Table 4.5). Regulations (R146) stipulate that to make a “low in saturated fat” claim the product may contain no more than 1.5g of saturated fat per 100g. Maas will, therefore, not qualify for this claim nor for any content claims (e.g. “source of polyunsaturated fatty acids”) regarding unsaturated fatty acids.

It is however, important to note that in the lower socio-economic groups in SA, fat is a good energy source in the diet. 2.9% of children in SA are wasted (Sishana *et al.*, 2014). Wasting is caused by chronic undernutrition and the intake of insufficient energy in the diet (Caulfield *et al.*, 2006). The fat content and associated energy (kJ) delivered from maas can play an essential role in increasing the energy intake of wasted children in SA. This should be investigated in terms of a weaning food for children as it is a culturally relevant food.

Significant differences in fatty acid content of maas were observed over the four week period during which samples were taken and analysed, with the exception of eicosapentanoic acid (EPA) (Table 4.4 and 4.5). Possible reasons for the variation in fatty acid content could be the source of milk used to make the different batches. As a generic agricultural commodity, variation in the composition of raw milk is observed due to breed, feed, climate and seasonal variation (Laben, 1963). This once again illustrates why it is important to sample the same product over a period of time, in order to be able to obtain reliable data.

Differences in total fat and fatty acid content were also observed between the 1995 data and current data. Current values are lower in total fat content compared to the 1995 values (Table 4.7). No change in the legislation (R2581) regulating the fat content of maas has occurred since 1995. Possible reasons for this might be similar to the reasons for variation that occurred over time in the current data. Natural variation occurs in dairy products due to changes in

climate, breed of cow, season, region, etc. and it is therefore important to confirm the nutritional composition of dairy products on a regular basis (Laben, 1963). This would also contribute to the accuracy of nutrient intake data when it is based on nutrition composition data (Greenfield and Southgate, 2003).

A regulatory alignment of maas from a composition perspective was observed. Regulations pertaining to the addition of additives to foodstuffs prohibit the use of additives in maas, protecting the integrity and natural composition of the product. Furthermore, a notably lower sodium content was found in the current data compared to previous recorded values, which is a positive product attribute (Table 4.7), especially considering that 10.2% of South Africans suffer from hypertension (Shisana *et al.*, 2014). Due to this high incidence, regulations (R214) governing the salt content of food products were published in 2013 with the aim of lowering the salt intake of South Africans. Maas is not included in these regulations as these regulations are more focused on processed foods, however, in the light of the high hypertension incidence, lower sodium levels in any highly consumed food product may contribute to lowering sodium intakes.

Table 6 shows the mineral content of the maas samples tested over a 4 week period. The minerals are all present at 10% or lower of the prescribed Nutrient Reference Value (NRV) (R146, 2012). The calcium content is the highest at 123mg per 100g product (Table 4.6). Although currently lower than previously recorded (Table 4.7) calcium is still present at 9.5% of the NRV per 100g product. Serving sizes recommended on the packaging (250g) increase this amount to 23.7% of the NRV. Potassium and phosphorus content is also lower than previously recorded, while magnesium content was higher than previously recorded (Table 4.7). The natural variation of milk used for the production of maas analysed in 2014 and 1995 was probably different, and may be cited as a possible reason for the change in mineral content.

From a microbiological perspective the incorporation of probiotics into fermented milk (maas) was shown to have beneficial health effects especially on lipid profiles (Buttriss, 1997; Schelnbach, 1998; Parvez *et al.*, 2005). Schelnbach (1998) found that fermented milk can help delay gastric emptying due to its low pH. The delay in gastric emptying may also be beneficial for glycemic responses and appetite regulation. In the view of the high incidence of lactose intolerance, reported in African populations, including in SA, this may to some extent explain why maas remains a popular traditional food.

