Food habits of primary schoolchildren aged 11-15 years in Manzini, Swaziland

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Submitted in fulfilment of the requirements for the

Master in Consumer Science General

University of Pretoria©

Supervisor: Dr AT Viljoen

May 2014

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

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MConsumer Science (General)
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Declaration

I, **Anne Toysie Dlamini,** declare that the dissertation which I hereby submit for the Masters in Consumer Science (General) 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 and that all reference material used in this study has been duly acknowledged.

Anne Toysie Dlamini

Acknowledgements

My sincere gratitude goes to the following persons and institutions for their great contribution towards the completion of the study;

- Dr AT Viljoen, my supervisor, for her professional guidance, support, commitment and diligence during this study
- The University of Pretoria Administration for providing financial support that enabled me to study for a Master's degree in Consumer Science
- Prof Joan Fairhurst for language editing of the dissertation
- Ms Elsie Verheem from the University of Pretoria Library Services for obtaining some of the references so efficiently
- Ms Ingrid Booysen for being responsible for the final technical editing of the document
- The principals and Home Economics teachers at the Mafutseni schools for their involvement in the children's sessions during the data collection process
- The schoolchildren who freely shared their knowledge and time in this study
- My colleagues at work for their understanding, assistance and collegial support
- My husband, children, family and friends for their moral support throughout this challenging period of study.

Abstract

TITLE: **FOOD HABITS OF PRIMARY SCHOOLCHILDREN AGED 11-15 YEARS IN MANZINI, SWAZILAND**

By

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Supervisor: Dr A T Viljoen

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In this study the food habits of schoolchildren aged 11-15 years in three primary schools in Manzini, Swaziland were described and explored. Their eating patterns and the composition of their meals during the week and over weekends, together with their familiarity, consumption and preference rating of selected traditional foods were established. The school meal programme and other aspects of the school food environment were also included as part of the study.

As there is limited information on the food habits of Swazi people in general, and no recent information available on the food habits of Swaziland's primary schoolchildren, this study has contributed to filling a gap in the literature. Studies done in other sub-Saharan African countries on the food habits of schoolchildren have reported changes in their dietary intake due to migration, urbanisation, modernisation and Westernisation, processes also found in this country's history. This explorative and descriptive cross-sectional study is deductive in nature and followed a quantitative research design. A self-administered, pre-tested survey questionnaire consisting of closed and open-ended questions was developed and completed by 300 Grade 5, 6 and 7 primary schoolchildren to determine their eating and consumption patterns.

The results reflect a change in daily meal patterns from the traditional two meals to the Western-orientated eating pattern of three meals a day with in-between-meal snacking. In-between meal snacking was more common during the week than over weekends. For the

majority of the respondents breakfast consisted of either bread or a soft porridge prepared from sorghum or maize meal and tea. Lunch and supper meals were markedly predominantly stiff maize meal porridge served with a legume dish, meat stew or a vegetable relish. Rice is increasingly being eaten for lunch (25%) and supper (35%). Both healthy and unhealthy food and beverage choices were consumed as in-between-meal snacks. This, together with the reported low vegetable, fruit and milk consumption by the majority, is a matter of concern.

Most of the selected traditional foods and dishes listed were familiar and consumed by the majority of the respondents. Although some traditional foods and dishes received a low preference rating, the children preferred most of those listed with the exception, as could be expected, of the bitter tasting green leafy vegetables. Concerning the school food environment, results revealed that the majority brought money to purchase food items from vendors during break-times. With the exception of fruit and fruit juice, most of the food items for sale were products with a high fat, sugar or sodium content. Most of the respondents participated in the school meal programme. Although the schoolchildren were satisfied with the meals served, they could not be regarded as nutritionally adequate.

This study not only provided empirical data on the food habits of this group of Swazi schoolchildren, but also gave valuable insights into the school food environment. The important role of the school environment in promoting healthy eating was once again confirmed. Based on the findings of this study recommendations and guidelines to promote healthy eating in Swaziland's primary schools were formulated.

Keywords: food habits
primary schoolchildren
traditional Swazi food
acculturation
eating patterns
meal composition

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CHAPTER 1 :

THE STUDY IN PERSPECTIVE

CHAPTER 1: THE STUDY IN PERSPECTIVE

1.1 BACKGROUND AND INTRODUCTION

There is worldwide concern about the increasing rate of obesity and malnutrition among schoolchildren and many studies have been undertaken to investigate this issue. The eating patterns of schoolchildren reflect a major shift in food consumption patterns associated with increased empty kilojoule foods. These foods are often prepared and/or consumed outside the home and are characterised by a high fat, sugar and salt content resulting in a lower intake of nutrient dense food such as vegetables, fruits and dairy products (Holsten, Deatrick, Kumanyika, Pinto-Martin & Compher, 2012; Poti & Popkin, 2011; Popkin, Adair & Ng, 2011; Serrano & Jedda, 2009; Oogarah-Pratap, 2007; Weinberger & Swai, 2006; Ang & Foo, 2002).

Due to these changes in food consumption patterns an increased incidence of obesity and overweight has thus become a major health problem as a result of sustained energy imbalance (Hoy & Childers, 2012; Seubsman, Kelly, Yuthapornpinit & Sleigh, 2009; Timperio, Ball, Roberts, Andrianopoulos & Crawford, 2009; Lakin & Little-Dyke, 2008; Demoura, 2007; Rolfes, Pinna & Whitney, 2006:536; Oogarah-Pratap & Heerah-Booluck, 2005; Subratty, Chan Sun & Kassean, 2003). This may increase the risk of non-communicable diseases (NCDs) in later life. However, in sub-Saharan Africa there is the double burden of over-and under-nutrition (Abrahams, DeVilliers, Steyn, Fourie, Dalais, Hill, Draper & Lambert, 2011: Delisle, 2010; Temple, Steyn, Myburgh & Nel, 2006; Weinberger & Swai, 2006). It is suggested that changes in food habits from the traditional to the Western-orientated practices are attributed to a variety of factors such as urbanisation, economic development, modernisation, migration and education (Dapi, Omoloko, Janlert, Dahlgren & Haglin, 2007; Taylor, Gallagher & McCullough, 2004). The Western-orientated diet is characterised by an increased use of fast and convenience foods that are high in fat, refined flour, sugars and food additives that contribute to obesity (Raschke & Cheema, 2007; Ang & Foo, 2002).

Similarly, South African studies have reported changes in the food consumption patterns of the black population groups from the traditional diet to a partially Western-orientated lifestyle (Zingoni, Norris, Griffiths & Cameron, 2009; Mackeown, Pedro & Norris, 2007; Kruger, Kruger, Vorster, Jooste & Wolmarans, 2005). Eating patterns of schoolchildren reflect a change from the traditional pattern of two meals a day to three meals a day with in-between

snacking. The diet shows an increase in total fat, saturated fats, sugar and salt with a lower consumption of vegetables and fruits which is of great concern as this can lead to an early onset of obesity and other diet-related diseases (Oosthuizen, Oldewage-Theron & Napier, 2011; Zingoni *et al*., 2009; Temple *et al*., 2006; Kruger *et al.,* 2005).

About two thirds of the Swazi population live in rural areas often living in poverty with limited kinds of different foods being available. The National News of 17 February 2012 in Swaziland reported on a multiple cluster index survey conducted by Gulaid in 2010, that stated that 45% of the children in Swaziland were orphaned or vulnerable, and 38% of these children often went without even one meal a day which resulted in stunted growth that was more prevalent in rural areas (National News, 17 February 2012). According to several literature sources when food variety is limited or not available, the food choices made are not healthy (Hoy & Childers, 2012; Kittler, Sucher & Nahikian-Nelms, 2011:22; Oosthuizen *et al*., 2011; Lakin & Littledyke, 2008; Messer, 2007). This predisposes children to both a low energy and a low micronutrient intake that has adverse health consequences in adulthood, and increases the risk of non-communicable diseases (Oosthuizen *et al*., 2011; Marquis & Claveau, 2005; Bower & Sandall, 2002).

In Swaziland the school meal programme supported by the Swaziland Government is managed and administered through the Ministry of Education to provide school children with one meal a day. The general objective of school meal programmes worldwide is to improve school enrolment, children's ability to learn and regular school attendance for vulnerable children (Acham, Kikafunda, Malde, Oldewage-Theron & Egal, 2012; Jomaa, McDonnell, & Probart, 2010; Galloway, Kristjansson, Gelli, Meir, Espejo & Bundy,2009; Tshiwanambi, 2007:116; Rolfes *et al*., 2006; Kallman, 2005:7). In addition, the school meal programme is viewed as one way of addressing childhood obesity, micronutrient deficiencies and to provide social and food assistance to low income families with children attending school (Poti & Popkin, 2011; Van Stuijvenberg, 2005; Kain, Uauy & Taibo, 2002).

Apart from the meal served at school, schoolchildren in Manzini, a major town in Swaziland, are often seen purchasing and consuming a variety of processed snack foods, high in salt, fat and sugar that are sold around the school premises and nearby market stalls during their short breaks on a school day. These include sweets, popcorn, chips (crisps), iced Kool-Aid[1], fizzy drinks, chocolate bars, buns and biscuits. Findings from research done in other parts of

[1]Kool-Aid- is a powder sold in 10 gram packets that is mixed with water and sweetened

the world report a similar situation and indicate that parents have limited control of what their children eat at school due to extreme influences such as the increased availability of these snack food items, what other children brought to and bought at school and an array of advertisements that abound (Abrahams *et al.,* 2011; Dapi *et al.,* 2007*;* Kubik, Lytle & Story, 2005; Oogarah-Pratap & Heerah-Booluck, 2005; Brown, McIlveen & Strugnell, 2000[b]).

In Swaziland, there is no policy governing what is allowed to be purchased and consumed on the school premises to encourage healthy food choices and eating habits. To encourage healthy eating habits, parents and the school administrators should ensure nutritious meals and snacks are made available and accessible to learners on and around the school premises.

1.2 PROBLEM STATEMENT AND JUSTIFICATION

Significant changes in lifestyles and the kind of foods available have resulted in changes in family environments and food habits in many other countries in the world (Angell, 2008; Dapi *et al.,* 2007; Brown *et al*., 2000[b]). The same has been observed in Swaziland where the changed food habits of children have become part of this tendency. According to literature on the topic children have become active consumers who participate in the food purchasing decision–making process and therefore they do influence family food purchases (Oogarah–Pratap, 2007; Brown *et al.,* 2000[b]; John, 1999). It seems as if there is a decrease in the consumption of traditional foods and increased consumption of less nutritious foods that may result in obesity, poor performance in school and poor health in adulthood.

Balanced nutrition is important as it promotes good health and better performance of the individual, a situation that could contribute to an improved economy of the country at large. As far as the researcher could establish, no study has been conducted on the food habits of Swazi schoolchildren at primary school level with the exception of the limited information on children's food habits as given by Jones (1963) nearly two generations ago. Therefore, it is important to determine and describe the current situation in Swaziland with regard to the food habits of primary schoolchildren. This study under took to do this and investigated the current food habits of schoolchildren aged 11-15 years living in Mafutseni in Manzini, Swaziland and sought to see to what extent traditional foods were included and accepted by the group chosen as a sample. Furthermore, it was conducted in such a way so as to achieve the aim of gaining insight into the issue and analysing how the school meal programme operated in primary schools.

Such a study not only provides empirical data on what children are eating, but also provides baseline information to assist in policy formulation for primary school meal programmes in Swaziland. It will also identify aspects that need to be taught or emphasised regarding healthy eating in the Home Economics subject in schools. It provides an ideal forum where children can discuss their food habits and learn about their own nutritional needs as well as instilling pride in their culinary heritage. To clarify, the aim of the study was to determine and describe the current food habits of primary schoolchildren aged 11-15 years in Manzini, Swaziland and to see to what extent traditional foods are included and accepted by this group in order to make recommendations about meals prepared at school, and foods that should be made available in and around the school premises. The information will also be used to make recommendations for Home Economics curriculum development.

1.3 RESEARCH OBJECTIVES

The following objectives were set to guide the research:

1. To determine and describe the current eating patterns of primary schoolchildren aged 11-15 years in selected schools in Manzini, Swaziland.
2. To determine and describe how familiar the study group was with selected traditional Swazi foods, and to what extent they consumed and preferred these foods.
3. To determine and describe the school food environment.
4. To evaluate the school food environment in order to make recommendations for policy formulation concerning the school food environment.

1.4 RESEARCH DESIGN AND METHODOLOGY

In this explorative and descriptive study, a quantitative research approach was employed. Data for this cross-sectional study was collected by means of a pre-tested survey questionnaire. The questionnaire measured different dimensions of food habits, including aspects related to the school food environment. The survey questionnaires were completed by 300 primary schoolchildren in the Mafutseni area in Manzini, Swaziland.

In addition, observations of the school food environment were made by the researcher. This was done by means of an observation check list not only to explore and describe the school food environment, but also to contextualise the food consumed by the study group during the school day.

1.5 DELIMITATIONS OF THE STUDY

The study was confined to the Mafutseni area in the Manzini region of Swaziland. Three primary schools that were the same radius from Manzini, were selected to participate in the study.

1.6 OUTLINE OF THE RESEARCH REPORT

This **first chapter** has given the background and introduction of the study followed by the problem statement and justification for carrying out the research. The aims and objectives that were formulated to guide the study were itemised. The structure of the research report is presented in the following chapters.

Chapter 2: Literature review

This chapter provides an overview of the theory on which the human ecological perspective is based and states the assumptions that helped to guide an understanding of the interactions between the environmental factors and individuals or groups that bring about change. The factors influencing food habits, the development of food habits, the socialisation process and early adolescence changes are discussed. Food culture change and how it is affected by societal structural changes is also addressed.

Chapter 3: Swazi food patterns and the school meal programme

The historical background related to Swazi food patterns, the school meal programme and the school environment are presented in this chapter.

Chapter 4: Research methodology

The research methodology that was used in this study forms the content of this chapter. It includes description of: the research design; the study aim and objectives; the conceptual framework; conceptualisation of terms used in the study; the operationalisation and development of the measuring instrument; the study population and sampling; data collection and analysis; quality of the study and ethical issues.

Chapter 5: Results and discussion

In this chapter the results of the study are presented and discussed. The study area and sample description is given followed by the demographic profile of the sample, current eating

patterns, familiarity, consumption and preference rating of traditional foods and detail about the school environment.

Chapter 6: Conclusions, evaluation and recommendations of the study

This chapter presents the conclusions, the research is evaluated and the implications and recommendations are given. Some suggestions for future research are provided.

1.7 SUMMARY

The introductory chapter gave the background, the problem statement and justification for the study. It included the research objectives, methodology followed and delimitations if the study. Lastly, an outline of the structure of the report was given.

The next chapter addresses the theoretical perspective and main concepts of the study.

CHAPTER 2:

LITERATURE REVIEW

CHAPTER 2: THEORETICAL PERSPECTIVE AND CONCEPTUALISATION

2.1 INTRODUCTION

This chapter on the theoretical perspective and conceptualisation will be presented in four parts. The first part will deal with the human ecological perspective and the assumptions applicable to the study. An overview of the factors influencing food habits will be dealt with in the second part and in the third part, early adolescence as a life stage and the formation and development of food habits during this stage will be addressed. The fourth part will deal with food culture change and how it contributes to changing food habits including acculturation of food habits.

2.2 THE HUMAN ECOLOGICAL PERSEPCTIVE

As a theoretical point of reference a brief overview of the human ecological perspective is given to serve as background to understanding the factors that influence human food habits and how these habits are formed, developed and could change. The human ecological perspective considers the relation between individuals and their environments (Bryant, Dewalt, Courtney & Schwartz, 2003:2; Story, Neumark-Sztainer & French, 2002; Bubolz & Sontag, 1993:420). The behaviour is viewed as affecting, and being affected by multiple influences and the fact that humans have to continually adjust to them in order to survive (Pelto & Vargas, 1992).

2.2.1 Description of the human ecological perspective

The human ecological perspective as described by Kates (1971) is a framework that focuses on the interactions of humans and their environments. It acknowledges humans as both biological and social beings that interact with their environment (Bubolz & Sontag, 1993:419). The human ecological perspective acknowledges that an individual and the environment co-exist, and therefore must be viewed as a unit in order to fully understand human food habits. The ecological perspective is therefore the most suitable perspective to be used to investigate the relationships between the interacting factors that contribute to human food habits (Bubolz & Sontag, 1993:421; Sims & Smiciklas-Wright, 1978). The human ecological perspective is therefore a conceptual tool that could be used to explicate the relationship between the formation of food habits and the various environmental levels. It

is useful to describe the interdependence and interrelatedness between the different parts of an ecosystem (Story *et al.,* 2002). The human ecological perspective allows one to understand how the various environments influence human food practices (Bryant *et al.,* 2003:2).

Human food habits are complex and multi-dimensional, and are influenced by multiple factors from various environmental levels that are inter-related and interdependent (Sobal, Bisogni, Devine & Jastran, 2006:7; Contento, Williams, Michela & Franklin, 2006; Viljoen, Botha & Boonzaaier, 2005).The following section gives the assumptions of the human ecological perspective. There are a number of assumptions associated with this perspective but only assumptions applicable to this study will be discussed**.**

2.2.2 Assumptions of the human ecological perspective applicable to this study

The following assumptions are important:

- *The human ecological perspective assumes that all parts of the environment are interrelated and influence each other*. Therefore changes in one environment will result in changes of other environments that relate to it. For example: the natural environment that includes the geographical characteristics of an area, determines the food people cultivate for survival. Technological developments further enable people to produce, process, preserve and distribute the produced food which affects the type of food that will be available in that area. Improved infrastructure and transport conditions improve the availability of food products in both rural and urban areas. Economic status determines the extent to which people have access to the available food in the physical environment. The socio-cultural environment, in turn, guides people on what should be used as food from what is available in the physical environment (Bryant *et al.*, 2003:10-13). Improved socio-economic circumstances, due to the nature and availability of employment, allow people to be in a position in which they can afford to purchase a variety of food items that are available in shops.

- *Humans interact with multiple environments.* From this explanation it is clear that each of the environments contribute to the food choice process as depicted in Figure 2.1.

- *Humans respond to, change, develop, act on and modify their environment* (Story *et al*., 2002). For example, continuous change takes place and humans have the ability to alter their environment to achieve desired outcomes. As new technology becomes

available it enables people to preserve and store food for later use and have it transported to another place where it is scarce. This improves the food availability and gives meals variety. For example, the availability of convenience foods such as frozen meals enables people to easily keep food for some time, and to prepare interesting meals in a short time. This improves food choice in the diet and subsequently the health of people engaging in this way of life.

- *Environments do not determine human behaviour, but pose constraints as well as possibilities and opportunities for humans.* Humans live in the natural/physical environment and these differ from one region to the other according to variations in a range of features that include plants, animals, water resources and soils. Moreover, they can have either a negative or a positive impact on their well-being (Bubolz & Sontag, 1993:433). The adequacy of the environment and the opportunities that are seen by the people in that environment depend on their needs, values, resources and their organisational plans. The policies and legislation could also determine access to these resources. For example, the lack of or limited access to electricity for people in some rural areas in Swaziland pose some constraints as they cannot own refrigerators to store perishable foods especially when they are in abundance. This limits availability which has an impact on food choice and dietary patterns. People therefore make use of what the natural environment offers as food and develop ways of utilizing plants or animals in order to survive (Bryant *et al*., 2003:11). For example, when people did not have cold storage for keeping food when in abundance, they dried it in order to keep it for later use when the particular commodity was out of season.

In the second part of the chapter the concept **food habits** will first be defined and the factors influencing food habits will then be discussed.

2.3 FACTORS INFLUENCING FOOD HABITS

Food habits are described as practices or standardised behaviours in which individuals select, consume and utilize available foods in response to social and cultural norms (Kittler *et al*., 2011:2; McIntosh, 1995:141). They are behaviours that serve as guidelines to the food choices of a cultural group and are determined by the interplay between the different environmental factors which are products of human culture (Raschke, Oltersdorf, Elmandfa, Wahlqvisit, Cheema & Kouris-Blazos, 2007; Contento *et al*., 2006; Opare-Obisaw, Fianu, & Awadzi, 2000; Fieldhouse, 1995:1; McIntosh, 1995:141). Food habits are based on what

people have available and accessible as food in the area where they live, what is economically affordable, and what is culturally and personally acceptable to them, including their personal beliefs and the meanings they attach to food (Kittler *et al.,* 2011:12; Williams, 2001; Kuhnlein & Receveur, 1996). Hence the individual food choice process that is embedded in the food practices is thus dependent on the wide range of environmental, societal and personal influences that are interrelated and interdependent (Jaeger, Bava, Worch, Dawson & Marshall, 2011; Sobal *et al*., 2006:7).

A framework that depicts the individual food choice process is presented in Figure 2.1. It gives the different ecological environmental levels and shows where they interact and how they influence the food choice process. These are briefly described together with the components contained in each.

The model presented in Figure 2.1 shows the multiple factors influencing an individual's food choice and divides them into two broad groups, namely, the external and internal environments (Viljoen, 2009:23,249). Some sources refer the external environment as the macro-, exo-, meso-environment and the internal environment as the micro-environment. These environmental levels are interconnected and permeable (Story *et al*., 2002). People choose food from what is available or accessible in the natural/physical environment guided by social, cultural, religious, political and economic factors which determine what is acceptable for consumption. A brief description of each of the environments that influence food habits follows.

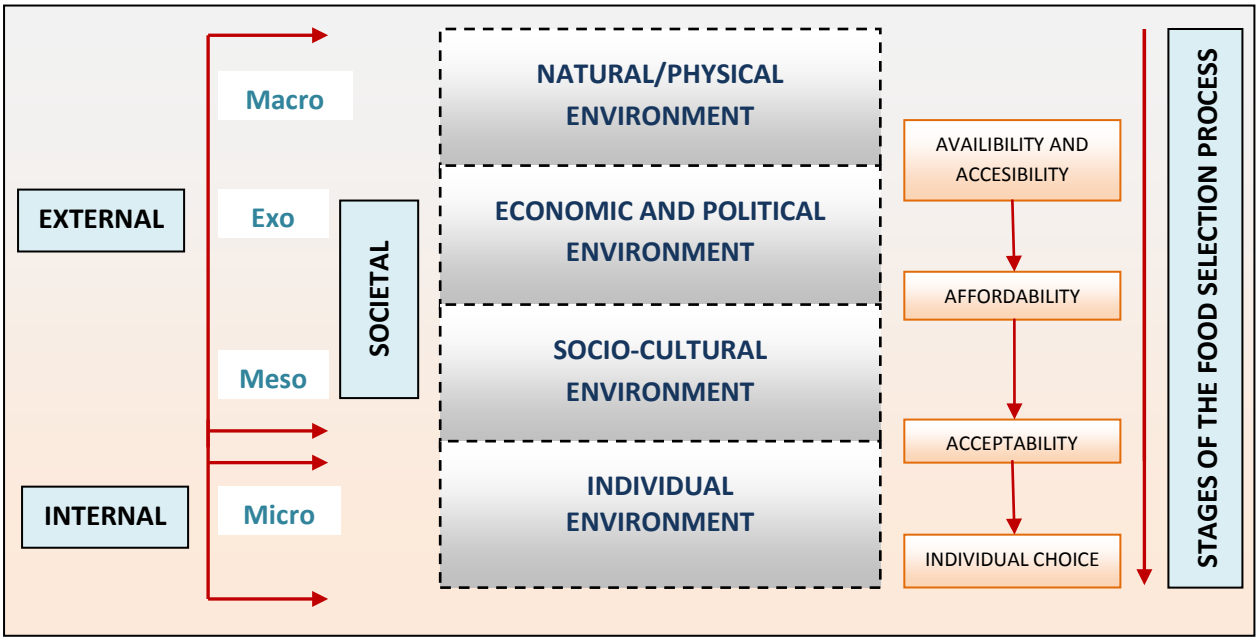


FIGURE 2.1: FOOD CHOICE PROCESS (Viljoen, 2009:23, 249).

2.3.1 External environment

The external environment includes the physical and natural environment, economic and political environment, and the socio-cultural environment (Viljoen, 2009:23; Bryant *et al*., 2003:3) and each will be discussed.

2.3.1.1 The natural/physical environment

The natural environment includes plants, animals and the geographic features of an area where humans live. These physical factors are the climate, soil and water available that, in turn, influence the availability of animals and plant species that can be used as food by the people living in a specific area (Bryant *et al*., 2003:11; Kuhnlein & Receveur, 1996). The physical environment includes the man-made environment used to produce, process, store and distribute food creating opportunities with regard to its availability and accessibility (Kittler *et al.,* 2011:12; Viljoen, 2009:23; Bryant *et al.,* 2003:11; Story *et al.,* 2002).

2.3.1.2 Economic and political environment

The economic and political environments refer to the political and economic system used by people to manage resources in their environment in order to survive (Bryant *et al*., 2003:13; Southgate, 1996:376). The political system refers to the government policies, controls and legislation that affect, inter alia, the production, processing and distribution of food. The economic system refers to food prices, the income of the people, marketing strategies used and the demand for the food by the consumer (Kittler *et al*., 2011:12; Fieldhouse, 1995:26; McIntosh, 1995:145).

The political forces influence what is available for purchase as they can control the crops produced for the market, the prices farmers receive and the final price paid by the consumer (Kittler *et al*., 2011:12; Bryant *et al*., 2003:14). High food prices in the market reduce accessibility to families with a low income and preclude them from having a variety of nutritious foods hence dietary inadequacies result (Messer, 2007; Bryant *et al*., 2003:13; Story *et al.,* 2002*;* Blades*,* 2001[b]). These forces in the political and economic systems affect individuals' access to food and other resources that enable them to survive.

2.3.1.3 The socio-cultural environment

The concept 'socio-cultural' comprises two separate but closely interrelated concepts namely, social and cultural. Culture refers to patterns of behaviour that characterise groups of people; and society refers to the people who participate in the culture (Bryant *et al*., 2003:12; Fieldhouse, 1995:2). Social groups have patterns of behaviour acquired through

the process of learning and interaction yet, on the other hand, it is society that sets the basic rules of living together as a group, and that would include food practices (Ferraro, 2006:29). The socio-cultural environment thus provides a framework for a society's behaviour including their food choices and practices (Viljoen, 2009:24; Messer, 2007). A society prescribes specific patterns of behaviour that include food behaviour. These are shared by members and passed on from one generation to the other hence food behaviours are a product of culture.

- ***The cultural environment***

Culture is defined as shared understandings - knowledge, beliefs, arts, morals, values and norms that guide people's behaviours, transmitted from one generation to the other through the process of socialisation that may occur at school, church, workplace or any other place where there is social interaction (Kittler *et al.,* 2011:6; Ferraro, 2006:19; Bryant *et al.,* 2003:12; Fieldhouse, 1995:2).Food choice is a product of culture that has determined the acceptability of food and therefore culture influences what is selected from the available and accessible food (Sobal & Bigsoni, 2009; Messer, 2007; Rozin, 2006:30, 1996:87; Kuhnlein & Receveur, 1996; Fieldhouse, 1995:1). Culture is often described as containing three components namely technology, ideology and social organisation (Bryant *et al.,* 2003:12; Hamilton, 1987). Food habits are influenced by each of these components as will now be explained.

- ***Technology***

Technology in the context of this study refers to the knowledge, skills and equipment a cultural group uses to respond to the physical environment to produce, distribute, procure and prepare food (Bryant *et al*., 2003:12). Technology not only enables humans to exploit the natural environment to produce and improve crop yields, but also to improve transportation, storage facilities and methods of food preservation. This contributes to food products being supplied to places where certain foods cannot be produced, and increases the availability and accessibility of food for individuals to choose from (Kgaphola & Viljoen, 2000; Southgate, 1996:380; Rozin, 1996:86; Fieldhouse, 1995:27; McIntosh; 1995:144).

- ***Ideology***

Food ideology refers to the shared beliefs, values, preferences, knowledge and attitudes of a cultural group with respect to food (Bryant *et al.,* 2003:13). Cultural beliefs about the value of a food influence its selection among other foods available (Kuhnlein & Receveur, 1996). Fieldhouse (1995:25) similarly defines food ideology as the sum of the attitudes, beliefs, customs and taboos affecting the diet of a given group. It is what people think of as food that

they will make available and what effect they think the food will have on their health and what is suitable for different age and gender groups (Pelto & Vargas, 1992). It contains the standards and norms people learn through socialisation and enculturation that they use to make food choices (Sobal *et al*., 2006:5).

- ***Social organisation***

It is described as the way a social group structures its members into families, communities, and other groupings to achieve common goals (Bryant *et al*., 2003:12). This includes the values, norms, beliefs and laws that regulate relationships including food practices, as these are intricately tied to social organisation. People develop guidelines on food related activities such as food acquisition that influences availability and distribution, who may eat together, and which foods may be served at a specific occasion in that society (Ferraro, 2006:22; Bryant *et al.,* 2003:87; Sobal, 2000:6; Jones, 1963:42). For example, in traditional Swazi social structure children and females are not allowed to eat with adult males but receive and eat their meals on their own (Jones, 1963:82).

2.3.2 Internal environmental factors

The second group of factors that influence food habits is often referred to as the internal or individual environment. The socio-cultural environment is closely interrelated with the internal environment. Factors included in this environment are the psychological, physiological and biological characteristics of an individual (Rozin, 2006; Fieldhouse, 1995:27).

2.3.2.1 Psychological factors

These are the beliefs, values, attitudes and knowledge that influence the way an individual thinks, feels or behaves towards a certain food (Conner & Armitage, 2002; Hamilton, McIlveen & Strugnell, 2000; Sims & Smiciklas-Wright, 1978). A brief discussion of these factors follows.

- ***Beliefs***

Beliefs refer to strong feelings, understanding or information shared by members of a society towards a situation or object (Bryant *et al.*, 2003:93). They are the primary component in the general system of values, built in a child growing up (Daresh, 1989). Food beliefs are often linked to the larger network of beliefs and attitudes that are based on cultural values (Furst, Conners, Bisogni, Sobal & Falk, 1996; Sanjur, 1982:150). People in each society have beliefs about food that are difficult to change and therefore they consume certain foods and

avoid others (Hauser, Jonas & Reimann, 2011; Bryant *et al*., 2003:93). This will have an impact on what is made available and acceptable as food in a cultural group.