Lactose intolerance has been shown to be common amongst people from South-East Asia, the Middle East and some parts of Africa. Research has however shown that the intake of milk and dairy can be better tolerated if fermented dairy products or hard cheeses are consumed

(Buttriss, 1997; Beyers & Salvaiano, 2005; Parvez *et al.*, 2006). The health benefits of maas, the prevalence of maas consumption and the cultural heritage of maas thus made it a viable food product for inclusion in the FBDGs of SA (Vorster *et al.*, 2014).

Table 4.3: Proximate analysis of maas (per 100g)

Nutrient	Unit	Week 1	Week 2	Week 3	Week 4	Composite sample	p-value
Energy	kJ	*	*	*	*	236	-
Protein	g ± SD	3.29 ±0.0353	3.29 ±0.0353	3.22 ±0.0141	3.29 ±0.0354	3.22 ±0.0212	0.122
Ash	g ± SD	0.69 ^{ab} ±0.00	0.725 ^b ±0.00707	0.7 ±0.00	0.705 ^{ab} ±0.0212	0.68 ^a ±0.00	0.041
DM	g ± SD	11.3 ^{ab} ±0.00	11.9 ^c ±0.00	11.0 ^c ±0.0212	11.6 ^{bc} ±0.311	11.23 ^{ab} ±0.00707	0.007
Total sugar	g	-	-	-	-	3,57	-
Fructose	g	*	-	-	-	0	-
Glucose	g	*	-	-	-	0	-
Galactose	g	*	-	-	-	0	-
Sucrose	g	*	-	-	-	0	-
Maltose	g	*	-	-	-	0	-
Lactose	g	*	-	-	-	3.57	-
Trehalose	g	-	-	-	-	0	-
Fat	g ±SD	3.27 ±0.0201	3.67 ±0.0212	3.24 ±0.00707	3.24 ±0.0141	3.25 ±0.00	0.291

*a,b,c Means in the same row with different superscripts differ significantly

Table 4.4: Fatty acid analyses of maas (per 100g)

Nutrient	Unit	Week 1	Week 2	Week 3	Week 4	Composite sample	p-value
C8:0	g ± SD	0.0241 ^c ±0.0000952	0.0138 ^a ±0.000276	0.019 ^b ±0.00	0.38 ^d ±0.00	0.0185 ^b ±0.000707	p≤0.001
C10:0	g ± SD	0.0781 ^b ±0.00016	0.0572 ^a ±0.000315	0.086 ^c ±0.00	0.106 ^d ±0.00	0.0815 ^{bc} ±0.00354	p≤0.001
C11:0	g ± SD	0.00180 ^b ±0.000273	0.00102 ^a ±0.0000388	0.002 ^b ±0.00	0.002 ^b ±0.00	0.002 ^b ±0.00	p=0.002
C12:0	g ± SD	0.107 ^b ±0.000309	0.076 ^a ±0.0000667	0.129 ^d ±0.00	0.137 ^e ±0.00	0.116 ^c ±0.00424	p≤0.001
C13:0	g ± SD	0.00297 ^b ±0.0000405	0.00203 ^a ±0.0000467	0.003 ^b ±0.00	0.004 ^c ±0.00	0.003 ^b ±0.00	p≤0.001
C14:0	g ± SD	0.385 ^b ±0.000244	0.263 ^a ±0.000267	0.404 ^{bc} ±0.00	0.419 ^b ±0.00	0.388 ^c ±0.0141	p≤0.001
C14:1	g ± SD	0.0351 ^b ±0.000138	0.0241 ^a ±0.000176	0.035 ^b ±0.00	0.038 ^c ±0.00	0.035 ^b ±0.00141	p≤0.001
C15:0	g ± SD	0.0388 ^b ±0.000224	0.027 ^a ±0.0000372	0.038 ^b ±0.00	0.038 ^b ±0.00	0.037 ^b ±0.00141	p≤0.001
C15:1	g ± SD	0.00890 ^b ±0.000139	0.00610 ^a ±0.00015	0.009 ^b ±0.00	0.009 ^b ±0.00	0.0085 ^b ±0.000707	p≤0.001
C16:0	g ± SD	1.091 ^b ±0.000336	0.842 ^a ±0.000262	1.07 ^b ±0.00	1.14 ^b ±0.00	1.08 ^b ±0.0389	p≤0.001
C16:1	g ± SD	0.054 ^{cd} ±0.000042	0.0388 ^a ±0.000349	0.051 ^b ±0.00	0.056 ^d ±0.00	0.052 ^{bc} ±0.00141	p≤0.001
C17:0	g ± SD	0.0279 ^d ±0.000136	0.01925 ^a ±0.000351	0.027 ^{cd} ±0.00	0.023 ^b ±0.00	0.025 ^d ±0.00141	p≤0.001
C17:1	g ± SD	0.000137 ±0.000193	0.0000965 ±0.000136	0.00 ±0.00	0.00 ±0.00	0.0045 ±0.00636	p=0.496
C18:0	g ± SD	0.42 ^c ±0.000042	0.385 ^b ±0.000344	0.406 ^{bc} ±0.00	0.358 ^a ±0.00	0.39 ^b ±0.0141	p=0.001
C18:1n9t	g ± SD	0.00	0.00	0.00	0.00	0.00	-