- ***Attitudes***

Attitudes are described as feelings and emotions, or likes and dislikes an individual has towards an object or situation that includes food. This accounts for the fact that food behaviour is acquired through experience. They incorporate beliefs and therefore a personal belief in something may develop into an attitude that may be good or bad, favourable or unfavourable and this could influence the acceptance of food (Botonaki & Mattas, 2010; Posner, 2006; Kittler & Sucher, 2004). An attitude is an emotional position towards a certain situation or food product and is formed early in childhood during socialisation (Mattsson & Helmersson, 2007). Children are therefore able to classify food as "good" or "bad", and what foods are appropriate for each meal through parental influence and this has an influence on food choice, acceptance and preference (Mattsson & Helmersson, 2007).

- ***Values***

Values are a collection of core aspects within a culture, enduring beliefs which guide and motivate individuals to behave towards a certain object like food in a certain manner (Posner, 2006; Wetter, Goldberg, King, Gigman-Grant, Baer, Crayton, Devine, Drewnowski, Dunn, Johnson, Pronk, Saelens, Snyder, Walsh & Warland, 2001; Connors, Bisogni, Sobal & Devine, 2001, Rokeach, 1970:5). Values are enduring beliefs that guide a person's conduct and behaviour when interacting with others, and therefore are important in determining an individual's behaviour (Botonaki & Mattas, 2010:629). Values and attitudes are closely related to each other as values are the ones that shape people's attitudes (Hauser *et al.,* 2011). Values are the most considered aspects that people weigh up or use in taking up food decisions. They are the healthfulness of the food, the taste, the cost, the convenience and the time taken for preparation, as well as how that food is accepted in society (Sobal *et al.,* 2006:11; Connors *et al*., 2001). Values shape food choice behaviour as they determine what is desirable and what is undesirable as food, and which foods are held in high esteem within a society and culture (Bryant *et al*., 2003:93; Connors *et al*., 2001). They influence what people choose to use from what is available and accessible in the physical environment.

- ***Knowledge***

Knowledge refers to the information, skills, facts and understanding a person gains through learning. This may be formal or informal or through experience that is acquired early in

childhood through the process of socialisation. People get to know what to eat, when to eat and how much to eat (Lally, Bartle & Wardle, 2011; Mattsson & Helmersson, 2007; Fieldhouse, 1995:3). Knowledge influences the decision-making process when choosing food from what is available, including how to prepare, store, cook and serve food that is acceptable (Hunt, Fazio, Mackenzie & Moloney, 2011; Furst *et al*., 1996). Children tend to reject food that is unknown especially when it does look appealing (Dovey, Staples, Gibson & Halford, 2008).

2.3.2.2 Biological and physiological factors

Humans need food for nourishment and energy to carry out various activities, including maintenance and growth within the body (Oogarah-Pratap, 2007; Rolfes e*t al.* 2006:536, Story *et al*., 2002; McIntosh, 1995:143). Adequate food supply is of the utmost importance in early adolescence more than at any other time in the human life span to promote physical, social and cognitive growth and development (Dapi *et al.,* 2007; Rolfes *et al.*, 2006:537; Story *et al*., 2002; Warwick, McIlveen & Strugnell, 1999).

During early adolescence irregular eating patterns tend to develop for various reasons. Not only do adolescents eat due to increased energy and nutrient needs but they are influenced by their peers, time constraints, convenience, preference and cravings (Bassett, Chapman & Beagan, 2008; Rolfes *et al.,* 2006:537; Story *et al.,* 2002; Ang & Foo, 2002). As girls move into adolescence they tend to gain weight and often their food choices are aimed to obtain and maintain a slim body shape (Dapi *et al.,* 2007; Blades, 2001[b]). Males need more energy than females as they develop a larger body frame and are more muscular and tend to be more physically active (Molewa, 2010:55; Rolfes *et al.*, 2006:537). The following section deals with early adolescence and the development of food habits during the socialisation process.

2.4 DEVELOPMENT OF FOOD HABITS AND EARLY ADOLESCENCE

Food habits are learnt early in life through the process of socialisation and enculturation that occurs in certain stages of the individual's life. Once formed, food habits are long-lasting and difficult to change especially when acquired in a pleasurable social setting (Arcan, Neumark-Sztainer, Hannan, Van den Berg, Story & Larson, 2007; Brown, McIlveen & Strugnell, 2000[a]; Warwick *et al.,*1999).

2.4.1 Socialisation and acquisition of food habits

Socialisation is the process through which cultural behaviours, including food habits, are passed on from one generation to the next. Socialisation involves the direct teachings such as the inculcation of cultural norms, rules, values and customs as done by parents, elders, teachers and others to shape the individual's behaviour (Segall, 1979:187). Children learn to like the food prescribed by the culture in which they are brought up (Hamilton, *et al.*, 2000; Fieldhouse, 1995:4). Deep-rooted sentiments, values, attitudes and knowledge regarding foods that are taught at home are likely to dominate later in life (Mooney, Farley & Strugnell, 2004).

Enculturation refers to indirect learning through which children imitate elderly people or others without being aware of it. This too leads to acquiring cultural norms, rules, values and customs of that society (Segall, 1979:187). It is described by Bryant *et al*., (2003:88) as a process through which an individual indirectly learns attitudes, beliefs, behaviour standards and other cultural norms of a society. Social learning occurs during social interaction bringing changes in behaviour that will be passed on to the next generation through the process of enculturation.

A model (Figure 2.2) adapted from Fieldhouse (1995:2) will be used to describe the process of socialisation and the acquisition of food habits.

There are three phases in the socialisation process namely the primary socialisation, the secondary socialisation and the re-socialisation phase. Only the first two phases depicted in Figure 2.2 will be described as they are applicable to the present study.

2.4.1.1 Primary socialisation

Primary socialisation of infants and young children takes place through interaction with immediate family members and friends together with exposure to cultural forces (Fieldhouse, 1995:4). Family meals are the occasions where most of the interactions take place and where the food practices are inculcated (Welsh, French & Wall, 2011; Sobal & Bisogni, 2009; Basset, *et al.,* 2008; Videon & Manning, 2003).

Parents expose children to certain foods while they restrict access to others, which influences their behaviour and attitudes (Holsten *et al*., 2012; Hoy & Childers, 2012; Bassett *et al*., 2008; Brown *et al*., 2000). The role of parents in the acquisition of eating patterns and food preferences of children, as explained by Marquis and Claveau (2005), thus begins at birth where a baby may be breastfed or fed with formula food, and the type of foods offered

as they grow and develop. Children learn to accept what is prescribed by the culture in which they are brought up (Fieldhouse, 1995:4).

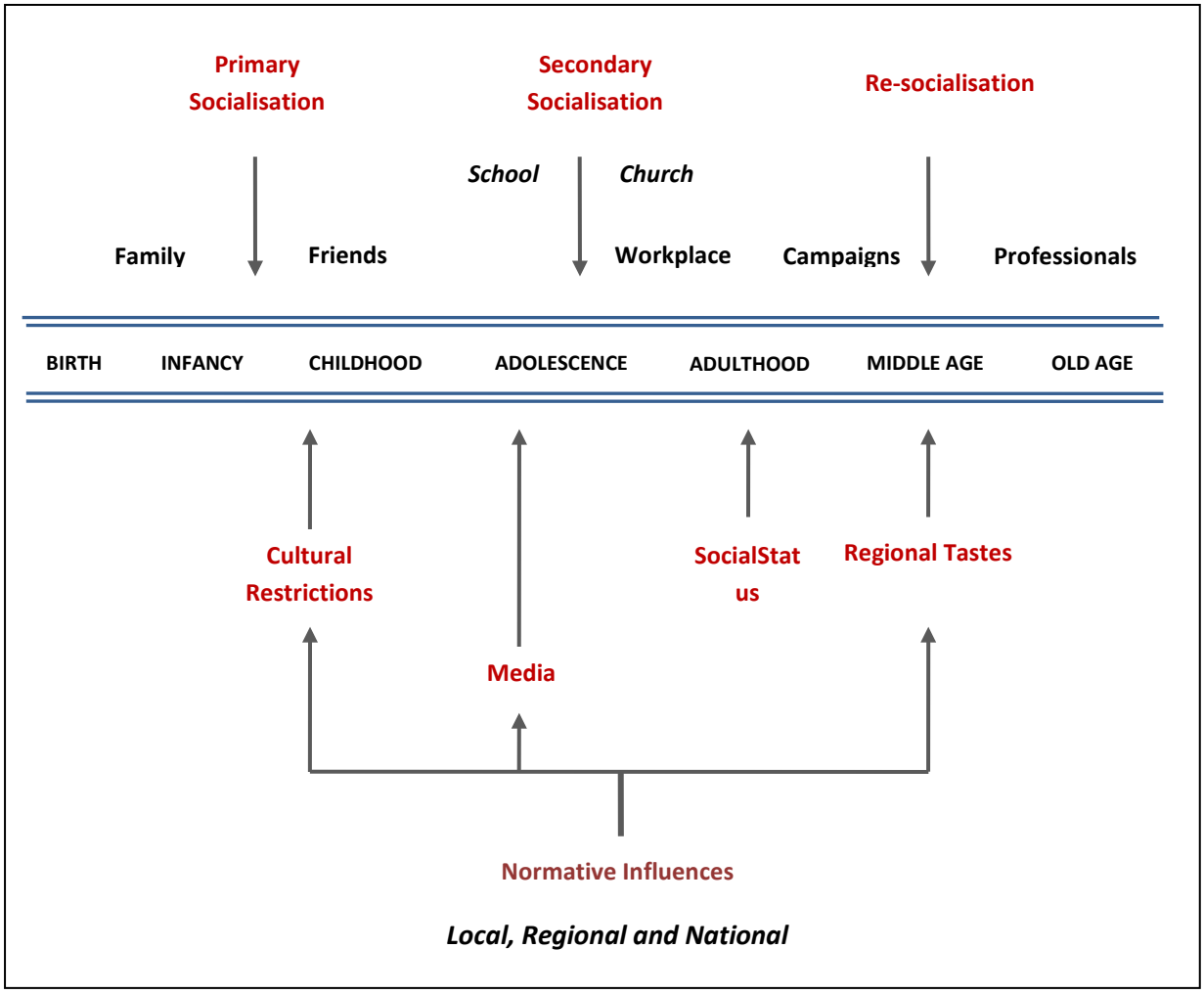


FIGURE 2.2: SOCIALISATION AND THE ACQUISITION OF FOOD HABITS (Fieldhouse, 1995:4)

Infants and children eat what is provided by their parents guided by the cultural traditions (Rozin, 2006:30; Hoy & Childers 2012; Kelly, Turner & Mckenna, 2006). Furthermore, these traditions impart knowledge on what particular food is eaten, and which foods are appropriate for the different meal occasions (Mattsson & Helmersson, 2007; Rozin; 2006:30). As children grow and develop they are exposed to other influences in society that may reinforce or contradict what has been learnt at home (Fieldhouse, 1995:5). This includes the school food environment where children are often exposed to energy-dense and low nutrient foods that are readily available (Kubik, *et al.,* 2005).

Knowledge concerning food habits needs to be taught to children in order to establish sound firm eating practices to enable them to select, procure and consume a healthy diet even into old age (Frobisher, Jepson & Maxwell, 2005). The influence of mothers in establishing eating patterns is very important. Guided by cultural norms she makes specific food items available to children and this will affect the food choices made at home (Diaz, Marshak, Montgomery, Rea & Beckman 2009; Arcan *et al.*, 2007).

Children's health is directly related to the food they eat and an adequate diet is necessary for growth, development and prevention of diet-related diseases that can originate in childhood (Mooney *et al.,* 2004; Taylor, *et al.,* 2004; Blades, 2001[b]). An adequate food supply is required to promote optimal physical, cognitive, social and emotional growth and development. Poor nutrition results in growth retardation, iron deficiency anaemia, poor academic performance, development of physiological difficulties and increased chances of developing chronic diseases such as cardio-vascular disease, hypertension, osteoporosis and some cancers in adulthood (Margetts, 2009; Angell, 2008; Oogarah-Pratap, 2007; Burgess-Champoux, Maquart, Vickers & Reicks, 2006; Mooney *et al*., 2004; Taylor *et al*., 2004). Overweight in children leads to social, psychological and health problems such as high blood cholesterol, high blood pressure, diabetes and heart disease (Diaz *et al*., 2009; Oogarah-Pratap & Heerah-Booluck, 2005).

Sharing one meal a day as a family creates family unity and encourages healthy eating habits in children (Welsh, *et al.*, 2011; Duffy, 2008). Parents are the ones setting an example about eating healthy foods and making them available to their children (Hoy & Childers, 2012; Duffy, 2008). A child's learning experiences influence the foods that they will favour or dislike in adulthood (Seaman, Woods & Grosset, 1997). Children are quick to catch the notions of those with whom they associate in their social environment. Therefore, teaching them good nutrition principles and skills during the time when eating habits are established will ensure their optimum growth and development and enhance their quality of life through adolescence, adulthood and into old age (Frobisher, *et al*., 2005; Taylor *et al.,* 2004).

2.4.1.2 Secondary socialisation

Secondary socialisation takes place outside the home as children grow up and meet friends at school and church, and become exposed to the printed media and television. They become exposed to other diverse opinions and experiences that introduce them to other people's food practices (Kubik *et al*., 2005; Douglas, 1998; Fieldhouse, 1995:5). During the early adolescent stage, secondary socialisation could have far reaching consequences in establishing the food habits of an individual. Food habits in turn influence health outcomes in the future as has been explained.

2.4.2 Early adolescence

Early-adolescence is a time of transition from childhood to adulthood that occurs between 11-18 years (Molewa, 2010:55, Brown *et al*., 2000[b]). It is marked by biological, cognitive, social and emotional changes (Oogarah-Pratap, 2007; Videon & Manning, 2003). It is a critical phase in human development when drastic physical, cognitive and social development occur (Burgess-Champoux, *et al.,* 2006; Subratty, Imrit, & Jowheer, 2002). Each of these phases will be briefly discussed.

2.4.2.1 Physical development

The early adolescence stage involves physical changes characterised by a rapid increase in height and weight gain, resulting in higher nutrient requirements than in any other life stage (Dapi *et al*., 2007; Spear, 2002; Story *et al*., 2002). The physical changes that occur in girls are linked to the female body shape that develops and more fat stores are deposited around the hips. Boys grow taller, their shoulders broaden and they become stronger and more muscular (Molewa, 2010:55; Rolfes *et al*., 2006:537; Wardlaw, 2003:503; Aginlar & Galbes, 2000:227).

2.4.2.2 Cognitive development

The early adolescent phase is a time of rapid change when children develop the ability beyond themselves which means they start thinking of what others could be thinking of them or what is possible (Subratty *et al*., 2002; Sturdevant & Spear; 2002). They compare family values and standards with others outside their family which includes food-related values and standards (Sturdevant & Spear, 2002; Subratty *et al.,* 2002; Brown *et al*., 2000[b]; John, 1999).

2.4.2.3 Social development

Early adolescence is the life stage that is influenced by the desire to fit in with the social norms of the group to which one belongs (Rolfes *et al*., 2006:538; Subratty *et al.,* 2002; Neumark-Sztainer, Story, Perry & Casey, 1999). Early adolescence is thus a period of socialisation where the peer group share beliefs, attitudes and practices that may also influence their food choices. This, in turn, may either hinder or improve their nutritional well-being (Rolfes *et al*., 2006:539; Subratty *et al*., 2002). Being autonomous becomes important as they try to align themselves with the social norms of the peer group. Girls have a desire to be slim as they associate it with beauty and being attractive. Boys on the other hand are more concerned about being muscular as a sign of fitness and general well-being (Mooney

et al., 2004; Subratty *et al*., 2002). This could have an impact on their eating behaviours as they try to accommodate these perceived ideals.

The next part of this chapter addresses food culture change and how it contributes to changing food habits. This section gives a description of the structural changes and how they affect the food culture change in a society.

2.5 FOOD CULTURE CHANGE

There are four major structural changes that overlap and interact with each other (Kittler *et al*., 2011:11-12; Sobal, 2000). These major structural changes are migration, urbanisation, modernisation and globalisation that result in food culture changes of acculturation, delocalisation, commoditisation and consumerisation. Figure 2.3 gives a presentation of the structural changes and food culture changes. The model illustrates how structural changes in a society contribute to food culture change. These structural and cultural changes are interrelated and result in modified cultural beliefs, values and behaviours (Kittler *et al.,* 2011:11). A brief description of each of the structural changes and the paralleled food culture changes is given.

Migration is the structural change where people move from their original locations to new regions that may be local or international (Kittler *et al*., 2011:12; Sobal, 2000). The movement of people from their place of origin to other societies creates new cultural contacts that result in acculturation. **Acculturation** involves contact between distinct cultural groups and the cultural changes that occur in both groups that may be direct or indirect (Jamal, 1996). Dietary acculturation thus occurs when people change their original eating patterns and adopt elements of other dietary patterns which may result in healthful or unhealthful outcomes (Diaz, *et al*., 2009; Archer, 2005; Sobal, 2000). Dietary acculturation further occurs at a personal level where individuals change their beliefs, attitudes and behaviour regarding food (Satia-Abouta, Patterson, Neuhouser & Elder, 2002). The introduction and acceptance of food from other cultures or the incorporation of others' adopted foods into the food patterns of a group may either improve or lower the quality of their diets.

Urbanisation is the process in which humans or people shift from low density rural areas to sub-urban or urban areas of residence (Kittler *et al*., 2011:12). People who produced food for themselves through subsistence farming become dependent on others for their food which implies that they must have financial means to procure food. This move from producing food

to becoming dependent on commercial food outlets is referred to as **delocalisation** (Kittler *et al.,* 2011:12; Sobal, 2000; Pelto & Vargas, 1992).

Modernisation is the structural change that encompasses technological development and adoption of various new technologies that result in cultural and socio-economic shifts (Kittler *et al.,* 2011:11; Sobal, 2000). People initially relied on human and animal power to produce process and prepare food consumed. This was changed by the Industrial Revolution when a shift from muscle power to fuel-generated engine power led to major changes in social structures as well as in cultural beliefs, values and behaviours of societies especially concerning the production, processing, distribution and consumption of food (Sobal, 2000).

Commoditisation is the cultural change arising from modernisation, where a move from consuming home-produced foods to marketed commodities takes place (Kittler *et al.,* 2011:11; Sobal, 2000). The use of advanced technology in the production, processing and distribution of food resulted in it becoming an economic commodity instead of an item of sustenance (Kittler *et al.,* 2011:12; Sobal, 2000).

Globalisation is defined as a structural change that occurs when local, regional and national food products are integrated into an unrestricted worldwide or global network.

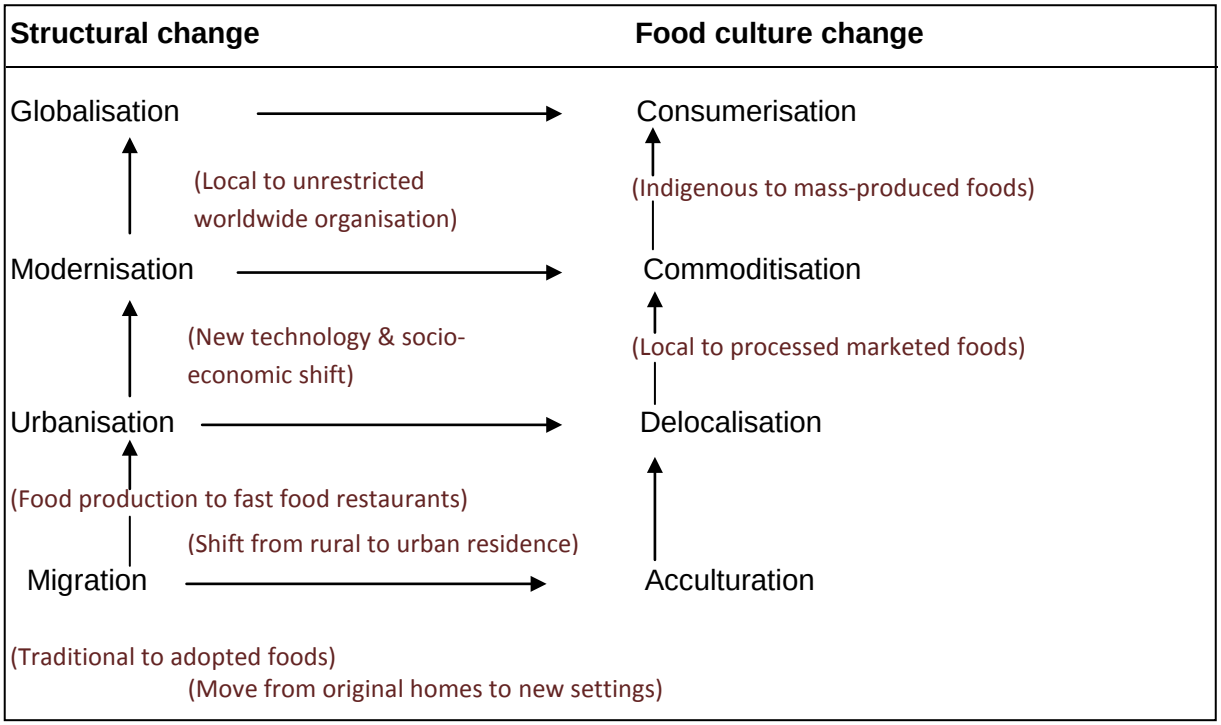


FIGURE 2.3 DEVELOPMENTAL MODEL OF FOOD CULTURE (Viljoen, 2009:39)

Consumerisation is the cultural change that takes place as people move from being producers and consumers of indigenous foods to the consumption of mass-produced foods (Kittler *et al*., 2011:11; Sobal, 2000).

Globalisation and modernisation not only cause a change in food supplies but also in food consumption behaviour with more Western-style fast foods becoming available in markets (Seubsman *et al.,* 2009). This has contributed to changes in the food consumption patterns in many countries of the world (Flyman & Afolayan, 2006). In many African countries dietary intake has shifted towards an increased intake of fats, animal foods, sugar and refined carbohydrates with a decreased intake of legumes, coarse grains and vegetables that is closely associated with obesity and non-communicable diseases (Popkin *et al*., 2011; Bourne, Lambert & Steyn, 2002).

2.6 SUMMARY

In this chapter, the human ecological perspective, the factors influencing food habits, and how food habits are formed were discussed. The last section explained how changes in society contributed to food culture changes. In order to contextualise the study the next chapter gives a historical background of the Swazi food patterns referring to the meal patterns and composition, including the use of traditional foods. It will also address the school meal programme in Swaziland.

CHAPTER 3:

SWAZI FOOD PATTERNS AND THE SCHOOL MEAL PROGRAMME

CHAPTER 3: SWAZI FOOD PATTERNS AND THE SCHOOL MEAL PROGRAMME

3.1 INTRODUCTION

This chapter gives a historical overview of the Swazi food patterns to illustrate the development and changes in the Swazi food patterns and the use of traditional foods. It also provides a historical background of the school meal programme in Swaziland, how it started, developed and how it is currently managed, and the benefits of the meals offered. The contribution of the school food environment to healthy eating patterns is highlighted.

3.2 HISTORICAL BACKGROUND ON SWAZI FOOD PATTERNS

This section presents information from literature on how food patterns of Swazi people developed over the past 100 years. Their meal patterns, including the changes that occurred, are discussed.

3.2.1 Geographic location of Swaziland

The Kingdom of Swaziland is a landlocked country that shares the eastern borders with Mozambique and its other borders with the Republic of South Africa. It is divided into four ecological regions, namely the Highveld, the Middleveld, the Lowveld and the Lubombo (Vilakati, 1997:10; Ogle & Grivetti, 1985; Beemer, 1939) (Fig 3.1). Each region has a different climate and this influences food production and availability (Vilakati, 1997:20; Ogle & Grivetti, 1985). The Highveld, being humid and having a near temperate climate is suitable for growing maize, the staple food of the Swazi people. The Middleveld and Lubombo regions have comparable climatic conditions that are subtropical. The Lowveld is the hottest region with the lowest rainfall (Vilakati, 1997:20; Ogle & Grivetti, 1985).

During the 1930s, and even up to the 1960s, the Swazi people still lived traditionally and their food consumption was primarily influenced by what the natural environment offered. However, this varied with the different food production seasons that consequently dominated their lives (Jones, 1963:45; Beemer, 1939). The people were self-sufficient as they had several important sources of food namely arable agriculture, livestock, hunting and the gathering of indigenous plants that contributed to their sustenance. During the 1960s, people began to seek employment away from tilling the land, and this resulted in a move from to

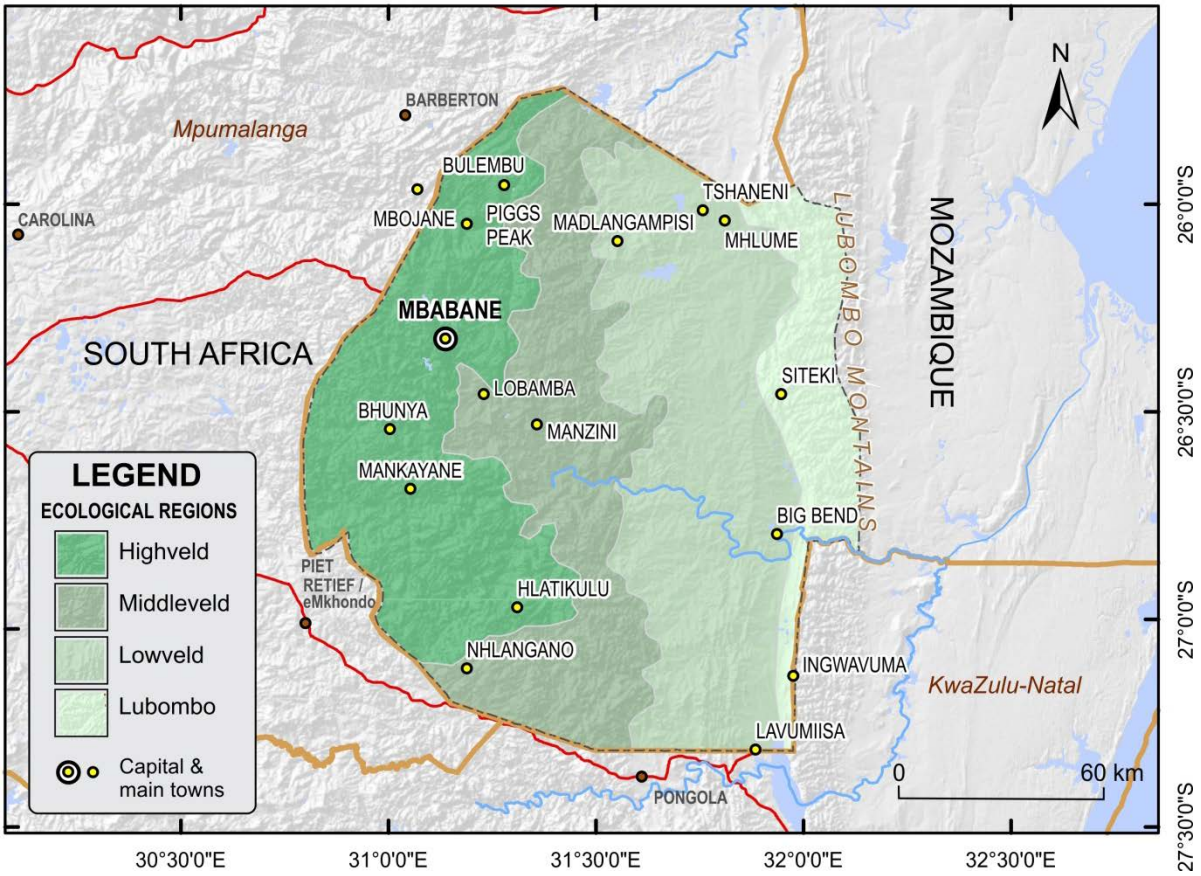


FIGURE 3.1: SWAZILAND: GEOGRAPHIC LOCATION AND ECOLOGICAL REGIONS

subsistence to a semi-subsistence level. Food supplies were improved by the rations received from the employers and wages that enabled them to purchase food items from local stores (Jones, 1963:50-51). These changes in food sources were influenced by availability and accessibility due to structural changes that include urbanisation, modernisation and migration. Studies carried out during the 1980s up to 1999 indicated that rural Swazi households were still semi-subsistence farmers as they purchased foodstuffs to supplement their home grown foods (Kgaphola & Viljoen, 2000; Ogle & Grivetti, 1985).

The next section describes food sources from agriculture, livestock, gathering, hunting and new foods introduced into the rural Swazi diet because of changes that occurred from the twenty first century.

3.2.2 Food Sources

3.2.2.1 Agriculture

The Swazi people cultivated cereals, vegetables and legumes and these varied according to the ecological zones.

Cereals. The most important staple cereals cultivated were sorghum (*emabele*) and millet (*imfe*) that grew well in the Lowveld and later maize *(umbila)* introduced by missionaries was produced in the Highveld.

Legumes. Sesame *(ludvonca*), cowpeas (*tinhlumaya),* jugo beans (*tindlubu),*mung beans *(mngomeni*) and peanuts (*emantongomane)* grew best in the Middleveld but were also cultivatedin the other regions to supplement the cereals and root vegetables eaten (Jones, 1963:69; Beemer, 1939).

Vegetables. Cucurbits, that included pumpkin (*litsanga),* gourd (*liselwa)* and melon (*lijoti),* were planted amongst the maize plants and provided variety in the meals prepared (Jones, 1963:70; Beemer, 1939). Roots and tubers included crops like sweet potatoes *(bhatata),* taros *(emathapha*) and cassava *(umjumbula*) were important supplementary foods for the Swazi people, being collected and eaten during the winter season (Jones, 1963:69).

Leafy vegetables used for relishes were also obtained from the leaves of sweet potato, cowpeas and pumpkin plants. The latter would also be sun-dried for later use (Beemer, 1939). Newly introduced vegetables such as onions, tomatoes, cabbage, spinach, carrots and potatoes were becoming popular in the Swazi diet (Kgaphola & Viljoen, 2000; Ogle & Grivetti, 1985; Jones, 1963:69).

3.2.2.2 Gathering

Uncultivated plants, wild fruits and insects were gathered when in season to supplement the diet.

Vegetables. A variety of indigenous plants were gathered especially green leafy vegetables such as *umsobo (Clanumnigrum) chuchuza* (*Bidenspilosa), umdzayi* (*Asclepiaaffinis*, *silele* (*Portulacaoleracea), imbuya* (*Amaranthus hybrids), sibhadze* (*peocedanum species), emahala* (Aloe species), *emakhowe* (mushrooms), *ligusha* (*Corchoroustridens), inshubaba* and *inkakha* (*Momordica species*) (Ogle & Grivetti, 1985; Jones, 1963:70; Beemer, 1939).

Heart and cap vegetables that were also commonly collected included plants such as *emahala* (Aloe species) and *emakhowe* (mushrooms).

Fruits. A wide variety of fruits were also collected from indigenous trees. Examples are *tincozi* (water berries), *umkhwakhwa* (monkey orange), marula fruit, water melon, wild figs and *emantulwa* (wild meddlar) (Beemer, 1939). Other fruits introduced to the Swazi diet and later grown in the home gardens were citrus, paw-paws, pineapples, guavas, apples, bananas, peaches and mangoes (Jones, 1963:71; Beemer, 1939). Fruit was mainly eaten as a snack.

Insects. These delicacies were collected from the veld during the summer season and consisted of flying ants (termites), grasshoppers, locusts and caterpillars (Jones, 1963:72; Beemer, 1939). Flying ants were dried and stored for later use.

3.2.2.3 Livestock

Animals. Animals used for food included cattle that were only slaughtered on special occasions as well as to be included goats, sheep and chicken. Pigs were rarely used as food (Jones, 1963:71; Beemer, 1939).

Dairy products and eggs. Cow's milk was one of the most valued foods in the traditional Swazi diet particularly in the form of *emasi* (sour milk) that would be eaten on its own or mixed with boiled sorghum or maize from ground grain or mixed with crumbed porridge. Eggs were rarely eaten as they were regarded potential for the breeding of more fowl that would be used as food and also for income. Another reason was the belief that eggs caused woman and young girls to lust for men (Jones, 1963:74; Beemer, 1939).

3.2.2.4 Hunting

Game hunted in an organised way were buck, rabbits, water vole, field mouse and birds and they were also hunted by young boys in the veld (Jones, 1963:50; Beemer, 1939).

3.2.2.5 New Foods

New foods were introduced into the Swazi diet in the early 1930s through contact with Europeans and missionaries. These included fruits and vegetables such as oranges, mangoes, paw-paws, onions and potatoes (Beemer, 1939).

Thirty years later Jones (1963:68) reported more new foods as introduced. These foods were mainly purchased at stores and included baked products such as bread, scones, buns, cakes and biscuits. Rice was introduced and occasionally used as a substitute for maize. Sugar and sugar products such as jam, sweets and chocolate as well as cultivated vegetables like onions, tomatoes and cabbage were consumed more frequently. Fruits that were already planted by households included paw-paws, mangoes, peach, citrus and banana (Jones, 1963:71). Other fruits that were also available were pineapples and guavas. Fish and chips, canned pilchard and sardines were popular food items enjoyed (Jones, 1963:74). Milk products procured from stores included cheese, butter and condensed milk and beverages used included tea, coffee and cocoa (Jones, 1963:77).

Twenty years later, Ogle and Grivetti (1985) reported that new foods had been adopted by rural Swazi households. Lentil (*Lens esculenta*) and sugar beans (*Phaseolus Vulgaris*) were some of the legumes commonly used. Spinach and chard leaves were among the vegetables used to prepare relishes. Wheat bread, canned fish, tea and carbonated drinks had become common in their diet (Ogle & Grivetti, 1985).

In the case study conducted by Kgaphola and Viljoen (2000), 35years later other vegetables, namely carrots, beetroot, peppers, chillies, okra and apples were also found among the cultivated vegetables and fruits used in the Swazi diet. Coffee creamer, margarine and peanut butter were some of the items used in addition to what had been reported in the previous studies.

Table 3.1 summarises the food sources of the Swazi people from early 1930s up to year 2000 as provided by literature records.

TABLE 3.1: FOOD SOURCES SUMMARISED

FOOD SOURCES	Beemer, 1939	Jones, 1963	Ogle & Grivetti, 1985; Huss-Ashmore & Curry, 1991	Kgaphola & Viljoen, 2000
Cereals	Maize Sorghum Millet — —	Maize Sorghum — —	Maize Sorghum — Rice Wheat	Maize — — Rice Wheat
Legumes	Cow peas (*Vigna species*) Jugo beans (*Voandzeiasubterranea*) Mung beans (*Phaseolusaureus*) Peanuts (*Arachishypogaea*) — — — —	Cow peas (*Vigna species*) Jugo beans (*Voandzeiasubterranea*) Mung beans (*Phaseolusaureus*) Peanuts (*Arachishypogaea*) Sesame seeds — — —	Cow peas (*Vigna species*) Jugo beans (*Voandzeiasubterranea*) Mung beans (*Phaseolusaureus*) Peanuts (*Arachishypogaea*) — Sugar beans (*phaseolus vulgaris)* — Lentil *(Lens essculenta)*	Cow peas (*Vigna species*) Jugo beans (*Voandzeiasubterranea*) Mung beans (*Phaseolusaureus*) Peanuts (*Arachishypogaea*) — Sugar beans (*phaseolus vulgaris*) Butter beans *(Phaseoluslunatus)* —
Vegetables Green leafy vegetables	*Chuchuza (Bidenspilosa)* *Imbuya (Amaranthus species)* *Ligusha (Corchoroustridens)* *Inshubaba/ Inkakha (Mormordica species)* *Umsobo (Solenumnigrum)* *Silele (Portulacaoleracea)*	*Chuchuza (Bidenspilosa)* *Imbuya (Amaranthus species)* *Ligusha (Corchoroustridens)* *Inshubaba/ Inkakha (Mormordica species)* *Umsobo (Solenumnigrum)* *Silele (Portulacaoleracea)*	*Chuchuza (Bidenspilosa)* *Imbuya (Amaranthus species)* *Ligusha (Corchoroustridens)* *Inshubaba/ Inkakha (Mormordica species)* *Umsobo (Solenumnigrum)* *Silele (Portulacaoleracea)*	*Chuchuza (Bidenspilosa)* *Imbuya (Amaranthus species)* *Ligusha (Corchoroustridens)* — — —

TABLE 3.1 (CONTINUED): FOOD SOURCES SUMMARISED

FOOD SOURCES	Beemer, 1939	Jones, 1963	Ogle &Grivetti, 1985 Huss-Ashmore& Curry,1991	Kgaphola&Viljoen, 2000
Vegetables **Green leafy vegetables**	*Ingabe (Cichoritum species)* *Sibhadze (Peocedenum species)* *Umdzayi (Asclepiasaffins)* — — *Tintsanga (Cucurbitaepepo)* leaves *Tinhlumaya (Vigna spp.)* leaves *Umjumbula (Manihotesculenta)* leaves	— — *Umdzayi (Asclepiasaffins)* *Umdzebedzebe (Anne sorrhizaflavellifollia)* — *Tintsanga (Cucurbitaepepo)* leaves — — —	— *Sibhadze (Peocedenum species)* *Umdzayi (Asclepiasaffins)* *Umdzebedzebe (Anne sorrhiza species)* *Liklolo (Grewia species)* *Tintsanga (Cucurbitaepepo)* leaves — Chard leaves —	— — — — — *Tintsanga (Cucurbitaepepo)* leaves *Tinhlumaya (Vigna spp.)* leaves — — —
Root and Tubers	*Bhatata (Ipomoea batatas)* *Umjumbula (Manihotesculenta)* *Emathapa (Colocasiaesculenta)* *Emadumbe (Colosia antriquorum)* - *Lizambane (Solanumtuberosum)*	*Bhatata (Ipomoea batatas)* *Umjumbula (Manihot esculenta)* *Emathapha (Colocasiaesculenta)* — - *Lizambane (Solanumtuberosum)*	*Bhatata (Ipomoea batatas)* — — — - *Lizambane (Solanumtuberosum)*	*Bhatata (Ipomoea batatas)* — — *Emadumbe(Colosiaantriquorum)* *Lizambane (Solanumtuberosum)*
Cucurbits	*Litsanga(Cucurbitaepepo)* *Liselwa (Lagenariasiceraria)* *Lijoti (Cucumismelo)* *Luhwabha (Citrulluslanatus)*	*Litsanga (Cucurbitaepepo)* *Liselwa (Lagenariasiceraria)* *Lijoti (Cucumismelo)* —	*Litsanga (Cucurbitaepepo)* *Liselwa (Lagenariasiceraria)* *Lijoti (Cucumismelo)* —	*Litsanga (Cucurbitaepepo)* — — —
Heart, cap/stem	*Likhowe (Psalliotacampestris)* *Lihala (Aloe saponaria)*	*Likhowe (Psalliotacampestris)* *Lihala (Aloe saponaria)*	*Likhowe (Psalliotacampestris)* *Lihala (Aloe saponaria)*	— —

TABLE 3.1 (CONTINUED): FOOD SOURCES SUMMARISED

FOOD SOURCES	Beemer, 1939	Jones,1963	Ogle & Grivetti, 1985 Huss-Ashmore & Curry, 1991	Kgaphola & Viljoen, 2000
Other vegetables	Cabbage Onions — — — — — —	Cabbage Onions Tomatoes — — — — — —	Cabbage Onions Tomatoes Spinach — — — — —	Cabbage Onions Tomatoes Spinach Carrots Beetroot Green pepper Chillies Okra
Other fruits	Pawpaw Mangoes Oranges — — — — — —	Pawpaw Mangoes Citrus Pineapples Bananas Peaches Guava — —	Pawpaw Mangoes Citrus — Bananas Peaches Guava Granadilla —	— — Oranges — Banana — Guava — Apples
Wild Fruits	Wide variety to include: Marula fruit Water berries Wild medlar Monkey orange — — —	Transvaal milk plant Marula fruit — Wild medlar onkey orange Wild figs — —	Wide variety to include: Marula fruit Water berries Wild medlar Monkey orange Wild figs Mulberries —	Marula fruit — — Monkey orange — — Quinine
Livestock	Cattle Goats Chicken Sheep Pig	Cattle Goats Chicken Sheep Pig	Cattle Goats Chicken Sheep Pig	Cattle Goats Chicken — —

FOOD SOURCES	Beemer, 1939	Jones, 1963	Ogle and Grivetti, 1985 Huss-Ashmore& Curry, 1991	Kgaphola & Viljoen, 2000
Insects	Locusts Grass hoppers Caterpillars Flying ants — —	Locusts Grass hoppers Caterpillars Flying ants — —	Locusts Grass hoppers Caterpillars Stingless bees Termites —	Locusts — — — — Mopani worms
Newly- introduced Foods	— —	Flour and baked products Tea Sugar Jam Chocolate Soft drink Cooking fats and oil Curry powders — — — — — — — — — — — — — — — — — Condensed milk	Flour and baked products Tea — Jam — Soft drinks Cooking fats and oils Curry powders Gravy powders Kool-Aid Bicarbonate of soda Jam — — — — — — — — — — — —	Flour and baked products Tea Sugar Jam — — Cooking fats and oils — — — — — Pepper Margarine Mayonnaise Tomato sauce Spices Coffee creamer Peanut butter Oats Polony Viennas Powdered milk — Coffee

The next section presents the changes that took place in the rural Swazi consumption patterns and includes the eating patterns and the type of foods consumed.

3.2.3 Eating patterns

Eating patterns refer to repeated or regular arrangement of eating occasions such as meals or in-between meal snacking and includes the meal pattern and meal composition of an individual or group (Viljoen &Gericke, 1998).

Meal pattern and meal composition

Traditionally the Swazi people prepared two meals daily in rural households with in-between meal snacking (Ogle & Grivetti, 1985; Jones, 1963:66; Beemer, 1939). The first meal was eaten any time before sunrise up to when the day's work in the fields was over, usually around 11:00 and the evening meal was prepared just after sunset, at around 18:00 (Ogle & Grivetti, 1985; Jones, 1963:79; Beemer, 1939).

Traditionally, the first meal of the day consisted of sour milk (*emasi*) and the evening meal of boiled, crushed white maize or sorghum grains (*umcaba*) mixed with sour milk (*emasi*) (Jones, 1963:66). Wild vegetables and herbs were also part of the meal these were either boiled or eaten raw. Meat was scarce and only consumed at feasts or in winter when men hunted for a short period. The inclusion of maize-meal porridge (*lipalishi*) was believed to be introduced by the missionaries. After the outbreak of the rinderpest in 1897 that destroyed a large number of cattle and resulted in lower milk production, the nature of Swazi food composition changed (Jones, 1963:66). The Sotho meal composition was subsequently adopted and stiff maize-meal porridge became the staple food of the Swazi diet accompanied by a vegetable relish or a relish prepared with vegetable and legumes (Jones, 1963:61). Some dishes were made by combining maize-meal with either legumes or vegetables. Snack foods were seasonal and included wild fruit, roasted peanuts, sugar cane, jugo beans and a fermented maize-meal beverage (*emahewu*) (Jones, 1963:71, 83; Beemer, 1939).

In the early 1960s access to shops in both rural and urban areas added variety to the Swazi diet as other cereals such as rice, flour and food items prepared from flour such as bread, cakes, scones and buns were introduced and became accessible when money was available to purchase these (Jones, 1963:69). Vegetables such as tomatoes, onions and cabbage became popular among the Swazis (Jones, 1963:70). Other food products such as condensed milk, cheese, butter, vegetable fats and oils, canned fish, cooking salt, curry powder, soup powders, sugar, tea, coffee, cocoa and soft drinks also became available and

were gradually included in the Swazi eating pattern (Jones, 1963:76-77).Similar changes in the diets of other South African population groups are reported (Viljoen, *et al.,* 2005).

Twenty years later Ogle and Grivetti (1985) confirmed that white maize-meal was continuing to be the foundation of the Swazi diet as was the case with other southern African groups (Matla, 2008:100; Tshiwanambi 2007:83). It was frequently prepared as porridge accompanied by a relish or a stew based on locally available food. The side dishes included vegetables, fish, meat or legumes. The vegetable relishes were prepared from either green leafy vegetable that were cultivated or gathered as edible indigenous leafy vegetables. Jugo beans were mentioned as the most commonly consumed legume although other legumes such as cowpeas, mung beans, lentil and peanuts were also popular amongst the Swazi people (Ogle & Grivetti, 1985). Insects were enjoyed seasonally and included termites, caterpillars and stingless bees. Snack foods consisted of left-overs, bread or the fermented maize-meal beverage (*emahewu*) (Ogle & Grivetti, 1985).

A study on rural Swazi households on the border of Swaziland and South Africa in the late 1990s by Kgaphola and Viljoen (2000) reported that Swazi food habits seemed not to have changed much from that noted by previous scholars (Ogle & Grivetti, 1985; Jones, 1963). The rural Swazi households came to adopt the three meals a day meal pattern typically found in urban areas where people had breakfast, lunch and supper.

In-between meal snacking on leftover food, fruit, fermented maize-meal beverage (*emahewu)* and bread was a common practice as noted in the literature (Ogle & Grivetti, 1985; Jones, 1963:79, Beemer, 1939). However, a decline of snacking was reported in the study by Kgaphola and Viljoen (2000). This was believed to be influenced by a change in the physical environment resulting in poor availability of wild and indigenous food items in the new area where these people were now living as they had recently resettled because of a settlement programme. There was a change in the food items consumed in-between meals after the 1980s, as bread, fermented maize-meal beverage (*emahewu)* and leftover foods were reported as food often consumed (Ogle & Grivetti, 1985). Although acculturation of the Swazi food habits seemed to have taken place, meal composition, however, had not changed much except for breakfast, where bread and tea formed an integral part of the meal (Kgaphola & Viljoen, 2000). Over weekends specifically on Sunday, lunch was considered the main meal of the day that was more elaborate as it consisted of chicken, rice, salads and cooked vegetables (Kgaphola & Viljoen, 2000). Table 3.2 reflects the development of the Swazi eating patterns from 1930s to the late 1990s.

TABLE 3.2: EATING PATTERNS SUMMARISED

Mealoccasion	Beemer, 1939	Jones, 1963	Ogle & Grivetti, 1985 Huss-Ashmore & Curry, 1991	Kgaphola & Viljoen, 2000
Meal composition Breakfast	Maize-meal porridge alone Sour soft maize-meal/sorghum porridge Maize-meal porridge with relish (legume or green leafy vegetable) Sour milk with boiled crushed corn Mixed porridge (maize-meal and legume or vegetables) — —	— — Maize-meal porridge with relish (legume, meat or green vegetable) Sour milk with boiled crushed corn Mixed porridge (maize-meal and legume or vegetables) — —	— — Maize-meal porridge with relish (meat , legume or vegetables) — Mixed porridges (maize-meal and legume or vegetables) — —	— Sour soft porridge with sugar — — — Bread and tea/ coffee Dumpling, scones or vetkoek and tea/ coffee
Meal composition Lunch				Weekday and Saturday lunch consisted of stiff maize-meal porridge and a relish (fish, legumes, eggs, meat or leafy vegetable dish). Rice or mealie-rice served with a relish *Phutu* (crumbled maize-meal porridge) with sour milk or relish Sunday lunch consisted of rice, chicken, salads, cooked vegetable
Meal composition Supper	Maize-meal porridge alone Maize-meal porridge with relish (meat, legume or vegetable) Mixed porridges (maize-meal and legume or vegetable) — —	Porridge with relish (legume, meat or vegetable) Mixed porridges (legume or vegetable) — —	Porridge with relish (legume, meat or vegetable) Mixed porridges (legume or vegetable) — —	Porridge with relish(legume, meat or vegetable) — Leftover from lunch Tea and bread
Snacks	Roasted maize Sweet cane Wild fruits *Emahewu* drink peanuts — — — — —	Roasted green mealies Sweet cane/ Sugar cane Wild fruit *Emahewu*drink peanuts Bread Jugo beans — — —	— Sugarcane — *Emahewu* drink Peanuts Bread or left-overs — — — —	— — — — — — Jugo beans Potato crisps Soft drinks/ Tea Cheese-curls

3.2.2.4 Traditional Swazi foods and dishes

Traditional food is usually defined as easily grown or locally available cereals, tubers, roots, leaves and other parts of plants considered by a cultural group to be part of their culinary heritage since this group of foods have been part of the group's eating patterns for generations. They are also still seen as products that are frequently consumed or only associated with specific celebrations in a cultural group, showing transmission between generations (Pieniak, Verbeke, Vanhonacker, Guerrero & Hersleth, 2009; Guerrero, Claret, Verbeke, Vanhonacker, Enderli, Sajdakowska, Sulmont-Rosse, Issanchou, Contel, Scalvedi, Granli & Hersleth, 2009; Trichopoulou, Soukara & Vasilopoulou, 2007).

As is evident from Table 3.1, the traditional staple foods of the Swazis were maize and sorghum that were supplemented with legumes, vegetables, meat, fish or sour milk. Wild fruits were commonly used as snack foods in-between meals. A large variety of maize dishes, ranging from whole grain dishes, crushed grain preparations to plain or mixed porridges, were served to avoid monotony in the diet. Legumes, vegetables, fish, meat and milk were prepared as side dishes. Insects and game were delicacies in the Swazi diet. Figures 3.2 to 3.14 portray examples of selected traditional Swazi foods and dishes.

FIGURE 3.2: *LIFUTFO* (BOILED GREEN MEALIES)

MIXED PORRIDGES

FIGURE 3.3: *SIJEZA* (PUMPKIN PORRIDGE)

FIGURE 3.4: *SENTANGABOMU* (GOURD, GREEN MAIZE AND PEANUT POWDER)

FIGURE 3.5: *UMGQUSHU* (SAMP, JUGO BEANS AND PEANUT BUTTER)

LEGUME DISHES

FIGURE 3.6: *MNGOMENI* (MUNG BEANS)

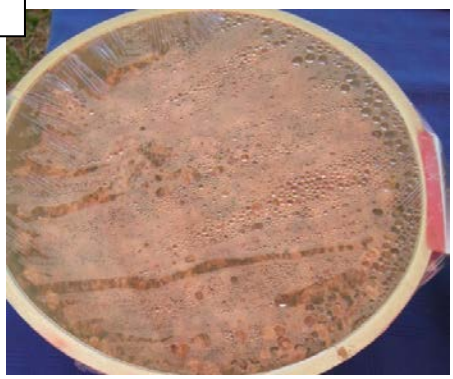


FIGURE 3.7: *SIPHUSHE SETINDLUBU* (BOILED MASHED JUGO BEANS)

VEGETABLE DISHES

FIGURE 3.8: *INKHAKHA* (BITTER GOURD LEAF RELISH)

FIGURE 3.9: *UMBHIDVO WETINTSANGA* (PUMPKIN LEAF RELISH)

FIGURE 3.10: *TINCHEKE* (BOILED PUMPKIN)

ROOTS AND TUBERS

FIGURE 3.11: *BHATATA* (SWEET POTATOES)

FIGURE 3.12: *EMATHAPHA* (TAROS)

BEVERAGES

FIGURE 3.13: *EMAHEWU* (FERMENTED MAIZE-MEAL BEVERAGE)

MILK DISH

FIGURE 3.14: *EMASI EMABELE* (SOUR MILK WITH BOILED CRUSHED SORGHUM)

Preparation of traditional dishes

The most common traditional method used to prepare Swazi foods and dishes was boiling. The use of cooking oil and animal fats was very rare. Peanuts were ground and added to the relishes to improve their flavour. Mixed porridges were prepared by boiling a legume or vegetable until tender then mixed with mealie-meal to make porridge. Fermented sorghum or maize-meal was used to prepare sour porridge. Meat was boiled or grilled over an open fire but later on frying and adding vegetables to boiled meat became popular ways to prepare meat. The Swazi fermented maize-meal beverage (*emahewu*) was enjoyed between meals and contributed substantially to the energy and nutrient intake of the diet.

As people started to get employed in other economic sectors they gradually became more dependent on stores for their food supplies (Jones, 1963:50) and were able to purchase new food items that would vary the ways of cooking certain traditional dishes. People moved from their traditional residential setups to their workplaces where they came into contact with other culture groups. They also became acquainted with their food and food preparation methods that, in adopting them thus contributing to their dietary acculturation.

Introduction of new foods

The availability of electricity and cold storage facilities enabled the rural Swazi people to buy perishable foods such as meat, margarine, milk in bulk (Kgaphola & Viljoen, 2000). The

availability of better cooking facilities like stoves improved the methods of cooking used, and reduced the cooking time. The addition of tomatoes, fat, potatoes and onions when cooking legumes and vegetables like cabbage and spinach became common practice. The use of fats and oils and eggs in the preparation of numerous dishes seemed to have increased to as is evident in the recipe book by Godeffroy (1999) on Swazi foods. More new foods were introduced into the Swazi diet and the use of traditional foods and dishes seemed to also be declining due to environmental changes (Kgaphola & Viljoen, 2000; Ogle & Grivetti, 1985; Jones, 1963:49). Bread and tea became core food items for breakfast meals. Snacks changed from wild fruit, legumes, *emahewu* and sugar cane to soft drinks, bread, potato crisps, maize-based snacks, cultivated fruits and tea.

The next section gives the historical background of the school meal programme in Swaziland, referring to how it is currently managed and the benefits of the school meals offered are discussed.

3.3 THE SCHOOL MEAL PROGRAMME IN SWAZILAND

This section reports on the historical background of the school meal programme, how it is presently managed and examples of the typical menus offered in the current meal programme are given.

3.3.1 Historical background

The school meal programme was introduced in 1963 as a pilot project supported by Save the Children Fund of the United Kingdom. Parents were required, to pay for the meals as part of the overall school fees and Save the Children Fund took responsibility for the delivery of the food to the schools. They assisted with the construction of the school kitchens, advised on nutritional menus, and provided training to the kitchen and school staff involved in the programme.

The programme was further supported by World Food Programme (WFP) from 1970 to 1991. Schools were encouraged to start vegetable gardens to provide fresh vegetables to supplement the food supplied by Save the Children Fund. In 1990, about 60% of the schools in Swaziland had introduced the programme and it benefited pupils especially those in drought-stricken areas (Save the Children Swaziland, 1998).

In 1991, the World Food Programme withdrew its support for the school feeding programme due to lack of funds and this had a negative impact on parents as they had to pay more towards this programme. Some schools decided to discontinue the programme because

they could not afford to run the programme on their own. Schools that realised the benefits of the programme decided to continue with it as good nutrition principles were instilled in the children and more effective learning took place (Save the Children Swaziland, 1998) when children received nourishing food.

The programme continued to be operated by the parents and teachers in those schools that continued with the programme until 2005, when United Nations International Childrens Emergency Fund (UNICEF) and World Food Programme (WFP) assisted with the school meal programme. They concentrated on drought- stricken areas only where primary schools were supplied with food items to provide two meals a day for children (Lambers, 2008). The National Emergency Response Council on HIV and AIDS (NERCHA) in Swaziland came into being in 2006 and assisted some of the primary schools that were not supported by the WFP and UNICEF. These three organisations assisted the school meal programme until 2007 when UNICEF and World Food Programme terminated their support because the project period had expired. It was estimated that about 78 000 primary school children benefited from this aid out of 200 000 pupils in Swaziland (Lambers, 2008).

3.3.2 How the programme is currently managed

After, the donors pulled out in 2007 the Swaziland Government, through the Ministry of Education and Training, stepped in and supplied all government aided primary and high schools with dried whole-maize, rice and dried sugar beans that were delivered at the beginning of each school term to be used to prepare meals for the schoolchildren. The schools had to ensure that the food items were kept safely in a well-ventilated storeroom to prevent spoilage. Some schools keep the maize in tanks so that it is easily fumigated to prevent damage by weevils. The schools decide on the menus and therefore take the maize to hammer mill shops for milling into maize-meal and grinding into samp. The Swaziland Government is currently responsible for the programme. A nutrition officer coordinates the purchasing and distribution of the food to both primary and high schools in the country. Maize or rice and beans are supplied once a term, and each school has to purchase the other food items required to prepare attractive and varied meals. School fees paid by parents are used for these purchases. The items bought are cooking oil, salt, peanut butter, minced meat, soup powder and vegetables. The amount paid towards the programme determines the type of food and menus provided by the schools. In general, typical menu items are samp and beans, rice and bean soup, porridge and vegetable soup, rice or bread and mince soup. The menus served in the schools are not standardised and may vary. They are planned by parents according to the amount of money available from the money parents pay towards the provision of school meals.

Presently, there is no policy governing the school meal programme in the country that would ensure that healthy eating patterns are provided for the children. The principal, in collaboration with the parents, decides on the menu depending on what they can afford. A parent, nominated by the school, prepares the meal that is served between 10:00 and 11:00. The parent in charge either dishes the food out to each pupil or the cooked food is portioned out to each class accordingly to the class enrolment where it is then served by prefects, under the supervision of the class teacher of each class. Schools continue to supplement what is being supplied by the Swaziland Government in order to provide a variety of meals for the children. They also pay the salaries of those preparing the food and the equipment required to prepare the meals.

Apart from the school meal programme, pupils can also purchase certain food items in and around the school premises during the school day. Ladies from the community are allowed to sell food items to the schoolchildren and there is no policy that regulates type of food items sold. Each lady brings her own food items and displays them inside the school premises or outside the school gate. The schoolchildren can purchase these food items during the school break times and after school hours.

In the next section the benefits of providing school meals is discussed.

3.3.3 Benefits of meals offered at schools

Schools can play an important role in providing healthy food options to support healthy eating practices (Lakin & Little-Dyke, 2008; Bower & Sandall, 2002; Brown *et al*., 2000[a]). Balanced school meals can, for example, reduce the children's current practice of frequent snacking on unhealthy foods (Bower & Sandall, 2002). Studies carried out with schoolchildren in developing countries found that school feeding programmes were used as intervention programmes to address nutrition deficiencies in children of school age, improve their attendance, overall development, and the quality of their educational experience (Acham *et al*., 2012; Jomaa *et al*., 2010; Galloway *et al*., 2009; Van Stuijvenberg., 2005).

The school meal programme in the United States of America, for example, was introduced to encourage school attendance, in an effort to persuade children from poor areas to seek an education and so food was offered to all who came (Payne-Palacio & Theis, 2011). In Chile, large scale food interventions were introduced through school feeding programmes that were implemented to correct overt nutritional deficiencies in children that, in turn, would improve cognitive performance. The main objective was, however, to promote school attendance by providing free meals (Kain *et al*., 2002). The lessons learned from the school

meal programme was that absenteeism declined and 70% of children in rural areas completed their primary education (Kain *et al.,* 2002).

Children who had breakfast at home usually developed better eating patterns and had a higher intake of important nutrients (Ward, Hoelschen & Briley, 2002). It was also found that 60 percent of the 11 year olds in Northern Ireland consumed school meals but only 20 percent of the 16 year olds opted for this selection (Brown *et al*., 2000[b]). It is important for the school environment to promote healthy eating by ensuring that food items made available are nutrient dense and that the school meal served promotes healthy eating practices. Some researchers are of the opinion that changing the school food environment through the type of lunch offered and the school Home Economics syllabus would promote appropriate dietary change amongst school children (Oogarah-Pratap, 2007; Prell, Berg, Jonsson & Lissner, 2005; Burke, 2002).

The next section explains the contribution of the school environment to the promotion of school children eating healthily.

3.4 CONTRIBUTION OF THE SCHOOL ENVIRONMENT TO HEALTHY EATING

In the previous chapter (see 2.4.1) the phases of the process of socialisation were described and how each influences the formation of food habits in children. During the secondary socialisation phase the school was identified as one important factor that could influence the reinforcement or contradiction what children were taught at home regarding their food habits. In this section the school environment is dealt with in order to contextualise how the foods available to schoolchildren (aged 11-15 years) in Swaziland may affect their food habits.

The school is recognised as a setting where learning takes place and environmental influences on eating practices are found (Kubik *et al.,* 2005).The school is a social structure that provides an educational setting that is ideal for teaching good nutritional practices (Frobisher *et al*., 2005). It is where children spend most of their time during weekdays, and thus is often the place where they need to take some of their meals during the school day. Studies indicate that children enrolled in schools in rural poor areas either do not perform well, and often complete primary school later than expected or not at all (Acham *et al.*, 2012; Haeh-Reinecke, 2005).

Studies have revealed that school meals can be a strategic point of intervention for children where nutrition education and its promotion could be effectively implemented. However,

teamwork amongst school foodservice personnel, teachers, parents and administration is essential if an appropriate environment to promote healthy eating patterns is to be provided (Lakin & Little-Dyke, 2008; Sherman & Muehlhoff, 2007; Burgess-Champoux, *et al*., 2006). On the other hand, the easy availability of fast and snack foods in the school environment could easily hinder or lower the effectiveness of health and nutrition education in the classroom and limit the necessary implementation of any recommended school food policies (Sturm, 2007). For behavioural change to take place the school environment must be maintained in such a way that it supports healthy eating behaviour (Prell *et al.,* 2005; Ang & Foo, 2002; Brown *et al*., 2000[b]).