Nutrient	Unit	Week 1	Week 2	Week 3	Week 4	Composite sample	p-value
C18:1n9c	g ± SD	0.902 ^c ±0.000068	1.20 ^d ±0.000296	0.843 ^b ±0.00	0.766 ^a ±0.00	0.828 ^b ±0.0304	p<0.001
C18:2n6t	g ± SD	0.0152 ^{bc} ±0.00026	0.011 ^a ±0.000053	0.017 ^d ±0.00	0.014 ^b ±0.00	0.0155 ^c ±0.000707	p<0.001
C18:2n6c	g ± SD	0.0558 ^a ±0.000239	0.239 ^d ±0.0000544	0.056 ^{ab} ±0.00	0.062 ^c ±0.00	0.0595 ^{bc±} 0.00212	p<0.001
C18:3n6	g ± SD	0.00103 ±0.00004	0.00023 ±0.00033	0.001 ±0.00	0.001 ±0.00	0.078 ±0.109	p=0.484
C18:3n3	g ± SD	0.0118 ^a ±0.000277	0.0118 ^a ±0.000284	0.014 ^b ±0.00	0.014 ^b ±0.00	0.0135 ^b ±0.000707	p=0.003
C20:0	g ± SD	0.00689 ^a ±0.000154	0.0179 ^b ±0.000185	0.007 ^a ±0.00	0.006 ^a ±0.00	0.0065 ^a ±0.000707	p<0.001
C20:1	g ± SD	0.00113 ^a ±0.000184	0.009241 ^c ±0.000341	0.001 ^a ±0.00	0.001 ^a ±0.00	0.002 ^b ±0.00	p<0.001
C20:2	g ± SD	0.000793 ^{bc} ±0.000292	0.000245 ^{ab} ±0.000346	0.00 ^a ±0.00	0.001 ^c ±0.00	0.001 ^c ±0.00	p=0.013
C21:0	g ± SD	0.000996 ±0.00000532	0.000944 ±0.0000799	0.00 1±0.00	0.001 ±0.00	0.001 ±0.00	p=0.499
C20:3n6	g ± SD	0.00222 ^a ±0.000309	0.00175 ^a ±0.000352	0.002 ^a ±0.00	0.003 ^b ±0.00	0.002 ^a ±0.00	p=0.0012
C20:4n6	g ± SD	0.000106 ^a ±0.000149	0.0000781 ^a ±0.000111	0.00 ^a ±0.00	0.02 ^b ±0.00	0.00 ^a ±0.00	p<0.001
C20:3n3	g ± SD	0.00	0.00	0.00	0.00	0.00	-
C22:0	g ± SD	0.00279 ^b ±0.000294	0.00593 ^{c±} 0.0000973	0.002 ^a ±0.00	0.002 ^a ±0.00	0.002 ^a ±0.00	p<0.001
C20:5n3	g ± SD	0.00192± 0.00011	0.000933± 0.0000945	0.001± 0.00	0.001± 0.00	0.0015± 0.000707	p=0.099
C22:1n9	g ± SD	0.000125± 0.000177	0.000229± 0.000323	0.00	0.00	0.00	p=0.579
C22:2	g ± SD	0.000939 ±0.0000864	0.000905 ±0.000135	0.001 ±0.00	0.001 ±0.00	0.001 ±0.00	p=0.587
C23:0	g ± SD	0.00	0.00	0.00	0.00	0.00	-
C24:0	g ± SD	0.001149 ^a ±0.000211	0.00309 ^b ±0.000110	0.001 ±0.00	0.001 ^a ±0.00	0.001 ^a ±0.00	p<0.001
C24:1	g ± SD	0.000071 ^a ±0.00001	0.000846 ^b ±0.000218	0.002 ^c ±0.00	0.002 ^c ±0.00	0.002 ^c ±0.00	p<0.001
C22:6n3	g ± SD	0.00	0.00	0.00	0.00	0.00	-