Studies conducted on schoolchildren in South Africa and other countries in the world found that most children bought food items at school, and that these were often high in fat and sugar and had a low nutrient density (Feeley, Musenge, Pettifor & Norris 2012; Oosthuizen *et al*., 2011; Temple, *et al*., 2006; Ward, *et al.,* 2002; Ang & Foo, 2002). The influence of friends and peers at school is stronger than that of parents and often results in higher purchasing frequency of junk food (Kelly *et al*., 2006).

Children's purchase of snack food at school was reported to be influenced by the cost of snack foods, its taste, availability of these foods and the amount of pocket money they had (Oogarah-Pratap & Heerah-Booluck, 2005; Bower & Sandall, 2002; Neale, Ottie & Tilston, 1994). Older children had higher snack consumption with boys preferring savoury snacks while girls preferred sweets, chocolates and fresh fruits (Oogarah-Pratap & Heerah-Booluck, 2005). What children eat at school is always thought to be what they are familiar with and represents what they eat at home (Brown & Lewis, 1999).

3.5 SUMMARY

The chapter addressed the historical background of the Swazi food patterns, how they developed and changed over the past century. The historical background of the school meal programme in Swaziland was presented with reference to details of its management and the meals offered. The contribution of the school environment to promoting healthy eating patterns was highlighted in the last section of the chapter.

The next chapter focuses on the research methodology employed in this study.

CHAPTER 4:

RESEARCH METHODOLOGY

CHAPTER 4: RESEARCH METHODOLOGY

4.1 INTRODUCTION

The purpose of this chapter is to focus on the research approach and the methodology used to carry out the research. The chapter deals with the research design, the aim and objectives of the study, the conceptual framework, the operationalisation of the research process, development of measuring instruments, data collection and data analysis. Measures to combat error are addressed as well.

4.2 RESEARCH DESIGN

This study is an explorative and descriptive, cross-sectional study. It is deductive in nature and falls within the quantitative research paradigm.

- An explorative research design is valuable when a researcher is breaking new ground and it enables a researcher to obtain at least approximate answers to some questions on the topic of the study when it is relatively new. Exploratory studies are typically done to satisfy the researcher's curiosity and desire for better understanding of a situation (Neuman, 2011:200-204; Babbie & Mouton, 2001:79-80). In this instance the researcher wanted to know more about the food habits of Swazi primary schoolchildren and what foods they consumed at home and at school and to what extent they include traditional Swazi foods and snack foods.
- A descriptive study presents a picture of a well-defined situation, social setting or relationship by focusing on the 'how' and 'why' questions (De Vos, Strydom, Fouche, Delport, 2005:106). A descriptive study is very common when a researcher is trying to detail the particular culture of a society. It can emphasize the frequency with which a specific characteristic or variable occurs in a sample (Babbie & Mouton, 2001:80-81). In this study the aim was to describe the food habits of Swazi primary schoolchildren, their eating patterns and the type of foods they consume by tending to focus on behaviours, inclinations, situations and events.

4.3 RESEARCH AIM AND OBJECTIVES

In order to focus on the situation regarding children's food habits at the beginning of the twenty-first century, the aim of this study was to determine and describe the current food habits of primary schoolchildren, aged 11-15 years, in Mafutseni, Manzini, Swaziland. The study also aimed to document the extent to which traditional foods are included and accepted by this group. Finally it aimed to gain insight into the school meal programme by analysing how it functioned in Swaziland's rural primary schools. The information could be used to make recommendations on how to create a school food environment that favours healthy eating habits and to suggest guidelines for the operation of a satisfactory school meal programme that is based on well-considered policy formulation regarding the school food environment.

The objectives of the study on the food habits of primary schoolchildren aged 11-15 years are fourfold:

1. To determine and describe the current eating patterns of primary schoolchildrenaged11-15 years in selected schools in Manzini, Swaziland(henceforth referred to as the 'study group') with regard to:
    - 1.1 the meal patterns of the study group on weekdays and over weekend and reasons for them not eating some meals
    - 1.2 the meal composition of the study group on weekdays
    - 1.3 the type of food and beverages consumed as snacks, where these were obtained and their reasons for eating them.
2. To determine and describe how familiar the study group was with selected traditional Swazi foods, and to what extent they consumed and preferred these foods, focusing on:
    - 2.1 how familiar the study group was with traditional Swazi foods and to what extent they consumed these selected traditional foods
    - 2.2 the study group's preference rating of the selected traditional Swazi foods.
3. To determine and describe the school food environment, documenting.
    - 3.1 the foods the study group consumed and purchased during the school day
    - 3.2 the school meal menus
    - 3.3 the extent the study group made use of the school meals provided
    - 3.4 what food items were preferred on the school meal menu
    - 3.5 how the school meals were served and presented to the study group
    - 3.6 what other food items were available to the study group for purchase in and around the school yard.

4. To evaluate the school food environment in the Manzini area in Swaziland in order to make recommendations for policy formulation concerning the school food environment.

4.4 CONCEPTUAL FRAMEWORK

The conceptual framework given in Figure 4.1 illustrates the relationship of the most important concepts that contribute to the formation of food habits. This framework is based on the reviewed literature and served as a guide to the study.

The model in Figure 4.1 displays the two groups of environmental influences that contribute to food habits, distinguished as either external or internal. The double-headed arrows show an interdependency of these environmental groups that result in food habits. The natural/physical environment is depicted as the key to all environments as people can only develop food habits if they can be guided by what is available and accessible in the natural environment. The economic and political environments control the production, processing and distribution of the available food resources so that they are obtainable and within easy reach. The socio-cultural environment comes into play as it determines foods acceptable for consumption from what the natural and physical environment provides. It represents the technology, ideologies and social organisation of a cultural group, and provides the opportunities and constraints for human food consumption. The socio-cultural environment impacts on individual's psychological beliefs, values, attitudes and knowledge when choosing food for consumption, as only those foods that are acceptable in a cultural group will be made available for consumption. The biological and physiological factors contribute to the acceptability of foods that have to be approved by that cultural group. Through social interaction children follow certain eating patterns that could include the number of meals, the food eaten on each eating occasion and the type of traditional Swazi foods or snack foods consumed.

The next section describes the main concepts of the study.

4.5 CONCEPTUALISATION

The conceptualisation of this study is captured in important concepts that are defined as applicable to the theme under review.

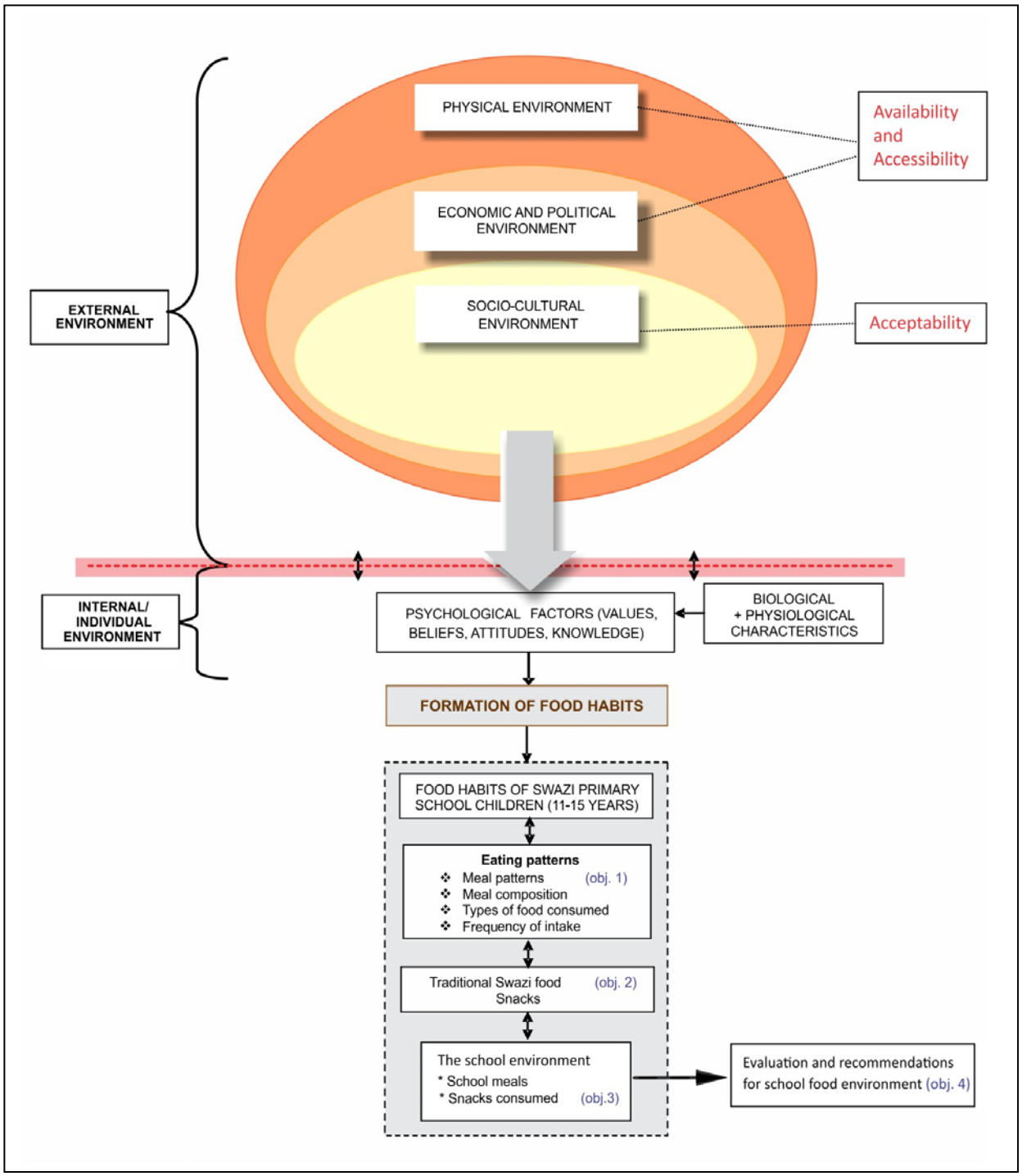


FIGURE 4.1: CONCEPTUAL FRAMEWORK (adapted from Bryant *et al.,* 2003; Viljoen & Gericke, 1998; Sims & Smiciklas-Wright, 1978)

Food habits - food habits refer to the way in which humans select, consume and utilise portions of the available food supply in response to social and cultural pressures (Kittler, *et al*., 2011:2; McIntosh, 1995:141; Mead, 1964). Food habits are based on what individuals or groups of individuals have available as food in the area where they live, what they can afford

to buy and their beliefs and personal meaning attached to that particular food (Williams, 2001:297).

Food – foods are products derived from plant or animals that can be taken into the body to yield energy and nutrients for the maintenance of life and the growth and repair of tissues (Whitney & Rolfes, 2013:3). It is any liquid or solid substance which, when swallowed, digested and absorbed by the body provides the necessary nutrients to sustain life and growth (Kittler, *et al*., 2011:1).

Eating patterns - eating patterns refer to the recurrent pattern in which the individual chooses, prepares and consumes food from the available, acceptable food for a specific meal or snack. It includes the specific combination of foods that are used as a **meal** or a **snack** as well as the distribution of meals and snacks through the day. An eating pattern thus describes the **meal composition** and the **meal distribution or pattern** of an individual or a group. It is thus repeated or is a regular arrangement of eating that forms a food habit (Viljoen & Gericke, 1998).

Meal pattern - meal pattern is the repeated or regular arrangement of meals. This amounts to the number of meals eaten in one day or the frequency of eating (Meiselman, 2008).

Meal composition - meal composition refers to what a meal consists of or the courses eaten in one meal. It refers to the types and quantities of foods included or served at a specific eating occasion (Meiselman, 2008). Meal composition may differ regarding the type of food or number of courses taken during a meal (De Graaf, 2006).

Meals - meals are often described as structured eating events, usually at a specific time of a day (Meiselman, 2008). They are usually referred to as the main eating moments of the day and are breakfast, lunch and supper or dinner (De Graaf, 2006). The concept meal is therefore applied to both the event and the product that often includes the time of the day and the food served (Meiselman, 2008).

Snacks - snacks could be foods or beverages that are consumed between meals (Viljoen & Gericke, 1998). They could be either small tit-bits eaten in-between meals or more substantial items to replace a meal. Eating a snack is regarded as a food event without any rules with regard to the combination and/or sequence of the food items consumed (Meiselman, 2008). De Graaf (2006) describes snacks as other eating episodes that include beverages and foods eaten outside the context of the three main meals.

Traditional foods - traditional foods usually consist of easily grown or locally available cereals, tubers, roots leaves and other parts of plants considered by a cultural group to be

part of their culinary heritage and refers to the foods that have been included in the eating patterns of the group for generations. They have been proven to be of use in the community, showing transmission between generations and a product that is frequently consumed or associated with specific celebrations (Pieniak *et al.,* 2009).

Frequency of consumption - frequency of consumption indicates how often an individual consumes or intends to consume a specific food item during a predetermined period that could be a day, week or month (Viljoen & Gericke, 1998).

Food preference - food preference could be described as the degree of like or dislike of a particular food. Food preferences therefore indicate the individual's personal motivation to choose a food from the available, acceptable food (Viljoen & Gericke, 1998).

4.6 OPERATIONALISATION

This section of the study deals with how the variables used in the study will be measured. The objectives and sub-objectives, the concepts, dimensions, indicators and measuring instrument used are given in Table 4.1.

4.7 DEVELOPMENT OF THE MEASURING INSTRUMENT

A questionnaire that measures the different dimensions of food habits was compiled. It consists of five sections: social-demographics, usual eating patterns, traditional foods, the school environment and a 24-hour dietary recall (see Addendum B for the questionnaire).

Section A: Socio-demographic information

Closed and open-ended questions were used to collect information on the demographic profile of the respondents. Questions on age, gender, home language, ethnic and religious group, home area and the household size, were asked.

4.6 OPERATIONALISATION *(CONTINUED)*

TABLE 4.1: OPERATIONALISATION

OBJECTIVE AND SUB-OBJECTIVES	CONCEPTS	DIMENSIONS AND INDICATORS	MEASURING INSTRUMENT (QUESTIONNAIRE)
1. To determine and describe the eating patterns of primary schools children aged 11-15 years in Manzini, Swaziland (henceforth referred to as the study group).			
1.1 To determine and describe the meal patterns of the study group on weekdays and over weekend days and reasons for not eating some meals.	Meal patterns weekdays weekend days	Number of meals MondaytoFriday SaturdaytoSunday	B1,B2,B5,B8,B11 B17, B18 B4, B7, B10
1.2 To determine and describe the meal composition of the study group on weekdays.	Meal composition Weekdays	Types of food Monday to Friday	B3, B6, B9
1.3 To determine and describe the type of food and beverages used as snack, where they were obtained from and reasons for eating them.	Snack food	Food items Beverages	B12, B15 B13 B14
2. To determine and describe how familiar the study group was with selected traditional Swazi foods and to what extent they consumed and preferred these foods.			
2.1 To determine and describe how familiar the study group was with traditional Swazi food and to what extent they consumed the selected traditional foods.	Familiarity Traditional foods consumed Consumption frequency	Known foods consumed Traditional foods How often eaten	C1

TABLE 4.1:
OPERATIONALISATION*(CONTINUED)*

OBJECTIVE AND SUB-OBJECTIVES	CONCEPTS	DIMENSIONS AND INDICATORS	MEASURING INSTRUMENT (QUESTIONNAIRE)
2.2 To determine and describe the study group's preference rating of the selected traditional Swazi foods.	Preference rating	Degree of liking	C2
3. To determine and describe the school food environment.			
3.1 To determine and describe the foods consumed and purchased during the school day by the study group.	School environment	Foods bought Foods eaten	D4 Observations
3.2 To determine and describe the school meal menus.	Menus	Menu options available	D7 and observations
3.3 To determine and describe to what extent the study group made use of school meals provided.	School meal participation	Participation	D5 and observations
3.4 To determine and describe what food items were preferred on the school meal menu.	Menu preference	Degree of liking	D7 and observations
3.5 To determine and describe how the school meals were served and presented to the study group	Serving of meals	Serving Portioning	D5 and observations D6 and observations
3.6 To determine and describe what other food items were available to the study group to purchase in and around the school yard.	Food available for purchase		D4 and observations
4. To evaluate the school food environment in the Manzini area in Swaziland in order to make recommendations for school environment policy formulation.			

Religion
Ethnic group
Home area
Family

Section B: Eating patterns

This section sought information on the number of meals consumed and in-between meals snacked. Questions were asked to determine the frequency and composition of meals and snacks on weekdays, weekends and on special occasions. It also determined if and why meals were skipped.

Section C: Familiarity with and consumption of traditional foods

This section measured the extent to which the study group was familiar with, consumed and liked or preferred traditional foods. A 3-point Likert-type scale was used to determine the degree of liking each of the foods mentioned.

Section D: School meal programme

In this section closed-ended questions were used to determine what the respondents ate at school, how often they bought food at school, if they took part in the school meal programme, and the menus they preferred the most.

Section E: 24-hour dietary recall

The respondents were requested to recall and fill in what they had consumed the previous day and where they consumed these foods by completing the 24-hour dietary recall sheet. This section served as a cross-check for the information given in Section B.

Pilot testing the questionnaire

The questionnaire was pretested on a group of learners that had the same characteristics as the study group, to check if statements were clear and instructions were understood by the respondents. The questionnaire was pilot-tested on grade five, six and seven learners in a rural school that was 16 kilometres away from Manzini city. Sixty learners aged 11-15 years participated in the pilot testing. All questions were well understood and well responded to thus the responses of the pilot study indicated that the questionnaire was easy to follow and therefore no changes were made to it.

4.8 STUDY POPULATION AND SAMPLING

The units of analysis were 11-15 year old primary schoolchildren (both genders) in the rural area of Mafutseni in Manzini. In Swaziland, a primary school child is in Grade 1 at six to

seven years of age and therefore expected to be in Grade 6 when eleven to twelve years of age. However, through late entry into Grade 1 or repeating classes due to failure, there may be children who are as old as 15 years in Grade 6 or 7.

The primary schools were selected from one specific area to reduce cost and time when collecting data. Respondents were chosen by means of applying the convenience sampling technique from three primary schools that were within the same geographical area and were almost the same radius from the nearest town, Manzini. All children aged 11-15 years were given consent forms to take home to obtain approval from their parents for participation in the study (see Addenda D and E). Once the children had been selected, the researcher used the school admission books and registers to ensure they were within the 11 to 15 year age group. Only those children who were in possession of completed consent forms were eligible to fill in the questionnaires.

4.9 DATA COLLECTION

4.9.1 Survey questionnaires

The data was collected on weekdays during the last week of August 2008. The questionnaires were distributed to 300 learners by the Home Economics teachers in three primary schools in the Mafutseni area in Manzini, Swaziland. One primary school was visited a day and Grade 5, 6and 7 children aged 11-15 years were selected to complete the questionnaire.

The researcher was present during the data collection sessions to give minimal assistance to the pupils to assure clarity of the questions and to ensure that participants did not influence each other. Before completing the questionnaire, the researcher explained the aim and objectives of the study. The respondents were assured of anonymity when filling out the questionnaires.

4.9.2 Observations made of the school environment

Observations of the school food environment were made by means of an observation checklist (See Addendum F). Aspects covered included food outlets available inside and outside the school premises, type of food items sold and whether the respondents were allowed to leave the school premises during breaks or not. Other aspects covered included availability of the school meal programme, participation of the respondents in the programme, type of menus offered, whether plates were provided to the respondents or not,

who dished up the food and if there were policies in place to control type of food made and if these were available to the respondents.

4.10 DATA ANALYSIS

The researcher coded the questionnaires, captured the data and entered it on an Excel spreadsheet. The researcher carefully screened the entries to ensure that correct information had been captured. The Statistical Analysis Software (SAS) package Version 9.3 was used to analyse the data to obtain descriptive statistics (percentages, frequencies) and to summarise the data as tables and graphs.

4.11 QUALITY OF THE STUDY

All research should aim to provide quality data that is valid and reliable (Babbie and Mouton 2001:277). This section describes how validity and reliability was attended to in this study.

4.11.1 Validity

Validity is described as the extent to which an instrument measures what it is expected to measure about certain variables and to do so in such a way that reliable results will be yielded. (De Vos *et al.,* 2005:161). There are three categories of validity underlying measurements namely content, face, and construct validity.

- **Construct validity** involves determining the extent to which an instrument successfully measures a theoretical construct using data from a variety of sources (De Vos *et al.,* 2005:162). A comprehensive literature review contributed to ensure construct validity. The literature review included topics such as the factors influencing food habits, pre-adolescent as life stage, including the formation and development of food habits.
- **Content validity** is concerned with whether the instrument used is really measuring the concept it is assumed to be measuring and whether it provides an adequate sample of items representing that concept (De Vos *et al.,* 2005:161). The questionnaire used as a measuring instrument was assessed by subject experts from the Department of Consumer Sciences and other subject experts. These experts included primary school teachers who taught Home Economics to Grades 6 and 7, and a Home Economics curriculum designer. They were requested to assist in the assessment of the questionnaire. The researcher was also assisted by the study

leader in making adjustments and additions to ensure that the instrument measured what it was intended to measure.

- **Face validity** refers to what an instrument appears to measure or appears relevant to those whom it will be administered to for completion (De Vos *et al.,* 2005:161). Neuman (2006:192) describes face validity as judgment made by the scientific community that the instrument measures the relevant concept. The assistance of Home Economics teachers and other subject experts to assess the measuring instrument further contributed to ensure face validity.

4.11.2 Reliability

Reliability is described as the stability or consistency of the measurement (De Vos *et al*., 2005:162; Babbie & Mouton, 2001:157) It is obtained when a measuring instrument applied on the same variable under the same conditions gives the same results. An instrument used repeatedly should give the same results in order for it to be reliable. To ensure the reliability of the instrument, one school, not included in the sample, was selected from the region for pilot testing the questionnaire. Piloting enabled the researcher to check that the statements and instructions were clear and to test the questionnaire for reliability and comprehension.

4.12 ETHICS

Before pursuing with the data collection, the researcher sought and obtained permission to conduct the research from Ministry of Education and Training in Swaziland. This was communicated with the schools through the Regional Educational Officer (see Addendum A for letter). The study was approved by the Ethics Committee of the Faculty of Natural and Agricultural Sciences at the University of Pretoria (Ethics approval number Eco90209-008). Informed consent from the parents/guardians of the children (see Addendum C) was sought and obtained before commencing with the data collection as they had the right to decide if their children could participate or not. Confidentiality was adhered to as the respondents were not required to write their names on the questionnaire but code numbers were used.

4.13 SUMMARY

This chapter focused on the approach and the methodology used to carry out the research. The chapter included the research design, the aim and objectives of the study, the

conceptual framework, operationalisation, development of measuring instruments, data collection and data analysis including measurements to combat error in the study and ethics.

The next chapter gives a presentation and discussion of the results of the study according to the research aim and objectives.

CHAPTER 5:

RESEARCH RESULTS

CHAPTER 5: RESULTS AND DISCUSSION

5.1 INTRODUCTION

The chapter presents and discusses the results of the study according to the research aim and objectives. It is divided into four sections. The first section deals with the demographic profile of the respondents, followed by the results after analysing the collected data on their current eating patterns, their familiarity with, consumption of and preference for traditional foods. The section that follows pays attention to the school environment foods, including the food purchased and consumed during the school day and the school meal programme. In the last section of this chapter an evaluation of the school meal programme is given together with recommendations for an improved school food environment.

5.2 STUDY AREA AND SAMPLE DESCRIPTION

The study was confined to Swaziland. Swaziland is divided into four administrative regions, the Hhohho, Lubombo, Manzini and Shiselweni. The study was conducted in the Manzini region at Mafutseni, a rural area about 20 kilometres from Manzini city. There are three primary schools and one high school in this area (Fig. 5.1).

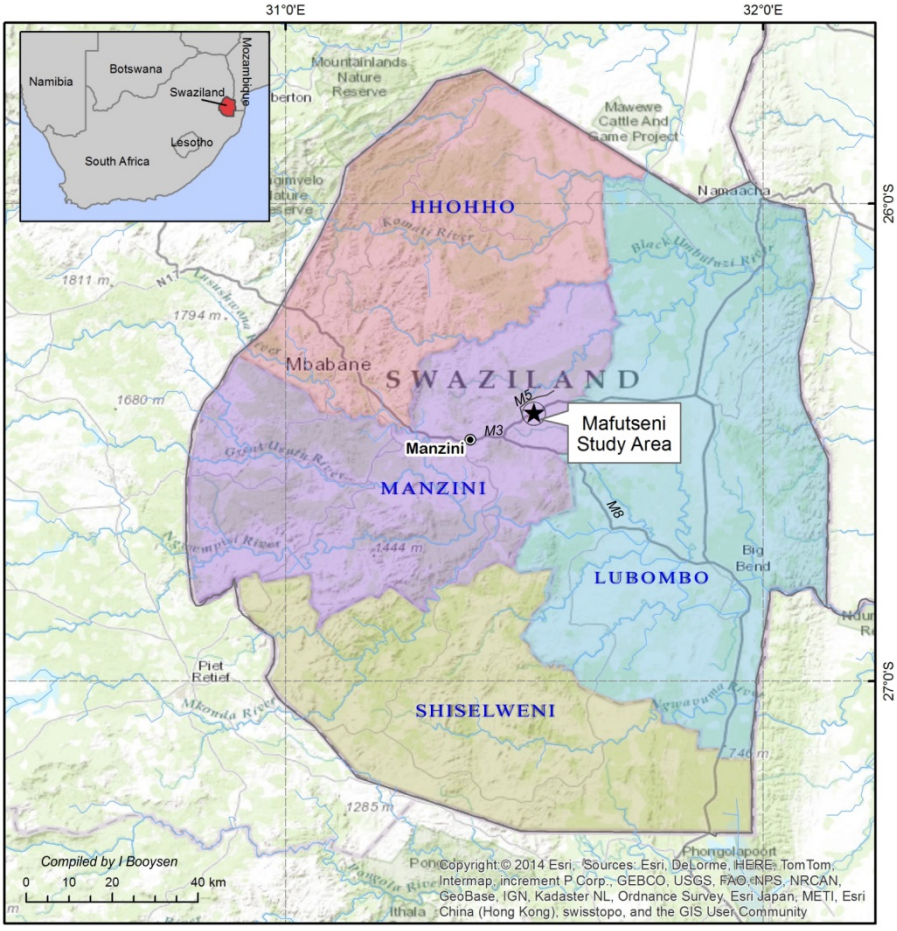


FIGURE 5.1: MAP OF SWAZILAND

The sample consisted of 300 pupils aged 11-15 years, from the three primary schools in the Mafutseni area namely, Mafutseni Nazarene, Kabhudla and the Mafutseni Roman Catholic School. Self-administered questionnaires

were distributed to children in Grades 5, 6 and 7 as these were the grades expected to typically have children between 11-15 years old. Only those children who had returned consent forms signed by their parents/ guardians were allowed to participate in the study.

5.3 DEMOGRAPHIC PROFILE OF RESPONDENTS

The demographic profile of the respondents (N = 300) is presented in Table 5.1.

Gender of respondents. An uneven distribution between the gender groups is noted. This uneven distribution of gender is confirmed by the last population census of 2007 that indicate that there are more females than males in the Swazi population (National News, Sunday times 5th May, 2011).

Age of respondents. The age range of the respondents varied between 11 and 15 years. The majority of the respondents (n = 91, 30%) were twelve years old, followed by those who were 13 (n = 74, 25%) and 14 years old (n = 61, 20%) with 52 (17%) that were 11 years old and only a small number being 15 years (n = 22, 8%). In Swaziland the recommended age requirement for pupils to enrol in Grade 1 is seven years. The majority of 15 year old children are expected to be in Grade 8 or 9, but some could be in Grade 7at this stage due to late enrolment or repeated classes as there is no automatic progression from one grade to the other in Swaziland.

Ethnic group and home language. The majority of the respondents were Swazis (n = 290, 97%) and being a typical rural area the majority indicated SiSwati (n = 295, 98%) as their home language.

Church group. Many Christian denominations exist in the area which is reflected in the results. All children were members of Christian churches and the majority (n = 110, 37%) were Zionist followed by the Evangelical Church (n = 39, 13%), Catholics (n = 37, 13%) Nazarene (n =2 1, 7%), Methodist (n = 19, 6%) and a range of others (n = 73, 24%) such as Church of Christ, Assemblies of God and Pentecostal.

Residential area. The majority (n = 174, 58%) resided in Mafutseni and the others were fromsurrounding areas within 5 km from Mafutseni in the Manzini region of Swaziland.

Household size. The majority (n = 252, 85%) of the children lived in households of five and

TABLE 5.1: DEMOGRAPHIC PROFILE OF RESPONDENTS (N =300)

	n	%
Gender		
Female	170	57
Male	130	43
Ages		
11 years	52	17
12 years	91	30
13 years	74	25
14 years	61	20
15 years	22	8
Home language		
SiSwati	295	98
English	5	2
Church group		
Methodist	19	6
Nazarene	21	7
Roman Catholic	37	13
Evangelical	39	13
Zionist	110	37
Other (Church of Christ, Assemblies of God, Pentecostal)	73	24
Ethnic group		
Swazi	290	97
Coloured	2	1
Other	8	2
Residential area		
Mafutseni	174	58
Kabhudla	88	30
Other	37	12
Household size		
Three	17	6
Four	28	9
Five	80	27
Other (6-10)	106	36
>10	37	12

more than five members. There were 106 (36%) children who lived in households of six to ten members and 37 (12%) who lived in families with more than ten members. Studies conducted in rural Swazi households found that the average size of the households varied between four and ten members (Kgaphola & Viljoen, 2000; Ogle & Grivetti, 1985; Jones, 1963:38). Similar results were reported by other studies amongst rural households in developing countries (Acham *et al*., 2011; Tshiwanambi, 2007:56).

The next section reports on the results of the current eating patterns of the study group.

5.4 CURRENT EATING PATTERNS

The eating patterns on weekdays and over weekends, which included the number of meals and a description of the food eaten at these meals, were determined by answers to closed questions. Answers to the closed-ended questions on the number of meals eaten, the reasons for consuming these meals and in-between meal eating, as well as the type of foods consumed had to be recorded. Food and menu items commonly consumed by Swazi families were grouped according to the different mealtimes and the respondents were requested to indicate which ones they usually consumed on weekdays. As a cross-check on the information given by the study group regarding their meal pattern and meal composition during weekdays, they were also asked to recall what they had eaten the previous day. This information also gave an idea of the extent of routine choices for meals each day.

5.4.1 Weekday meal patterns

The results on the weekday meal patterns of the respondents are presented in Table 5.2.

TABLE 5.2: USUAL MEAL PATTERN ON WEEKDAYS (N = 300)[2]

Number of meals	Responses	%
One	7	2
Two	41	14
Three	218	73
<4	33	11
Type of meals		
Breakfast	278	93
Lunch	248	84
Supper	293	98
In-between	266	90

The majority (n = 218, 73%) of the respondents indicated that they consumed three meals a day and in-between meal snacking was common on weekdays. There were some

[2] In this study the symbol N stands for the number of respondents equivalent to the number of questionnaires as all were completed by the students in the sample.

respondents (n = 41, 14%) who consumed only two meals a day and a small number (n=7, 2%) who only had one meal a day. The results on the meal patterns concur with previous studies (Ogle & Grivetti, 1985; Jones, 1963:79) as a gradual shift from the traditional meal patterns of two meals a day to a three meals a day pattern has been taking place since the 1960s (Kgaphola & Viljoen, 2000; Jones, 1963:73). Recent South African studies also report a pattern of three meals a day with in-between snacking becoming a pattern within the black population (Matla, 2008:72; Tshiwanambi, 2007:82; Temple *et al*., 2006; Viljoen *et al*., 2005).

The majority (n = 278, 93%) of the respondents indicated that they consumed breakfast and this concurs with results of other South African studies (Faber, Laurie, Maduna, Magudulela, Muehlhoff, 2013; Feeley, *et al*., 2012; Abrahams *et al*., 2011; Tshiwanambi, 2007:82; Temple *et al*., 2006). Studies in other countries, however, report low breakfast consumption (Devine, Farrell, Blake, Jastran, Wethington & Bisogni, 2009; Ang & Foo, 2002; Hamilton *et al*., 2000; Seaman *et al*., 1997). The results pertaining to the reasons for not consuming breakfast were that a few, 7% (n = 22), of the respondents said that they did not eat breakfast; half of them, 50% (n = 11) did not have food to eat, with 27% (n = 6) saying that breakfast was not prepared and 14% (n = 3) indicated that they had no time to eat. Only one of the respondents mentioned that it was too early to eat or that they became sick after eating breakfast.

On weekdays the majority of the respondents consumed lunch and supper - 84% (n = 248) enjoyed lunch and 98% (n = 293) supper. The reasons for not eating lunch were not being at home for lunch (the majority of the respondents (n = 23, 43%) whereas 33% (n=18) said lunch was not prepared and 25% (n = 13) shared that there was no food to eat. These results concur with Tshiwanambi's (2007:83) finding that 6% of the 10-13 year old children living in a rural area in Venda, South Africa did not have supper because their household could not afford it. The next section deals with the meal composition of the weekday meals and what is eaten in between meals.

5.4.2 Meal composition on weekdays

A list of food and menu items, according to the researcher's knowledge and observation of what is eaten at each meal was compiled (see Addendum E for a description of the items listed). The respondents were requested to mark the listed items that they usually consumed at each meal as well as in-between meals. In addition, as a check, the respondents were also requested to specify their previous day's food consumption indicating what they had eaten as a 24-hour recall answer and say where these foods were consumed. The results of

the closed questions are presented first, followed by those from the 24-hour recall that served as a cross-check.

5.4.2.1 Meal composition for breakfast

The meal composition for breakfast is illustrated in Figure 5.2 with percentages calculated as the number of responses out of a total of 300 questionnaires.

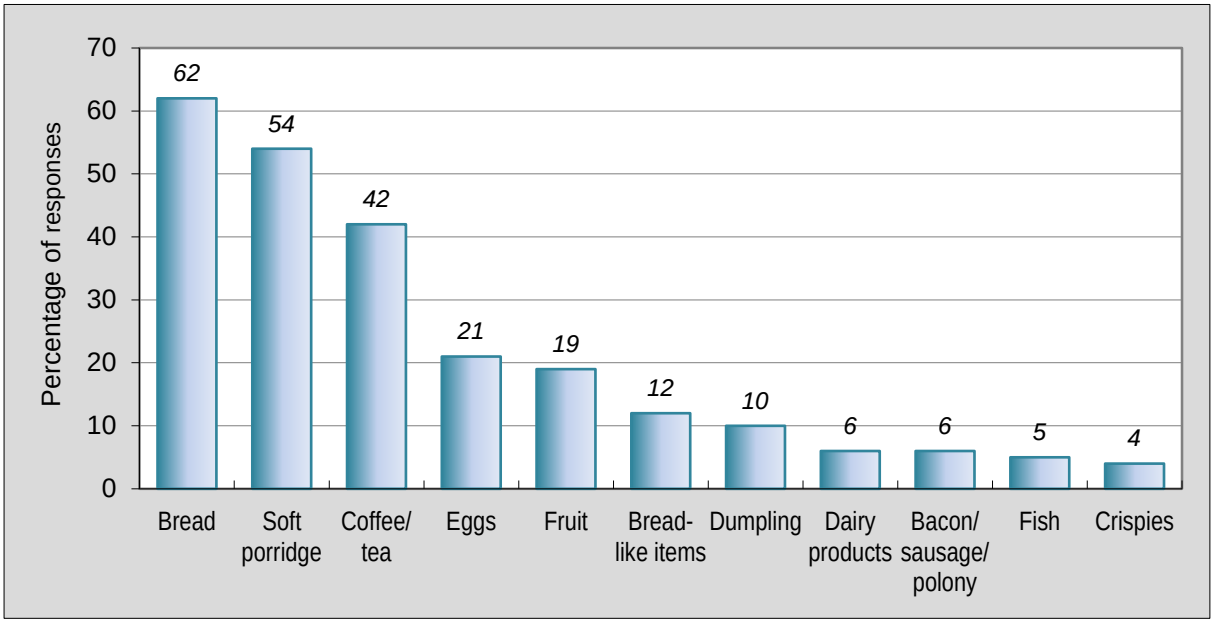


FIGURE 5.2: MEAL COMPOSITION FOR BREAKFAST

The majority (n = 187, 62%) of the respondents consumed either bread or a soft porridge prepared from either *mabele* or maize meal (n = 161, 54%) and tea or coffee (n = 125, 42%). Eggs were consumed by some (n = 64, 21%) and fruit (n = 57, 19%). Other bread-like items such as buns, bread rolls and fat cakes as well as mealie-bread and dumplings were eaten by 12% (n = 35) and 10% (n = 29) of the respondents respectively. A small number of respondents, only 6% of the sample ate items from the less mentioned list that comprised of cheese, milk, yoghurt or sour milk and bacon, sausage, polony or fish as a breakfast food. According to the results of the 24-hour recall the majority (n = 259, 96%) of the respondents had breakfast at home. The 24-hour recalls provided similar results regarding the menu composition for breakfast as seen in Figure 5.3. Results from the closed questions reflected a similar pattern.

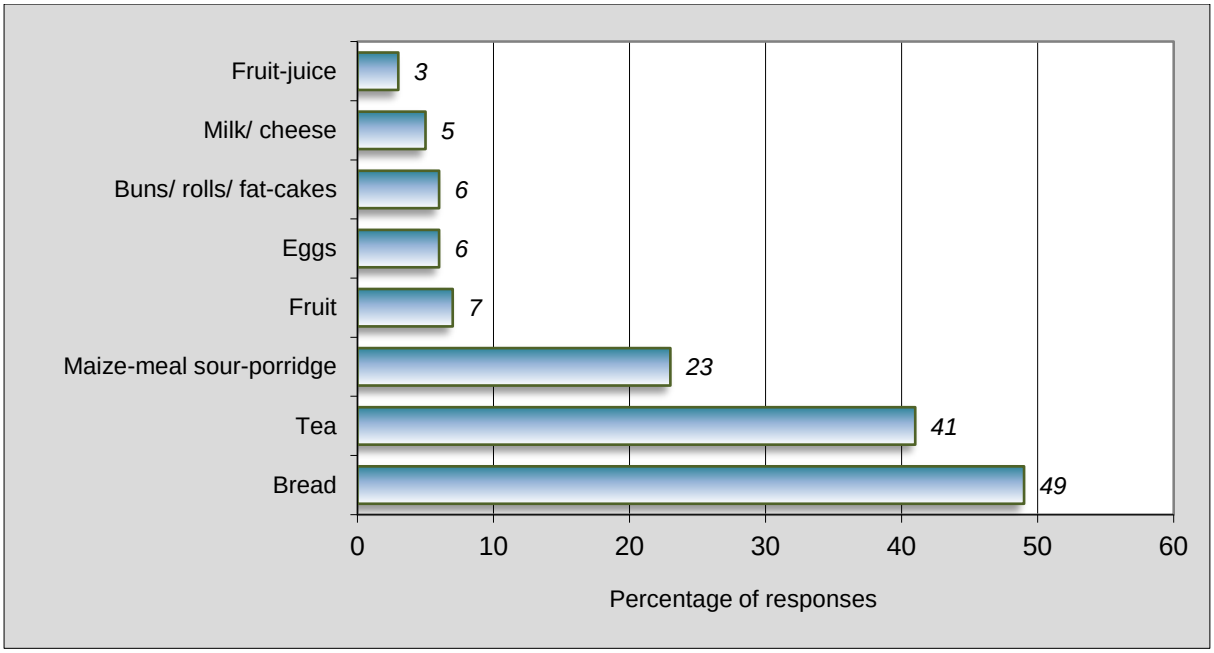


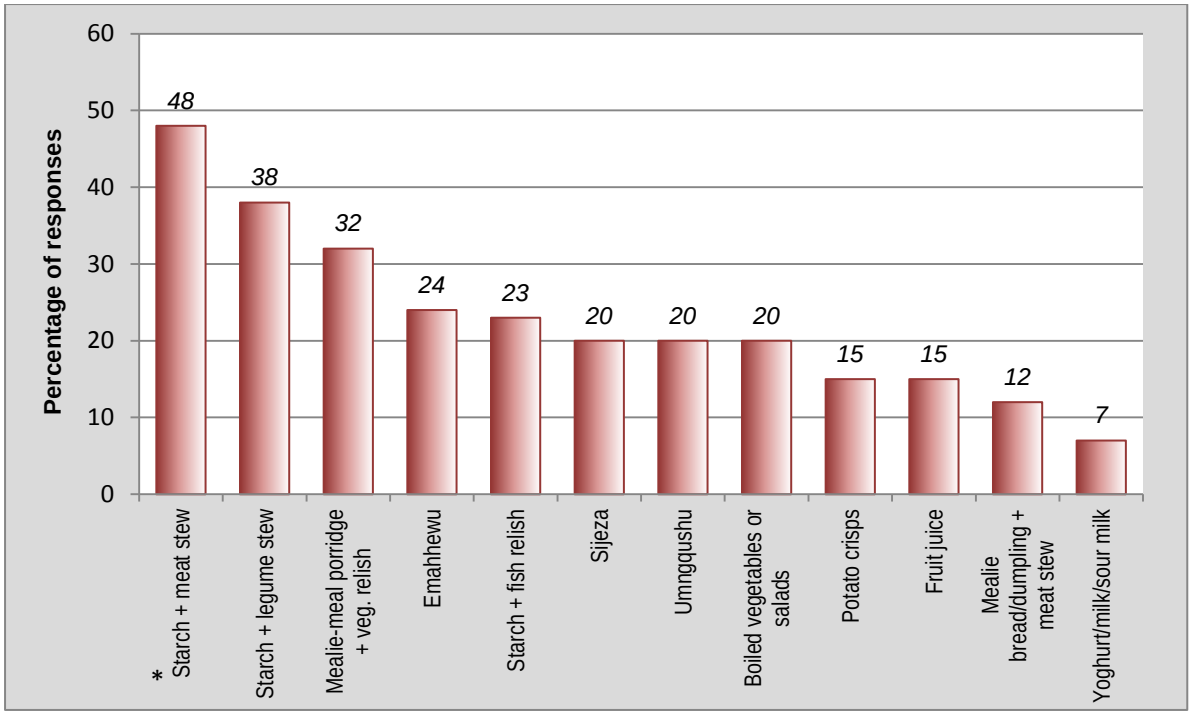
FIGURE 5.3: 24-HOUR RECALL FOR BREAKFAST

Figure 5.3 represents food items that were marked by ≥ 3% of the respondents. Bread was the most frequently consumed (n = 148, 49%) food item followed by tea (n = 124, 41%) and soft porridge (n = 70, 23%). The other bread-like items consumed were buns, bread rolls or fat-cakes and only a small number (n = 17, 6%) enjoyed protein-rich foods such as eggs (n = 17, 6%) and milk or cheese (n = 15, 5%). Fruit and fruit juice were consumed by 7% and 3% of the respondents respectively.

The results of the 24-hour recall confirm that the majority of the study groups' breakfast composition consisted of bread or soft porridge and tea. There was a very low report on the consumption of fruit and protein-rich foods. The meal composition of the respondents has not changed from what was reported by other studies conducted amongst the Swazi people since the 1960s (Kgaphola & Viljoen, 2000; Ogle & Grivetti, 1985; Jones, 1963:79). A similar trend was reported in South African studies that breakfast foods commonly included bread, maize meal porridge and tea (Faber *et al*., 2013; Oosthuizen, *et al*., 2011; Matla, 2008:81; Tshiwanambi, 2007:84; MacIntyre, Kruger, Venter & Vorster, 2002).

5.4.2.2 Meal composition for lunch

The majority (n = 248, 84%) of the respondents indicated that they usually had lunch at home. Figure 5.4 portrays the food items consumed for lunch.



* Starch represents samp, rice or maize meal porridge

FIGURE 5.4: MEAL COMPOSITION FOR LUNCH

Figure 5.4 shows the food items usually eaten for lunch by 7% and above of the respondents. The majority (n = 145, 48%) of the respondents marked the samp, rice or maize meal porridge with meat stew as their lunchtime meal. This was followed by the options of samp, rice or maize meal porridge and legume stew[3] (n= 133, 38%), maize meal porridge and vegetable relish[4](n =97, 32%), samp, rice or maize meal porridge and fish relish (n = 69, 23%). *Sijeza* (melon/ pumpkin porridge), *umgqushu*[5] and boiled vegetables or salads were indicated by some (n = 62, 20%).

Potato chips and fruit juice were marked by some (n = 6, 15%), including steamed mealie-bread or dumpling and meat stew (n = 36, 12%). Similar to breakfast, milk, yoghurt or sour milk were consumed by a small number (n = 21, 7%) of respondents for lunch. The results of the 24-hour recall for lunch reflect that the majority (n = 222, 72%) of the respondents had

[3]Vegetable stew – a dish prepared from legumes, onions and cooking oil

[4]Vegetable relish—a dish prepared from leafy vegetables, onions and ground peanuts

[5]*Umngqushu* – a dish prepared from jugo beans, samp and peanuts

their lunch meal at home. Figure 5.5 depicts the results of food items that were marked by 3% and above of the respondents.

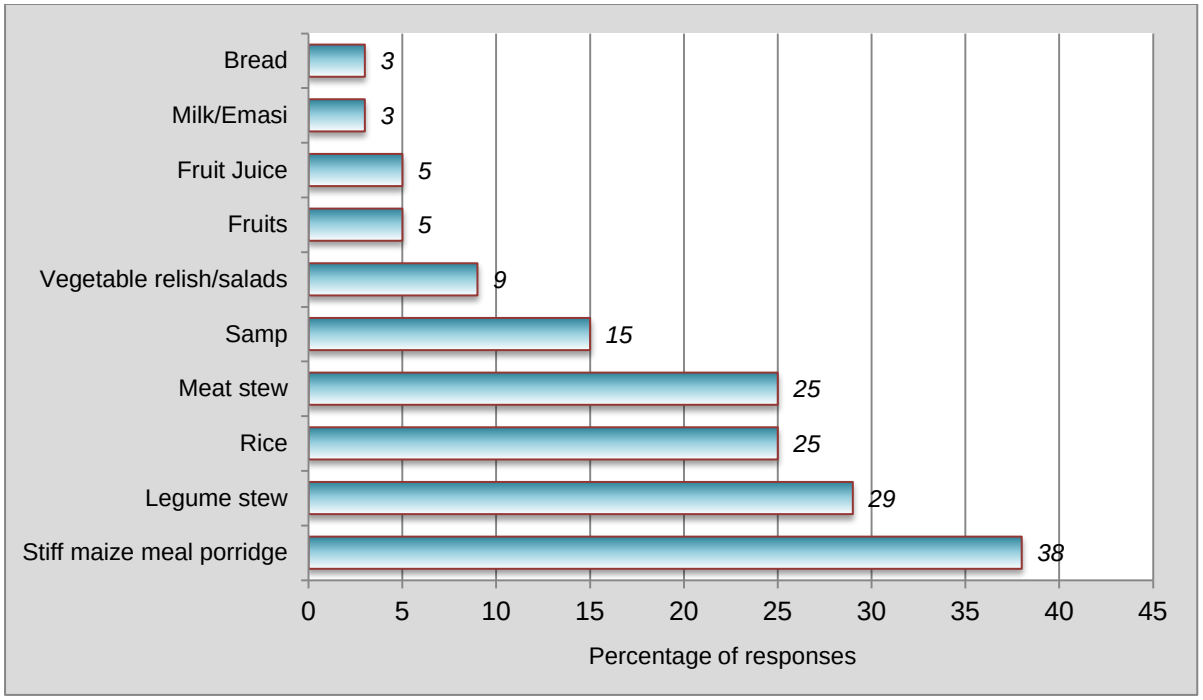


FIGURE5.5:24-HOUR RECALL FOR LUNCH

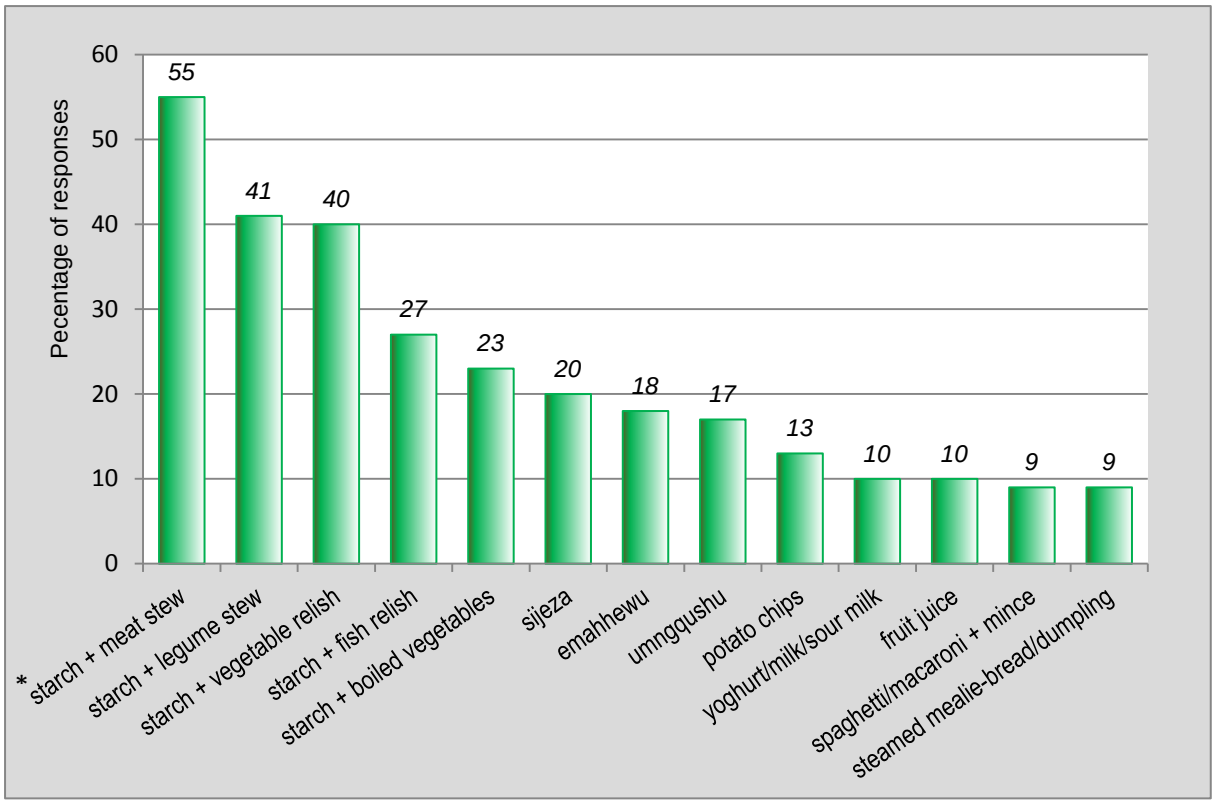
Figure 5.5 shows that stiff maize meal porridge, the staple food of the Swazis, was eaten by the majority (n = 113, 38%) accompanied by either a legume stew (n = 94, 29%) or a meat stew (n = 79, 25%) and sometimes even eaten on its own (n =21, 7%). Rice and samp were listed by 25% (n = 78) and 15% (n = 45) of the respondents respectively as an accompaniment to meat or legume stew instead of the traditional maize meal porridge. Vegetables (spinach, cabbage and lettuce) were served as salads or relishes. A small number (n = 16, 5%) of respondents indicated that they ate fruit such as bananas, apples or oranges. Similarly, beverages such as fruit juice, milk or sour milk were consumed by 5% (n = 6) or even fewer of the respondents.

The closed-ended responses indicated a higher consumption of samp, rice or maize meal porridge and meat while maize meal porridge and legume stew was mentioned by the majority of respondents in the 24-hour recall. There were 24% (n = 72) of the respondents who marked *emahewu* (fermented maize meal beverage) in the closed-ended questions; however, it was not indicated in the 24-hour recall responses. A small number (n = 62, 20%) of respondents marked *sijeza* (pumpkin/melon porridge), *umngqushu* (samp, jugo beans and peanut) and boiled vegetables or salads in the closed questions and none indicated these Swazi traditional dishes in the 24-hour recall. The results reflect that the respondents

continued to enjoy a traditional Swazi lunch consisting of stiff maize meal porridge together with either meat or a legume stew or vegetable relishes as reported in previous studies (Kgaphola & Viljoen, 2000; Ogle & Grivetti, 1985; Jones, 1963:81).

5.4.2.3 Meal composition for supper

The meal composition of the respondents (n = 293, 98%) who ate supper during weekdays is given in Figure 5.6.



* Starch represents samp or rice or maize meal porridge

FIGURE 5.6: MEAL COMPOSITION FOR SUPPER

In Figure 5.6 a similar consumption pattern as for lunch is evident. The majority (n = 166, 55%) of the respondents marked samp, rice or maize meal porridge together with meat stew for supper. Vegetables stew or vegetable relish with samp, rice or maize meal porridge were the choice of 41% (n = 123) of the respondents. There were fewer responses to the consumption of traditional dishes that included sijeza (melon/ pumpkin porridge (n=59, 20%) *emahewu* (a fermented maize meal beverage) (n = 53, 18%) and *umngqushu* (samp, jugo bean and peanuts) (n = 51, 17%). As was the case for lunch only a small number (n = 30, 10%) had milk, yoghurt or sour milk regularly at supper time.

The majority (n = 253, 96%) of the respondents indicated that they ate their evening meal at home. The results of the 24-hour recall for supper are presented in Figure 5.7.

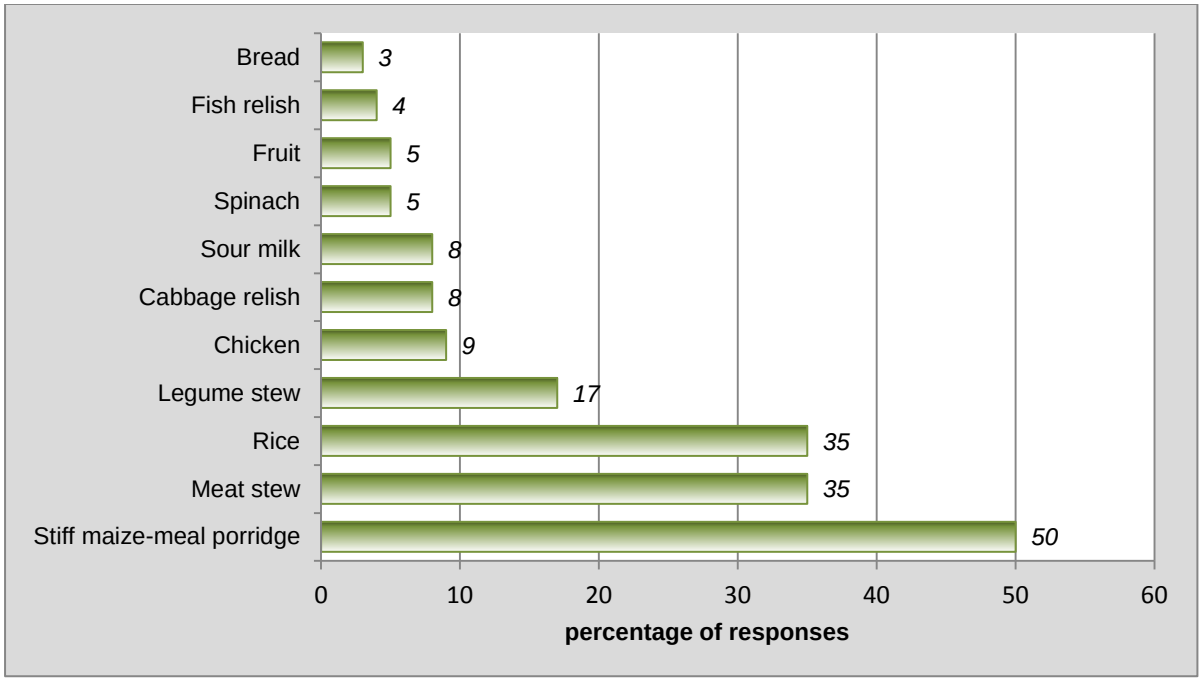


FIGURE 5.7: 24-HOUR RECALL FOR SUPPER

A variety of 23 food items were mentioned for this meal but only those food items marked by 3% and above of the responds are presented in Figure 5.7. Stiff maize meal porridge was mentioned by the majority (n = 132, 50%) followed by rice (n = 92, 35%).These were accompanied by meat (n = 91,35%), legume stew (n = 45,17%), chicken (n = 25, 9%), sour milk (n = 21, 8%), cabbage (n = 21, 8%), spinach (n = 18, 5%) or fish relishes (n = 10, 4%). Fruit and bread were eaten only by 5% and 3% of the respondents respectively. These results concerning the meal composition for supper are similar to those obtained from the closed-ended question, where stiff maize meal porridge, rice or samp accompanied by meat stew were reported as items consumed by the majority of the respondents.

The next section reports on the food and beverage consumption between meals.

5.4.2.4 Food consumed between meals

The respondents were requested to indicate if they ate or drank anything between meals. If they did, they had to indicate the foods and beverages they usually drank between meals including where they normally got the foods and why they consumed these foods.

The majority (n = 266, 90%) of the respondents indicated that they usually had something to eat between meals. The majority (n = 235, 83%) of these respondents claimed that they do

this because they were hungry, some (n = 39, 14%), said they followed their friends who ate food in-between meals and a small number (n = 8, 3%) did not give a reason for having food in-between meals. The respondents were requested to indicate where they obtained the food eaten between meals. The results are given in Table 5.3.

TABLE 5.3: SOURCES OF FOOD ITEMS CONSUMED BETWEEN MEALS

Source	Number of responses	%
Home	75	27
School tuck shop	44	16
Market stall	141	52
Shop	13	5
Total	**273**	**100**

The majority (n = 141, 52%) of the respondents bought the food items from the market stalls and some (n = 75, 27%) brought them from home. The school tuck shop was supported by a small number of students (n = 44, 16%) and the reason for this could be that most primary schools in the country do not have tuck shops but instead allow community members to set up market stalls on the school premises. The results concur with South African studies where the majority of schoolchildren bought food eaten in-between meals from stalls in the school surroundings (Feeley *et al*., 2012; Temple, Steyn, Fourie & De Villiers, A. 2011; Temple *et al*., 2006). A small number (n = 13, 5%) bought food items from shops.

The next section gives the types of food and beverages usually consumed between meals. A list of food and beverages, according to the researcher's knowledge and observation of what is usually eaten between meals was compiled. The respondents were requested to mark from the list those items they usually consumed between meals. The results of the food items usually consumed between meals are given in Figure 5.8.

The results reflect that both healthy and unhealthy foods were consumed by the respondents. The majority (n = 142, 47%) of the respondents had fruit between meals. Popcorn (n=137, 46%) was the second choice and the potato chips (n = 124, 41%), fatcakes, buns, bread rolls or scones (n = 100, 33%) and sweets or chocolate bars (n = 89, 29%). Other items that were consumed by 20% or even fewer of the respondents included peanuts (n = 59, 20%), yoghurt or cheese (n = 38, 13%), ice cream (n = 40, 13%), viennas or polony (n = 26, 9%), mealie-bread (n = 44, 16%) and rusks, biscuits or cakes (n = 40, 13%). According to the researcher's observation the food items marked by the majority of the respondents were those commonly offered at the market stalls arround the school premises and these were affordable.