*a,b,c Means in the same row with different superscripts differ significantly

Table 4.5: Summary of fatty acid groups for maas (per 100g)

Nutrient	Unit	Week 1	Week 2	Week 3	Week 4	Composite sample	p-value
Saturated fatty acids	g ± SD	2.19 ^b ±0.00	1.71 ^a ±0.000077	2.20 ^b ±0.00	2.25 ^b ±0.0347	2.20 ^b ±0.00	p≤0.001
Mono Unsaturated fatty acids	g ± SD	1.00 ^b ±0.00	1.28 ^c ±0.000264	0.942 ^a ±0.00	0.897 ^a ±0.0354	0.951 ^b ±0.00	p≤0.001
Poly Unsaturated fatty acids	g ± SD	0.074 ^a ±0.00	0.255 ^d ±0.000135	0.075 ^a ±0.00	0.085 ^c ±0.000707	0.082 ^b ±0.00	p≤0.001
Trans fatty acids	g ± SD	0.015 ^{bc} ±0.00	0.011 ^a ±0.000053	0.017 ^c ±0.00	0.013 ^{ab} ±0.00141	0.016 ^c ±0.00	p=0.001
Cis fatty acids	g ± SD	0.958 ^c ±0.00	1.44 ^d ±0.00035	0.899 ^{ab} ±0.00	0.851 ^a ±0.0332	0.91 ^{bc} ±0.00	p≤0.001
Omega 3 fatty acids	g ± SD	0.013 ^a ±0.00	0.0122 ^a ±0.000329	0.015 ^b ±0.00	0.0155 ^b ±0.000707	0.015 ^b ±0.00	p≤0.001
Omega 6 fatty acids	g ± SD	0.075 ^a ±0.00	0.252 ^c ±0.00002	0.075 ^a ±0.00	0.081 ^b ±0.001414	0.081 ^b ±0.00	p≤0.001
Omega 9 fatty acids	g ± SD	0.902 ^c ±0.00	1.20 ^d ±0.000027	0.843 ^b ±0.00	0.789 ^a ±0.0325	0.0849 ^{bc} ±0.00	p≤0.001
EPA C20:5n3	g ± SD	0.002 ±0.00	0.000933 ±0.0000945	0.001 ±0.00	0.0015 ±0.000707	0.002 ±0.00	p=0.05
DHA C22:6n3	g ± SD	0.00	0.00	0.00	0.00	0.00	-

*a,b,c Means in the same row with different superscripts differ significantly

Table 4.6: Mineral analysis of maas (per 100g)

Nutrient	Unit	Week 1	Week 2	Week 3	Week 4	Composite sample
Calcium	mg	140	130	130	140	123
Phosphorus	mg	90	90	90	90	87.6
Magnesium	mg	20	17	18	20	18.5
Copper	mg	0.019	0.019	0.0197	0.026	0.0247
Iron	mg	0.231	0.197	0.21	0.211	0.0204
Manganese	mg	0.041	0.043	0.038	0.034	0.0383
Zinc	mg	0.456	0.311	0.467	0.524	0.0513
Potassium	g	0.16	0.15	0.17	0.17	0.163
Sodium	mg	47	45	43	40	38.3
Selenium	mcg	2.73	2.05	2.09	2.11	2.08
Vitamin A	mcg	-	-	-	-	26.9