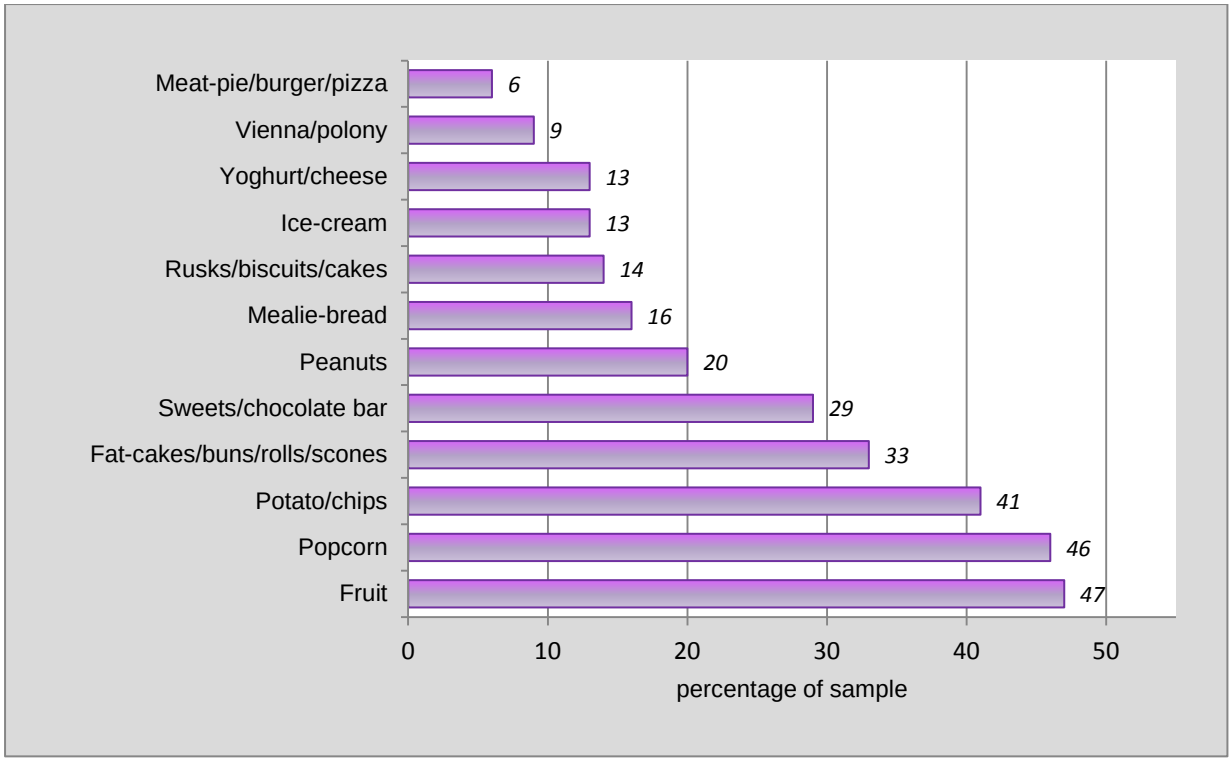


FIGURE 5.8: FOODS CONSUMED BETWEEN MEALS

Figure 5.9 gives the beverages consumed between meals.

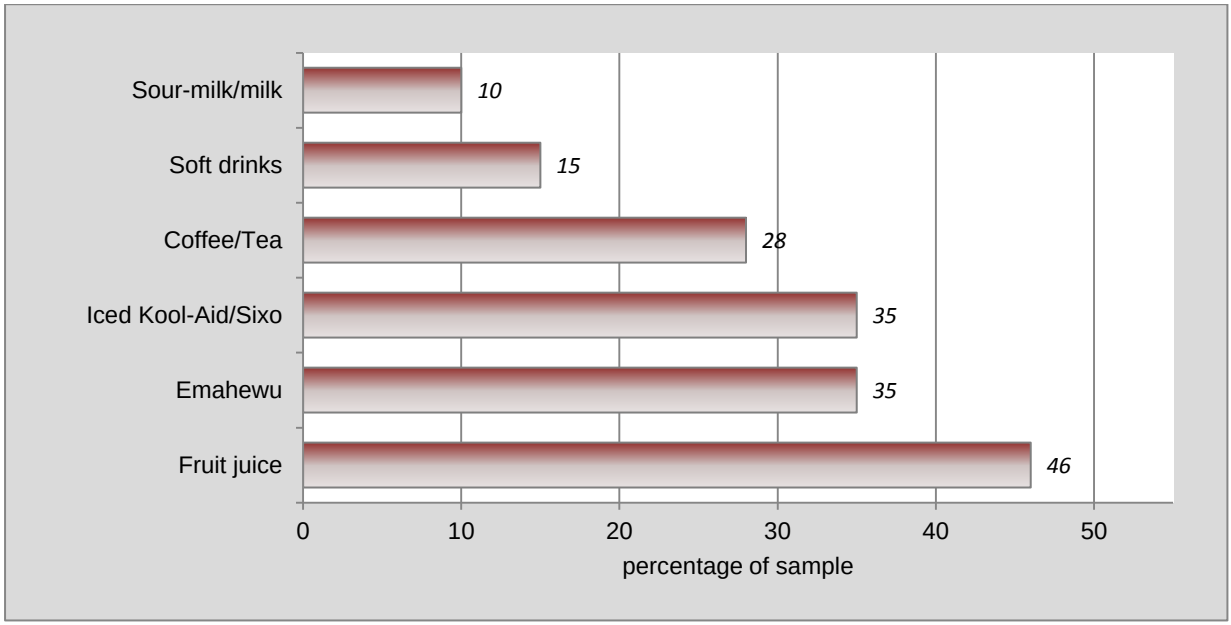


FIGURE 5.9: BEVERAGES CONSUMED BETWEEN MEALS

Fruit juice was by far the favourite beverage (n = 139, 46%), followed by *emahewu* (a fermented maize meal beverage) (n = 105, 35%) and iced Sixo[6] or Kool-Aid[7] (n =1 04, 35%). The least marked beverages were soft drinks (n = 46, 15%) and sour milk or milk (n = 31, 10%). The reason why soft drinks, sour milk or milk were marked by a small number of respondents could be that they were not sold at market stalls at schools as they were generally expensive therefore sales were low as only a few children could afford them.

Table 5.4 gives the results of the 24-hour recall record of the foods consumed between the various meals. They were grouped into bread-like items, maize and rice, savoury snacks, sweets and cakes, friut and vegetables and beverages to ease the discussion.

Almost all the respondents (275, 96%) had something to eat between 9:00 and 12:00. The majority (n = 178, 65%) of the respondents had food at school, and 31% (n = 86) ate at home and these could probably have been the children from the Mafutseni Roman Catholic School who filled the questionairein on a Monday morning so they were thinking about what they had done on Sunday.

Of the 142 respondents who consumed food between 15:00 and 17:00 the majority (n = 111, 78%) ate at home. In Swaziland primary school lessons end at 14:30 and it can be assumed that these children eat at home when they get back from school. This also applies to the food items consumed after supper where 37% (n = 112) respondents had something before bedtime at home.

The results of the 24-hour recall reflect that most respondents have food during the morning. Food items listed as being consumed the most during the morning (9:00-12:00) are similar to the results from asnwers to the closed questions.

Food items consumed between breakfast and lunch (9:00-12:00)

The results of the 24-hour recall on food consumed by the 275 (96%) respondents between breakfast and lunch reflect that the majority of these respondents (n = 44,16%) consumed popcorn followed by Jiggies or NikNaks that were consumed by 41 (15%) of the respondents. Maize meal porridge with legume stew was consumed by 24 (9%) of the respondents followed by buns, rolls or fatcakes (n = 22, 8%). Sixo or Kool-Aid and sweets or

[6]Sixo is a concentrate dilluted with water and sweetened

[7]Kool-Aid is a powder mixed with water and sweetened

chocolates were each enjoyed by 15 (5%) respondents respectively whereas bananas, apples, bread and cakes/biscuits were eaten by only 4% of the respondents.

TABLE 5.4: FOODS AND BEVERAGES CONSUMED BETWEEN MEALS AS REPORTED IN THE 24-HOUR RECALL

FOODS	9:00-12:00 N=275		15:00-17:00 N=142		After 20:00 N=115	
	Responses	%	Responses	%	Responses	%
Bread-like items						
Bread	12	4	6	4	3	3
Buns/ rolls/ fatcakes	22	8	5	4	4	3
Maize and rice dishes						
Soft porridge (mabele/ maize meal)	5	2	2	1	0	0
Maize meal porridge and meat	4	1	20	14	18	16
Maize meal porridge and bean stew	24	9	16	11	9	8
Green mealies	3	1	1	0	0	0
Maize meal porridge and vegetable relish	0	0	1	0	3	3
Rice and fish relish	2	1	4	3	3	3
Maize meal porridge	2	1	5	4	2	2
Savoury snacks						
Jiggies, Nik-Naks	41	15	22	15	7	6
Popcorn	44	16	13	9	0	0
Polony	2	1	2	1	0	0
Peanuts	5	2	6	4	1	1
Sweets and cakes						
Cakes/ biscuits	12	4	6	4	4	3
Sweets/ Chocolate	15	5	4	3	13	11
Fruit and vegetables						
Apple	12	4	**6**	4	9	8
Banana	13	5	**8**	6	8	7
Orange	10	4	**5**	4	6	5
Sweet potato	5	2	0	0	1	1
Beverages						
Tea/ coffee	2	1	1	0	4	3
Sixo/ Kool-Aid	15	5	2	1	1	1
Fruit juice	11	4	7	5	7	6
Emahewu (fermented maize meal beverage)	3	1	2	1	8	7
Emasi/ milk	10	4	2	1	1	1

Food items consumed between lunch and supper (15:00-17:00)

A smaller number (n = 142,47%) of respondents compared to the morning consumed food items in the afternoon. Jiggies or Niknaks and maize meal porridge with meat were consumed by 7% (n = 22) of the respondents followed by maize meal porridge with bean stew (n=16, 11%) and popcorn (n = 13, 9%). Bananas were consumed by 6% (n = 8) of the respondents followed by fruit juice (n = 7, 5%). The rest of the food items listed were consumed by 4% (n = 6) and less of the respondents.

Food items consumed after supper (after 20:00)

In comparison to the mornings and afternoons a smaller number (n = 115, 37%) of respondents consumed food after 20:00. Fruit was eaten by 20% (n = 23) followed by maize meal porridge with meat 16% (n = 18) of the respondents, sweets/chocolate (n = 13, 11%), maize meal porridge with bean stew (n = 9, 8%), *emahewu* (a fermented maize meal beverage) (n =8 , 7%), Jiggies or NikNaks (n = 7, 6%), fruit juice (n = 7, 6%) and tea consumed by 4% of the respondents.

The results of the closedquestions and the 24-hour recall revealed that the majority of the respondents consumed more food items at school during the morning hours, and that they obtained them from market stalls. The results on the consumption pattern of snacks by the study group concur with those by Tshiwanambi (2007) and Temple *et al.* (2006) who reported that most schoolchildren in South Africa enjoyed morning snacks and these were mainly bought at school stalls. The results of the closed-ended question were confirmed by the 24-hour recall. Popcorn, fruit and Jiggies or NikNaks were food items consumed by the majority of the respondents. However, although fruit was indicated as being consumed by 47% of the respondents in the close-ended questions only 4% of the respondents reported that they had fruit between breakfast and lunch; 6% that they did soate them between lunch and supper; and 20% of them enjoyed fruit after supper.The fruits eaten in-between meals were mainly bananas, apples and oranges. Similar fruits were mentionedin other South African studies (Matla, 2008:81; Tshiwanambi, 2007:68; Reinaerts, De Nooijer, Van de Kar & De Vries, 2006).

The results on meal pattern over weekends follows.

5.4.3 Meal pattern over weekends

The section reports on the meal pattern over weekends. Closed-ended questions were used to determine the meals usually eaten on Saturday and Sundays. The majority (n = 260,

87%) of the respondents indicated that they ate different foods over weekends. Table 5.5 presents the meal pattern of the respondents over weekends.

TABLE 5.5: MEAL PATTERN OVER WEEKENDS (N=300)

Meal pattern	Number of responses	%
Saturday: Breakfast	252	84
In-between	123	41
Lunch	245	82
In-between	90	30
Supper	257	86
Sunday: Breakfast	256	85
In-between	88	29
Lunch	232	77
In-between	83	28
Supper	263	88

Similar to the weekday meal pattern the majority of the respondents enjoyed three meals on Saturdays and Sundays. Worth noting is that fewer than half of the respondents consumed food in-between meals. The majority of the respondents indicated that they has breakfast (n = 252, 84%), lunch (n = 245, 82%) and supper (n = 257, 86%) on Saturdays. Similar results were reflected for Sundays as 85% (n = 256) respondents consumed breakfast, 77% (n = 232) lunch and 88% (n = 263) supper. Only 41% (n = 123) respondents consumed food items between breakfast and lunch and 30% (n = 90) between lunch and supper on Saturdays. A similar pattern was reported between meals on Sunday as 29% (n = 88) consumed food items between breakfast and lunch, and 28% (n = 83) between lunch and supper.

Comparing weekdays and weekend meal patterns the results reflect that more respondents usually consumed meals more regularly on weekdays than they did over weekends. A similar trend was observed on weekends and over weekend days where the supper meal was consumed by more respondents followed by breakfast and finally lunch. The results also reflect that a larger number of schoolchildren respondents had food items between meals on weekdays than over weekends.

The next section deals with the objective of how familiar the study group is with traditional foods and to what extent they consumed and preferred them.

5.5 FAMILIARITY, CONSUMPTION AND PREFERENCE RATING OF TRADITIONAL FOODS

This section reports on how familiar the study group was with selected traditional foods and dishes, to what extent they consumed these foods and dishes, and the preference ratings of each food. The listed 36 traditional food items were selected from Ogle and Grivetti (1985) and Godeffroy (1999). The selected traditional foods were those the researcher knew were commonly consumed in the Middleveld region which where the study area is located. Therefore the schoolchildren would be familiar with them. The traditional dishes selected were those the researcher had observed as commonly prepared in many Swazi homes in the rural areas.

The study sought to determine and describe how familiar the study group was with traditional Swazi foods and to what extent they consumed and preferred traditional Swazi foods. The respondents were requested to indicate from the list of traditional foods and dishes, those that they were familiar with, and if they consumed them. They also had to indicate their preference ratings for these foods. The results of the two questions were combined to get a comprehensive overview on the familiarity, consumption and preference ratings for the selected traditional foods and dishes. The results on the familiarity, consumption and preference ratings of these selected traditional foods and dishes have been grouped into four categories namely the maize and legume dishes; meat, insects and milk dishes; vegetable dishes and wild fruits, to ease the discussion.

5.5.1 Maize and legume dishes

This group included traditional Swazi dishes prepared from maize only; maize mixed with legumes and legume dishes.

Table 5.6 presents the results on the familiarity, consumption and preference ratings of maize and legume dishes.

The respondents were familiar with the majority of the listed maize and legume dishes and indicated that they ate them. With the exception of *sentswane* (maize meal and cowpeas) the majority of maize and legume dishes were familiar to ≥ 70% of the respondents. *Sentswane* (maize meal and cowpeas) was familiar to only 65% (n = 194) of the respondents.

TABLE 5.6: FAMILIARITY, CONSUMPTION AND PREFERENCE RATINGS OF SELECTED TRADITIONAL MAIZE AND LEGUME DISHES (N=300)

	Familiarity		Con-sumption		Preference rating					
Food Item					**Disliked**		**Neutral**		**Liked**	
	n	**%**	**n**	**%**	**N**	**%**	**n**	**%**	**n**	**%**
Maize dishes										
Lifutfo (Boiled fresh mealies)	239	80	214	71	43	18	46	20	144	62
Emahewu (Fermented maize meal beverage)	292	97	284	95	28	10	43	15	212	75
Sinkhwa sembila (Green mealie- bread)	250	83	220	74	36	15	42	17	164	68
Maize and legume dishes										
Sentswane (Maize meal and cowpeas)	194	65	113	38	89	47	57	30	45	24
Umgqushu (samp, beans and peanut butter)	240	80	196	65	51	23	46	20	127	56
Tinkhobe (jugo bean and maize)	275	92	248	83	44	16	80	30	143	54
Legume dishes										
Siphushe (boiled cowpeas)	250	83	211	70	48	20	75	31	122	50
Mngomeni (boiled mung beans)	221	74	160	53	73	34	65	30	77	36
Tindlubu (boiled jugo beans)	291	97	284	95	17	6	50	18	215	76
Sishibo semantongomane (Peanut relish)	209	70	167	56	60	29	59	28	89	43

5.5.1.1 Maize dishes

The group included maize dishes commonly prepared in the traditional Swazi cuisine, namely *lifutfo* (boiled fresh mealies), *emahewu* (fermented maize meal beverage) and *sinkhwa sembila* (green mealie-bread). The majority of the respondents was familiar with these dishes and indicated that they consumed them. The preference ratings indicated that *emahewu*(fermented maize meal beverage) was the most liked of these three maize dishes as 75% (n = 212) of the respondents indicated that they liked this beverage. Green mealie-

bread was liked by 68% (n = 164), and boiled fresh mealies were enjoyed by 62% (n = 144) of the respondents respectively.

5.5.1.2 Maize and legume combination dishes

The traditional maize and legume combination dishes listed under this group, included dishes prepared with maize or maize meal combined with legumes such as cowpeas, jugo beans, mung beans or sugar beans. *Sentswane* (maize meal and cowpeas) was familiar to 65% (n = 194) of the respondents, in contrast to *umngqushu* (samp, jugo beans and peanut butter) and *tinkhobe* (jugo beans and maize) that were familiar to 80% (n = 240) and 92% (n = 275) of the respondents respectively.

Sentswane (maize meal and cowpeas) was eaten by only 38% (n = 113) of the respondents and it also received a low preference rating, as only 24% (n = 45) of the respondents liked it. *Tinkhobe* (maize and jugo beans) and *umngqushu* (samp, beans and peanut butter) were consumed by 83% (n = 248) and 65% (n = 196) of the respondents respectively. The preference rating indicated that *tinkhobe* (maize and jugo beans) were liked by 54% (n = 43) and *umngqushu* (samp, jugo beans and peanut butter) by 56% (n = 127) of the responding schoolchildren.

5.5.1.3 Legume dishes

This group of traditional dishes consisted of mashed boiled legumes or relishes prepared from boiled legumes that include *tinhlumaya* (cowpeas), *mngomeni* (mung beans), *tindlubu* (jugo beans) and *emantongomane* (peanuts). The majority of the respondents were familiar with these dishes. The *tindlubu* (jugo beans) were known to 97% (n = 291) of the respondents followed by *siphushe* (cowpeas) (n = 250 83%), *mngomeni* (mung beans) (n = 221, 74%) and ground peanut relish (n = 209, 70%). *Tindlubu* (jugo beans) were consumed by the majority (n = 284, 95%) of the respondents followed by *siphushe* (cowpeas) (n = 211, 70%). *Mngomeni* (mung beans) and *emantongomane* (peanut) relish were consumed by 53% (n = 160) and 50% (n = 167) of the respondents respectively. *Tindlubu* (boiled jugo beans) dish was the most liked of the four legumes dishes as 76% (n = 215) of the respondents indicated that they liked them followed by *siphushe* (cowpeas) that was indicated as liked by 50% (n = 122) of the respondents followed by *emantongomane* (peanut) relish (n = 89, 43%) and *mngomeni* (boiled mung beans) (n = 77, 36%).

5.5.2 Meat, insects and milk

The next group of traditional Swazi foods and dishes includes meat, insects and milk. Table 5.7 reflects the results on the familiarity, consumption and preference rating of selected traditional meat, insects and milk dishes.

TABLE 5.7: FAMILIARITY, CONSUMPTION AND PREFERENCE RATINGS OF SELECTED TRADITIONAL MEAT, INSECT AND MILK DISHES (N=300)

	Familiarity		Consumption		Preference rating					
Food item					**Disliked**		**Neutral**		**Liked**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Meat dishes										
Meat stew and dumplings	234	78	217	72	16	7	52	22	165	71
Chicken heads and feet	269	90	251	81	28	11	66	25	171	64
Insects										
Tinhlwa (termites)	267	89	178	59	100	39	63	25	94	37
Emanyamane (caterpillars)	263	88	170	57	113	46	44	18	90	36
Milk dishes										
Emasi emabele (sour milk and sorghum)	257	86	231	77	36	15	40	16	171	69

5.5.2.1 Meat dishes

The meat group included the two meat dishes namely meat stew and dumplings and chicken heads and feet. The majority of the respondents were familiar with both dishes and consumed them. Chicken heads and feet were familiar to 90% (n = 269) of the respondents and meat stew with dumplings was familiar to 78% (n = 234) of them. Chicken heads and feet were consumed by 81% (n = 251) of the respondents and meat stew and dumplings by 72% (n = 217) of them. Both the chicken heads and feet and meat stew with dumplings received a high preference rating as 64% (n = 171) and 71% (n = 165) of the respondents liked them respectively.

5.5.2.2 Insects

This group comprised two insects namely *tinhlwa* (termites) and *emanyamane* (caterpillars). *Tinhlwa* (termites) and *emanyamane (*caterpillars) were familiar to 89% (n = 267) and 88% (n = 263) of the respondents respectively. There were 59% (n = 178) of the respondents that consumed *tinhlwa* (termites) and 57% (n = 170) that consumed *emanyamane* (caterpillars). Both dishes received low preference ratings as *tinhlwa* (termites) were liked by only 37% (n = 94) and *emanyamane* (caterpillars) 36% (n = 90) of the respondents respectively.

5.5.2.3 Milk dishes

The traditional Swazi dish, *emasi emabele* prepared from boiled crushed sorghum and sour milk was familiar to the majority (n = 257, 86%) of the respondents, consumed by 77% (n = 231) and liked by 69% (n = 171) of the respondents.

5.5.3 Vegetable dishes

The vegetable dishes have been grouped into pumpkin and gourds, leafy, heart, cap or stem, and root vegetables. The results on these selected traditional vegetable dishes are given in Table 5.8.

5.5.3.1 Pumpkin and gourds

This group of traditional dishes consisted of these dishes: *sijeza* (pumpkin/melon porridge), *sentangabomu* (green maize, gourd and peanuts), *sishibo selitsanga* (pumpkin and peanuts relish), *emaselwa* (gourd) and *tincheke* (boiled pumpkin). These dishes were familiar to ≥ 71% of the respondents and consumed by ≥ 72% except for *sishibo selitsanga* (pumpkin and peanuts relish) that was eaten by only 54% (n = 163) of them. This group of dishes was, however, liked by ≤ 57% of the respondents, with *sishibo selitsanga* (pumpkin relish) that was liked by only 26% (n = 73).

5.5.3.2 Leafy vegetables

This group of vegetables were *umbhidvo wetintsanga* (young pumpkin, pumpkin leaves and peanut powder), *inkhakha* (bitter gourd leaves) and *chuchuza* (black jack leaves). These dishes were familiar to ≥ 74% of the respondents and consumed by ≥ 61% of them. These dishes were, however, liked by ≤36% of the respondents.

5.5.3.3 Heart, cap or stem vegetables

This group included *emahala* (aloe saponaria) where the heart of the plant is boiled until soft then salted and eaten, and *emakhowe* (mushrooms) that have their stem and cap made into

a relish. Both dishes were familiar to ≥ 88% and consumed by ≤ 62% of the respondents, and liked by ≤ 38% of the respondents.

TABLE 5.8: FAMILIARITY, CONSUMPTION AND PREFERENCE RATINGS OF SELECTED TRADITIONAL VEGETABLE DISHES (N=300)

	Familiarity		Consumption		Preference rating					
Food items					**Disliked**		**Neutral**		**Liked**	
	n	**%**	**N**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Pumpkin and gourds										
Sijeza (pumpkin/melon porridge)	273	91	224	75	83	31	78	29	109	40
Sentangabomu (green maize, gourd and peanuts)	256	85	215	72	51	21	61	25	134	54
Sishibo selitsanga (pumpkin and peanut relish)	214	71	163	54	70	34	61	30	73	26
Emaselwa (gourd)	273	91	245	82	43	16	70	27	148	57
Tincheke (boiled pumpkin)	265	88	239	80	50	19	78	30	131	51
Leafy vegetables										
Umbhidvo wetintsanga (young pumpkin, leaf and peanut powder)	221	74	182	61	60	27	82	37	78	35
Inkhakha (bitter gourd leaf) relish	275	92	208	69	117	44	73	27	76	29
Chuchuza (black jack leaf relish)	278	93	228	76	81	30	91	34	95	36
Heart, cap or stem vegetables										
Emakhowe (Mushrooms)	267	89	195	65	97	39	56	23	95	38
Emahala (aloe)	264	88	154	51	119	48	62	25	66	26
Root vegetables										
Bhatata (sweet potato)	299	100	297	99	8	3	26	9	259	88
Emathapha (taros)	263	88	218	73	50	17	74	29	129	51

5.5.3.4 Root vegetables

Bhatata (sweet potatoes) and *emathapha* (taros) were the two vegetables included in this group. All the respondents were familiar with *bhatata* (sweet potato) and 99%, (n = 297) indicated they consumed it. It also received a high preference rating as it was liked by 88% (n = 259) respondents. *Emathapha* were familiar to 88% (n = 263) and consumed by 73% (n = 218) of the respondents, however, only 51% (n = 129) liked them.

5.5.4 Traditional wild fruits

Table 5.9 gives the results on the familiarity, consumption and preference rating of selected traditional wild fruits.

TABLE 5.9: FAMILIARITY, CONSUMPTION AND PREFERENCE RATINGS OF SELECTED TRADITIONAL WILD FRUITS

	Familiarity		Consumption		Preference rating					
Food item					**Disliked**		**Neutral**		**Liked**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Wild Fruits										
Emantulwa (wild medlar)	291	97	278	93	16	6	25	9	242	85
Tineyi (berries)	272	91	255	85	27	10	34	13	200	77
Umkhwakhwa (black monkey orange)	262	87	191	64	96	39	64	26	87	35
Inkhokhokho (large leaf rock fig)	203	68	95	32	126	63	44	22	31	15
Emakhiwa (figs)	272	91	190	63	106	41	60	23	94	36
Emahlala (spiny monkey orange)	212	71	132	44	87	42	49	24	71	34
Tincozi (Water berry)	280	93	271	90	16	6	18	7	239	88
Emagwava (guavas)	294	98	292	97	12	4	12	4	268	92
Emanumbela (Transvaal milk plant)	217	72	161	54	61	29	61	29	90	42

Wild fruits included in this group were those the researcher knew were commonly found in the Mafutseni area. These included *emantulwa* (wild medlar), *tineyi* (berries), *umkhwakhwa* (black monkey orange), *inkhokhokho* (large leaf rock fig), *emakhiwa* (figs), *emahlala* (spiny monkey orange), *tincozi* (water berry), *emagwava* (guavas) and *emanumbela* (Transvaal milk plant). The guava is not an indigenous fruit, but grows wild in all regions of the country. Most of the fruits were familiar to ≥ 72% of the respondents and *inkhokhokho* (large leaf rock fig) was familiar to 68% (n = 203) of the respondents.

Ligwava (guava), *emantulwa* (wild medlar), *tincozi* (water berry) and *tineyi* (berries) were consumed by ≥ 85% of the respondents and *umkhwakhwa* (black monkey orange), *emakhiwa* (figs), *emanumbela* (Transvaal milk plant),*emahlala* (spiny monkey orange) and *inkhokhokho* (large leaf rock fig) were consumed by ≤ 64% of the respondents.

The preference ratings for *inkhokhokho* (large leaf rock fig), *emahlala* (spiny monkey orange) and *umkhwakhwa* (black monkey orange) indicated that they were liked by ≤ 42% of the respondents. Fruit that were liked by the majority of the respondents were the ones with a sweet taste and these included *ligwava* (guava), *emantulwa* (wild medlar), *tincozi* (water berry) and *tineyi* (berries).

In summary the majority of fruits listed in the questionnaire were known to the respondents. Fruit consumed and liked by the majority of the respondents were those that have a sweet taste such as *tineyi* (berries), *tincozi* (water berries), *ligwava* (guavas) and *emantulwa* (wild medlar). The fruit consumed and disliked by the majority of respondents were those that have a sour taste and or an after-taste, and these include *inkhokhokho* (large leaf rock fig), *emahlala* (spiny monkey orange) and *emanumbela* (Transvaal milk plant).

The results on the different traditional foods and dishes listed reflect that the majority of the respondents were familiar with them. Sweet potato, cultivated in all the regions and available in market stalls all year round was familiar to all (100%) the respondents. Other food items and dishes that ≥ 97 % of respondents were familiar with included *ligwava* (guava), *emahewu* (fermented maize meal beverage),*tindlubu* (jugo beans) and *emantulwa* (wild medlar). These foods were also consumed and liked by the majority of the respondents.

Maize and legume dishes familiar to ≥ 65% of the respondents included *lifutfo* (boiled fresh mealies), *umngqushu* (samp, beans and peanuts), *sinkhwa sembila* (green mealie-bread), *siphushe* (boilded cowpeas),*tinkhobe* (jugo beans and maize), *tindlubu* (boiled jugo beans) and *emahewu* (fermented maize meal beverage). However, only *tinkhobe* (jugo beans and maize), *tindlubu* (boiled jugo beans) and *emahewu* (fermented maize meal beverage) were consumed by ≥ 92% of the respondents. *Emahewu* (fermented maize meal beverage) and

tindlubu (boiled jugo beans) were the two dishes preferred by 75% to 76% of the respondents respectively. These results reflect that these two traditional dishes were the most familiar, consumed and preferred in this group of dishes. *Sentswane* (maize meal and cowpeas) was the least consumed and preferred dish in this category, as 38% and 24% of the respondents respectively indicated that they consumed and liked it.

Traditional Swazi meat, insect and milk dishes selected in this category were all familiar to ≥ 78% of the respondents. The chicken heads and feet dish was familiar to 90% of the respondents and consumed by 81% of the respondents, and was the dish consumed by the majority of respondents in this category.

Traditional vegetable dishes were all familiar to ≥ 71% of the respondents and consumed by ≥ 70% of the respondents. With the exception of *sishibo selitsanga* (pumpkin and peanuts relish) and *emahala* (aloe species) the other vegetable dishes were consumed by ≥ 55% of the respondents. Generally all these dishes were not highly preferred except for *bhatata* (sweet potato) that received a preference rating of 88%.The majority of the wild fruits were familiar to ≥ 69% the respondents and consumed by ≥ 63% of them, except for *inkhokhokho* (large leaves rock fig) that was consumed only by 32% with *emahlala* (spiny monkey orange) and *emanumbela* (Transvaal milk plant) that were consumed by only 44% and 54% of the respondents respectively. Only *emantulwa* (wild medlar), *tineyi* (berries), *tincozi* (water berries) and *ligwava* (guavas) were the fruits that received high preference ratings as they were liked by ≥ 77% of the respondents.

The next section deals with the results on the foods consumed and purchased at school. This includes where the food consumed at school was obtained from and what was usually bought during breaks at school and the school meal programme.

5.6 THE SCHOOL FOOD ENVIRONMENT

This section deals with the objective on the food consumption in the school environment. Data was collected on the foods consumed and purchased at school and the school meal programme offered by the Ministry of Education. The results of the foods consumed and purchased at school follow.

5.6.1 Foods consumed and purchased at school

The respondents had to indicate where they obtained the foods they consumed during schools break times. These results are given in Table 5.10.

TABLE 5.10: FOOD CONSUMED DURING SCHOOL BREAKING TIMES (N=300)

Lunch box from home	n	%
Yes	129	44
No	166	56
Buy food		
Yes	260	88
No	34	12

Lunch boxes were brought to school by 44% (n = 129) of the respondents and the majority (n = 260, 88%) indicated that they brought money to purchase food items at school. A similar trend was reported amongst schoolchildren in South Africa where the majority of children also purchased snacks at school depending on the pocket money available (Feeley *et al*., 2012; Abrahams *et al*., 2011; Temple *et al*., 2006).