*a,b,c Means in the same row with different superscripts differ significantly

Table 4.7: Comparison of data from 1995 (Smit, 1995. Unpublished data) and 2014

Nutrient	Unit	2014	1995					Average	SD
			1	2	3	4	5		
Protein	g	3.22	3.4	3.18	3.17	3.09	3.65	3.3	±0.228
Ash	%	0.680	0.376	0.73	0.82	0.676	0.815	0.683	±0.182
Moisture	%	89.8	88.4	87.8	87.6	88.2	86.6	87.7	±0.808
Fat	g	3.25	2.97	4.27	3.47	3.31	4.08	3.62	±0.542
Fatty acid profile:									
C8:0	g	0.0185	0.0316	0.0333	0.033	0.0286	0.0386	0.0033	±0.00363
C10:0	g	0.0185	0.0827	0.123	0.102	0.0827	0.108	0.997	±0.173
C12:0	g	0.116	0.0955	0.146	0.125	0.0961	0.126	0.118	±0.0217
C14:0	g	0.338	0.302	0.492	0.417	0.32	0.439	0.394	±0.0808
C14:1	g	0.0350	0.0279	0.0386	0.0351	0.029	0.0356	0.0332	±0.00459
C16:0	g	1.08	0.782	1.26	1.04	0.908	1.11	1.02	±0.184
C16:1	g	0.0520	0.0331	0.0419	0.0481	0.0368	0.0368	0.0393	±0.00581
C18:0	g	0.390	0.331	0.517	0.404	0.435	0.495	0.436	±0.0743
C20:0	g	0.0065	0.00799	0.00864	0.0179	0.0228	0.0217	0.0158	±0.00633
Minerals									
Calcium	mg	123	141	144	194	139	192	162	±28.4
Phosphorus	mg	90.0	94.7	86.4	92.1	91.7	99.8	92.9	±28.4
Magnesium	mg	20.0	12.7	13.0	15.0	12.9	18.0	14.3	±2.26
Potassium	g	160	197	187	198	194	175	190	±9.52
Sodium	mg	47.0	50.3	86.3	85.8	54.4	6.9	56.7	±32.6

4.6 CONCLUSIONS AND RECOMMENDATIONS

A separate dietary guideline for dairy products was included in the revised South African FBDGs in 2012, which read: “have milk, maas or yoghurt every day”. This guideline stresses the importance of the inclusion of dairy in a prudent diet, and includes specific mention of a traditional, unique cultured milk product, namely maas. As nutrient considerations become increasingly important food and nutrition security debates, the importance of diversity and variety in human diets is being increasingly highlighted. The inclusion of culturally relevant and traditional foods in policies and programmes such as FBDGs could improve the consumption of healthier foods that meet dietary requirements. The nutritional profile of such traditional foods should, therefore, also be considered.

The study showed that maas is a food product considered to be healthy by South Africans and that it is commonly consumed as part of the South African diet. Food composition data further indicates that the nutritional profile and health benefits associated with maas may have changed over time, but that it remains a source of protein, energy and important minerals. The consumption of maas is very likely to continue in future because it forms part of the traditional South African diet. As a nutrient-dense, culturally relevant food, it is rightfully included in the South African FBDGs and can potentially promote food and nutrition security.

The change in nutrient profile of maas serves as evidence that food composition may vary over time. Further research relating to the nutrient analysis of other food products included in the FBDGs is suggested to ensure that the revised FBDGs are based on timely, scientific evidence, relevant to the South African population to successfully promote food and nutrition security.

4.7 ACKNOWLEDGEMENTS

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CHAPTER 5: SIGNIFICANCE OF THE STUDY, CONCLUSIONS AND RECOMMENDATIONS

The main findings and conclusions of the research are discussed. Recommendations for further research are presented and discussed.

5.1 INTRODUCTION

The global policy environment has shaped the food system to produce more high-energy nutrient-poor foods at affordable prices. Food systems include mainly commercially produced foods, and they have generally moved away from the inclusion of indigenous and traditional foods (Stadlmayr *et al.*, 2011). Diets have become devoid of variety and, therefore, lost their nutrient quality. Globally unhealthy food systems have led to unhealthy diets and to the high incidence of obesity, while simultaneously causing an increase in micronutrient deficiencies (Mozaffarian, 2013). The high incidence of obesity has broader public health consequences including the higher risk for the development of non-communicable disease (NCDs) including type 2 diabetes mellitus, hypertension and cardiovascular disease (Grundy *et al.*, 2004).

The broader consequences, especially the economic impact, of the high incidence of obesity and micronutrient malnutrition have brought nutrition and the food system to the attention of policy makers (Swinburn *et al.*, 2013¹). The policy landscape has slowly started to shift towards more nutrition-sensitive policies to address burning issues such as undernutrition, deficiencies, obesity and NCDs. Various types of policies have been identified to regulate the food system and improve nutrition including food composition, labelling, promotion, provision, retail, pricing and trade and investment (Swinburn *et al.*, 2013²). Other policies have also been identified to address obesity and NCDs and include specific policies and strategies aimed at the promotion of healthy foods, educational campaigns aimed at improving consumer knowledge and inspiring behaviour change (e.g. Food-Based Dietary Guidelines (FBDGs)) and limiting the promotion of unhealthy foods to children. These policies and strategies must be supported by strong leadership, governance and monitoring of policies and programmes (Swinburn *et al.*, 2013²). They can play a significant role in regulating and understanding the population diet, the burden of obesity and other risk factors and health outcomes like the morbidity and mortality rates related to NCDs.

The Bill of Rights, as part of the Constitution, states that all South Africans have the right to sufficient food and water and that every child has the right to basic nutrition, shelter, basic healthcare services and social services (Presidency, 2011). The South African government has developed the National Development Plan (NDP), based on the Constitution of South

Africa. This has inspired the current government to implement policy interventions in numerous government departments that aim to ensure a healthy life for all South Africans.

Policy interventions, amongst others, include improved healthcare, addressing inequalities leading to malnutrition, addressing the development of obesity and NCDs and regulating the food system to improve the nutrient quality of food, as well as availability, accessibility and affordability (DOH, 2013; DAFF, 2013).

The aim of the research described in this thesis was to determine the broader policy interventions that have been implemented to address malnutrition together with obesity and NCDs in South Africa (SA). Two of the food-based policy interventions focusing on dairy products, namely food labelling and FBDGs were identified and discussed in greater detail.

5.2 SIGNIFICANCE OF THE STUDY

5.2.1 REVIEW OF NUTRITION POLICY IN SOUTH AFRICA

The evaluation of South African nutrition policies in the first study (Chapter 2), based on the Food-EPI model (Swinburn *et al.*, 2013), indicated that only 23% of good practice indicators consisting of policy and infrastructure support indicators respectively have been implemented in SA. Policies aimed at improving healthy food choices that have been implemented in SA include food composition targets, food labelling (ingredient/nutrient declarations, criteria for health and functional claims) policies, food price policies and policies that promote healthy eating in schools. Infrastructure support indicators that have been implemented in SA include visible political support for nutrition-sensitive policies; setting of population intake targets for some nutrients; the implementation of FBDGs; introduction of a comprehensive implementation plan linked to national needs including amongst others the Department of Health (DOH) strategy (2014-2019), Roadmap for Nutrition (2013-2017), NCD strategy (2013-2017) and the Zero Hunger strategy; strategies aimed at reducing inequalities like social grants and the Intergated Food Security Strategy (IFSS) (2005) strategy of the Department of Agriculture, Forestry and Fisheries (DAFF) and transparency to the public in the development of food policies and access to government information.