In Swaziland most primary schools do not have tuck shops; however, ladies from the local community obtain permission from the principal to sell food items of their own choice just outside the school yard. The common food items on offer include oranges, bananas, apples, popcorn, iced Kool-Aid, biscuits, sweets, fat-cakes, buns, NikNaks[1], Jiggies[2] and peanuts. A makeshift table is set up by each lady where the different food items are displayed. During the morning break the schoolchildren are free to visit the market stalls to purchase food items of their choice. In some of the schools the schoolchildren are allowed to go out of the school premises to where these ladies are displaying and selling the food items. The schoolchildren are allowed to pick their food items and pay the lady. In schools where children are not allowed to leave the school premises during break times, the ladies pass the food items over the fence to them. The schoolchildren call out the food items they wish to purchase and pay for them after they have been handed to them.

Figure 5.10, 5.11 and 5.12 display the food items sold to the schoolchildren within the school environment.

[1]NikNaks — flavoured maize corn snacks produced by Simba Company.

[2]Jiggies — flavoured snacks produced by Carnival Food.

FOOD ITEMS SOLDINSIDETHE SCHOOL GROUNDS

FIGURES 5.10 & 5.11: A VARIETY OF SNACKS (NIKNAKS & JIGGIES) AND CONFECTIONERY SOLD INSIDE THE SCHOOL GROUNDS

FIGURE 5.12: FOOD ITEMS SOLD OUTSIDE THE SCHOOL GROUNDS

A list of food items, according to the researcher's knowledge and observation of what is sold in the school environment was compiled. The respondents were requested to mark from the listed items, those they usually bought during the break times. The results of the food items bought during school break times are presented in Figure 5.13.

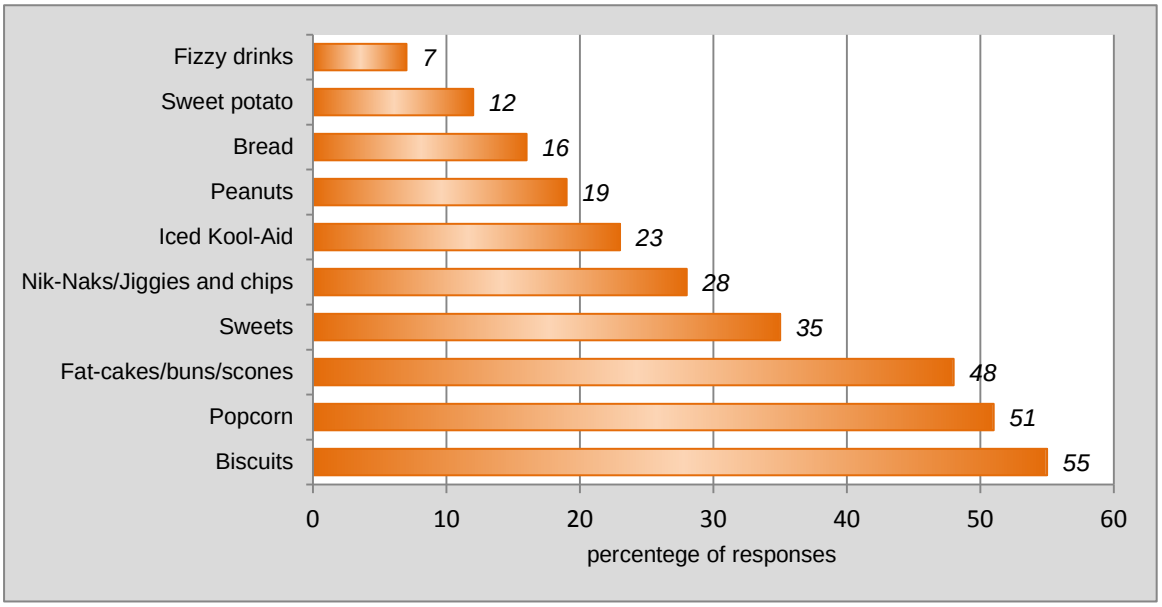


Figure 5.13: FOODS BOUGHT DURING SCHOOL BREAK TIMES

The most frequently marked items were biscuits (n = 164, 55%), popcorn (n = 154, 51%), fat-cakes, buns or scones (n = 143, 48%), sweets (n = 104, 35%) and chips (n = 85, 28%). The least purchased food items were soft drinks (n = 21, 7%), sweet potato (n = 36, 12%), bread (n = 47, 16%), peanuts (n = 57, 19%) and iced Kool-Aid (n = 69, 23%). These were also the typical food items consumed in-between meals on weekdays by the majority of the respondents. Tshiwanambi (2007:89, 114), however, reported that sweets were the most popular snack of children in Venda, South Africa, followed by maize snacks, fruit and biscuits.

5.6.2 The school meal programme

In Swaziland the school meal programme supported by the Swaziland government is managed and administered through the Ministry of Education to provide one meal a day to schoolchildren. The general objective of school meal programmes worldwide, is to improve children's, ability to learn, their general health and school attendance (Acham *et al*., 2012; Jomaa *et al*., 2010; Galloway, *et al*., 2009; Tshiwanambi, 2007:116; Kallman, 2005:7; Van Stuijvenberg, 2005; Kain *et al*., 2001).

The Swaziland government provides public schools with basic equipment and ingredients to prepare school meals, namely, two big three legged cast iron pots, maize meal and or samp, rice, beans and cooking oil. Parents each pay a fee ranging between R200- R300 a year for each child that goes into the fund that pays the salary of the person who prepares the meal and to supplement the basic ingredients provided by the Swaziland government. Schools purchase the other ingredients required to prepare the meals. Although, the Ministry of Education provides guidelines on menus, it does not control the planning and implementation of the school meal programme.

The menus provided as a guideline are presented in Table 5.11.

Table 5.11: SCHOOL MEAL MENUS

DAY	MENU
MONDAY	Samp and legume soup*(beans/peas, onions, cooking oil, powdered soup)
TUESDAY	Porridge and vegetable soup (cabbage, carrots, potatoes, onions, cooking oil, powdered soup, peanut butter)
WEDNESDAY	Rice and legume soup (beans/peas, onions, cooking oil, powdered soup)
THURSDAY	Rice and vegetable soup (cabbage, carrots, potatoes, onions, cooking oil powdered soup, peanut butter)
FRIDAY	(Samp, beans and peanut butter) *umngqushu*
* Soup – It is a thick stew-like relish prepared from legumes or cultivated vegetables	

5.6.2.1 Preparation and serving of school meals

The preparation of the school meals is done in a kitchen built by the parents. The Swaziland government stipulates this before introducing the school meal programme at a school. The head teacher, assisted by the deputy head teacher and the school committee nominate parents to prepare and serve the meals in the school kitchen. These parents are paid a certain gratuity as a token of appreciation. They are also provided with overalls and closed shoes as protective clothing. Some schools offer soft porridge in the morning before classes resume and another meal between 10:00 and11:00. The meals usually consist of maize meal porridge or samp and a legume soup usually bean soup or a one-pot meal such as *umngqushu* (samp, beans and peanut butter).

The food is dished into 20 litre plastic buckets and handed to the class prefects who are responsible for dishing out the food to their class mates. A standard scoop or 300ml mug is used to portion the food and the dishing out is monitored by the class teacher. The school children are provided with plates that are controlled by the person who prepares the

FIGURE 5.14: A PREFECT SERVING FOOD TO A CLASS MATE

meals. After each meal they are washed and stored in the kitchen. The schoolchildren are provided with a basin of water where the plates are washed before being given back for storage.

Although the majority (n = 187, 65%) of respondents' meals are served to them by the class prefects, a small number (n = 41, 14%) indicated that they each scooped their food from the bucket and 7% (n = 21) ate from same bucket which results in some not getting any food to eat. It therefore seems if some children could end up not receiving any food from the school meals offered. Figure 5.14 shows a prefect (on the left) dishes up a portion to a classmate (on the right) in the classroom.

In some schools the food is dished out to the children by the person responsible for the food preparation as shown in Figure 5.15.

FIGURE 5.15: FOOD SERVED BY THE FOOD PREPARER

The researcher's observation at the three participating primary schools was that the meals were prepared and served to all the schoolchildren during the mid-morning break (10.30-11.00). The menu offered was mostly *umngqushu* (samp and bean dish flavoured with peanut butter) cooked into a soft consistency to make it easy to eat with the hands.

Figure 5.16 is an example of the *umngqushu*.

FIGURE 5.16: *UMNGQUSHU*

5.6.2.2 Participation and satisfaction with meals served

The respondents were asked if they participated in the school meal programme, and if so to give their perception on the satiety of the meals offered by the school. Table 5.12 indicates the responses on the participation and the respondents' perceptions on the satiety of the meals served at school.

The majority of the respondents (n = 261, 90%) indicated that they participated in the school meal programme and 73% (n = 204) were satisfied with the satiety value of meals served to them. There were 61 (21%) respondents who indicated they were not satisfied and 16 (6%) were not sure of how satisfied they were after eating the meal.

TABLE 5.12: PARTICIPATION AND PERCEPTION OF SCHOOL MEALS (N=300)

Participation	Responses	%
Yes	261	90
No	29	10
Perception of satiety of school meals		
Yes	204	73
No	61	21
Not sure	16	6

The next section presents the results on the menu preferences of the respondents.

5.6.2.3 Menu preferences

The respondents had to indicate how much they liked the menu options prepared and served to them. They could mark more than one of the menu options. The results on the preferred menu options are given in Figure 5.17.

The most liked dish on the menu was the rice and legume soup (n = 167, 56%) closely followed by the second favourite, samp and legume soup (n = 157, 52%). Rice and vegetable soup (n = 54, 18%), samp and vegetables soup (n = 29, 10%) were next showing a preference for rice and samp rather than stiff maize meal porridge and legume soup (n = 22, 7%) and stiff maize meal porridge and vegetable soup, the least popular by far. Worth noting is that they liked the menu options containing rice more than those containing maize. The vegetable soup menus offered were indicated as the least liked of all the menu items. The menus offered by the school meal programme consisted mainly of maize dishes served with legumes or vegetables soups and no fruits or animal protein based foods were included.

5.6.3 Evaluation of the school food environment

The fourth objective of the study was to evaluate the school food environment in order to make recommendations to improve the school food environment policy formulations.

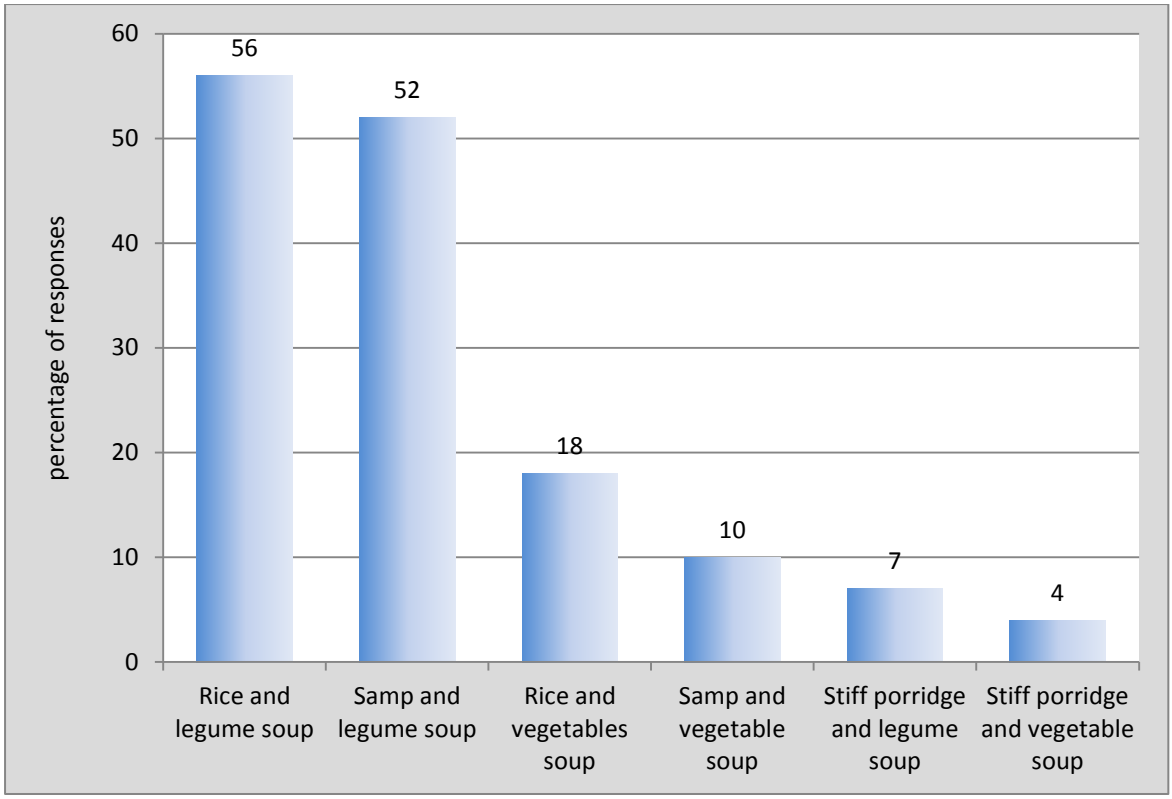


FIGURE 5.17: MENU PREFERENCE

An adequate food supply is important during childhood as it promotes physical, cognitive, social and emotional growth and development. It prevents diet related disorders, stunted growth, poor academic performance and reduces chances of developing chronic diseases in adulthood (Margetts, 2009; Angell, 2008; Oogarah-Pratap, 2007; Burgess-Champoux *et al*., 2006; Mooney *et al*., 2004; Taylor *et al.,* 2004). On the other hand, as children grow up and develop they are exposed to many environmental influences that affect their food choices. The school environment is where children are often exposed to energy dense foods that are cheap and thus affordable but less nutritious. This has a negative impact as children tend to become overweight resulting in social, psychological and health problems (Diaz *et al*., 2009; Oogarah-Pratap & Heerah-Booluck, 2005).

All public primary schools in Swaziland classes start at 8:00. The lower grades (one and two) have classes only up to 12:00and the higher grades (three to seven) have classes up to 14:30.This implies that many children need to have their breakfast as early as 06:00 and the next meal is taken at 10:00 – 10:30 during the first school break which can be four or more hours later. It is necessary that children are provided with nutritious food between breakfast and lunch to meet their nutrient needs and enhance their concentration for better learning. The school meal programme therefore should be designed in such a manner that it provides

a substantial healthy meal or snacks to the children before classes resume after the mid-morning break, to enhance their concentration for quality learning.

The results of the study reflect that the school meals offered were mainly carbohydrate base served with legume and vegetable combined dishes as accompaniments. There were no fresh fruit and vegetables and animal-based protein foods offered on the school meal menus. On the whole, these meals do not contribute to healthy eating. It is important that schools participate in the development of health promotion activities such as enhancing access to adequate, nutritious and affordable food to improve the health of the learners and to instil positive attitudes and behaviours that will benefit their current and future health (Abrahams *et al*., 2011), such as eating fresh fruit and vegetables daily. In Swaziland there is currently no policy by the Department of Education that controls the types of food made available to schoolchildren in and around school. This includes the food brought from home by the children, those sold by the vendors and tuck shops as well as the school meals.

The food items on display by the vendors were less nutritious options such as sweets and biscuits. Such food items tempt the schoolchildren as they are usually cheap. To implement a policy to promote healthy eating effectively, healthy food items have to be available in the school environment. Activities for learners could, for example, be to participate in the planning, cultivation and maintaining of a school vegetable garden. These vegetables could then be used as ingredients in dishes on the school meal menus. Not only will these vegetable gardens contribute to improve the menus provided, but will also help to reduce the costs of the school meals. Children could, through these activities, not only learn how to cultivate vegetables, but would also have the opportunity to learn about healthy eating and the value of fresh vegetables and fruit in their daily diets. This could serve as motivation to plant their vegetables at home. The availability of fruit at affordable prices in tuck shops could be another way of promoting healthy eating.

5.7 CONCLUSION

This chapter presented the results and discussion on the study group's current eating patterns on weekdays and over weekends. It also focused on the composition of their meals on weekdays and identified foods used as snacks and beverages. How familiar the study group was with traditional foods, the extent to which they consumed and preferred these dishes was described. The nature of the school food environment was the final aspect covered, and it was evaluated in order to make recommendations for improving policy formulation concerning the school meal programme. The next chapter frames a conclusion to the study and evaluates it, making recommendations for further research.

CHAPTER 6:

CONCLUSIONS AND RECOMMENDATIONS OF THE STUDY

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS OF THE STUDY

6.1 INTRODUCTION

This chapter gives the conclusions to the objectives of the study that addressed its main purpose which was to focus on the food habits and the school food environments of primary schoolchildren aged 11-15 years in Manzini Swaziland. The significance, evaluation and recommendations of the study are also presented together with suggestions for future research. In determining and describing food habits the eating patterns and meal composition on weekdays and over weekends and the type of foods and beverages used as snacks were investigated. The familiarity, consumption and preference rating of selected traditional dishes were used to determine to what extent the study group was familiar with them and consumed traditional Swazi food.

The data gathered on the school environment included information on the school meal programme, the menus offered, the level of participation of the respondents in it, their menu preferences, the serving methods and presentation of these meals. This enabled the researcher to determine and describe the extent to which the study group participated in the school meal programme. The information on foods consumed and purchased during the school day enabled the researcher to determine and describe the snacking trends and the role played by the school environment in the formation of healthy food habits. The conclusions on each formulated objective follows.

6.2 CONCLUSIONS

6.2.1 Conclusions on the current eating patterns of primary schoolchildren aged 11-15 years (objective 1)

The objective included sub-objectives related to information on the study group's eating patterns that dealt with the number of meals eaten on weekdays and during the weekend and the composition of these meals.

The majority of the respondents consumed three meals a day with in-between snacking during weekdays when they were at school. These results concur with other studies amongst the different ethnic groups in South Africa where three meals a day with in-between snacking has become the norm (Matla, 2008:72; Tshiwanambi, 2007:82; Temple *et al*.,

2006; Viljoen *et al*., 2005; Kgaphola & Viljoen, 2000). Snacking in-between meals occurred more during school days, which imply that this practice seemed to be influenced by the ready availability of snack foods in the school environment during school days. The results on the meal pattern on weekdays and over weekends confirmed that supper was consumed by the majority (98%) of the respondents followed by breakfast (93%). These findings were similar to reports by South African studies where it is argued that the reason for the high consumption rate of these meals is that they are those that were more likely to be shared with family members at home (Feeley *et al*., 2012; Abrahams *et al.,* 2011; Tshiwanambi, 2007:82; Temple *et al.,* 2006). Various studies confirm that family meals are associated with healthier food choices and that the presence of parents during meal times tend to promote healthier eating practices which, in turn, may contribute to better food habits and ultimately enhance the nutritional quality of the children's' diets (Hoy & Childers, 2009; Videon & Manning, 2003). The weekend meal pattern was similar to the weekday meal pattern although only a small number of respondents indicated that they ate food in-between meals. This could be attributed to the presence and availability of other foods during school days.

The results on the weekday meal composition of the respondents confirmed that their meals were based on carbohydrate-rich foods such as bread, soft maize-meal porridge and stiff maize-meal porridge. Although relishes prepared from vegetables, legumes, meat or a combination of these, were included in meals, a limited and/or infrequent consumption of fresh vegetables, fruits and protein-based foods were reported.

For the majority of the respondents breakfast was a bread-based meal with tea. The most consumed foods for breakfast were bread and tea, or soft porridge prepared from maize meal or *mabele.* These results concur with South African studies who also found that bread, tea and maize-meal porridge were the most popular breakfast foods consumed (Oosthuizen *et al*., 2011; Tshiwanambi, 2007:84, MacIntyre *et al., 2002).* The low intake of protein-rich foods was apparent at breakfast except for eggs, which were eaten by some (21%) of the respondents. Fruit was found to be less frequently included for breakfast which could possibly be due to limited availability of fruit at home.

The food items consumed by the study group in-between meals included fruit (banana, apples and oranges), Jiggies or NikNaks and popcorn. The beverages consumed by the respondents included fruit juice, *emahewu* (fermented maize-meal beverage) and iced Kool-Aid or Sixo. That these foods and beverages were consumed in-between meals is a result that concurs with findings of South African studies (Feeley *et al.,* 2012; Tshiwanambi, 2007:80; Temple *et al.,* 2006).

Stiff maize meal porridge, rice and samp were the main cereal dishes consumed for lunch and supper accompanied by a meat stew, legume stew or vegetable relishes. Although there was a relatively frequent consumption of meat which is similar to results reported in South African studies on rural communities (Matla, 2008:100; Tshiwanambi; 2007:83; Ladzani, Steyn & Nel, 1992), in this study only 25% of the respondents indicated that they had a meat stew as part of their midday and for 35% it was part of the evening meal. Legume stew was reported as consumed more often as part of lunch whereas chicken was more often part of the supper menu. The staple food, maize-meal porridge, was still an important dish and is frequently included in the menu of the majority of the respondents. A major concern is the low consumption of fresh fruit and vegetables that was apparent at all these meals. These findings are in line with other studies (Matla, 2008:100; Oogarah-Pratap, 2007; Tshiwanambi, 2007:88; Kgaphola & Viljoen, 2000). The reason for the low consumption of fruit and vegetables could possibly be related to factors such as availability and affordability.

This study confirms that the food habits of the Swazi people continue to change. The results show clearly that, as the Swazi people become more urbanised, a meal pattern of three meals a day is adopted. The meal composition for breakfast, lunch, supper and in-between meals had only changed slightly from the traditional Swazi meal composition to one characterised by a more frequent inclusion of modern western-orientated foods (Kgaphola & Viljoen, 2000; Ogle & Grivetti, 1985). Although stiff maize meal porridge remains the staple food of the majority, a more frequent inclusion of meat in the form of meat stew at lunch and/ or supper and food items such as bread, rice, chicken, including chicken offal products, and snack foods were noted in this study. These items are more convenient to use as they are not only easy to prepare, but are readily available in most urban shops and are relatively affordable.

6.2.2 Conclusions on familiarity, frequency of consumption and preference rating for selected traditional foods and dishes (objective 2)

The second objective of the study dealt with how familiar the study group was with selected traditional Swazi foods, and dishes prepared from them, in order to determine to what extent the consumption of these foods continues in the peri-urban areas of Swaziland. Sub-objectives relating to the frequency of consumption and the preference ratings of these foods were also formulated. The results showed that most of the listed selected traditional foods and dishes were familiar to the respondents. However, although these foods were familiar, and consumed by more than half of the respondents, not all of them were by some in the study group.

Traditional maize and legume dishes were familiar and consumed by ≥ 65% of the respondents. The maize and legumes were grouped in the questionnaire as maize, maize and legume combination dishes, and legumes. The traditional maize dishes *lifutfo* (boiled fresh mealies), e*mahewu* (fermented maize-meal beverage) and *sinkhwa sembila* (green mealie bread,) continued to be consumed by the majority of the respondents and were likewise rated as high preference foods by the majority. This serves as confirmation that maize and dishes prepared with maize, continue to be used as a staple food and are liked. Of the three legume and maize combination dishes, namely *sentswane* (maize-meal and cowpeas), *umngqushu* (samp, beans and peanut butter) and *tinkhobe* (jugo beans and maize), the maize and cowpea combination dish, although familiar to the respondents, was not consumed by the majority and neither liked, as it received a low preference rating. However, the other two combination dishes, *umngqushu* (samp, beans and peanut butter) and *tinkhobe* (jugo beans and maize) were liked by more than half the respondents. Similar to maize, the legume dishes, as part of the Swazi cuisine, continue to be consumed specifically jugo beans and cowpeas. Although cowpeas in combination with maize-meal were not liked by the study group, more than half of the respondents indicated that they liked boiled cowpeas on their own.

Meat dishes such as chicken heads and feet, *emasi emabele* (sour milk and boiled sorghum) and meat stew and dumplings were consumed by more than 70% of the respondents. Chicken heads and feet, although consumed by 81% of the respondents, were only liked by 64% of them. A possible explanation for this could be that chicken heads and feet are amongst the cheapest sources of protein available in the retail shops and, compared to other meats, are more affordable for low-income households; this could contribute to including them more often as part of meals.

The insects listed were *tinhlwa* (termites or flying ants) and *emanyamane* (caterpillars). Although familiar to the majority of the respondents, they were consumed by <60% of the respondents, and disliked by nearly 40%. This could be attributed to changes in the natural environment that resulted in some insect species being not as easily available for consumption as was the situation in earlier times (Ogle & Grivetti, 1985; Jones, 1963:70).

All the listed vegetables dishes were familiar to ≥71% of the respondents and more than half of them indicated that they consumed vegetables. In comparison to the leafy, heart, cap and stem vegetables, the pumpkins and gourds, as well as the root vegetables, were liked more, as 50% or more of the respondents indicated that they either liked or allocated a neutral preference rating to these vegetables. Sweet potatoes were consumed by 99% of the respondents and liked by 88% of them. Other vegetables consumed by more than 70% of

the respondents were *emaselwa* (gourd), *tincheke* (boiled pumpkin), *chuchuza* (black jack relish) *sijeza* (pumpkin/melon porridge), *emathapha* (taros) and *sentangabomu* (gourd, maize and peanuts).The leafy vegetables as well as the heart, cap and stem vegetables were only liked by ≤36% of the respondents, Most of the wild fruits included in this study were familiar to ≥68%of the respondents. Fruits consumed and liked by the majority of the respondents were those with a sweet taste such as *tineyi* (berries), *tincozi* (water berries), *emagwava* (guava) and *emantulwa* (wild medlar). The fruit consumed by fewer than 70% of the respondents and liked by less than 50% were those with a sour taste or an after-taste, and these include *inkhokhokho* (large leaf rock fig), *emahlala* (spiny monkey orange), *emanumbela* (Transvaal milk plum), *umkhwakhwa* (black monkey orange) *and emakhiwa* (figs).

From the results of this study it is apparent that traditional foods and dishes are still known and consumed by the majority of the children in Manzini, Swaziland. Children become familiar with food they are constantly exposed to in their social environment and they tend to develop a liking for these foods (Hunt *et al*., 2011; Mattsson & Helmersson, 2007). It is possible that the reason why some of the traditional foods and dishes were not liked by the respondents is that these are either no longer prepared or not frequently prepared in their homes. This could possibly be attributed to either the ingredients not being readily available any more, or that the food preparers in some households might lack the knowledge or skills needed to prepare them (Weinberger & Swai, 2006; Ogle & Grivetti, 1985).

6.2.3 Conclusions on the school food environment (objective 3)

The third objective dealt with the study group's food consumption in the school environment. This objective not only addressed the food consumed and purchased at school but also investigated the school meal programme regarding how it was implemented and managed by the participating primary schools.

Most primary schools in Swaziland do not have tuck shops, but they do allow vendors who usually consist of women from the community to sell food and snack foods either just outside or inside the school premises to the learners. The majority (88%) of the respondents brought money to school to purchase items from these vendors and only 44%indicated that lunch boxes were brought to school. A similar trend was reported in South African studies where the majority of schoolchildren also purchased snacks at school depending on the pocket money available (Feeley *et al*., 2012; Abrahams *et al.,* 2011; Temple *et al.,* 2006). The type of food items consumed were biscuits, popcorn, fat-cake, buns or scones, sweets and Jiggies or NikNaks. Although fruit was offered by some of the vendors, most of the items

available from them were snack-type foods. Most of these food items could be described as unhealthy food choices as they were energy dense foods high in sugars and fats.

In Swaziland the school meal programme is supported by the Swaziland Government and is controlled and managed by the Ministry of Education. The aim of the programme is to provide one meal a day to schoolchildren throughout the country. Similar to school meal programmes world-wide the school meal programme in Swaziland was introduced to provide one nutritious meal a day to learners in order to improve their daily nutrient intake and enhance their ability to concentrate and learn (Acham *et al.,* 2012; Jomaa *et al.,* 2010; Galloway *et al.,* 2009). The school meal menus followed by the primary schools that participated in this study consisted of a carbohydrate-rich dish of samp, rice or maize meal porridge served with a legume or vegetable relish. On all the school menus only legumes were offered as source of protein, and no fresh fruit or vegetables were included at all.

The serving of the meals to the children were not controlled or properly supervised in some schools. This resulted in poor or no portion control of the meals served. Ninety percent of the respondents indicated that they participated in the school meal programme; however, only 73% indicated that they felt satiated after having had the school meal. The results on the preference rating of the menus further showed that only two menus were preferred by nearly half of the respondents. It could be concluded that the menus offered were not particularly liked by the majority of the respondents. It was also clear that the school meal programme as currently practised in primary schools has certain shortcomings that should be addressed to improve the programme in order to achieve its initial aim and objectives. From the above findings it can be concluded that the food items available from the vendors and offered by the school meal programme are not conducive to healthy eating. Thus the school food environment has to change in order to encourage healthy eating practices to which end guidelines and policies have to be reformulated and implemented as far as the menus and foods made available to schoolchildren are concerned.

6.2.4 Conclusions on the evaluation of and recommendations to improve the school food environment (objective 4)

The fourth objective of the study was to evaluate the school food environment in order to make recommendations to improve policy formulation concerning the school food environment. As concluded from the results obtained from the third objective, the school environment of the participating primary schools did not expose children to food choices that promoted healthy food choices and eating. Children were mainly exposed to energy dense, high fat and refined carbohydrate foods with limited options of healthy foods such as, for example sandwiches with protein-rich fillings, nuts, fresh fruit and vegetables, fruit juice or

dairy products. This was evident in the food items on display as sold by vendors the majority of whom offered less nutritious options such as sweets, biscuits and corn snacks (NikNaks, Jiggies). In addition the school meals served consisted of a large portion of starch (samp, rice or stiff maize meal porridge) served with either a small portion of a legume or vegetable relish. No fresh fruit and vegetables, or animal protein food items were included in the school meal menus. Based on the international guidelines for school meals, schools that serve one meal a day should ideally contribute to approximately one-third of the daily nutrient requirements for children (Brown, 2011:327). Although the nutrient analysis of the school meals fell outside the scope of this study, it was obvious from the observed menus offered, that these meals were not nutritionally adequate.