Major policy and infrastructure support gaps were identified and include front of pack and menu board labelling, restriction on the promotion of unhealthy food products to children; subsidies and income-support for healthy food products; availability and accessibility to healthy food products; monitoring of nutrient intakes as well as programmes aimed at reducing obesity and NCDs, adequate budget for the promotion of healthy eating and creating adequate platforms for the government and private sector to collaborate.

In order that SA is able to address the occurrence of obesity and NCDs the policy and infrastructure support gaps which were identified in this thesis must be addressed and multi-sectorial interventions aimed at the promotion of healthy eating must be developed and implemented.

5.2.2 REGULATORY PROGRAMMES AND POLICIES AIMED AT PROMOTING HEALTHY FOOD CHOICES IN SOUTH AFRICA

In the second study (Chapter 3) it was found that the majority of yoghurt labels on South African retail shelves comply with the new labelling regulations, namely “Regulations Relating to the Labelling and Advertising of Foodstuffs in South Africa (R146/01 March 2010)”, published in 2010. R146/01 March 2010 was published as part of a broader plan to address the recent increase in NCDs in SA and to regulate the information available to consumers on food labels. It was also found that about 20% of labels displayed health benefit claims despite the fact that these are not permitted by R146/01 March 2010. R146/01 March 2010 only makes provision for nutrient content claims, negative claims, comparative claims and certain endorsements. The use of health claims, functional claims or reduction in disease risk claims is not permitted. The following types of claims were observed on yoghurt labels in 2013:

- Nutrient content claims (including EU and Codex alignment)
- Negative claims
- Endorsements
- Functional claims

Nutrient content claims and negative claims permitted by R146/01 March 2010 are aligned with both EFSA regulations and Codex. EFSA (articles 13.1; 13.5 and 14) as well as Codex make provision for health benefit and functional claims based on correct, scientific food composition data. Even though these nutrient content claims, negative claims and endorsements are permitted by R146/01 March 2010, a definite decrease in the number of claims on yoghurt labels was observed between 2009 and 2013. This might be due to the fact that in order to make these claims on a food product, substantiation, based on scientific evidence, is required, resulting in increased cost and effort to produce the product.

In 2012 a revised set of FBDGs was released by the Directorate of Food Control of the DOH. The revised guidelines included a separate guideline for milk, maas and yoghurt – “have milk, maas or yoghurt every day” as part of a prudent diet. Milk, maas and yoghurt are regarded as healthy foods that should be included in the diet. It is important to provide consumers with as much information as possible on these products. The restriction of health benefit claims and

function claims limits the information available on dairy labels so that consumers can make healthier food choices.

5.2.3 INCLUSION OF TRADITIONAL FOOD PRODUCTS IN THE REVISED FOOD-BASED DIETARY GUIDELINES OF SOUTH AFRICA

In certain parts of the world, policies promoting healthier diets have been shown to influence food choices. The WHO/FAO (1992) encouraged the introduction of FBDGs, as a food-based policy approach, to encourage healthier food choices and manage and prevent the rising incidence of obesity and NCDs as well as malnutrition. SA introduced the first set of country-specific FBDGs in 2001. The guidelines were revised and published again in 2011. The revised guidelines include a separate guideline for milk, maas and yoghurt – “have milk, maas or yoghurt every day”. The study (Chapter 4) specifically focused on the inclusion of maas, soured milk, as a traditional South African food product in FBDGs.

The study investigated the role of maas in the South African diet as well as changes in the nutrient profile of maas since 1995. Consumer research indicated that maas is consumed by two-thirds of the South African population and 87% of maas users indicated that there is always maas in the house. 60% of maas consumers also regard maas as a healthy food option, especially for children.