It is clear that recommendations to improve the school food environment have to be made and put forward to the relevant school authorities and forwarded to the Ministry of Education for consideration and implementation. At the moment there are no policy guidelines from the Department of Education to assist schools in promoting healthy food choices and eating. It is recommended that schools should be encouraged to start a school vegetable gardening project to cultivate vegetables that could be used in the menus of the school meals. Involving the schoolchildren in the planning, cultivation and maintenance of the school vegetable garden should ideally become part of the curriculum. This would not only improve their knowledge and skills about vegetable gardening, but also promote healthy eating habits and healthy eating awareness. Inclusion of the cultivated vegetables from the school garden in school meals could reduce the cost of meal preparation and motivate the children to eat the vegetables they themselves produced. Training the vendors on the principles of healthy eating and setting guidelines for the inclusion and promotion of healthier food options at affordable prices could also be considered. In conclusion the school environment should be used more constructively and creatively to encourage healthy eating practices by having clear guidelines and policies on the food that should be available to schoolchildren in the school environment.

The next section addresses the significance of the study.

6.3 SIGNIFICANCE OF THE STUDY

The aim of the study was to determine and describe the current food habits of schoolchildren aged 11-15 years in Manzini, Swaziland and explore the extent to which traditional Swazi foods were included and accepted by this group. In addition a further aim was to gain insight into and evaluate how the school meal programme operated in rural primary schools in

Swaziland. Although the study was limited to three primary schools in Mafutseni, and no generalization can be made to all primary schoolchildren in Swaziland, valuable insights were gained not only on the food habits of the study group, but also on the extent to which they were familiar with and consumed traditional foods. The study contributed to closing the gap in the knowledge on what primary schoolchildren in Swaziland eat. Certain areas where improvement is required were identified, and should be followed-up. Of specific concern is the low fruit and vegetable consumption reported in this study. Thus a priority for nutrition education should be to encourage children between the ages of 11 and 15 years to include more fruit and vegetables daily in their eating patterns and for their caregivers to make this possible.

Insight was gained into the type of food available in the school environment of primary schoolchildren in Mafutseni. Information on the type of food items available and accessible in the immediate school environment through the food items sold by vendors and the school meal programme further contributed to this holistic overview and insight into the eating patterns of the study group. From the results is was clear that the school environment plays a role in the eating patterns of children and thus it has to be made more conducive for the promotion of healthy eating habits. Measures to promote healthy food choices in the school environment should become a priority of the Ministry of Education.

This study proved that primary schoolchildren as young as 11 years are capable of reporting on their own food habits in a survey questionnaire. The respondents in this study were able to fill in the questionnaire and could report on their own food intake. This is in line with reports from other studies on children of this age group (Tshiwanambi, 2007:26; Brown *et al*., 2009), although contrary to information by that children of this age cannot accurately report on their food intake (Matvienko, 2007).

The next section deals with the limitations of the study.

6.4 LIMITATIONS OF THE STUDY

Although great care was taken in the development of the questionnaire, certain shortcomings and/ or gaps came to the fore when administering it.

- The questionnaire did not make provision for the collection of information on the meal composition over weekends in order to determine if there were differences in the type of food consumed on weekdays and over weekends. Such information

would have contributed to a more comprehensive database on the influence of the school environment on the eating patterns of this age group.

- The questionnaire did not include information on the types of food brought to school from home in the form of lunch boxes. This would have enabled the researcher to determine if these food items were healthy food choices. It would have provided additional information on the home food environment of the study group.
- A question on the amount of money brought to school to spend on food purchases at school would have been informative.
- The formulation of the questions dealing with traditional dishes served in combination with cereal dishes should have been more specific in terms of the type of cereals used in their preparation.

Based on the findings and conclusions of the study the next section presents the recommendations drawn from the study findings.

6.5 RECOMMENDATIONS

Certain areas of concern regarding the food habits of the study group have been noted in this dissertation. They specifically relate to the low and infrequent consumption of fruit and vegetables and the food available and accessible to primary schoolchildren in the school environment. The following recommendations are made to the Department of Education, school administrators, curriculum developers, teachers and parents.

- The Department of Education should take note of the findings of this study and consider developing guidelines to promote healthy food choices and eating through the food items that are available and allowed in the school environment.
- Curriculum designers should make it a priority to include the importance of making healthy food choices to ensure a balanced food intake in all relevant subjects offered at primary school level. Subjects such as Science, Agriculture and Siswati, can be used to reinforce the information on healthy eating habits and prevent that schoolchildren associate such information to the Home Economics subject only. The importance of emphasising the inclusion of traditional foods in their eating patterns must continue.
- Appointed persons responsible for the preparation of the school meals should be trained in menu planning. Emphasis should be on healthy eating and how to promote

healthy food choices through interesting and balanced school meals. Healthy food preparation practices, adequate portion control and the serving of the meals should also be addressed.

- The training of vendors on the importance of including healthy food choices to offer to schoolchildren should be considered. They should be made aware of and become sensitised to the role they play in helping children make healthy food choices. Guidelines and ideas of healthy options they should consider must be given to them.
- The establishment of school vegetable gardens and fruit orchards should be apriority. All children in schools should become actively involved in the planning, cultivation and maintenance of these gardens as part of the curriculum. The vegetables produced can be used in the preparation of the school meals. Parents and the rest of the community can also become involved in such as school gardening project. Educate, train and sensitise parents about the importance of healthy food choices and eating. Motivate them to consider having their own home vegetable gardens and fruit trees and to involve their children in the cultivation of these gardens to improve the availability of fruit and vegetables.

From the results of this study certain aspects that need further research were identified and are presented in the following section.

6.6 SUGGESTIONS FOR FUTURE RESEARCH

Suggestions for future research on the topic of the food habits of Swazi primary schoolchildren, based on the results of this study, include:

- A comparative study on the food habits of primary schoolchildren in urban, semi-urban and rural areas in all four regions of Swaziland, including the extent to which traditional foods are included in each region.

- Investigate the reasons for the low fruit and vegetable consumption of primary schoolchildren by means of a study on the contribution of food environment of rural and urban communities in Swaziland.

6.7 CONCLUDING REMARKS

The study has shown that the food habits of the Swazi people continue to change as portrayed in the reported food patterns of the primary schoolchildren in Mafutseni. The

influence of modernisation and urbanisation was noted specifically in the type of foods included in the weekday meal patterns. The influence of the food environment seems to contribute to the availability, accessibility and affordability of food not only in the school environment, but also at home. Although there is a gradual increase in the consumption of modern western-orientated foods, the inclusion of certain traditional food items continues. This is confirmed as the majority of the respondents were familiar with and consumed these food dishes. Maize and dishes prepared with maize meal were eaten at least once a day by the majority of the respondents, which confirms its importance and position as the staple food of the Swazi people. Other traditional foods and dishes prepared from legumes, root vegetables, pumpkin and gourds were enjoyed and rated as liked by the respondents. Green leafy vegetables, although familiar and consumed, were not liked by the majority of the respondents, probably due to the bitter taste associated with some of these green leafy vegetables. Thus the importance of the culture of food in society, reflected in the daily lives of even the youngest of its members, is reconfirmed.

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ADDENDUM A: LETTER TO HEAD TEACHERS (MINISTRY OF EDUCTION, KINGDOM OF SWAZILAND)

- 1 -

MINISTRY OF EDUCATION

P.O.Box 190
Manzini
Swaziland

Telegrams: IMFUNDVO
Facsimile: (268) 505-6067
Telephone: (268) 5052248/9
5058653

18th September 2008

Kingdom of Swaziland

REGIONAL EDUCATION OFFICE

MANZINI

Primary School Head Teachers

Manzini Region

Dear Sir/Madam

RE: AUTHORIZATION OF ANNE T. DLAMINI TO CARRY OUT A SURVEY ON STUDENTS IN MANZINI SCHOOLS

This letter serves to inform head teachers in Manzini Primary Schools that the Ministry of Education has authorized Ms Anne T. Dlamini to conduct a survey on primary school pupils regarding their traditional food habits.

You are kindly requested to co-operate with her as this is a requirement in the pursuance of her current educational programme with the University of Pretoria.

Yours Faithfully

M.E. Nkambule

(R.E.O.MANZINI)

ADDENDUM B: QUESTIONAIRE

For official use only

Respondent Number | | V1 | | | |

SECTION A: INFORMATION ABOUT YOURSELF

Answer all questions by marking with a cross(x) in the appropriate square or giving the correct answer in the spaces provided.

A1 How old are you?

11 years	1	
12 years	2	
13 years	3	
14 years	4	
Other (specify)	5	V2		

A2 What is your gender?

Female	1	
Male	2	V3	

A3 What is your home language?

SiSwati	1	
English	2	
Other (specify)	3	V4	

A4 To which church do you belong?

Catholic	1		
Evangelical	2		
Zionist	3		
Other (specify)	4	V5	

A5 To which ethnic group do you belong?

Swazi	1		
Coloured	2		
Other (specify)	3	V6	

A6 In which area do you live?

Mafutseni	1		
KaBhudla	2		
Other (specify)	3	V7	

A7 How many people do you live with?

Three people	1		
Four people	2		
Five people	3		
Other (specify)	4	V8	

SECTION B: USUAL EATING PATTERN

Please indicate habits as you would eat at home during the week

B1 How many meals do you eat at home **most** days during the week?

One meal	1		
Two meals	2		
Three Meals	3		
Other (specify)	4	V9	

B2 Do you eat breakfast?

Yes	1		
No	2	V10	

B3 If you eat breakfast, which foods do you usually eat? You may mark more than one food

Mabele/Maize meal porridge	1	V11	
Crispi's	2	V12	
Mealie Bread/Dumpling	3	V13	
Brown/White bread	4	V14	
Buns/Rolls/Fat cakes	5	V15	
Cheese/Milk/Sour milk/Yoghurt	6	V16	
Polony/Sausage/Bacon	7	V17	
Fish	8	V18	
Eggs	9	V19	
Fruit	10	V20	
Tea/Coffee	11	V21	
Other (specify)	12	V22	

B4 If you do **not** eat breakfast, give the ***most*** important reason why you do **not** eat it.

There is no food to eat	1		
It is too early to eat	2		
There is no time to eat breakfast	3		
I become sick after eating	4		
Breakfast is not prepared	5		
Other (specify)	6	V23	

B5 Do you eat lunch at home?

Yes	1		
No	2	V24	

B6 If you **do eat lunch at home** which foods do you usually eat? You may mark **more than one food**.

*Sigeza (*Pumpkin/Melon porridge)	1	V25	
*Umgquishu (*Samp and jugo beans)	2	V26	
Samp/Rice/Maize meal porridge and meat stew	3	V27	
Samp/Rice/Maize meal porridge and vegetable stew	4	V28	
Samp/Rice/Maize meal porridge and fish relish	5	V29	
Maize meal porridge and vegetable relishes	6	V30	
Steamed mealie bread/Dumpling and meat stew	7	V31	
Spaghetti/Macaroni with mince	8	V32	
Potato chips	9	V33	
Milk/Yoghurt/Sour milk	10	V34	
Fizzy drinks (Coke/Sprite/Other)	11	V35	
Emahewu (Fermented porridge drink)	12	V36	
Fruit juices	13	V37	

Biscuits/Cakes	14	V38	
Vegetables boiled or salads	15	V39	
Other (specify)	16	V40	

B7 If you do **not** eat lunch, give the **most important** reason why you do **not** eat it.

There is no food to eat	1		
Lunch is not prepared	2		
Other (specify)	3	V41	

B8 Do you eat supper at home?

Yes	1		
No	2	V42	

B9 If you **do eat supper at home**, which foods do you usually eat. You may **mark more than one** item.

*Sigeza (*Pumpkin/Melon porridge)	1	V43	
*Umgquishu (S*amp and jugo beans)	2	V44	
Samp/Rice/Maize meal porridge and meat stew	3	V45	
Samp/Rice/Maize meal porridge and vegetable stew	4	V46	
Samp/Rice/Maize meal porridge and fish relish	5	V47	
Maize meal porridge and vegetable relishes	6	V48	
Steamed mealie bread/Dumpling and meat stew	7	V49	
Spaghetti/Macaroni with mince	8	V50	
Potato chips	9	V51	
Milk/Yoghurt/Sour milk	10	V52	
Fizzy drinks (Coke/Sprite/Other)	11	V53	
Emahewu (Fermented porridge drink)	12	V54	

Fruit juices	13	V55	
Biscuits/Cakes	14	V56	
Vegetables boiled or salads	15	V57	
Other (specify)	16	V58	

B10 If you do **not** eat supper, give the **most important** reason why you do **not** eat it.

There is no food to eat	1		
Supper is not prepared	2		
Other (specify)	3	V59	

B11 Do you usually eat between meals?

Yes	1		
No	2	V60	

B12 If you do eat between meals, which of the foods do you usually eat? You may **mark more than one** item.

Fruit	1	V61	
Chocolate bars/Other sweets	2	V62	
Cakes/Biscuits/Rusks	3	V63	
Steamed mealie bread/Green mealie bread	4	V64	
Buns/Rolls/Scones/Fatties	5	V65	
Vienna's/Polony	6	V66	
Potato chips	7	V67	
Meat pie/Burger/Pizza	8	V68	
Iced Kool-Aide/Sixo iced	9	V69	
Popcorn	10	V70	
Peanuts (Roasted/Boiled)	11	V71	

Ice-cream	12	V72	
Cheese/Yoghurt	13	V73	
Other (specify)	14	V74	

B13 Where do you normally get these foods?

At home	1	
At school tuck shop	2	
At market stall	3	
Other (specify)	4	V75

B14 Why do you eat these foods?

I am hungry between meals	1	
My friends also eat between meals	2	
Other (specify)	3	V76

B15 Which of the following drinks do you usually take between meals? You may mark **more than one** item.

Coffee/Tea	1	V77
Sour milk/Milk	2	V78
Emahewu (Fermented porridge drink)	3	V79
Fruit juice	4	V80
Coke or other fizzy drinks	5	V81
Iced Kool-Aid/Sixo	6	V82
Other (specify)	7	V83

B16 Do you eat different foods over the weekend?

Yes	1	
No	2	V84

B17 Which meals do you usually eat on Saturdays? You may mark **more than one** option.

Breakfast	1	V85	
In-between meals	2	V86	
Lunch	3	V87	
In between meals	4	V88	
Supper	5	V89	

B18 Which meals do you usually eat on Sundays? You may mark **more than one** option.

Breakfast	1	V90	
In-between meals	2	V91	
Lunch	3	V92	
In between meals	4	V93	
Supper	5	V94	

SECTION C: TRADITIONAL FOODS

C1 Put a tick against each of the foods you know and foods you eat.

Food item	**Foods you know**	**Foods you eat**				
*Sijeza (*Pumpkin porridge)			V95		V96	
Sentswane (Maize meal and cowpeas)			V97		V98	
Sentangabomu (Green maize, gourd, peanuts)			V99		V100	
Umngqushu (Samp, beans, peanut powder)			V101		V102	
Boiled fresh mealies			V103		V104	
Meat stew and dumplings			V105		V106	
Chicken heads and feet			V107		V108	
Bhatata (Sweet potatoes)			V109		V110	

Tindlubu (Jugo beans)			V111		V112	
Groundnut relish			V113		V114	
Tinkhobe (Boiled maize, jugo beans)			V115		V116	
Emahewu (Fermented porridge drink)			V117		V118	
Pumpkin top relish			V119		V120	
Emathapha (taros)			V121		V122	
Inkakha (bitter gourd)			V123		V124	
Pumpkin relish			V125		V126	
Emakhowe (Mushrooms)			V127		V128	
Green mealie bread			V129		V130	
Tinhlwa (Termites)			V131		V132	
Emanyamane (Caterpillars)			V133		V134	
Emasi emabele (ticaba) (Sour milk, sorghum)			V135		V136	
Siphushe se tinhlumaya (Boiled cowpeas)			V137		V138	
Mngomeni (Boiled mung beans)			V139		V140	
Emahala (Aloe)			V141		V142	
Chuchuza (Black-jack)			V143		V144	
Emaselwa (Wild melon)			V145		V146	
Tincheke telitsanga (Boiled pumpkin)			V147		V148	
Emantulwa (Wild medlar)			V149		V150	
Tineyi (Berries)			V151		V152	
Umkhwakhwa (Black monkey orange)			V153		V154	
Inkhokhokho (Large leaf rock fig)			V155		V156	
Emakhiwa (Figs)			V157		V158	
Emahlala (Spiny monkey orange)			V159		V160	
Tincoze (Water berry)			V161		V162	
Emagwava (Guavas)			V163		V164	
Emanumbela (Transvaal milk plum)			V165		V166	

C2 Indicate **how much you like** each of the following foods by ticking in the correct column and along the line of the food given.

Food item	**Dislike it**	**Neutral**	**Like** **Like it**		
*Sijeza (*Pumpkin porridge)				V166	
Sentswane (Maize meal and cowpeas)				V167	
Sentangabomu (Green maize, gourd, peanuts)				V168	
Umngqushu (Samp, beans, peanut powder)				V169	
Boiled fresh mealies				V170	
Meat stew and dumplings				V171	
Chicken heads and feet				V172	
Bhatata (Sweet potatoes)				V173	
Tindlubu (Jugo beans)				V174	
Groundnut relish				V175	
Tinkhobe (Boiled maize, jugo beans)				V176	
Emahewu (Fermented porridge drink)				V177	
Pumpkin top relish				V178	
Emathapha (taros)				V179	
Inkakha (bitter gourd)				V180	
Pumpkin relish				V181	
Emakhowe (Mushrooms)				V182	
Green mealie bread				V183	
Tinhlwa (Termites)				V184	
Emanyamane (Caterpillars)				V185	
Emasi emabele (ticaba) (Sour milk, sorghum)				V186	
Siphushe se tinhlumaya (Boiled cowpeas)				V187	
Mngomeni (Boiled mung beans)				V188	

Emahala (Aloe)				V189	
Chuchuza (Black-jack)				V190	
Emaselwa (Wild melon)				V191	
Tincheke telitsanga (Boiled pumpkin)				V192	
Emantulwa (Wild medlar)				V193	
Tineyi (Berries)				V194	
Umkhwakhwa (Black monkey orange)				V195	
Inkhokhokho (Large leaf rock fig)				V196	
Emakhiwa (Figs)				V197	
Emahlala (Spiny monkey orange)				V198	
Tincoze (Water berry)				V199	
Emagwava (Guavas)				V200	
Emanumbela (Transvaal milk plum)				V201	

SECTION D: SCHOOL FEEDING

D1 Are you sometimes hungry during school time?

Yes	1	
No	2	V202

D2 Do you bring a lunch box with you to school?

Yes, sometimes	1	
No, never	2	V203

D3 Do you bring money to buy food at school?

Yes, sometimes	1	
No, never	2	V204

D4 If you do bring money, which foods at your school do you usually buy during break times? You may tick **more than one** answer.

White/Brown bread	1	V205
Ground nuts/Peanuts	2	V206
Fat cakes/Scones/Swazi buns	3	V207
Fried potato chips/Crispy chips	4	V208
Bhatata (Sweet potato)	5	V209
Biscuits	6	V210
Kool -Aid (iced)	7	V211
Sweets (loose, stock sweets/chocolate)	8	V212
Popcorn	9	V213
Fizzy drinks eg. Coke/Fanta	10	V214
Other (specify)	11	V215

D5 Are you taking part in the school feeding scheme? **If no, go to section E on the next page.**

Yes, sometimes	1		
No, Never	2	V216	

D6 Are you full, after having eaten the school feeding meal ?

Yes	1		
No	2		
Do not know	3	V217	

D7 Which menu do you like the most in school feeding scheme? You may mark **more than one** item.

Samp and bean/Pea soup	1	V218	
Samp + vegetable soup + peanut butter	2	V219	
Rice and bean/Pea soup	3	V220	
Rice + vegetable soup + peanut butter	4	V221	
Stiff porridge and bean/Pea soup	5	V222	
Stiff porridge and vegetable soup + peanut butter	6	V223	

D8 How are the prepared meals presented and served?

Dished out to each person by the cook	1	V224	
Individual scoops from main pot	2	V225	
All eat from same bucket	3	V226	
Dished out to each person by class prefect	4	V227	
Dished out to each person by class teacher	5	V228	
Individual scoops from bucket served in class	6	V229	
Other (specify)	7	V230	

SECTION E: 24-HOUR DIETARY RECALL FORM (QUESTIONAIRE)

E1 I'd like you to give me the list of everything you had to eat and drink yesterday, from midnight to midnight. Please include everything you ate and drank at home and away and even snacks.

Time	Food/drinks/snacks	Where
Breakfast 6-9		
Snack 9-12		
Lunch 12-3		

V231		V232	
V233		V234	
V235		V236	
V237		V238	
V239		V240	
V241		V242	
V243		V244	
V245		V246	
V247		V248	
V249		V250	
V251		V252	
V253		V254	
V255		V256	
V257		V258	

SECTION E: (continued)

Snack 3-5			V259		V260	
			V261		V262	
			V263		V264	
			V265		V266	
Dinner 5-8			V267		V268	
			V269		V270	
			V271		V272	
			V273		V274	
			V275		V276	
After 8+			V277		V278	
			V279		V280	

SECTION F: INFORMATION ABOUT FOODS THAT ARE NOT EATEN BY YOUR FAMILY MEMBERS

F1 Put a tick against each of the foods you do not eat because of your church beliefs or your culture. You may tick **more than one** answer.

Pork/Bacon	1	V281		
Mutton	2	V282		
Goat meat	3	V283		
Rabbit	4	V284		
Cheese	5	V285		
Fish	6	V286		
Umlaza (Whey)	7	V287		
Viennas/polony	8	V288		
Eggs	9	V289		
Emanyamane (Caterpillars)	10	V290		
Tinhlwa (Termites)	11	V291		
Emaselwa (Wild melon)	12	V292		
Sijeza (Melon porridge)	13	V293		
Emakhowe (Mushrooms)	14	V294		
Emahala (Aloe)	15	V295		
Tinhlumaya (Cow peas)	16	V296		
Mngomeni (Mung beans)	17	V297		
Ludvonca (Sesame)	18	V298		

Thank you for your participation! It is appreciated!

☺

ADDENDUM C: PARENTS/GUARDIANS INFORMATION LEAFLET

TITLE: Food habits of primary children aged 11-15 years in Manzini, Swaziland

INTRODUCTION

Your child is invited to volunteer for a research study to be carried out at Mafutseni area in the Manzini region. This leaflet is to help decide if you would allow your child to participate. Before you agree for your child to take part in this study you should fully understand what is involved. If you have any question not fully explained in this leaflet please do not hesitate to contact the investigator or the principal of your child's school. You should not agree unless you are completely happy about all procedures your child is involved in.

The purpose of the study is to determine and describe the current food habits of primary school children aged 11-15 years in Manzini, Swaziland.

The information obtained will enable us to:

- Learn more about the learner's eating patterns that contribute to food habits.
- Identify and determine external and internal factors that contribute to their food habits and food choices.
- Determine the extent to which traditional foods are included in eating patterns.
- Determine foods consumed at school.
- To make recommendations to influence these food practices in order to achieve responsible eating habits.

During the study, your child will be told the purpose of theresearch will receive a questionnaire in class and will be asked to fill it in as a class activity. It will be an anonymous study, collected by the researcher at the end of the session. Your child will not be identified by the real name on the questionnaire but given a number to represent the name.

POSSIBLE BENEFITS OF THIS STUDY

The basic prerequisite from the health and education perspective is a sound nutritional status that contributes to healthy development as well as good performance of children in school. The study will identify possible factors that contribute to eating patterns that are a basis for good habits which result to healthy living in childhood and old age. The findings will enable decision makers to address areas of need as indicated by the food habits of the school children used in the study.

INFORMATION

If you have any questions concerning the study, you can contact the researcher Mrs. Anne Toysie Dlamini, Tel: 25058519 or Cell: 76041957.

ETHICAL APPROVAL

The research protocol was submitted to faculty of Natural Science in the Department of Consumer Sciences Ethics Committee, University of Pretoria and written approval has been granted by that committee.

APPROVAL BY THE PRINCIPAL OF THE SCHOOL

The study has been discussed with the principal and the teacher of your child and written consent has been signed by the principal of your child's school.

THE CHILD'S RIGHT AS A PARTICIPANT IN THIS STUDY

The participation in this study is entirely voluntary and therefore you or your child can refuse to participate and stop at any time without stating any reason.

RISKS INVOLVED IN THIS STUDY

There are no risks involved that are for participation in the study.

CONFIDENTIALITY

All information obtained from your child whilst in the study will be regarded confidential. Participants will remain unidentifiable when the results are presented.

Investigator's signature_____

Date _____

ADDENDUM D: PARENTS/GUARDIANSCONSENT LETTER

UNIVERSITY OF PRETORIA

Pretoria

0002

Republic of South Africa

Faculty of Natural and Agricultural Sciences

Questionnaire: Food habits of primary school children aged 11-15 years

Dear Participant,

I am a student at the University of Pretoria currently undertaking Master's studies in the Department of Consumer Science. My research topic is to investigate food habits of primary school children aged 11-15 years and to what extent traditional foods are included and accepted by this study group Findings of the study will provide empirical data on what children are eating and baseline information to assist in policy formulation for primary school feeding programmes in Swaziland. It will also indicate what aspects need to be taught or emphasized regarding healthy eating.

Your child has been identified as a most valued person to contribute to my study. Filling in the questionnaire is not compulsory. The child is free to withdraw at any time, but I would prefer that he or she participates freely without any coercion.

You are thus requested to kindly allow your child to participate by signing this letter as shown below. All information provided will be treated with outmost confidentiality and his or her identity will not be revealed.

Thank you for your participation which you are respectfully asked to indicate below.

Yours faithfully

Anne T. Dlamini

(Student registration number: 27087434)

Parent/Guardian's Consent

I, …… hereby give my consent to have my child participate in the study on Food habits of primary school children aged 11-15 years.

Signature of parent/guardian: ……

Date: ……

ADDENDUM E: CONSENT FORM FOR MINORS IN GRADE FIVE/SIX/SEVEN

The Investigator, Anne Dlamini, has explained to me why she is present in my school during this week. She and my class teacher talked about the study titled: **Food habits of primary schoolchildren aged 11-15 years in Manzini, Swaziland.** I know that I will be a participant in a process with the aim to learn more about the leaner's food habits in primary schools.

- I could ask anything about the study and I can refuse to answer the questionnaire.
- I have read the questionnaire I will be asked to answer.
- I understand that I will not be identified after this week on the questionnaire.
- I understand fully what my participation involves.
- I consent to participate in this study.

Learner's Name_____

*Learner's Signature*_____

Date_____

Investigator's Name_____

*Investigator's Signature*_____

Date_____

Witness's Name_____

*Witness's Signature*_____

ADDENDUM F: COMMON SWAZI DISHES

English and SiSwati terminology	Description of dish
Bhatata (sweet potatoes)	Fresh sweet potatoes boiled until soft
Emahewu(fermented maize meal beverage*)*	Soft porridge prepared from maize meal and water, cooled, mixed with flour and left to ferment overnight and served as a beverage/ snack
Emasi (sour milk)	Curds of soured milk mixed with boiled and crushed sorghum/ maize kernels or crumbed porridge
Incwancwa (ting/sour soft porridge)	Soft porridge prepared from fermented sorghum/maize meal
Indengane (soft *mabele*/ maize meal porridge)	Soft porridge prepared from water and maize meal as a gruel; typically served in the morning with milk and sugar
Lidombolo (dumpling)	Usually a baking powder bread steamed over meat or chicken
Lifutfo (boiled fresh mealies)	Fresh maize boiled on cob
*Ligusha (*Chorcorus relish*)*	Leaves cooked in boiling ash water and flavouring
Liphalishi (stiff maize meal porridge)	Porridge prepared from equal amount of maize meal and water
*Sentangabomu (*gourd, green maize and peanuts powder*)*	Mashed combination of gourd, green maize and peanut powder
Sentswane (maize meal and cowpeas)	Cowpeas boiled and mixed with maize meal, then flavoured
*Sijeza (*melon/ pumpkin porridge*)*	Porridge cooked with maize meal and mashed pumpkin or melon
Sinkhwa sembila (mealie bread*)*	Usually maize meal or crushed fresh maize mixed with flour, baking powder and salt, steamed in maize husks over maize cobs, sticks or in a bowl with a lid over boiling water

ADDENDUM F: COMMON SWAZI DISHES(continued)

English and SiSwati terminology	Description of dish
Siphushe (cow pea mash)	Cowpeas, boiled, mashed and flavoured
Sishibo semabhontjisi (bean stew)	Beans soaked and boiled, flavoured with chopped onions, cooking oil, crushed peanuts and salt
Sishibo semantongomane (peanut relish)	Peanuts, roasted, crushed into powder, cooked in onion or shallot and water to make a sauce and flavoured
Sishibo semfishi (fish relish)	Mixture of onion, tomato, cooking oil and pilchards and sometimes soup power added
Sitambu (samp)	De-husked and de-germed kernels boiled and served separately with a stew or relish
Tindlubu (jugo beans)	Boiled, seasoned and served
*Tinkhobe (*boiled maize and jugo beans/cow pea/mungbean)	Whole dried kernels boiled with a legume and flavouring added when soft.
Umbhidvo (leafy vegetable relish)	Leafy green vegetables are cooked in little water, flavoured with onions, crushed peanuts and salt
Umbhidvo *wetintsanga* (pumpkin top relish)	Pumpkin shoots/leaves, young pumpkin and crushed peanuts cooked in little water and flavoured.
Umngqushu (samp and jugo bean dish)	Boiled jugo beans mixed with samp and ground peanuts, then mashed and served

ADDENDUM G: OBSERVATION CHECKLIST SHEET

To be observed	yes	no	Other (specify)
1.0 THE SCHOOL ENVIRONMENT 1.1 Available outlets inside the premises — Vendor/ladies stalls — Tuck shop 1.2 Available outlets outside the school premises — Vendor/ladies stalls — Supermarkets — Groceries 1.3 Types of food items sold in the school environment **Flour based products:** Rolls Buns Scones Fat-cakes Bread Cake Biscuits Pie **Fruit:** Banana Orange Apple Pear **Dairy products:** Ice cream Cheese Yoghurt Milk (fresh) **Legumes** Boiled jugo beans/peanuts Roasted peanuts **Maize based** Popcorn Jiggies NikNaks Green mealies **Sweets** Chocolates bars Stock sweets Small individually wrapped sweets			

Drinks Iced Kool-Aid/Sixo *Emahewu* Soft drinks Juice **Potato based** Crisps Potato chips 1.4 School children allowed to leave school premises during break 1.5 School meal program is available 1.6 All children participate 1.7 Menus offered — Samp with legume soup — Rice with legumes soup — Porridge with vegetable soup — Rice with vegetables soup — Samp, beans and peanut butter. 1.8 Serving plates provided by: schoolchildren 1.9 Food dished out by: — the food preparer — prefects 1.10 Any policy on food that learners can bring to school or food that are allowed to be sold in the school environments			