Significant differences were found between the compositional data obtained from maas in 1995 and the current data. The values of key nutrients such as protein, fat and calcium have decreased since 1995. Despite these nutrients decreases, maas remains a good source of animal protein, energy and calcium in the diet. The mineral content (magnesium, phosphorus and potassium) also decreased since 1995. Maas was included in the FBDGs based on the nutritional profile determined in 1995. The study found that significant compositional changes in maas occurred over time. It is thus important to review and reanalyse the nutrient profile of foods, especially foods included in FBDGs, on a regular basis. This must be done to ensure that guidelines, as a policy tool, are accurate and will achieve the goal of a prudent diet, which is acceptable and accessible to all South Africans to help decrease and prevent malnutrition, obesity and NCDs.

Research indicated that maas is regarded as traditional food product, part of the South African heritage, and consumption is very likely to continue in future. As a nutrient-dense, culturally relevant food, it is rightfully included in the South African FBDGs.

5.3 CONCLUDING REMARKS AND RECOMMENDATIONS

In the light of the high morbidity and mortality rates caused by the increased incidence of NCDs and malnutrition in SA, the South African government has started developing and implementing policies aimed at improving nutrition for all. Results of this study indicate that some nutrition-related policies have been implemented. However, major gaps in the development and implementation of nutrition policies, governance and leadership still remain.

As part of the effort to improve nutrition in SA by means of nutrition-sensitive policies, the DOH introduced and implemented stricter food labelling regulations (R146/01 March 2010) and FBDGs (NNW, 2012). This study found that the information displayed on dairy labels generally complies with R146/01 March 2010. However, R146/01 March 2010 does not permit the use of health and functional claims on food labels in SA. These types of claims, based on accurate food composition data, can be a useful source of information for consumers to promote healthier food choices (Van Trijp and van der Lans, 2007). Furthermore, the introduction of the revised country-specific FBDGs, as a source of product and nutrition information for consumers, has served as an educational guide to help South Africans to make healthier food choices. The revised FBDGs include the guideline – “have milk, maas or yoghurt every day”. This study found that maas is a suitable food product to be included in the South African FBDGs as it is a culturally relevant, traditional food product with a good nutritional profile. However, it was found that the FBDGs are based on food composition data that is sometimes outdated and not reliable because the composition of food has changed over the time. This emphasises how important it is to continually update food composition tables, which are used as reference sources.

The inclusion of functional and health benefit claims as part of labelling regulations can serve as a source of product information that can further promote the consumption of milk, maas and yoghurt as healthy food products as part of a prudent diet in SA.

Even though these policy tools have been implemented, it is essential to continually review and update them to improve the policies so that they are more effective in promoting healthy eating. Furthermore, a lack of collaboration exists between the different government departments which leads to a lack of development and implementation of holistic policies that encourage healthy eating by providing product and nutrition information to consumers to help them to make better food choices.

A multi-sectorial approach by government departments should have a synergistic effect that can play a vital role to decrease and prevent malnutrition, obesity and NCDs by addressing vital gaps in the policy and infrastructure support framework.

Regular monitoring of food composition and consumption information must be put in place to ensure that accurate information is available to policy makers to develop and implement policy that aims to promote healthy eating.

Labelling regulations which include criteria for the use of health and functional claims on food product labels can serve as an additional source of health and nutrition information to aid consumers in food choices.

The broader promotion of FBDGs as part of a national promotion campaign for healthy eating can increase awareness of the FBDGs and provide valuable product and nutrition related information to consumers to improve their food choices.

Reviewing South African nutrition-sensitive policies using the Sustainable Development Goals (SDGs) (2015-2020) is recommended. Many of the current nutrition-sensitive policies of SA were developed based on the Millennium Development Goals (MDGs) (2000-2015). The MDGs concludes in 2015 and will be replaced by the SDGs. It is thus imperative that SA nutrition policy is reviewed and aligned with the SDGs.

Based on the findings of this study it appears that SA has made some progress in terms of developing nutrition-sensitive policies and infrastructure aimed at promoting healthy eating. However, there are still gaps in the policy and infrastructure and such gaps must be addressed urgently to ensure that implemented policies are supported and that the development of further strategies is not in vain. Building on the important finding that self-regulation within some industries is sufficient, the focus should be on more urgent strategies e.g. NCD prevention.

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